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"Your Paper did not come, Sir."

We recommend a careful perusal of the following plain statement, both to post-masters and to subscribers, it is from a paper called "The Advance," published at Hernando, Miss.:

"The uncertain arrival, or uncertain delivery of papers at country Post Offices, is often the ground of complaint against publishers and editors. Many of the offices are poorly supplied with conveniences for taking care of papers, no matter with what certainty they arrive. The papers are jumbled into a few little pigeon holes, or piled upon a desk, box, or barrel, to await the call of subscribers—in the midst of boots, hats, bridles, horse collars, and other coarse wares, which may be called for during the day by customers. Country Postmasters, in most cases, being engaged in some mercantile business, many newspapers find their way into some obscure corner, where they are hid for a time from human eyes, as completely as if buried in a mountain cave. In comes the man for his paper, and as it can't be found, of course it didn't come. The indignant subscriber consequently abuses the rascally editor, and, perhaps, calls for pen, ink, and paper, to write a letter of complaint about not sending his paper punctually, when, if the said paper were endowed with speech, it would cry out 'here I am, squeezed to death behind this box, or under this barrel.' We have seen just such things at many country Post Offices elsewhere as in this country. These remarks have no reference to any particular office, but are meant for all where they will apply."

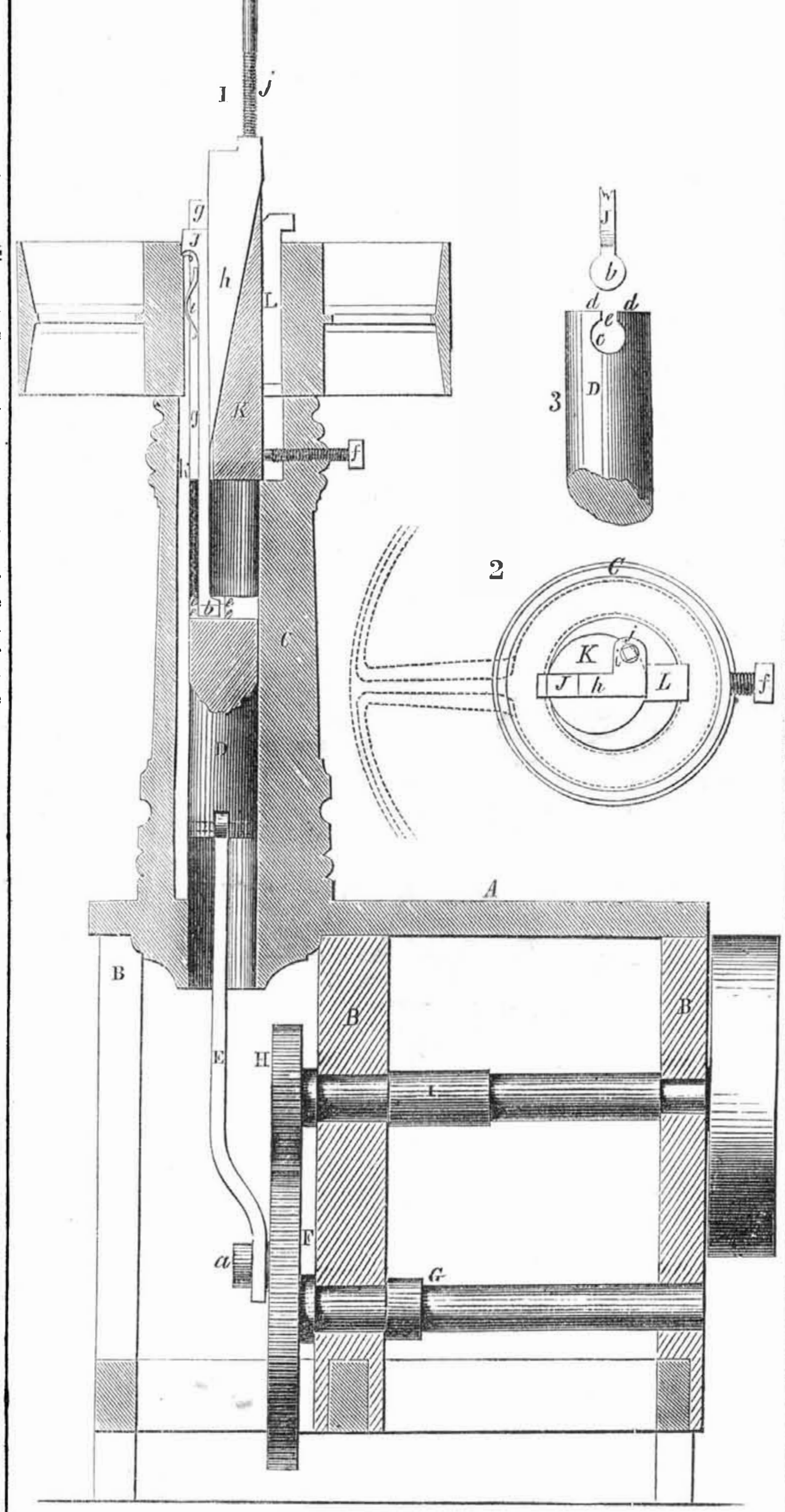
The People's College.

We understand that the prospects for the establishment of this Institution, in this State, are cheering. More than $50,000 are now promised by its friends, and it only requires that amount to be paid into the Treasury to locate and commence operations. Geo. H. Stebbins, No. 348 Broadway, has been appointed its local agent in this city. The objects of the originators of this college are good. It is designed to instruct students for practical life, in the workshop and on the farm. The President of the Association is D. C. McCallum, Superintendent of the N. Y. and Erie Railroad—an able and upright man—a friend of education, of moral and scientific progress.

Not all Gold that Glitters.

A curious trial recently took place in London, between parties somewhat conspicuous in the world, being no other than Mr. Wyld, who constructed the monster globe, and had it on exhibition, in 1851, and Mr. Calvert, the great gold discoverer. The affair seems to have been very discreditable to both parties. Wyld was to pay Calvert so much for giving his name as being the owner of a great number of large and small nuggets of gold, which were exhibited in the inside of the globe. These nuggets were lead electro-gilded with gold, consequently those who admired such fine specimens as the produce of Australian and British gold mines were greatly deceived.

IMPROVED SLOTTING MACHINE.



The annexed figures represent an improvement in Slotting Machines for cutting key ways in the hubs of wheels, pulleys, and such articles as are required to be keyed on shafts, or for slotting operations of a similar nature. A patent was granted for the improvements to Parley Williams, 2nd, of Barre, Mass., on the 2nd of last month, (May 1854.) Figure 1 is a vertical section of the machine; figure 2 is a top view of the column containing the tool and feeding devices, and figure 3 is a front view of the top part of the tool stock and the lower part of the tool—showing the means of attachment. The same letters of reference indicate like parts on all the three figures.

A is a table supported upon standards, B B, and carrying an upright column, C, which is firmly secured to it. The lower part of this column is bored out to receive the solid piston, D, which fits easily therein, and forms the tool stock. The tool stock is attached by a connecting rod, E, to a stud, *a*, on the face of the spur wheel, F, on a shaft, G, which rests in bearings on the standards which support the table. The spur-wheel, F, gears with a smaller spur-wheel, H, on a shaft, I, which is supported in bearings above the shaft, G, and is the driving shaft of the machine. The driving shaft communicates motion to the shaft, G, by the gearing and stud, *a*, forming the equivalent of a crank gives a vertical reciprocating motion to the tool stock. The tool, J, is attached to the tool stock by means of a knob or button, *b*, at the bottom, which slides into a slot, *c*, in the top of the tool stock. This slot for about half way across from the front of the stock has a narrow mouth, *e*, which prevents the knob or button, *b*, being withdrawn upwards, but the other half has its mouth wide, so that it will allow the button to pass up, and the tool to be taken out. This method of attaching the tool allows it to move back and forth horizontally in the machine far enough for the purpose of feeding it to its work, and allows it to be easily taken from the machine when necessary, by simply sliding the knob or button, *b*, back to the wide mouthed part of the slot, *c*. As the tool is intended to cut downwards, it is made of a hooked form. The cutting edge is made of the full width of the intended slot, so that it will cut the whole width at once. The length of the tool is such that at the lowest point in its stroke, the cutting edge is just below the top of the column, A. The tool has a spring, *l*, in front, a short distance below the cutting edge. The column has a slot, *k*, inside, for the tool to work in. The upper part of the column receives an adjustable cylindrical mandrel, K, which is secured in place by a binding screw, *f*, and protrudes some distance above the top of the column. The front side of this mandrel has a slot, *g*, along its whole length, in which the tool works, and at the back of this slot it is cut away to receive a wedge, *h*, which bears against the back of the tool with its point downwards. This wedge has a lug, *i*, on one side of its head, in which is a left screw to receive an upright right screw, *j*, whose point rests upon the top of the mandrel.

The wheel or other article requiring a slot cut in it is placed over the mandrel, K, which must be smaller than its bore, and is supported on the top of the column. It is keyed fast to the mandrel by a key, L, at the back, so as to draw it close to the front of the mandrel where the tool works. A wheel is represented in figures 1 and 2, (dotted lines in the latter) in place for being operated upon. The action of the wedge, *h*, when not supported by the screw, *j*, is to descend by its own weight, and feed the tool forward towards its work. The descent of the wedge is regulated by the screw, *j*, which supports it during the time the tool is cutting and prevents any further feed taking place after the cut has commenced. Every time the tool ascends the screw requires to be turned by hand in such a direction as to allow the wedge to fall far enough for the feed. The spring, *l*, in front of the tool rests against the face of the bore, or against the face of that part of the slot which may have been already cut, and forces the tool into close contact with the wedge and prevents it overloading itself.

The reason for making the mandrel, K, detached and adjustable is, that mandrels of different sizes may be used to suit the hubs of different bores. The mandrel should only be so much smaller than the bore as is necessary to introduce the key, L, by which the hub is secured to it.

With this machine Mr. Williams has cut a slot 6 1-2 inches long, by 9-16 inch wide, and 5-16 inch deep in a cast-iron hub in the short space of five seconds—quick work.

More information may be obtained of the patentee by letter addressed to him at his place of residence mentioned above.

Submarine Explosive Shells.

We perceive by our foreign exchanges, that Capt. Norton, of Cork, Ireland, is astonishing the scientific men of that city with a new submarine mortar. It is dropped by hand into the water, and requires no electric battery to ignite the charge. It seems to be a very handy and destructive missile.

Flax Industry.—No. 10.

The total value of the linen thread and cloth exported from Ireland during the thirty years preceding the year 1740, was £417,600 sterling; during the thirty years succeeding 1748, the amount increased to £1,228,148 sterling. The whole of this production was taken for the English home market, with few exceptions.

The following table shows the amount of Irish linens exported from 1800 to 1826 inclusive:—

1801 - - -	37,774,885 yards.
1805 - - -	44,043,487 "
1809 - - -	37,151,000 "
1813 - - -	38,700,147 "
1817 - - -	56,241,000 "
1821 - - -	49,800,000 "
1826 - - -	54,963,315 "

Of this amount about one-tenth part was exported to countries other than Great Britain.

Independently of cloth, Ireland also exported a considerable amount of thread, and with Germany contributed the principal supplies to the English and Scotch manufactories. The above table showing the exportations of Irish linens, shows also that up to 1826, hand weaving and spinning had been able to sustain "itself against the mechanical processes which were being introduced into England and Scotland as early as 1802. After 1826 the hand labor of Ireland rapidly gave way before the progress of mechanical improvement, and as we have shown the culture of flax for a time was also neglected. Although mechanical spinning has been in successful operation in Ireland since 1827, there were as late as 1840, a large number of persons gaining a livelihood by means of hand spinning.

In 1828 the first factory for the spinning of flax was established at Belfast. In 1841 the number of mills in operation, had increased to forty-one, containing 280,000 spindles; in 1852 upwards of eighty mills, containing 480,000 spindles were in full employment, the whole exhibiting an increase of a particular manufacturing industry rarely equalled. These mills represented a capital of more than $25,000,000, and taken in connection with the weaving and bleaching department, give employment to upwards of 200,000 persons, disbursing also in wages between five and six millions of dollars. The goods manufactured at Belfast find their market principally in the United States, Spain, and Mexico. During the period referred to, the city of Belfast has enjoyed a most unexampled prosperity and its progress in population has been of late years in a more rapid ratio than any city on the British Empire, London alone excepted. Belfast has also expended, without any Government aid, $2,500,000, on the improvement of its harbor; $1,200,000 on municipal improvements, and $15,000,000 on railroads and canals.

But the flax industry in Ireland is by no means confined to Belfast. Flax spinning factories are to be found in twelve counties of Ireland, bleach-greens throughout the whole of Ulster, and weaving in every parish of that province, and Drogheda, Cork, Galway, and Westport. New spinning and weaving establishments are now being erected on an extensive scale on the banks of the Shannon, the Boyne, the Liffey, and the Erne. And the cultivation of flax, which six years ago was only 53,000 acres, and was confined principally to Ulster, was in 1853 estimated at 176,000 acres, with a crop valued at $11,000,000.

The Report of the Inspectors of Factories, gives the number of spindles employed in the spinning of flax throughout Great Britain during the year 1851 as 1,060,693, distributed as follows: England, 265,560; Scotland, 303,125; Ireland 500,000.

The estimate at the present time is probably as follows: England, 300,000; Scotland between 4 and 500,000; Ireland, 600,000.

The number of acres of land under cultivation with flax in Ireland increased from 1848 to 1853, as follows:—

1848	53,868	1851	138,619
1849	60,314	1852	136,090
1850	91,040	1853	176,000

Glasgow, like Belfast, owes its commercial importance in a great measure to the linen manufacture, and is one of the principal seats of the flax industry in Scotland. The goods manufactured are principally coarse linens, burlaps, canvas, crash, &c., &c. Within a circle of ten miles there about sixty spinning mills and factories employed in the production of this class of goods. Some of these establishments are of great extent, having 8,000 or 10,000 spindles, and, perhaps, 500 looms, continually at work. One of them has under pay over 1,000 hands. There is probably no place in the world where more flax and hemp is bought and sold than there is here. Some seasons more than $15,000,000 worth of manufactured goods have been sent from this place.

Much of the coarse bagging and canvas is wove by hand. In this branch of the business probably 16,000 persons are employed, and their condition is sad enough to excite compassion in the breast of the most callous observer.

The weekly pay of the weaver is, on an average, about $1,75. By working long hours, a man may sometimes earn more than that; but for every one that earns $2,50 for a week's work, there is another who gets only $1,12 for the same.

The town of Dundee is also celebrated for its linen manufactures, and in the importance and extent of its fabrications exceeds Glasgow. In 1745 this place imported flax to the amount of 160,000 lbs.; fifty years later, its importance had increased to 550,000 lbs., and its exports of cloth were between 6 and 7,000,000 yards. In 1837 this town imported flax to the amount of 70,000,000 lbs., and 7 to 8,000,000 lbs. of hemp. The number of pieces of cloth of all qualities manufactured during the same year was 640,000.

