
№. 18.

THE
SCIENTIFIC AIMERICAN :
PUblished weekly
at 128 Fulton Street, New York (Sun Building,) and
13 Court Street, Boston, Mass.
By Munn \& Company.
The Principal Office being at New York.
TERMS-- $-\$ 2$ a year- $\$ 1$ in advance, and
the remainder in 6 months.
Sose advertisement on last page.
the remainder in 6 months.
予See advertisement on last page.

## \#octry.

## THE COTTAGE EMIGRANT'S FARE-

 WELL.by agnes strickland
In a lone mossy dingle,
By green trees o'erhung,
Their wild song of sorrow
Their wild song of sorrow
Three Highland maids sung-
Who were doomed, with their people In exile to roam
O'er the stormy Atlantic
To seek for a home.
For the hearths of their fathers, By Want's chilling hand Had been sternly extinguished That morn in the land: And they came, for the last time, All weeping, to bring,
The cool gushing waters
From that pleasant spring.
It was piteous to see How their sweet eyes grew dim, With their fast flowing tears, As they hung o'er its brim. And looked their farewell To that beautiful spot, Endeared by those ties Which could ne'er be forgot.
And oft from their vessels, Replenished in vain. They restored the pure stream To the fountain again; As fondly they lingered, And loth, to depart, They sobbed forth their grief In the anguish of heart.
" Dear fountain of our native glen! Far hence we're doomed to go; And soon for other urns than ours Thy crystal streams will flow.
". Thy snowy lillies still will bloom On this delightful spot. S'weet fountain of our native glen! Though we behold them not.
"And thou wilt from thy sparkling cell, Still softly murmur on.
When those who