The progress of mechanical spinning in England can be illustrated to some extent by a table showing the decrease in the importations of foreign thread, from the year 1827 to 1838, as shown by the Official Parliamentary Reports.

In 1827 the amount of linen thread imported by the English manufacturers was 3,782,353 lbs.

1828	"	3,429,104	1834	"	1,624,448
1829	"	3,320,240	1835	"	1,378,183
1830	"	2,151,632	1836	"	589,526
1831	"	1,943,424	1837	"	416,320
1832	"	1,522,416	1838	"	356,272
1833	"	1,564,460			

The first importation of English linen yarn was made into France in 1825, but the importation did not attain to any considerable figure until 1830 The importation of cloth did not acquire any importance until 1836. The following table exhibits the importations of cloth and yarn from England to France for the years 1830 to 1842 inclusive:

YEARS	YARN lbs.	CLOTH lbs.
1830	6,707 "	3,794 "
1831	39,064 "	7,524 "
1832	112,756 "	6,562 "
1833	846,766 "	6,452 "
1834	1,662,878 "	19,130 "
1835	2,690,186 "	26,562 "
1836	3,802,148 "	167,860 "
1837	6,399,834 "	950,920 "
1838	10,590,484 "	2,718,224 "
1839	12,435,542 "	1,245,094 "
1840	12,420,200 "	1,589,040 "
1841	18,491,400 "	3,366,720 "
1842	20,507,800 "	3,778,600 "

On the Production of Butter.

The production of butter is nearly the same everywhere, and yet how different is the quality of that made in one farmer's family from that made in another's. It is the attention which is paid to the minute parts of the process—by some denominated *trifles*—which gives the great superiority to one parcel of butter over another. Cleanliness, attention, and labor, are the requisite qualifications for producing good butter everywhere, with proper dairy utensils and accommodations. Having received some letters recently, making inquiries respecting the best methods of preparing butter for selling next winter, we have taken the present opportunity to collect information from various sources on the subject. In London the butter from Dorsetshire holds about the highest rank. In that county the cows are milked twice a-day in summer—in the fields. The milk is passed through a sieve, and then set to cool in milk-leads. In some counties glass-ware or stone coolers are used; but a Dorsetshire family will use nothing but leads. In these the milk is allowed to stand for a period varying from 12 to 36 hours. Usually, after standing for 24 hours it is skimmed, and the cream is collected in tin vessels until sufficient to form a "churning" has accumulated. In very large dairies in the summer season, butter is made every day; and it may be set down as a general rule that the quicker cream is converted into butter, the sweeter and better is the butter. It should not be allowed to remain longer than three days under any circumstances. The churn having been prepared by rinsing with hot water in winter, and with cold water in summer, the cream is agitated until a complete separation of the fatty matter from the milky fluid has been effected. The butter having "come," it is taken out and well washed. It is then worked with the hand until the buttermilk is thoroughly expressed, and the air-bubbles are broken. A portion of salt is mixed with about each half dozen pounds; the manipulation is resumed; the lump undergoes a second washing, which carries off the surplus salt; and it is finally made up into rolls for the home-market, or with an additional salti g, is packed in clean tubs for the London market.

There is an objection to the lead coolers, for if the milk sours it acts upon the metal, and by taking up a portion of it, a poisonous ingredient becomes mixed with the butter. The quantity may be very minute, but no matter for that, it is still a deleterious agent.

The production of butter by churning is both a chemical and mechanical process. Milk, according to the analysis of Henri and Chevalier, is composed as follows:—

Casein, pure curd - - - - - - -	4·48
Butter - - - - - - - - - - - -	3.13
Milk sugar - - - - - - - - -	4·77
Saline matter - - - - - - - -	0·60
Water - - - - - - - - - - -	87·02
	100·00

By the mechanical operation of the churn the envelopes of the globules of fat are broken, and the globules brought into cohesion. By the chemical process the sugar of milk is converted into lactic acid, and the bulk of the fluid, which was put sweet into the churn, is instantly soured. The best temperature for obtaining these results has been found by experience to be 60° Fah. To attain this temperature the dairymaid rinses her churn in summer with cold water, lest the butter come too quickly, and be flaccid and pale, and in winter with warm water, lest it come not at all.

The primal condition of excellence in butter-making is purity. Milk is in the highest degree susceptible of taint. Milk in the udder may be poisoned by the cow eating improper food. "Milk," says Dr. Taylor in his work on Poisons, "is rendered bitter when the cow feeds on wormwood, and the leaves of the artichoke. Its taste is affected by the cabbage, the carrot, and all strong-smelling plants, and the effects extend to butter and cheese, and all articles of food prepared with milk." Milk may even be poisoned without the cow being affected. With so sensitive a fluid, therefore, the utmost care is required, not simply as regards the milk itself, but also the food which the cow eats and the water it drinks. If milk is so liable to be affected that it may be the medium of conveying poison through the cow, it follows that the quality of butter very materially depends upon the quality of the water which the cow drinks.

The dairy-vessels must be scrupulously clean; they and the dairy itself must be removed from everything that taints the air. If the coolers be made of zinc, a very serious effect indeed may be produced. "It is probable," says Dr. Taylor, "that some of the lactate of zinc is here formed. Milk and cream which were allowed to stand in such vessels have given rise to nausea and vomiting." From the time when its elements are first formed from the succulent grass of the field, until the time when it appears on the breakfast-table, butter leads, (so to speak) a most precarious existence, and its preservation depends almost entirely on trifling, but constant attentions.

The dairy house should be a cool, clean, airy place. Good butter cannot be made if flies, dust, &c., are allowed to get into either the milk or cream. When the butter is made in the churn, and removed from the churn to the basin for working it for market, great care should be exercised to keep it cool. The water for washing it should be crystal pure, and about 48° of temperature. Nothing but the best of salt should be used in salting, and one ounce of ground white sugar should be mixed with every two pounds. Sugar is a good preservative, and it tends to remove any bitterness of taste in the butter. Butter should always be packed in air-tight vessels. Any butter will keep well if it is clean, freed from milk particles, and well salted and tight-packed.

The quality of butter and the quantity of milk depend less on the breed than on the food of the animal. It is almost impossible to assign to any particular breed the milching palm—it belongs to the individual animal.

The Guernsey cow, a small animal, has long been famous for its good quality of butter, but perhaps this depends more upon the pastures of that Island, than the quality of the animal. Good natural grasses are the most economical and best summer food for cows.

[For the Scientific American.]

Effects of Moonlight on Fish.

In the "Scientific American," page 186, the question is mooted whether the putrefaction of fish and meat exposed to moonlight, is more rapid than at any other time. That moonlight affects fish is not only a traditionary belief, but is a positive fact, which can easily be ascertained by those who have doubts upon the subject. I have known it to be so for more than forty years. I recollect of an instance where a person purchased newly-caught fish at the fishing station, and threw them floundering into his wagon, without taking the precaution to cover them from the moon's rays of that night. He lived a distance in the country, which required about five hours to reach, and he thought, as the journey was to be made in the cool of the night, all would be well, but he was greatly surprised when he arrived at home at daylight, to find the most of his fish so green and putrid that they had to be thrown away. Why was this? Such an effect would not have been produced upon fish on a moonless night, nor even by exposure to the sun's rays for the same period. All old housekeepers are careful not to expose fresh fish or meat to moonlight. It is also generally believed that it is dangerous to sleep exposed to the moon's rays. These precautions and traditionary opinions had their origin in facts, which I have observed on both land and water. The great thing in mooted questions in natural philosophy, is first to discover and arrange facts; but in accounting for them, there may be a variety of opinions, until some new fact is discovered which settles all the disputed points. G. V.

Troy, N. Y.

Uniting Wrought and Cast Iron.

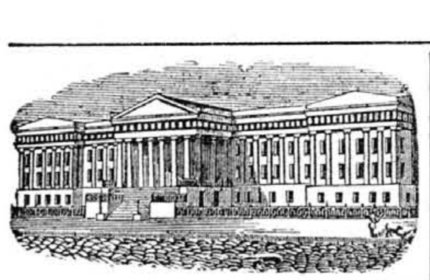
Filings of soft cast iron are melted with calcined borax, the mass pulverized and sprinkled on the parts to be united. They are then separately heated and welded together on an anvil by gentle blows.

Strawberries.

This fine fruit is very plentiful in our markets at present. We think they are finer in flavor and larger in size this year, than we ever saw them. Whether this is owing to a favorable season, or improvements in their cultivation, we are unable to tell.

A convention of farmers is to be held in July, at Warrenton, Va., on the subject of the joint worm. The exchange from which we clip the foregoing, calls it "A Joint Worm Convention."

The greatest breadth of the River Nile is 2000 feet, or about a third of a mile. Its current is sluggish, aad nowhere does it move over three miles an hour. Its waters are always muddy.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JUNE 13, 1854.

MANUFACTURE OF SULPHURIC ACID—D. E. Coutaret, of Roxbury, Mass. Patented in England Dec. 16, 1852: I claim the mode of bleaching and purifying (without loss or injurious emanations) sulphuric acid from the leaden chamber, by means of the movable cover, plunging into the liquid sulphuric acid contained in the boiler, and receiving by the tube the sulphurous gas of the furnace, leaving the surplus to escape by the tube, as described, which arrangement constitutes a new and complete apparatus, whereby is obtained, by chemical re-action, the bleaching and purification of the sulphuric acid, as drawn from the leaden chambers, while it avoids the loss of the nitrous gas and inconveniences arising therefrom.

I also claim the mode of concentrating sulphuric acid to 66 degrees without loss or injurious emanations, by means of the movable cover or capital, surrounded by a gutter adapted to the leaden evaporating boiler, as described.

THRESHERS—Wm. R. Palmer, of Elizabeth City, N. C.: I claim, first, the peculiar form and construction of the furrowed surfaces of the flanches and rubbers, as described.

Second, I claim the combination of such rubbers that are adjustable with such flanches, and their arrangement, as described, upon opposite sides of the flail case, and also the combination of such rubbers and flanches with the rotating flails, as set forth.

NAIL PLATE FEEDERS—Joseph Iler and Wm. Fitzpatrick, of Troy, N. Y.: We do not claim the revolving cylinder through which the nail plates are fed, as that device will be found in the patent granted to Caleb Isbister, 31st Dec. 1844.

First, we claim giving a rising and falling motion to the end of the nipper barrel and nose pieces attached thereto, by means of the cam, bearing, and guide saddle, in combination with the nipper barrel, as set forth.

Secondly, we claim constructing the nose pieces with an opening between them, so as to permit the jaws of the nippers passing into this opening, for the purpose of feeding the scrap end of the nail plate as close up to the cutter as possible, thereby leaving less scrap iron.

Third, we claim the guide and spring, in combination with the nose pieces, for the purpose of guiding and holding the nail plate in the nose pieces.]

BED BOTTOMS—Tyler Howe, of Cambridgeport, Mass.: I claim combining the main-springs, together, and with the frame, in lateral direction, by means of wire and clasps, in combination with connecting said springs at their ends in such frame, by means of rocker links, as specified, and for the purpose of forming a mattrass foundation of bar springs, whose parts shall readily accommodate themselves to the varied strains induced by a person's body when laid upon them, and this without injurious strain upon one another.

CUT-OFF VALVES FOR STEAM ENGINES—Thomas Ashcroft, of Dorchester, Mass.: I claim controlling the operation of the cut off plates or valves, by means of two inclined planes, one attached to each valve and the movable stop bar, the whole being as described.

[See notice of this improvement in No. 35, Vol. 9, Sci. Am.]

CAST-IRON CAR WHEELS—David Prew, of Taunton, Mass.: I claim the cast metal chilled rim wheel, as made of the combination of a solid or tubular hub, a chilled rim, two underlating plates uniting the hub and rim, a series of ogee or curved arms (placed between the hub and rim and two plates, and made to connect the hub and rim, and be joined throughout their entire length to the two plates) and a series of openings in one of the plates, and respectively between the arms, all cast or founded in one piece of metal, as specified.

SPARK ARRESTERS.—Casimir Abos, of New Brunswick, N. J.: I claim the combination and arrangement of the draught pipe, central spark conducting or return pipe, hinged self closing valve and stack, as described.

INSULATING TELEGRAPH WIRES—J. M. Batchelder, of Cambridge, Mass.: I claim the combination of an electric telegraph wire or conductor, with a composition of india rubber and sulphur, forming an insulating coating upon and around the wire: this composition being the same for which a patent was granted to Nelson Goodyear on the 6th of May, 1851.

STILLS FOR DISTILLING FATTY BODIES—Samuel Childs, of New York City: I claim, first, the use of a stratum of steam within a jacket or case between a fire heat and a vessel containing any article such as those named under treatment, whereby the heat applied to said vessel can be any desired amount, and the same can be regulated to any desired point according to the supply and delivery of the steam, as specified.

Second, I claim passing the steam from a jacket, as set forth directly into the still, and material under treatment, for the purposes and as specified.

LENS LAMP CHIMNEY—Silas Constant, of Brooklyn, N. Y.: I claim constructing a lamp chimney with the bulge so thickened as to form an annular lens for refracting the rays of light, as described.

TANNING APPARATUS—Nathl. Dodge, of Orford, N. H.: I claim the combination of the two dashers and sets of notch bars, as applied to the two vertical and movable frames, and in the vats, and made to operate as set forth.

CONSTRUCTION OF ACCORDEONS—Anthony Faas, of Philadelphia, Pa.: I claim combining with the diatonic scale of the large keys, two other scales, viz., one for producing all the intermediate notes or semi-tones, and the other founded upon the sub-dominant of said diatonic scale, and both arranged so as to be fingered by a single set of small keys, as described, to enable the instrument to produce full and correct harmony in any key.

I also claim providing the accordeon with a sound-board, as set forth, for producing more strength, fullness, and resonance of tone.

CARRIAGE AXLE—Eli H. Green, of Baltimore, Md.: I do not claim the axle with a shifting sleeve, but the construction of axles for carriages wherein the arms and intermediate bars shall be of wrought iron, and the arms thereof formed of eight or more sides fitting into a corresponding hollow of a cast sleeve, the surface of which may be turned for a bearing, as set forth.

I also claim the combination of the cast sleeve carrying the hinter, with the mail coach patent box, as set forth, for the purpose of obviating the necessity of cutting the axle to remove the broad washer, as set forth.

PRINTING PRESS—G. P. Gordon, of New York City: I claim, first, the employment or use of a rotating reciprocating fly, arranged as shown, for the purpose of relieving or removing and piling the sheet after it is printed.

Second, I claim giving, with one inking cylinder, two distributions to the inking rollers for each impression, viz, one prior to the passing of the form, and one prior to its repassing.

Third, I claim the combination of the spiral spring, connecting rod, and crank motion, with the stops, for operating a bed or carriages and giving the necessary dwell or cessation of movement to a bed or carriage during the time the impression is made, the parts being arranged as shown, or any equivalent manner.

[Mr. Gordon is the well known Card Printer at No. 84 Nassau street, and this is a good improvement in his line.]

TAIL-BOARDS OF WAGONS—F. M. Harris, of Carroll, O.: I claim the manner described, of rendering the tail gate or board capable of increasing the length of the body of the wagon when lowered to a horizontal position.

I also claim the combination of the spring catches, eye strap hinged tail-board, elbow-shaped pieces, and hooks, for the purpose of rendering the tail-gate self-locking, and also capable of resting in a horizontal position while unloading, as described.

[See notice of this invention in No. 35, this Vol.]

BED BOTTOMS—B. R. Himaley, of Lynchburgh, Ohio: I claim the ring provided with hooks or other attachments for the cords, in connection with a handle and catch, as described, for the tension of a radial arrangement of the bed cord.

VISES—Bernard Hughes, of Rochester, N. Y.: I claim the method of attaching and using the nut or left handed screw at the back of the movable jaw, with simple screws through its flange.

SADDLE TREES—Wm. E. Jones, U.S. Army: I claim the introduction of a hinge into the pommel, and one into the cantle in connection with screws, by means of which the saddle can be made to enlarge and contract, and thus to fit any horse, as set forth.

WINNOWING MACHINES—J. Keech and S. Stillwell, of Waterloo, N. Y.: We claim the movable trunk, for the purpose of converting the open horizontal blast of the ordinary winnowing machine into a vertical blast separator.

MAKING CARD TEETH—William Montgomery, of Roxbury, Mass.: I do not claim to make card teeth of wire; but I claim the making of each two teeth and the base thereof of a metallic plate formed and bent in the manner described.

EXHAUST FANS—J. V. Merrick, of Philadelphia, Pa.: I do not claim the use of suction blowers for increasing draught in a chimney, as this has been long known; but I claim the combined arrangement of the valves and the external exhaust blower, operating in the manner and for the purpose described.

PRINTERS' FRISKETS—Andrew Overend, of Philadelphia, Pa.: I claim the construction of movable barred frisket frames, by the combination of elastic bars, clamps, and toothed frisket frame, arranged and operating as described,

OPERATING VALVES FOR STEAM PUMPS—C. A. Wilson, of Newport, Ky.: I claim the double weighted lever, having one fixed, and one jointed weight, as described, for opening and closing the valve instantaneously without a rebound at the end of each stroke of the piston.

I also claim connecting the slotted rod, or its equivalent, with the valve, by means of the weighted lever and the jogs on the valve, to allow the valve to remain stationary until the piston is at the point of finishing its stroke and then instantly opening and closing them by the weighted lever, the lever turning freely on its fulcrum, causing no motion of the valve thereby,

COUPLING—Martin Newman, 2nd, and N. C. Whitcomb, of Lanesboro', Pa., and G. C. Cole, of Hartford, Conn.: We claim the application of the spring button, operted as set forth.

MILLS—D. L. Latourette, of St. Louis, Mo.: I claim the combination of the revolving wheel, with a roll or rolls, or with a block or blocks, or their equivalents, arranged in any of the ways or for any of the purposes set forth.

HARVESTER CUTTERS—Bronson Murray, of Farm Ridge, Ill. (assignor to T. R. Spencer, of Geneva, N. Y., assignor to J. S. Wright, of Chicago, Ill.): I claim making the rear serratures of the sickle blade sickle-edged, as set forth, except the rear projecting points, which latter construction I disclaim, as being the invention of Henry Green.

CLOSING WICKETS IN CANAL GATES—D. N. Knownover, of Danville, Pa. (assignor to R. L. Knownover, of Milton, Pa.: I claim attaching an arm with a roller to wicket rods of canal lock gates, by which means the wicket will close when the gate is opened, as specified.

TRIMMING WELTS OF BOOTS, SHOES, &c.—Lyman Clark (assignor to L. Clark and Jos. Sawyer), of South Royalton, Mass.: I claim the described welt knife, constructed as set forth.

ADJUSTABLE RAILS FOR REPLACING CARS ON TRACKS—Chas. Perley, of New Nork City: I claim connecting an inclined grooved rail to a shoe or box setting on the rail road track, by means of a joint, or to an intermediate section or sections, so that said grooved incline can be turned to any position, to coincide with the flanch of the wheel, and replace the same on the track, as specified.

CHAIN CABLE STOPPERS—Chas. Perley, of New York City: I claim the method described of hinging and sustaining one or more pawls on an inclined hinge or hinges attached to the chock, to clamp or stop a chain cable between said pawl or pawls, and the chock or plate on the deck.

CRUSHING AND GRINDING QUARTZ AND MINERALS—Saml. Perkes, of Walbrook, England. Patented in England, Oct. 12, 1852: I do not claim any of the parts when separately considered. But I claim the combination of the vessel, the trough, the conical crushing rollers, the hollow axis, and the arrangement for supplying water, as described.

RAILROAD CAR ODOMETERS—M. F. Potter, of Charlemont, Mass.: I do not claim transferring the motion of the axle by means of the endless screw.

But I claim the arrangement by which the pinion upon the upright shaft attached to the car is adapted directly to the axle itself, so that while the rotation of said axle causes a revolution of the pinion through the endless screw, the endwise movement of the axle in turning curves, acts upon the pinion so as to move it independently of the rotation of the screw in the same or opposite direction according to the course of the curve, the screw exceeding in length the arc of the circle through which the axle would move.

BRIDLE BITS—E. N. Price, of Salem, Mass.: I claim making the bit, or providing it with the nippers or jaws made to operate against the jaw or under lip of a horse, as specified.

And in combination with the nippers or jaws, I claim the strap as applied to him, and made to operate with them, as specified; not meaning to claim a strap or its equivalent, separate from the jaws; nor the application of such to the bars of a common bit, but meaning to claim combining it directly with the nippers, so as not only to keep them from spreading outwards, but to preserve the bit in place, or prevent it from rising too high in the mouth of a horse, as specified.

HOLDING PIECES IN SPOKE MACHINES—Isaac Starks, of Geneva, N. Y., and L. Perrigo, of Grafton, N. Y.: We claim the manner of holding and operating the spoke in the carriage, so that upon slackening the tail screw at one end, the spoke is forced backwards and made capable of being turned without disturbing it from its centers, and is restrained from turning when set, by means of the sliding and turning socket bar in the head stock provided with a clamp head fitting in a V, or other suitably shaped recess in the head-stock, and the socket bar with its clamp head forced backwards by a spring, or its equivalent, as specified.

CARRIAGES—J. L. Rowley, of Steuben Co., Ind.: I claim the employment of a spring reach in combination with the swivel joint on the front end of the same, as set forth,

HARVESTERS—Ira Reynolds, of Republic, O.: I claim, first, the arrangement of a double series of double edged shear blades supported at their rear ends by the reciprocating bars to which they are pivoted, and regulated by temper screws, as set forth.

Second, the grain gatherer, so arranged that its forward portion can be elevated or depressed from the driver's seat without stopping the machine, as set forth.

HARDENING TALLOW—Chas. Schinz, of Camden, N. J.: I claim the use of either the nitrate of ammonia alone, or conjointly with sulphite of ammonia, for the purpose of hardening fats used for the manufacture of candles, as described.

STEERING APPARATUS—John Stowell, of Charlestown, Mass.: I claim the curved sectoral rack, and the rest of the steering mechanism, directly to the rudder head, so that such can rise with, and be elevated or depressed by such rudder head, in combination with supporting the rack upon the deck by posts formed with shoulders, as described, or by such contrivances as will not only prevent it from moving laterally in a horizontal direction, but permit it to rise upwards with the rudder head, as specified.

STEAM BOILERS—Peter Sweeney, of Buffalo, N. Y.: I claim dividing the interior of the boiler by an annular casing filled with non conducting material, or by a non-conducting tube, formed in any convenient and suitable manner, so as to form an external water-space, which exposes a thin body of water to the action of the fire, and an inner or central cylinder, in which the water is kept at a comparatively low temperature, as set forth.

[This improvement in boilers is noticed in No. 4 of the present volume.]

BUCKLES—Wm. Shove, of Elizabethport, N. J.: I do not claim the broad device of uniting the two ends of the buckle by a joint which is kept closed by a peculiar tongue.

But I claim making the union by a common dove-tail joint, which of itself resists tension lengthwise, and which requires only the common tongue to hold it in permanent connection.

The advantage of this improvement, that the bow is made equally as strong and durable as the soldered or brazed ones, and with much less expense.

[This is a good improvement.]

LOCKING UP PRINTERS' FORMS—E. H. Sprague, of Zanesville, Ohio: I claim the manner described of setting and locking or unlocking the form in the chase by means of the tapering bar with the intermediate wedges, extending lengthwise and cross-wise of the chase on the side and end thereof, and operated by hand lever, as described, whereby the usual sticks and quoins are dispensed with, and the many other advantages obtained.

[See notice in No. 20 of this volume Sci. Am.]

TIGHTENING WINDOWS—Thos. Silver, of Philadelphia, Pa.: I claim the swell or lateral bearing, in combination with the oblique base, applied in the manner and for the purposes described.

OPERATING BOLTS AND LOCKS FOR CONTROLLING SERIES OF DOORS—David J. Stagg, of Hoboken, N. J.: I claim, in combination with double throw lock bolts, or double-acting lock bolts on the doors, as specified, the sliding hasps, constructed as specified, and attached to and operated by the system of bolts, as set forth.

SPARK ARRESTERS—G. B. Simonds, of New Haven, Ct., and Abel Braer, of Saugatuck, Ct.: We claim, first, so arranging the conical deflector in the upper part of the case, and in relation to the flange which is around the draught opening, and extends down, inside, from the top of the case, that the exhaust steam will be caused to act upon the sparks, and force them into their chamber and form a screen between the inverted base of said cone and the lower edge of the flange, and thereby serve most effectually for preventing the sparks rising and escaping through the draught opening when it is desired to retain them in the case, as and for the purpose described,

Second, in the employment of the elliptical-shaped cone within the elliptical case, in combination with the spreaders, for the purpose described.

We also claim regulating the escape of the sparks by means of the adjustable flange, arranged round the discharge opening, as set forth.

[See notice of this improvement in No. 33 of this Vol. Sci. Am.]

FEED-WATER APPARATUS TO STEAM BOILERS—Henry C. Sergeant, of Cincinnati, Ohio; I claim, first, the combination of the balance valves, the float, and the valve, all arranged within, or applied in any manner, as described, to a box, connected as described, with a boiler and a reservoir.

Second, I claim the cup, sunk below the pipe which supplies the box with water, or otherwise applied inside of the valve, for the purpose of receiving and retaining a small quantity of water every time the box is charged, for the purpose of facilitating or expediting the condensation of the steam after the water has been discharged from the box.

[This is an ingenious apparatus, and we should think it capable of operating well.]

COATING TELEGRAPH WIRES, &c.—Thomas, Earl of Dundonald, of London, Eng. Patented in England Oct. 12, 1853; I do not claim the use of native bitumen or asphaltum to any of the purposes to which it has been heretofore applied,

I do not claim any cement made therefrom by mixture, as heretofore used.

Nor do I claim the covering of textile fabrics with any combination of bitumen or asphaltum.

But I claim the combination of gum shellac, rosin, tar, the unctuous oils, or the viscid oil of coal tar, bitumen, asphaltum, or mineral pitch and india rubber, for the coating and insulating telegraph wires, and for other purposes, as set forth.

[SOA]P COMPOUNDS—T. C. Taylor, of Camden, N. J. Patented in England Sept. 17, 1853: I claim the dissolving of the bran of cereal grains in caustic alkali, and using the product as a substitute for, or as an ingredient in, the manufacture of soap, as described,

SOAP MANUFACTURING PROCESSES—T. C. Taylor, of Camden, N. J.: I am aware that potatoes and other similar bulbous or vegetable materials, divested of their skins, boiled and mashed, or otherwise prepared or manufactured so as to involve a loss of the skin, have been used as ingredients in the manufacture of soaps. This I do not claim.

But I claim the process described, of treating by alkali in a cold or tepid state, potatoes with their skins on, in the manner set forth.

SECURING TOOLS TO THEIR HANDLES—Anthony Vittaly and Carl Kolb, of Newark, N. J.: We claim securing the tool to the stock or handle, by means of the screw rod, block, or collar, and dowel pin, constructed and arranged as set forth.

[See notice of this on page 20 of this Vol.]

LOOMS—George Yates and Eli Clayton, of Lancaster, Pa.: We claim a mere improvement upon the contrivance of H. T. Robbins, patented 14th Sept., 1852, and which consists in the grooved shuttle in combination with the grooved lathe cap, as set forth.

RAILROAD CAR VENTILATOR—John Bevan, of Jersey City, N. J.: I claim arranging on either side of a suction fan blower, and on the same shaft with it, a series of revolving separating blades, or their equivalents, for the purpose of creating a strong revolving current of air above the top of the car, which acts centrifugally upon the cinders, dust, and other heavier particles than air accompanying the current created by the rapid motion of the cars, and causes them to be deflected, and to fall to the ground, instead of entering the car while the fan blower acts centripetally upon the air thus separated or stripped of its impurities, until it enters the blower, and then causes it to pass into the car and ventilate the same agreeably and in a very perfect manner, as set forth.

[Another Car Ventilator. See notice of it on page 34, this Vol.]

STEAM BOILERS—James Wightman, of Pittsburg, Pa.: I claim the arrangement of the arch or roof of the fire-box extending through to the up-take, and connecting with a counter arch, in such a manner as to form an elliptical flue to form a communication between the furnace and up-take, in connection with a series of small return flues above the roof of the fire-box and elliptical flue, and in a curve concentric therewith so that the upper side of the highest flue will be at the same distance, or thereabouts, below the upper surface of the water within the boiler, whether the latter be upright, as when a vessel on which it is placed is on an even keel, or inclined, as when the vessel is careened, as set forth.

CANAL LOCK GATES—G. W. Wood and L. O. Webster, of Utica, N. Y.: We claim, first, the hooked form of the levers, and the curving of the shackle bars, as described.

Second, the adjustable lever box described, including the mode of adjusting the valve rods and tightening the valve gates by the use of the screws, or their equivalent, as described.

Third, We also claim the combination of the hooked levers with the curved shackle bars and the adjustable lever box, the whole being constructed and arranged as set forth.

ENDLESS CHAIN HORSE POWER—G. Westinghouse, of Central Bridge, N. Y.: The mode of gearing by internal gear and pinion I have adopted, is old,—the peculiar construction of the parts of it is my invention.

I claim the construction of the gearing as set forth, having a pinion permanently affixed on the end of each shaft, to either of which the hubs of either the driving or band wheels fit and are fastened.

NAPPING CLOTH—Joseph Weight, of Lawrence, Mass.: I do not claim the employment or use of cards for napping cloth, irrespective of the peculiar arrangement as shown.

I claim the combination of the endless card sheet and endless transverse card belt, the parts being arranged and operating in the manner and for the purpose described.

[This improvement is noticed on page 28 of this Vol.]

MACHINERY FOR SPINNING WOOL—Edmund Victory, of Watertown, N. Y. (assignor to D. M. Linsley & George Goulding): I do not claim of themselves the employment of drawing rollers, revolving with the head, and made, in addition, to rotate at a suitable velocity on their own axis, for the purpose of drawing and twisting the sliver or thread, as such have before been used.

But I claim arranging the drawing roller to operate in the manner specified, within the revolving tube or head, while the head is sustained by a sufficient bearing on the whole circumference outside of the said rollers, as set forth, whereby the double movement of the drawing rollers on their own axes and with the head, is rendered perfectly steady, and the vibration prevented which tends to produce an uneven thread.

[This improvement is noticed on page 244, Vol. 8, Sci. Am.]

DESIGN.

COOKING STOVES—Apollos Richmond (assignor to A. C. Barstow & Co.), of Providence, R. I.

NOTE—Thirteen of the applications in the above List were prepared at the "Scientific American Patent Agency,"—a larger number than were ever issued at one time to a single agency; this we presume no one will question. It gives us much pleasure to notice the continued activity in the Patent Office—our notice has had a good effect.

A Curious Structure.

The nest of a tarantula (spider) has been found in California, of most singular construction. It is about three inches in length, by two in diameter, built of adobes, the walls being nearly half an inch thick. Inside is a projection, which nearly divides into two apartments about an inch in diameter. The inside is lined with a white downy substance, not unlike velvet, and presents one of the cleanest and most tidy little households imaginable. But the most curious part of it is a door, which fits an aperture and closes it hermetically. The door is secured by a hinge, formed of the same fibrous substance as the lining of the house, and upon which it swings with freedom. The next is occupied by a dozen little tarantulas, which seem to subsist upon a yellow secreted substance that appears upon the wall of the front apartment. The arrangement of the door for the protection of the little inmates, indicates great instinctive architectural knowledge. It is the intention of the finder to forward this curiosity to the Smithsonian Institute at Washington.

Salt your Chimneys.

In building chimneys put a quantity of salt into the mortar with which the intercourses of brick are to be laid. The effect will be that there will never be any accumulation of soot in that chimney. The philosophy is thus stated:—The salt in the portion of mortar which is exposed absorbs moisture from the atmosphere every damp day. The soot thus becoming damp, falls down to the fire-place.—[Ex.

[Where anthracite coal is used, very little, if any, soot is formed in chimneys. But to those who live in places where bituminous coal is used for fuel, the above—if true—will be useful information.

Wild Game on Lake Superior.

During the past winter the Indian hunters of this vicinity, found the red deer quite numerous, where scarcely one was killed the winters previous. These animals appear to be coming westward from regions farther east in Canada, and most of them are found on the Canadian side. The reindeer have been found more often within two or three years past than formerly. The hunters also report the beaver more numerous at this time than they have been for many years, which is accounted for from the price of this fur having being so low of late years, that little attention has been given to trapping them.

A Bell Buoy.

A Bell Buoy has been constructed in this city for the "Southwest Spit," where it will be of great service to vessels coming into this port during foggy weather. The buoy is in the shape of a whale-boat, about twenty-eight feet long, and is made like a steam boiler, and of boiler iron. The bell is suspended on a framework twelve feet high, and is struck by four hammers, the slightest motion being sufficient to cause an alarm.

New Inventions.

Smoke-Consuming Stoves.

An improvement in smoke consuming stoves has been made by E. A. Hill, of Joliet, Ill., who has taken measures to obtain a patent for the same. The fire box of the stove is divided into two compartments, each having a separate smoke pipe, and both fire places so connected together that the smoke from one can be thrown over the surface of the other fire alternately by a damper, so that the products of the combustion of both fires pass up the same pipe. For burning bituminous coal, the improvement appears to be an excellent one; for it is designed that one of the fires shall always be full, red, and glowing when the other is supplied with fresh fuel, so that the black smoke (carbonic oxyd) which arises when new coals are put on, shall be carried over the top of the glowing fire, and mixed with a portion of fresh heated air, by which means it will ignite—flame up—and be consumed; in other words, form carbonic acid. This stove will not only consume the smoke, but save considerable fuel. The fire-box being divided into two compartments is a good idea, and is one which we have brought before our readers, as something which promised to be convenient and beneficial. Its application by Mr. Hill is new, ingenious and useful.

Cut-Off for Steam Engines.

Oliver Cope and W. S. Bracken, of Salineville, Ohio, have taken measures to secure a patent for a new mode of operating the cut-off to govern the speed of an engine. The invention consists in fitting the cut-off eccentric or cam, to turn freely on its shaft, and so connecting it with a governor of any known construction, that the latter will always bring it to the required position relatively to the engine, to cut off the steam at such a point in the stroke of the piston, as will give the desired speed to the engine, and any tendency of the engine to run faster or slower will cause the governor to move the eccentric on its shaft, either in advance or in rear of the said position, and thus cause the cut-off to act earlier or later in the stroke of the piston, as may be required.

Improvement in Looms.

William Henley, of New Salem, N. C, has taken measures to obtain a patent for improvements in looms, which are applicable to those operated by hand or power, but they have been made principally with a view to their application to hand looms. One improvement consists in a certain means of throwing the shuttle, and the other improvement relates to operating the harness, both of which derive motion from the *lay*, so that the swinging of the latter sets the whole of the loom in motion,—in other words, by swinging the lay, all the working parts of the loom are moved. In common looms, the shuttle, the lay, and the harness are operated by three distinct and separate movements.

Flax Breaker.

An improvement has been made in machinery for breaking flax, by John Hinde, of Schenectady, N. Y. It consists in passing the flax hemp between a ribbed or fluted endless apron and a series of fluted rollers, which have a rolling motion over its surface. The action of this sheet or apron and the rollers is intended to resemble the action of the human fingers in rubbing and divesting the material of its boon or woody substance. Measures have been taken to secure a patent.

Fountain Brush.

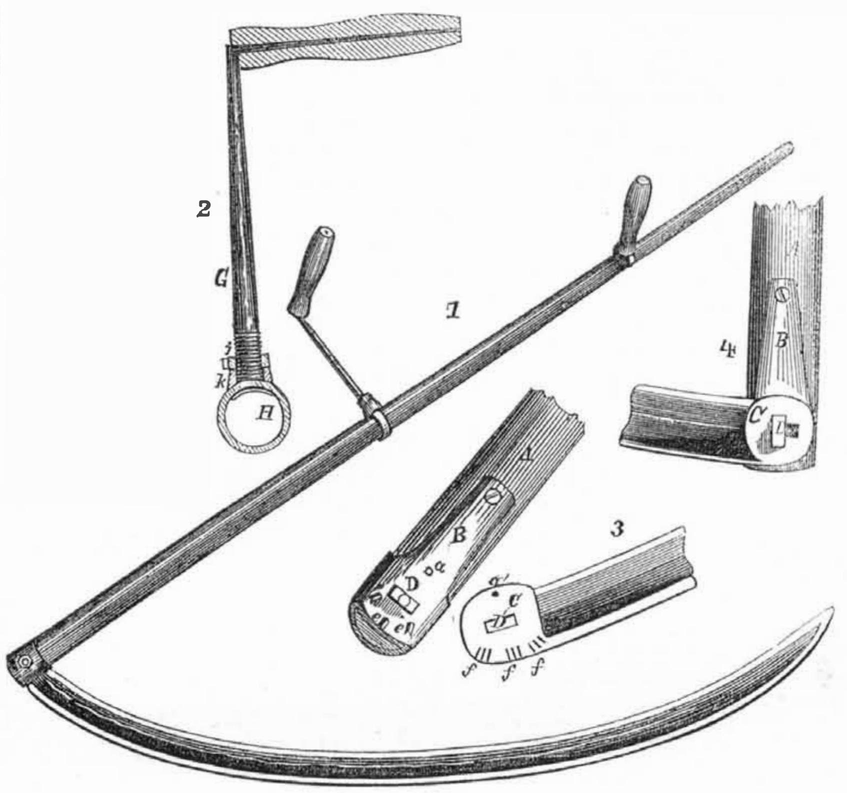
An improvement has been made in self-supplying brushes, by J. B. Wentworth, of Lynn, Mass., who has made application for a patent. The nature of the improvement consists: 1st. In placing a brush at the end of a tube and filling the tube with the necessary marking or painting fluid, and regulating the supply to the brush by a valve. 2nd. In placing the brush within a socket provided with a strainer, for the purpose of preventing the brush becoming clogged and filling up with impurities.

SCYTHE SNATH FASTENINGS.

The annexed engravings are views of an improvement in fastening scythe snaths, by John Boley, of Baldwinsville, N. Y., and which was noticed in No. 40, this Vol. "Sci. Am."

Figure 1 is a view of the scythe secured to the snath. Figure 2 is an enlarged section through the middle of one of the nibs or handles of the shank. Figure 3 is an inside view of the heel of the scythe. Fig. 4 is an enlarged view of the heel of the scythe and snath fastened together, and figure 5 is an inside view of the snath plate, on which the scythe matches. The same letters refer to like parts.

A is the main shank of the snath; B is a metal plate secured on it; it is formed with an oblong slot through its center, and with projections or teeth, *a* and *e e e*, to fit into the recesses, *a'* and *f f f*, on the circular plate, C, on the heel of the scythe. The scythe is secured to the snath by placing the recesses, *e e e* and *a'*, of the plate, C, over the projec-

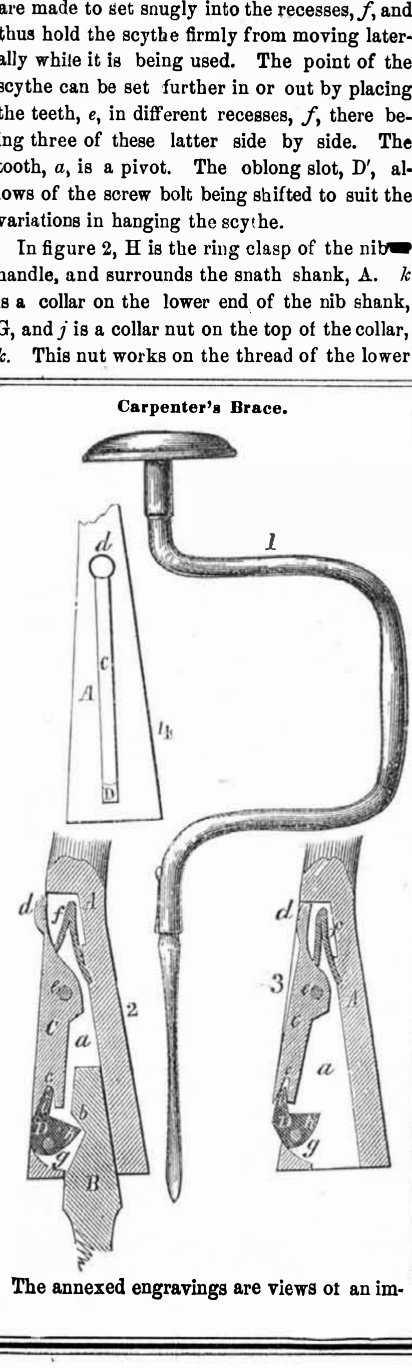


tions or small teeth, *e e e* and *a*, on the plate B, of the snath, and then introducing the screw bolt, D, through the oblong slot, D', and screwing it up firmly. By doing this, the teeth, *e*, are made to set snugly into the recesses, *f*, and thus hold the scythe firmly from moving laterally while it is being used. The point of the scythe can be set further in or out by placing the teeth, *e*, in different recesses, *f*, there being three of these latter side by side. The tooth, *a*, is a pivot. The oblong slot, D', allows of the screw bolt being shifted to suit the variations in hanging the scythe.

In figure 2, H is the ring clasp of the nib handle, and surrounds the snath shank, A. *k* is a collar on the lower end of the nib shank, G, and *j* is a collar nut on the top of the collar, *k*. This nut works on the thread of the lower end of the nib shank. By turning this nut to the right or left, the metal ring, H, is made to clasp the snath shank, and secure the nib at any desired point suitable to the grip of the mower; that is, by turning, *j*, to the left, the ring clasp, H, is loosened on the snath shank, and the ring, H, can be shifted further up or down, and by turning the said collar nut to the right the ring clasp is secured firmly on the snath shank at any point to which it is shifted.

Measures have been taken by Mr. Boley to secure a patent for the method shown and described, of securing the scythe and snath together to allow for the hanging of the scythe by the notches and teeth; also for the method of securing the nib or snath handles to the main shank of the snath. More information may be obtained by letter addressed to the inventor.

Carpenter's Brace.



The annexed engravings are views of an improvement in Carpenter's Braces, for which a patent was granted to Charles M. Daboll, of New London, Conn., on the 16th of last month (May, 1854.)

Figure 1 is a side elevation of the brace stock, with a bit inserted in it. Figure 2 is a section of the pad with the shank of a bit inserted in it. Figure 3 is a similar section of the pad broken off, showing the position of the catch and thumb piece, when raised for detaching a bit, and fig. 4 is a top view thereof. Similar letters indicate like parts.

The nature of the invention consists in the improved manner of securing and detaching the bit in and from the socket of the brace, by means of the eccentric catch, D, and the inclined side, *b*, of the notch in the shank of the bit, operating in such a manner that any force exerted to withdraw the bit, will bind it tighter in its place without straining said catch, and by which a slight pressure upon the thumb lever, C, combined with the catch, will release its hold upon the bit.

The pad, A, of the brace is provided with a socket, *a*, of the usual form, to receive the shank, B, of any bit. Near the mouth of said socket, in a suitable recess at one side for its reception, is situated the eccentric catch, D, whose pivot, *g*, is so located that its holding projection, *h*, will be raised, by vibrating inward, (as in fig. 3) sufficiently to allow the shank of the bit to be inserted in the socket; and then entering the notch of the shank, whose side, *b*, is made inclining or flaring out, to allow the free insertion and withdrawal of the catch, will, by its eccentric action in vibrating outward, press the shank against the opposite side of the socket and wedge it there with increased firmness whenever any force is exerted to draw the bit out of the socket, as represented in fig. 2. The catch is pressed against the shank of the bit by a spring, *f*, situated in the bottom of the socket and acting upon the thumb lever, C, by which the catch is operated. This thumb lever is sunk into the side of the brace so as to form an even surface therewith, except its button, *d*, against which the thumb presses for raising the catch; and this must project sufficiently to allow the required extent of motion to the lever by being pressed down even with the surface of the brace. The lever vibrates on a pivot, *e*, near its center, and its lower end is notched, as shown at *c*, for the purpose of receiving a spur, *i*, on the catch, D, by which means the said catch is operated and limited in its motions both ways, by the thumb lever. The exterior face of the projection, *h*, is rounded or beveled off, as represented, so that the shank of the bit will itself raise the catch and enable itself to be inserted without touching the thumb lever. Thus constructed, the entire catch forms a neat piece of workmanship, having no projections outside to mar the appearance or obstruct the motions of the brace, and retains the bit with great firmness and security; while it is made to easily set free the bit, however tightly held, since the action of the thumb lever is to lift the binding projection, *h*, almost directly from the shank of the bit.

Further information respecting this ingenious and useful improvement may be obtained by letter addressed to the patentee.

Spark Arresters.

C. Abos, of New Brunswick, N. J., has obtained a patent for an improvement in spark arresters of locomotives. The object of the improvement, is to prevent the sparks passing out, by returning them back to the fire-box by a peculiar arrangement of the draught-pipe, and a self-opening and closing valve in the central pipe. See claim on another page.

Hydraulic Ram.

Joseph D. West, of the City of New York, has made an improvement in Hydraulic Rams, the nature of which consists in a peculiar arrangement of valves, whereby the Ram is made double-acting, and the use of weighted or spring valves dispensed with—important considerations truly. Measures have been taken to secure a patent.

Dies and Punches.

W. Lormer and L. Siess, of Massillon, Ohio, have taken measures to secure a patent for an improvement in dies and punches, for making clinch rings or washers. The nature of the invention consists in a stationary lower die provided with a stationary central pin, and a raising and falling bottom in combination with a hollow and falling punch. By this arrangement the metal can be forced into the die and punched, and the washer finished and discharged with greater ease and facility than by modes heretofore pacticed.

The Largest Boring Machine.

A Philadelphia correspondent informs us that a larger boring machine than the one noticed in the "Scientific American," page 299, is in operation in that city, at the Iron Works of Messrs. Morris & Co. It is capable of boring cylinders 16 feet in diameter and 18 feet long. He mentions that the "Ericsson's" large cylinders were bored in this machine. We never heard of this before.

Sowing Guano.

E. Marshall, of Hunterdon, N. J., has made an improvement in apparatus for sowing guano, and other fertilizers. In a cylindrical hopper there is arranged a series of adjustable blades and a vibratory brush, by which means the guano is distributed with great regularity.

Patent Case.

A case of Interference in the Patent Office, Barlow vs. Beardslee, on Planing Machines, has been declared against the former.

Scientific American.

NEW YORK, JUNE 24, 1854.

Iron Bridges.

Since the fall of the Wheeling Suspension Bridge, articles have appeared in a number of our daily papers condemnatory of iron as a material for such structures. Some of these articles evince considerable ability, and in one which appeared in the "Washington Star," signed "Engineer," the question is discussed with good judgment, and scientific knowledge. The conclusion at which the author arrives, with respect to the use of this material for bridges, is, that in the absence of the necessary skill, both in the manufacture of the proper iron, and in the scientific arrangement of the parts of the different kinds of iron, so as to give each the office best suited to its properties, it would seem most prudent to build either of stone altogether, or with stone piers and wooden superstructure.

In speaking of those properties of iron which chiefly contribute to its strength and utility, —its elasticity and tenacity, he points out a fact in connection with its elastic quality, to which, too little attention has been paid by engineers, in its use for resisting strains and supporting weights, that is, the difference between its elastic and tensile power. Thus he says, "a weight of 8½ to 11 tons suspended to the end of a bar of wrought iron, of a square inch section, will overcome its elasticity; while 24 to 26½ tons similarly suspended, are necessary to overcome its tenacity, or to produce disruption of the bar. Hence we see that the elasticity of the wrought iron may be destroyed, long before disruption would ensue, and long before the ordinary observer would discover that any change had taken place in the bar, or in any structure of wrought iron."

This is true, and will account for a great many accidents connected with iron bridges, steam engines, &c., which have been pronounced "mysterious."

Metal in a state of rest, although sustaining a heavy pressure and strain, as in a beam or brace, and exhibiting only the deflection due to the superposed weight, will continue to bear that pressure without fracture so long as its rest is not disturbed, and the *same* strain not too frequently repeated. But by frequent changes of pressure or strain on iron, a certain disturbance of its particles takes place, the metal deteriorates, and suddenly, when not expected, the very same strain or weight which it had oftentimes supported, or resisted, will break it to pieces. Iron of the lowest degree of elasticity, is the easiest broken by frequent deflections, whether caused by concussions, or rolling heavy weights on it.—Thus if we take two pieces of iron wire, possessing different elastic powers, the least elastic will break by being bent and rebent sooner than the other piece; but, at the same time, every person is aware of the ease with which any iron wire can be broken by bending and rebending. It soon becomes as brittle at the bending point as a piece of glass. How different from a piece of whalebone, or india rubber. Here, then, is the very quality which should be looked to in iron for building bridges, as such structures are subject to continual concussions, deflections from heavy rolling bodies, and oscilations, from severe gales of wind.

There can be no doubt, in our opinion, but the breaking down of so many iron bridges in our country, can be traced to the bad quality of iron used in their construction—it did not possess sufficientelasticity.

The deteriorating effects of fatigue on iron, by which it so often fractures suddenly, has been proven by the fall of the iron bridge on the New York and Erie Railroad three years ago, and a number of other iron bridges in various parts of our country. In view of these facts, we must conclude that iron has not hitherto been safely used for many bridges.

But are wood and stone, not equally with iron, subject to deteriorate, by fatigue, concussions and strains? They are; but long experience has made engineers better acquainted with their application, and this is the very point to which attention should be especially directed by engineers in the application of iron, namely, a knowledge of its powers for the purposes to which they wish to apply it. Iron combined with carbon in certain proportions—some kinds of steel—is the most elastic material known to us, and it will maintain this quality for a long period, and endure more fatigue than any other known substance. All iron is iron, just as all wood is timber; but there are just as many varieties of the former as of the latter, and yet, how small is the amount of knowledge possessed by the most experienced engineers of the different kinds of iron, in comparison with wood. Let civil and mechanical engineers look more to the quality of the iron which they use for various purposes, and the community will not be so often inflicted with painful accidents on sea and land, from the bursting of boilers, the fracturing of the shafts and beams of engines, and the breaking down of iron bridges.

Alcohol without Re-Distillation

Some week's since the announcement was made in the journals of the day, and also in a paper read before the American Association for the Promotion of Science, that a method had been devised at the Patent Office for obtaining pure alcohol from whisky without distillation or heat. The discovery, it was stated, was accidental, and in this wise:—"A gentleman had a quantity of whisky in a cask five feet high; on drawing it off, he discovered that the upper part of it was much stronger than that near the bottom. The hint was taken; and now we prepare our alcohol by putting whisky into a tall column, and allowing it time for the heavier parts to subside, and we find pure alcohol at the top."

At the first thought this may seem to many as a very pretty and useful discovery, but a moment's consideration given to the composition of alcohol, will show its utter and entire fallacy, and at the same time demonstrate its value to be on a par with Paine's wonderful discovery of the carbonization of hydrogen by passing a current of the same through cold spirits of turpentine.

Anhydrous alcohol consists of four atoms of carbon united to two of oxygen and six of hydrogen, the whole represented by the formula $C.^4 O.^2 H.^6$. Anhydrous alcohol, as such, does not occur naturally, but can only be formed artificially. It exists naturally combined with water, and this combination is always a chemical combination, and not a mechanical one; and we might as well expect that water confined in a long narrow column would separate into its component elements—oxygen and hydrogen, in virtue of their different specific gravities (the former] being eight times heavier than the latter,) and thus allow the hydrogen to be drawn off pure at the top, as to expect water and alcohol would thus arrange themselves. Indeed, such is the affinity of alcohol for water, that no amount of distillation, cooling, or condensation, is sufficient to entirely separate the two bodies, a tenth part of the water always remaining after every distillate. In order to procure it absolutely anhydrous, a body must be presented to it which has a greater affinity for water, and which fixes it so firmly that it cannot evaporate with the alcohol at the boiling point of the latter.

The gentleman who had the quantity of whisky standing in a cask five feet high, undoubtedly found the alcohol, after a time, stronger at the top than at the bottom, and if he had been better posted in chemistry, would have referred the matter to its true cause rather than to the ridiculous one of difference in specific gravity. Thus, if a quantity of brandy or alcohol be put into a bladder, and be exposed to a warm temperature, the aqueous portion of the spirit will pass through the membrane in preference to the alcohol, and in this way the spirit will be made stronger.—Smugglers who carry spirits about their persons in bladders, are aware of this fact, and their customers also, as they always prefer the smuggled to the legitimate article, on account of its being stronger than ordinary spirit. This change which we have described takes place in accordance with the well-known laws of exosmosis, and in the case of the whisky in the barrel, the wood, and particularly the head of the barrel, being the highest portion, played the part of the membrane, and gradually withdrew a portion of the water of the whisky. As long as the whisky was kept at rest the stronger portion would naturally float at the top. We think a good thick coat of paint, closing effectually all the pores of the wood, would essentially modify the experiment.

Defective Steamships.

Our army—as well as our navy—seems to be inflicted with government mismanagement in almost all that is done respecting steamships. The sad disaster of the "San Francisco" steamship, on her first voyage, with U. S. troops, involved other consequences than those of suffering and death at that time. The commanding officer has been dismissed from the army for misconduct on that occasion, and Major Wyse, who since then was ordered to embark with his troops on the "Falcon" steamer, has been court-martialed, and suspended for disobedience of orders, he having refused to embark with his soldiers, because he considered the "Falcon" unseaworthy. It so happened that, the "Falcon" on the very voyage in which Major Wyse refused to go on board, proceeded only about forty hours on her passage, when she was compelled to put in at the nearest port, in distress. This was owing to a defect in the valves of her engines. The testimony adduced on his trial consisted chiefly of opinions respecting the sea-worthiness of the "Falcon"—the quality of her hull, engines, &c. Very strong testimony was presented to show that the vessel was unsafe, and unfit for the transport of troops and passengers, and that of C. H. Haswell, of this City, Engineer for the New York Underwriters, although he considered the machinery good and safe, admitted that vessels were often used to carry passengers that would not be used for carrying freight. Respectable witnesses of good authority, gave testimony in favor of the engines; while other testimony equally good—show ing how different persons take different views of matters—was presented against the steamer. From an examination of the evidence, we are of opinion that Major Wyse placed himself in a delicate position—sacrificed himself in a measure, from patriotic motives. While he is the immediate sufferer, apparently, his action will do good, and the very Court Martial that sentenced him, by their decision, almost admit that he was justified in what he did; for they censure the conduct of those who hired the "Falcon." It is not for us to discuss the abstract right or wrong of that sentence—such a question is not within the legitimate sphere of our duties—but we do say, that the miserable steamships which have been employed by our government for various purposes, touch the feelings of every true American. The engines of the "Falcon" might have been the best in the world, but they certainly were not in order for that voyage. The said engines were constructed for the "Iron Witch," a *steamboat* projected by Capt. Ericsson, about fifteen or sixteen years ago, and which failed of success. With repairs and modifications they were transferred to the "Falcon," and, we are informed, "worked well;" but we presume they are better adapted for summer than winter voyages, on a stormy sea. We sincerely hope that more attention will hereafter be paid to the choice of steamships for transporting troops, than has hitherto been done. That Major Wyse's conduct will contribute to this result, we have no doubt; for it is the prevailing opinion that it was wrong to order him with his men to make a voyage in that vessel.

A Noble Inventor

In our list of patents this week there appears the name of the Earl of Dundonald. As but few of the titled aristocracy of any nation have been distinguished for inventive qualities, the singularity of the circumstance provokes us not to pass over in silence our new titled American patentee. Thomas Cochrane, Earl of Dundonald, is a most extraordinary character, and has taken out perhaps fifty patents in England during his lifetime. Some of them have been worthless and some very useful. Lord Brougham said of him once, "he was one of the most extraordinary mechanical geniuses that ever lived." He is a British Admiral, as well as an Earl, and for nautical skill, bravery, and genius, he never had a superior in that navy. He distinguished himself while very young in the early part of this century, in some desperate enterprizes on the coast of France; after that he was dismissed from the navy and deprived of his knightly honors, for some alleged disreputable speculations on the London Stock Exchange. He then left England and became an adventurer for a number of years, in commanding a fleet of one of the South American Republics, then fighting for independence. A few years ago it was found out that he had been deprived of his knighthood and expelled from the British Navy upon false and frivolous accusations, and he was then restored to more than his former rank and honors. His present title is one of heir-ship, he having succeeded his elder brother, who died without issue.

City Subscribers and the Carriers.

For several months past we have experienced great difficulty in obtaining faithful carriers to serve the "Scientific American" in this city and Brooklyn, and the complaints from our patrons of the non-receipt of their papers week after week, has become so annoying that we have resolved to discontinue serving the paper in the city by carriers entirely. No doubt many faithful newspaper carriers serve the paper to their patrons properly, with other periodicals, and it is not that class with which our arrangement will at all interfere, but it is those carriers who have been entrusted with the *office subscribers* that this arrangement will effect.

After this week's issue, those of our city subscribers who have paid their subscriptions in advance at the office of publication, will receive their papers by Boyd's Dispatch Post, enveloped in a wrapper and the postage pre-paid, until such time as their subscriptions expire, after which they may be furnished at the counter of the office of publication each week, or obtain the paper at any of the periodical depots in this city, Brooklyn, or Williamsburgh.

We believe nearly all the periodical depots have the "Scientific American" on sale, and our patrons will be better served and get their papers in better time, and in a better condition than heretofore, while we hope to be relieved of the annoyance of constant complaint about the non-receipt of the paper, which our city patrons have of late had just reason for making.

All that have paid for the paper at the office and still get their paper irregularly by the new arrangement, will oblige us by sending word to the office, giving their place of residence anew, and they shall be attended to.

More Blind Communications.

Some one has sent us a sketch and description of an improved repeating pistol. The letter lacks town, county, and State, and also the writer's name, therefore we cannot answer it. We are sorry to be compelled to caution our correspondents so often against such gross mistakes. In a few days, probably, our *incog* correspondent will write complaining of not receiving such attention as we bestow upon others. This is often the case, and to say that it is annoying, is using the mildest language we can think of just now. Correspondents—do be careful in future, and give us all necessary directions,—write plain and to the point, and avoid unnecessary prolixity in statement; this will please us very much, and aid us greatly in coming at once at the very core of the subject, besides insuring a prompt reply.

The Wheeling Bridge.

We judge from the Wheeling papers that no arrangements for the rebuilding of this bridge have yet been matured. The "Gazette" thinks a suspension bridge for the use of locomotives impracticable. The erection of piers, and the construction of a truss draw-bridge is suggested as the most practicable method.

The Bill for granting the renewal of Moore & Hascall's patent for a Reaping Machine, wa rejected in the Senate on the 16th inst.

Anthracite Coal for Locomotives.

The following article is from the "Journal of the Franklin Institute." Its author is A. Pardee, Chief Engineer of the North Pennsylvania Railroad. The subject is one of increasing importance to our railroad companies, and we wish to give it that extent of circulation which it deserves, and which, through our columns, it alone can attain among the Railroad Engineers of our country:—

"The use of anthracite coal as fuel, was commenced on the Beaver Meadow Railroad, in 1836, in engines built by Eastwick & Harrison, and has been continued to the present time in a portion of their engines.

On the Hazleton road we commenced its use in 1838, in the 'Lehigh' engine, built by Eastwick & Harrison, and in 1839 in the 'Hercules,' by same makers. Both engines have been in constant use during the season of navigation, say eight months per year, up to and including 1852, when the 'Lehigh' was taken into the shop to be rebuilt. The 'Hercules' is still in use.

Both engines had originally copper flues, which were replaced by iron ones after about two year's use, the copper having been worn out at the end next to the fire-box, by the particles of coals drawn in by the draft.

Both engines have now the same fire-boxes with which they were turned out of the maker's shop, excepting about one foot of the lower part, which has been once renewed. The iron flues now in use are those put in to replace the copper—never having been renewed either in whole or in part. Altogether, we have in use eight locomotive engines, three built by Eastwick & Harrison, one by M. W. Baldwin, and four in our own shops at Hazleton.

We have never used other fuel than anthracite coal, excepting for the purpose of kindling fires. The engines have been in use during the season of navigation from two years ago, (when the last were built,) up to the time of the oldest engines named above, and we have never renewed a fire-box or set of flues, except the repairs to the two engines named. As far, therefore, as our experience goes, anthracite coal for fuel is not so destructive to fire-boxes and flues as has been generally argued and supposed. We wear out two sets of grate bars in the same season's use of an engine.

As to the Character of the Road.—In starting from the Lehigh at Penn Haven, we had, while using a part of the Beaver Meadow road, an ascending grade averaging 80 feet per mile for five miles; then 140 feet per mile for 1¾ miles; then 60 feet for 3½ miles, and then a grade of 12 feet per mile for 3½ miles, to the intersection of the various branches to the mines. In deecending, as you will perceive, mostly by gravity, the coal fire remained entirely inactive, having no artificial draft by fans or otherwise, except that caused by the exhaust steam; while in the ascending with a load of empty cars, equal to the whole power of the engine, the fire to generate the necessary steam must be stimulated to the most intense activity; thus making, apparantly, a far more unfavorable state of things for the use of coal than on a road where the grades are more uniform, and in consequence, the fire acted upon by a more uniform draft.

I am aware that it has been said that coal might do for short roads, but that on long roads the continuous intense action of the heat would destroy the fire-box and flues.

Now, it strikes me as absurd to suppose that on a road of any length a fire need be made more intensely hot, or that any part of the boiler could be more heated, than is necessary to drive an engine and full train up ten miles of such grades as are specified above, or that a continuous equable heat for eight or ten hours can be worse than continuing the same heat for an hour, than a moderate fire for an hour, and so on alternately, with the consequent expansion and contraction, and this continued day after day for eight months annually during fifteen years.

I have entered on this subject, perhaps, to a somewhat tedious length, my object being to satisfy yourself and others, that anthracite coal has been used successfully for a series of years in this region as fuel for locomotive engines not differing materially from the ordinary mode of construction."

Scientific Memoranda.

Influence of a Long Summer in the Arctic Regions.—The perpetual daylight had continued up to this moment with unabated glare. The sun had reached his north meridian altitude some days before, but the eye was hardly aware of change. Midnight had a softened character like the low summer's sun at home, but there was no twilight. At first the novelty of this great unvarying day made it pleasing. It was curious to see the "midnight Arctic sun set to sunrise," and pleasant to find that, whether you ate or slept, or idled or toiled, the same daylight was always there. No irksome night forced upon you its system of compulsory alternations. I could dine at midnight sup at breakfast time, and go to bed at noonday; and but for an apparatus of coils and cogs, called a watch, would have been no wiser and no worse. My feeling was at first an extravagant sense of undefined relief, of some vague restraint removed. I seemed to have thrown off the slavery of hours. In fact, I could hardly realize its entirety. The astral lamp, standing, dust-covered, on our lockers—I am quoting the words of my journal—puzzled me, as things obsolete and fanciful. This was instinctive, perhaps; but by-and-by came other feelings. The perpetual light, garish and unfluctuating, disturbed me. I became gradually aware of an unknown excitant, a stimulus, acting constantly like the diminutive cup of strong coffee. My sleep was curtailed and irregular; my meal hours trode upon each other's heels; and but for stringent regulations of my own imposing, my routine would have been completely broken up. My lot had been cast in the zone of liriodendrons and sugar maples, in the nearly midway latitude of forty degrees. I had been habituated to day and night; and every portion of these two great divisions had for me its periods of peculiar association. Even in the tropics I had mourned the lost twilight. How much more did I miss the soothing darkness, of which twilight should have been the precursor! I began to feel, with more of emotion than a man writing for others likes to confess to, how admirable, as a systematic law, is the alternation of day and night; words that type the two great conditions of living nature, action and repose. To those who with daily labor earn the daily bread, how kindly the season of sleep! To the drone who, urged by the waned daylight, hastens the deferred task, how fortunate that his procrastination has not a six month's morrow! To the brain workers among men, the enthusiasts, who bear irksomely the dark screen which falls upon their day dreams, how benignant the dear night blessing, which enforces reluctant rest!—[Dr. Kane's Journal.

Cure of Hydrophobia.—1. An English journal says that an old Saxon has been using for fifty years, and with perfect success, a remedy for the bite of mad dogs, by the agency of which "he has rescued many fellow beings and cattle from the fearful death of hydrophobia." The remedy is to wash the wound immediately with warm vinegar and tepid water, dry it, and then apply a few drops of muriatic acid, which will destroy the poison of the saliva, or neutralize it, and the cure is effected.

2. A cure for hydrophobia, discovered by M. Cossar, a French physician: "Take two spoonsful of fresh chloride of lime, in powder, mix it with a half pint of water, and with this wash keep the wound constantly bathed and frequently renewed. This wash should be applied as soon as possible after the infliction of a bite."

[The above we select from exchanges, and we would caution persons against a reliance of either of them as a perfect remedy for the bite of a rabid dog. When a person is bitten by an animal in such a state, a physician should be called at once, but if this cannot be done, then either of the above plans, but especially the latter, should be pursued, for both certainly have merits. Washing such a bite quickly with clean water, and then applying a leaf of tobacco, we have also been informed, may be relied on as a remedy.

A Powerful Electric Shock.—The following account of a very remarkable effect produced by electricity we copy from the "Courier de l'Europe":—

"A gentleman employed in one of the telegraph offices in France, accidentally brought his arm in contact with one of the wires while the electric fluid was passing through it. So violent was the shock that he was raised from his chair and thrown with great force through an open window into an adjoining garden. When he recovered his senses, he had no recollection of what had happened, and could only be convinced of it by finding that his hair and beard, which were previously of a beautiful jet black, had become in various places as white as snow. It devolves on men of science to explain this phenomenon, which will form an epoch in the history of electricity."

[It will be time enough to investigate this phenomenon when its truth or falsehood is positively ascertained. Charles II. asked the savans of the Royal Society, "what was the reason that when a fish was placed in a basin full of water, the latter did not overflow?" This puzzled them for some time, until one them asked him if he was sure that such was really the case, when he answered, "he really believed it was not."

A Lofty Cataract.—Capt. Walker, of the U. S. Surveying Expedition, gives the following account, in the "San Diego Herald," of a wonderful cataract which he discovered in his explorations:—

"On the Upper Virgin River are two very remarkable falls. One of them, two hundred miles from its mouth, is the most stupendous cataract in the world; it falls in an almost unbroken sheet a distance of full one thousand feet! The river some distance above, traverses a pretty timbered valley, and then runs through a close kenyon. Here the current becomes rapid. The mountain seems to run directly across the river. At the fall, the stream is narrowed to thirty or forty yards—while the kenyon rises on either side in almost perpendicular cliffs to a hight of two hundred feet. The pent up stream rushes on to the brink of the precipice, leaps over the falls with scarce a break, into the vast abyss below.

About thirty miles above, there is another magnificent fall. Here the river plunges over the cliff, falls a distance of two or three hundred feet, and breaks into a myriad of fragments upon a projecting ledge beneath. Although the fall is not so great as the other, it is more picturesque, from the multitude of smaller cataracts into which it is divided by the rocks."

(For the Scientific American.)

Storm Lights.

With the exception of the Aurora Borealis, which is also called a storm light in this State, these lights may be fully accounted for by the burning prairie and other fires. Owing to the rotundity of the earth, and the unevenness of its surface, a distant fire will be so much below the range of vision that the smoke will become too much attenuated to reflect the light, by the time it rises to this range, so that on a clear night it will radiate into space, unseen. But when there is a cloud over the fire, it will, by its elevated position, reflect the light over all obstacles to a great distance, and the light will become brighter or paler, according to the brilliancy of the fire and density of the cloud. The light shows that there is a cloud, and the latter indicates the storm.

A thunder cloud is frequently so distant as to be below the range of vision; and the lightning is reflected by its upper or nearer edges, or by another cloud. In such cases the lightning never appears in streaks, but silently flashes up in sheets just above the horizon, being too far off for the report to be heard, however terribly it may roar under the cloud. In support of this theory of the lights, it may be stated that they are of "common occurrence" only in the fall and winter, when the prairie grass is dry; and they are most numerous in cloudy weather before rain or snow, and not to be seen at all on the first night after a general rain or snow (which may be known by a regular, uniform appearance of the clouds) though the rain or snow, continue to fall for several hours or days in succession.

I have never been certain of seeing the Aurora Borealis but twice, and each time on a clear night, and these were seen in the Eastern States also. The first time I saw one was about the 17th Nov., 1835; it was followed in this vicinity by a storm three or four nights afterwards. H. Pollard.

Lexington, Mo., June 5, 1854.

Inventions—Old Dishes Served up as new.

An intelligent press is a powerful engine for elevating man, by conveying to him a knowledge of what is doing in different parts of the world—informing him of the new discoveries and inventions which men are continually bringing to light. But to be really intelligent, and to prevent deception, it is necessary that the correspondents and conductors of a paper should be well informed of what has been done remotely as well as recently, in all that relates to the particular subject on which they write. It is no uncommon thing, however, for men who correspond for some newspapers from abroad, and those who conduct them at home, to be well acquainted with all that has been done, or is doing, in foreign lands, and yet be perfectly ignorant of what has been done or is doing at home. The truth of this assertion is proved by the Paris correspondence of the "New York Tribune" of Tuesday last week. It is there stated that "M. Adar has invented a machine called a pistol-canon, composed of three barrels cast together, side by side, a little divergent, with but one charge of powder for each barrel, which communicate at the bottom, and with but one cap to explode. Each of these barrels is charged with a cylindrical projectile, fastened together by chains, which may have a length of one hundred yards if deemed necessary, or they may be tied together by incendiary materials. The destructive effects of these projectiles is readily understood; every man or body of men which they encounter are mown down like grass before a scythe. In a naval battle these chain-balls directed on the masts, or better still, on the chimneys of the steamers, will make quick work; the chimneys destroyed, the under-decks will be filled with smoke, and the sailors asphyxiated and blinded; the fires will be extinguished, the engines stopped and the vessel rendered an easy prey."

This correspondent appears never to have heard of old-fashioned *chain-shot*, nor the illustrated description of such a cannon on page 340, Vol. 5, "Scientific American," where the cannon and chain-shot are both shown. Here is another extract from the same correspondent:

"A young Italian, M. Cipri, has invented a pyrotechnic machine, consisting of a balloon, held and guided by a cord, which carries in the place of peaceful æronauts, incendiary materials, asphyxiating bullets, &c. With a favorable wind the balloon is directed over a city, a fortification, or a fort, and by means of an electric current they detach successively the projectiles according as they apply the electric spark. This is most assuredly a practical invention, and under circumstances that do often occur in the course of a war might be rendered a most destructive one. Experiments on a grand scale are to be tried in a few days on the Champ de Mars in presence of the Emperor."

And this is called *a practical invention*—a tethered balloon firing balls, by being connected with wires to an electric battery. It would require a strong cable to hold a balloon that could carry any amount of destructive materials to speak of, and to allow a balloon to rise one mile high, and sail one mile from the place where it was sent up, would require a cable to be 1·4142 miles long, which would offer a fine chance for a chain-shot to take it flying. An experiment of this kind with a paper balloon in a room, may answer very well, but to carry it out on a large effective scale, it will always be "coming to come," like the "Aeroport" of the venerable Prof. Porter, whose balloon so successfully circumnavigated the rotunda of the New York Exchange in 1849, but has not yet, as was so often promised, made its voyage to California, "startling the grizzley bears on the Sierre Neveda, and the antelopes on the slopes of the Sacramento."

LITERARY NOTICES.

THE PLURALITY OF WORLDS—With an Introduction by Edward Hitchcock, D. D. 12mo. pp. 307. Boston: Gould & Lincoln. For sale in New York by Evans Dickerson. Gould & Lincoln, of Boston, are rapidly acquiring for their house an extensive and enviable reputation, as the publishers of the most valuable and popular scientific books issued in this country. In addition to the numerous geological and miscellaneous works of Hugh Miller, the Comparative Anatomy of Barnett, the Physical Geography of Guyot, the Annual of Scientific Discovery by Wells, and the works of Agassiz, Gould, Marcou, and others, they have now issued this work, whose title is given in full above. It is an English re-print, from an anonymous author, with an introduction by President Hitchcock, of Amherst College. The character of the book as its title would indicate, is astronomical, and is mainly a series of speculations and arguments respecting the condition of the other bodies of the planetary and stellar system, of which our earth is a member. Strong ground is taken against the popular notion that the planets are inhabited, and the author even combats the established belief that the fixed stars are suns and centers of other systems. The course of argument throughout has much of originality, and is based upon scientific facts and the generally acknowledged truths of astronomy. The reasoning, also, is nowhere made inconsistent with revelation. We commend this work as one of great interest, presenting, in a new light and connection, many of the indisputable facts of science, and as unfolding many views of novelty and interest.

NEW YORK CRYSTAL PALACE ILLUSTRATED—This is an elegant work, by Messrs. Geo. Carstensen and Charles Gildemeister, architects of the Building—the publishers are Riker, Thorne & Co., New York. There is one beautiful exterior view of the Palace in oil colors, and six large plates containing plans, elevations, sections and details from the working drawings. It is a valuable work for architects, and possesses no small amount of interest for a great number of our people. It reveals some strange operations in relation to the architects and the old Directors. It is well known that rumors had been propagated, throwing the whole blame of delay in opening the Crystal Palace, last year, upon the architects: they repudiate this, and assert that there was much engineering inefficiency in certain officials employed. From the statements (and they are very candidly presented) in this book, we infer that the authors have been greatly sinned against.

TROW'S NEW YORK CITY DIRECTORY—Compiled by H. Wilson. This Directory is unusually valuable, as it contains not only a complete and accurate list of the names and residence of the inhabitants of this great city, but also a general classified business and copartnership directory; these two latter features are new, and are well worthy of the attention and patronage of our people. To the man of business out of the city, this directory must be a very useful and convenient work of reference. We are often receiving letters from strangers in the country, inquiring where they can procure certain articles, and to answer them correctly we have almost invariably been compelled to turn to the pages of Wilson's small Business Directory. This large one contains the whole of this information, and we recommend our country readers, as many as can, to procure it. John F. Trow, publisher, 51 Ann st., N. Y.

TO CORRESPONDENTS.

E. H. McDonald, of New Creek Depot, Va.—This man says, he has a large quantity of white oak slabs, and wishes to know how he can convert them into saleable stock, or ohwhe can dispose of them. Who will inform him?

S. S., of N. Y.—We use a faucet every day in our office which is constructed precisely like the sketch you sent us.

R. M., of Mass.—An application was made some time since, for a pat nt on a knife sharpener after the plan you suggest, but we think it has not issued yet, and it is doubtful if it ever does.

J. H., of N. H.—Fire alarms constructed in a manner you propose w re probably the first kind ever adopted. Suspending cords around a building made fast to clock work gearing with an alarm bell attached, answers a very good purpose, but the use of a metal wire will answer the purpose and is much more durable. The expansion of the wire by heat will produce the same result as the cord by altering the mechanism of your clock work but slightly.

S. T. McC., of Ga.—We see no novelty in your wheel, and believe it possesses no merit over many other wheels.

G. S. Q., of Conn.—Chas. Lucas did obtain a patent in 1848, for an apparatus for cutting garments.

S. W., of N. Y.—You cannot do anything towards patenting a machine of which you are not the inventor, we can see no chance for you under the circumstances, unless you can negotiate with the foreign inventor, and through him secure the patent.

J. P. H., of N. H.—We see no advantage to be gained from your proposed improvement in steam engines. We would prefer to attach the engine to the boiler as is usually done in all portable engines.

H. D. B., of Cal.—Your question propounds to us the very subject we have been wishing information upon for sometime. Who among our intelligent readers will impart some facts concerning the remarkable dark day of which we have all heard from the lips of our grandmothers? Was the phenomenon ever accounted for? What was the terrestrial and celestial appearance of the universe. Who will enlighten our inquirer and ourselves upon this matter.

T. M. P., of Md.—It would not be patentable to construct a kettle with a recess around it, so as to allow of its being packed with non-conducting substances. This principle has been applied to so many different purposes that any mere change of use would not render it patentable.

C. C., of Pa.—Your alleged improvement in paper feeders has a number of claimants, and unless you invented it months ago you will stand no chance for a patent.

J. B. C., of Tenn.—Yours will receive attention.

W. B., of Mass.—Yours is under consideration.

R. McQ., of Mass.—You must be the best judge of the quality of the liquor to which you refer, as testing the matter is the only way to prove its qualities. It interferes, we believe, with no existing patent right.

T. B. C., of Del.—Some have supposed that motion was the cause of heat, while others have supposed that heat was the cause of motion. The friction of the water in motion to which you refer, no doubt increased its temperature.

L. A. D., of Ohio.—There is no patentable novelty in your self-operating faucet for letting water out of steam cylinders. We have seen essentially the same thing before.

J. B. K., of Geo.—We do not know of any one engaged in making such machines as you want.

F. J. M., of Mass.—There is certainly mor friction to be overcome in driving water through a long than a short pipe. The cistern which you describe could be filled as soon with the supply water a mile distant as thirty feet, but it would require more power to propel the water through the long pipe, as a column of water a mile long would have to be moved every stroke.

Money received on account of Patent Office business for the week ending Saturday, June 17:—

G. M. B., of O., $25; J. B. W., of Mass., $25; E. C. F., of Ct., $30; F. B. H., of Ind., $30; G. C., of Me., $45; J. L., of Ky., $30; T. G. B., of Ct., $25; J. A. G., of Mich., $45; J. C. F., of N. Y., $30; B. F., of Ind., $30; W. H. H., of Pa., $10: B. F. B., of Mass., $25; A. N. N., of Ind., $55; W. H. W., of Pa., $25; A. W.. of N. Y., $30; J. D., of N. Y., $55; J. J. S., of Mo., $50; P. G. G., of N. Y., $10; S. P. C., of N. Y., $30; C. A. S., of Mass., $28; E. T., of N. H., $40.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 17:—

G. M. B., of Ohio; T. G. B., of Ct.; H. L. C., of Ind.; J. B. W., of Mass.; G. C., of Me.; A. R. H., of Pa.; B. F., of Ind.; S. P. C., of N. Y.; J. T. D., of N. Y.; P. G. G., of N. Y.; C. A. S., of Mass.; E. T., of N. H.; W. H. W., of Pa.

A Chapter of Suggestions, &c

PATENT LAWS—The seventh edition of the American Patent Laws and Guide to the Patent Office For sale at this office, price 12 1-2 cents.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, forty numbers. price, in sheets, $1; bound $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, none complete, but about 30 numbers in sheets which will be sold at 50 cents per set; of Vol. 9, all but five numbers.

TO CORRESPONDENTS.—Condense your ideas into as brief space as possible, and write them out legibly, always remembering to add your name to the communication anonymous letters receive no attention at this office If you have questions to ask, do it in as few words as possible, and if you have some invention to describe come right to the business at the commencement of your letter, and not fill up the best part of your sheet in making apologies for having the presumption to address us. We are always willing to impart information if we have the kind solicited.

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Advertisements exceeding 16 lines cannot be admitted; neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

EUROPEAN PATENTS.—MESSRS. MUNN & CO. pay especial attention to the procuring of Patents in foreign countries, and are prepared to secure patents in all nations where Patent Laws exist. We have our own special agents in the chief European cities; this enables us to communicate directly with Patent Departments, and to save much time and expense to applicants.

CARPENTER & PLASS—Having removed their Works to the foot of 30th street, East River, N. Y., and enlarged their facilities for manufacturing Machinists' Tools, are now prepared to supply unlimited orders at shortest notice, alway guaranteeing a superior article. Terms moderate. 41 2*

NOVELTY IRON WORKS—Manufacturing of Machinists' Tools: also Engine Lathes, with an improved Tool Rest, Lathes, and Iron Planers kept on hand: for sale by W. W. NICHOLS & CO., cor. B and Turnpike street, Boston, Mass. 41tf

FOR SALE—The Crescent Foundry and Machine Co. have nearly finished a large Lathe, heavy and substantial, which swings 7 feet 8 inches over the ways, has 19 feet length of bed, and weighs about 13 tuns.
Bridgeport, Ct., June 14, 1854. 41 2*

RE-SAWING MACHINE—Myers & Eunson's Patent for cutting thin stu from 1-16 to 3-4 inch of regular thickness out of merchantable lumber. One of said sawing machines is running constantly at 34 Bethune st, in this city, and can be seen at any time. The attention of persons interested in the business is called to the quality of its work. For rights apply to R. G. Eunson, 551 Broadway. 41tf

PATTERNS—For Castings and Models for the Patent Office made to order at the pattern shop of the Peck Slip Foundry, Williamsburgh, L. I., near the ferry.
41 3* WM. ARCHER.

UNITED STATES PATENT OFFICE,
Washington, June 5, 1854.

ON THE PETITION of Frederick J. Austin, of New York, praying for the extension of a patent granted to him on the 16th June, 1841, ante-dated December 16th, 1840, for an improvement in "machines for cutting paper and trimming books," for seven years from the expiration of said patent, which takes place on the sixteenth day of December, eighteen hundred and fifty-four.

It is ordered that the said petition be heard at the Patent Office on Monday, the 4th of December next, at 12 o'clock. M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 24th of Nov.; depositions, and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Pa.; Scientific American, New York; Daily Courier, Buffalo, N. Y., and Post, Boston, Massachusetts once a week for three successive weeks previous to the 4th day of Dec. next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 40 3

IRON HILL SIDE PLOWS—The subscribers hereby give notice to all whom it may concern, that they are the assignees of Harrison & Metcalf (patentees of the above-named Plow,) embracing the States of New York, Connecticut, Massachusetts, Vermont, and New Hampshire; we expect to pass through those States and exhibit a model of our plow and will be prepared to sell either State, County, or district rights to make and use it, as this plow possesses three advantages over all others in use—strength, durability, and simplicity; it only needs to be examined—it will recommend itself, for side-hill work and road making, and also works well on flat land. Patented Oct. 11, 1853.)
41 2* N. & I. KUYKENDALL, Albany, N.Y.

A YOUNG MAN—Desirous of a situation as Foreman or Draughtsman in a machine shop, either in the city or country. Can give the best of references as to qualification. Address HENRY F. SNYDER, 206 Monroe st., New York.

KENTUCKY LOCOMOTIVE WORKS—Corner of Kentucky and Tenth streets, Louisville, Ky.—The proprietors of the Kentucky Locomotive Works would respectfully inform Railroad Companies and the public generally, that, having completed their establishment, they are now prepared to receive and execute orders with fidelity and dispatch. They will contract for Locomotives, Passenger, Baggage. Freight, Gravel, and Hand Cars. of every style and pattern, as well as all kinds of Stock and Machinery required for railroads. Particular attention will be paid to Repairing, for which they have every facility. They are also prepared to contract on favorable terms for building all kinds of Machine Tools, such as Turning Engines, Lathes, Planers, Drills, Slotting, Splining, and Shaping Machines of every variety of pattern. Having also a large Foundry connected with the establishment, orders for castings are solicited, and will be filled with promptness. Car Wheels of any pattern can be furnished on short notice. Double and single plate and Spoke Wheels of all sizes constantly on hand. Communications or orders must be addressed to OLMSTED, TENNEYS & PECK, Louisville, Ky. 40 6m.

PATENT RIGHT FOR SALE.—We are ready to dispose of the Patent Right, (or any part of it) of the best Stone Drilling Machine now in use, or we are prepared to furnish working machines at very reasonable prices, these machines will drill from 1 to 7 inches in diameter, and 100 feet deep, and can be worked by Hand, Horse, or Steam Power, one machine performing the work of twenty-five men. For further particulars and circulars with cuts address JAS. T. WHITTEMORE, Agent American Manufacturing Co., 39 State street, Boston, 40 tf

T. M. CHAPMAN'S PATENT SAW FILING Machine. The best known and without a rival. The subscriber offers for sale Territorial Rights, and also builds and sends machines wherever they may be wanted. T. M. CHAPMAN, Patentee, Old Town, Me. 40 10*

EXTENSION OF TIME.—The period for receiving proposals for Superstructure of Bridges and Trestle work of Huntingdon and Broad Top Railroad, has been extended by order of the Board of Directors to Saturday evening, June 24, 1854, Huntingdon, Pa., June 7, 1854. S. W. MIFFLIN, C. E. 40 tf

FOR $1000 EACH—An assignment will be made, (or security given therefor) of one third the rights patent for England and France, of a breech-loading and self-priming rifle, preventing escape at the breech, simple and durable arrangement and construction, and capable of one shot in five seconds, or one hundred in twelve minutes. U. S. Patent applied for. Addres J. C. DAY, Hackettstown, N. J. 39 5*

PIG IRON—Scotch and American: also English Boiler Plate and Sheet Iron, for sale at the lowest market prices, by G. O. ROBERTSON, 135 Water st. cor. Pine, N. Y. 40tf

MACHINISTS TOOLS—Power Planers 4 to 16 feet long, weight 1,000 to 10,000 lbs. Engine Lathes, 6 to 19 feet long, weight 1,700 to 8,400 lbs., swing 21 to 38 inches. Hand Lathes, Gear Cutters, Drills, Bolt Cutters, Slide Rests, Chucks, &c., of best materials and workmanship constantly on hand, and being built, also the best Grain Mills in the country, "Harrison's Patent." For cuts giving full description and prices address NEW HAVEN MANUFACTURING CO., New Haven, Conn. 38 tf.

BRASS FOUNDRY FOR SALE—On easy terms, having a good share of business, and a fine location. For further information address box 905, Detroit, Mich. 38 5*

MACHINERY DEPOT.—J. W. HOOKER, 36 Lloyd street, Buffalo, N. Y., commission merchant, and dealer in all kinds of machinery, is prepared to fill orders for Lathes, Planing Machines, Drills, Universal Chucks, Car Wheel Borers, Rubber and Leather Belting, Oils, Millstones, Portable and Stationary Engines, Boilers and Machinery generally. 38 4*

WOODWORTH'S PATENT Planing, Tonguing, Grooving Machines.—Double machines plane both sides, tongue, and groove at one and the same time, saving one half of the time when lumber is required to be planed on both sides. Large assortment constantly on hand. Warranted to give entire satisfaction to purchasers. JOHN H. LESTER,
37 13* 57 Pearl st, Brooklyn, L. I.

GRIFFITH'S PATENT VALVE COCKS for Steam Engines, dyeing establishments, or Chemical Works, They are warranted superior to any valve or cock in use. They are easily repaired without taking them from the pipes, they are made any size from 3-8 in. up to 7 1-2 in., either screwed or with flanges. Responsible agents for the sale of these valves wanted in New York, Boston, Pittsburg, and all the principal cities in the Union. The rights to manufacture in the different States for sale. Parties interested will address J. GRIFFITHS, City Tube Works and Brass Foundry, 15 North 7th street Philadelphia. 34 8*

STAVE AND BARREL MACHINERY—HUTCHINSON'S PATENT.—This machinery, which received the highest award at the Crystal Palace, may be seen there in operation during the ensuing season, Cutting, Jointing and Crozing Staves and Turning Heads. Staves prepared by this process are worth to the cooper from 20 to 40 per cent more than when finished in another way. Applicable alike to thick and thin staves. Apply to C. B. HUTCHINSON & CO., Auburn, N. Y., or at the Crystal Palace. 34tf

KRUPP'S BEST CAST STEEL—Suitable for Mint and Plater's Rollers, also of large size (72x18 inches diam.) for rolling iron, copper or brass. Pistons of Steam Engines, and Shafts for Steamboats, not exceeding six tuns weight in one piece. Also the celebrated Cast Steel Axles and Tire, made from a solid bar without welding. Agents, THOS. PROSSER & SON,
33tf 28 Platt st, New York.

STAVE MACHINERY.—The "Mowry Stave Cutter and Jointer Combined," which received the highest award at the Crystal Palace, is the only machine that ever undertook to joint a stave properly at the same time that it was cut and dressed, without rehandling. One man tends the machine and turns out from a solid block of wood ninety staves a minute, ready for the truss hoop. It is not only the best in use, but for slack work we challenge the world. For machines and rights in New York, apply to CHARLES MOWRY, Auburn, For machines and rights in other parts of the United States, apply to GWYNNES & SHEFFIELD, Urbana, Ohio. 29 tf

MINING MACHINERY—Of most approved construction, furnished by FRED'K COOK & CO, Hudson Machine Works, Hudson, N. Y. 15 6m

JOHN PARSHLEY, No. 5 and 7 Howard st., New Haven, Ct., manufacturer of Machinists' Tools, and Steam Engines, has now finishing off 25 Engine Lathes, 6 feet shears, 4 feet between centers, 15 inches swing, and weighs about 1100 lbs. These Lathes have back and screw gear, jib rest, with screw feed, and the rest is so arranged that the tool can be adjusted to any point the work may require, without unfastening the tool, hence they possess all the good qualities of the jib and the weight lathe; they are of the best workmanship. Price of Lathe with count shaft and pulleys, $155 cash. Cuts, with full description of the lathe, can be had by addressing as above, post-paid. Also four 30 horse power vertical Steam Engines with two cylinders. Price of engine with pump and heater, $800 cash. For particulars address as above. 35tf

$100 REWARD—To the Manufacturers of Bank Note Paper. The Executive Committee of the Association of Banks for the Suppression of Counterfeiting, hereby offer a reward of One Hundred Dollars for the best specimen, in the opinion of the Committee, of Bank Note Paper, of not less than five hundred sheets, which may be submitted to them on or before the 1st day of January next. All paper submitted, except that selected by the Committee, to be returned to the persons submitting the same.
J. M. GORDON, Secretary.
Boston, Mass., March 31, 1854. 31 15*

FULTON FOUNDRY AND MACHINE WORKS S. W. corner of Green and Morgan streets, Jersey City, N. J. The subscribers are prepared to contract for Sugar Mills and Mining Machinery of every description. Horizontal Steam Engines of various sizes constantly on hand. All orders executed with promptness.
34 13* FIELDS, BROTHER & CO.

ENGINEERING—The undersigned is prepared to furnish plans for ever description of ma hinery, water wheels, turbines, and to consult with parties to make experiments and scientific investigations, and to superintend the construction of works. Agent for Mellier's Patent for making White Paper from Straw.
VICTOR BEAUMONT,
33 10* Consulting Engineer, 74 Broadway, N. Y.

FOR SALE—By the Baltimore and Ohio Railroad Co., 24 Crate Cars, adapted to railroad purposes, which will be sold at a reasonable price. For further information apply to SAMUEL J. HAYES, M. of M., Baltimore and Ohio R. R. Co., or BRIDGES & BRO., 64 Cortland st., New York. 34 tf.

NORCROSS' ROTARY PLANING MACHINE. The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringement of the Woodworth Patent.

Rights to use N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.

The printed Report of the case with the opinion of the Court can be had of Mr. Norcross. 36 tf

MACHINERY FOR SALE—The following machines are for sale at the "Scientific American" Office:—Alcott's Concentric Lathe, price $25.
Portable Mortising Machine, $20
Bushnell's Iron Drill, $25
All orders should be addressed (accompanied with the cash) to MUNN & CO., 128 Fulton st., N. Y.

WHITE STRAW PAPER—For Newspapers.—A Mellier, the patentee, having established his process at Nixon & Xeinour's Mills, Manayunk, where the paper for the Philadelphia Ledger has been made daily from straw since the 12th of April, is now ready to sell licenses and make arrangements for establishing the process elsewhere. Apply to A. MELLIER & V. BEAUMONT, 74 Broadway, where specimens of half stuff, stuff and paper may be seen. 33 10*

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc., etc.
CHARLES W. COPELAND,
35 tf Consulting Engineer, 64 Broadway.

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months.. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
27tf GEO. W. BEARDSLEE.

STATIONARY STEAM ENGINES—The subscriber is now prepared to furnish, with or without pumps, boilers, &c., Horizontal Engines on iron bed frames, good strong, substantial, plain finished engines that will do good service, say from 4 horse, $215, to 30 horse, $1,037: they have Judson's patent valves, and will be warranted to work well. S. C. HILLS,
31tf 12 Platt st, New York.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American.
16 1y*

SEWING MACHINE—The Office and Warerooms of the Wheeler & Wilson Manufacturing Company, for the sale of their Sewing Machines, is removed to No. 343 Broadway, where the public are invited to call and examine them in practical operation. 31 13*

Scientific Museum.

New Mexican Sugar.

It is said that almost all grains and vegetables which grow in the clear, dry climate of Mexico, are remarkable for their extraordinary sweetness. The common corn stalk abounds in saccharine matter to such an extent as to furnish the native population with molasses, which, although hardly as good as the inferior molasses of Louisiana, might doubtless be much improved by a more perfect mode of manufacture than that adopted by the Mexican population. The molasses is purchased there by those who do not supply their own wants at a rate of $1,50 per gallon. The beet of New Mexico contains so unusual a quantity of saccharine matter, that the manufacture of beet sugar is said to offer strong inducements to gentlemen of enterprize and capital to embark in the business. The only sugar which is brought to Santa Fe now, is transported from the valley of the Mississippi across a desert of nearly 900 miles in extent—and the cost of transportation increases its price about ten cents a pound, so that the most inferior kinds range from nineteen to twenty-five cents in value.

Saltpetre.

Prof. W. H. Ellet states that there has been discovered, in Bradford County, Pa., a regular vein of nitre, believed to be unique in its character. The nitre occurs as a solid and uncrystalline deposit in the horizontal seams of a sandstone rock, and in veins proceeding from them at different angles; and the rock itself, which is quite porous, is abundantly charged with the same material. The nitre itself is very pure, containing mere traces of nitrates of lime and magnesia. The sandstone in which it occurs is silicious containing a little carbonate of lime, and a notable quantity of sillicate of potash.

CHAMPION'S TAPERING DOUBLE LEVER BRIDGE.---Figure 1.

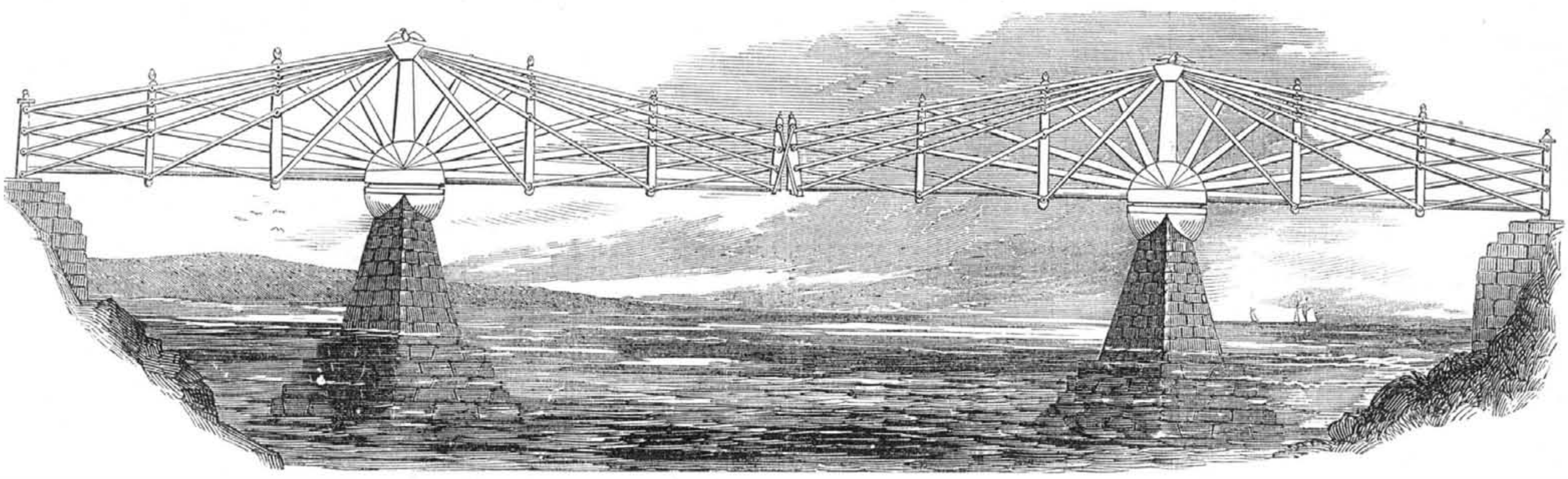


Figure 1 is a perspective view, and fig. 2 is a plan view of an improvement in Bridges, by Samuel and Thomas Champion of the City of Washington, D. C.

This bridge is a tapering double lever, skeletonized and balanced upon a pier, reaching, in moderate spans from the pier to either shore, and may be swung round as a draw, opening the whole stream by rollers underneath on the top of the pier.

In wide streams, where several spans are required, each section of the length of the bridge will reach from each pier to midway between the piers. Where no draw is required each section may continue in one unbroken connection from the center of the pier to the foot of the side piers each way beyond. By this plan of bridge, the principal weight and crushing force is thrown to the under side of the bridge, the lighter being above the heavier, giving an opportunity for cross and other bracings, where they are most required.

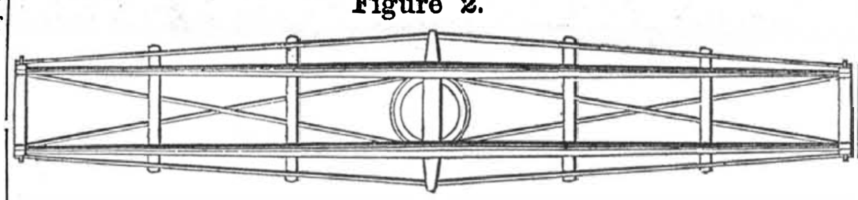
The commencement of this bridge is in a hub on the pier, in which are recesses for the reception of a series of upward diverging, tapering wrought-iron tubes, radiating like the rays of the half risen sun, for the purpose of throwing all compression to the foot of the center column, as all suspension is centered upon the cap on the top of the center or vertical column, over which, in recesses at the proper and angles, all the suspenders pass, and from which they diverge downwards, as the tubes do upwards, each in straight lines—nothing curvilinear in the compression or suspension. These being equal to each other, the expansion is equal, what one gives upward the other does downward, so that the whole remains comparatively stationary.

At proper intervals, throughout the length of the bridge, clamp posts are attached reaching from the upper terminus of the tubes to the lower termini of the suspenders embracing each tub, and suspender as they pass the posts, clamping by bolts through said posts, all tubes, suspenders, and posts, and holding all in a state of rigidity and tension, which is regulated by gib and key connections in the suspenders.

By this system, in which the principles of the lever, are analyzed, and skeletonized—as by placing the crush resistants on the under side, and the stretch or tension resistants on the upper side, with the correct principle of taper properly maintained and proportioned, any desired length and strength of span may be obtained, there being (as the inventors conceive), no limit in the principle, except in cost and expediency, it being cheaper to erect additional piers, where it is practicable to do so, than to increase the size of all parts from the center between the piers, to the piers at their greatly increased distance apart. It will be perceived that this bridge is never loaded in the center with burdensome weight, however lengthy the span may be, but remains at rest and equipoise when no train is passing over it. Iron bridges, which are as heavy in the middle as at the piers, are always loaded, and sometimes very heavily, too, by their own weight alone, and are often breaking down, and would do so in a few years, if no weight were placed upon them.

Believing this principle to be true and demonstrable, as capable of indefinite extension—that any desired length of span may be obtained for the support of any desired weight, the Messrs. Champion present the same to the consideration and criticism of a discerning and impartial public. They also call particularly attention to the capacity of the tapering suspenders for great length of span, far beyond the one size wire suspension, to say nothing of the advantages of the straight suspenders in their permanency and rigidity over the oscillating inverted curve suspender. In this bridge the permanent and suspension meet, and the anchoring is part of the bridge, the shore end (when not intended for a balance swinging draw) is considerably longer from the pier to the abutment than to the center between the piers beyond, forming by such additional length, an anchor and counterbalance to the weight of a train between the piers beyond: thus placing everything in sight above the danger of rust below.

Figure 2.



More information may be obtained by letter addressed to Messrs. Champion at Washington, D. C.

Crystal Palace Notes.

COAL—The yard of the Crystal Palace, near the Geological Department, although trodden by the feet of few visitors, still, for those few, it has peculiar charms, though no articles of beauty, taste or skill are there displayed—only a small number of mineralogical specimens. These, however uncouth in form and unclean to the touch, are solid specimens on which our country's future greatness materially depends, and from which, without hesitation, we can confidently predict (unless some new substitute for it is discovered in other countries) will some day make the United States the great Manufacturing Mart of the world:—we allude to coal. When some person was speaking to James Watt respecting the value of the river Clyde, as being the source of wealth in Glasgow, where he invented his improvements on the steam engine, it is related that he stamped on the ground, and said, "the wealth of this city lies under my feet," alluding to the iron and coal in that locality. He was right. Without coal, England never would have become a great manufacturing country, and much interest is now manifested there about the future supply of this mineral. When England ceases to produce coal it will for a certainty cease to be the world's workshop, and become a poor and insignificant island in comparison with what it now is. Coal rules the world; it propels the steam engine that makes the needle and the anchor; the steamship that plows the ocean; the locomotive that fleets on the wings of the wind; the mills that grind our grain, and the looms that weave our cloths. The coal fields of our country are more extensive than all the rest (yet discovered) in the whole world. Some specimens from a few of the mines are on exhibition in the place named above.

Of anthracite coal there is one shaft 30 feet high, furnished by the Baltimore Coal Co., from their mines at Wilkesbarre, Pa. It shows the thickness of the vein as it lies in the mines, and has every appearance of being the compressed coke of bituminous coal. If this coal has been thus formed, oily bituminous shales should be found above all anthracite seams. Besides this shaft of coal, there are also three other large lumps by this company; and six other lumps of the same coal, about 4 feet long, 3 feet wide. and 2 feet deep, from the mines of Messrs. Bowkley. The German Pennsylvania Coal Co., also furnishes some beautiful specimens of anthracite from the mines at Tresckow, Carbon Co., Pa.

Of semi-bituminous coal there is a shaft 15 feet high, showing the thickness of the seam, from Lonaconing Mines, furnished by the Ocean Coal Co., Alleghany Co., Md. There is also one huge specimen of bituminous coal, 15 feet thick, weighing 30,000 lbs., from the "Parker Vein." The Company which furnished this specimen, as stated in the daily papers, has been rather unfortunate; the coal is good, and it is to be hoped that the mine will yet be worked profitably and with economy.—There is one sample of cannel coal from Peytona, on Big Coal River, Va., and one from Little Coal River, Kanawha, Va. These comprise all the coal specimens on exhibition; they are few but important. It would have given us sincere pleasure to have seen a geological arrangement of samples from all our coal fields. Why was this not done? The Geological Department of the Crystal Palace is *very pretty*, and interesting to those who are well informed on the subject, but it is not so instructive nor so interesting as it might be made to the multitude.

PLUMBAGO—There is one large and fine specimen of Plumbago, 3×2×2 feet, weighing 1000 lbs., from the mines of J. & J. L. Seabury, New York State, but where this mine is situated we cannot tell. We can only say that it affords evidence to us that we do not require to send abroad for our black lead pencils for want of natural resources, and yet our best pencils are all imported.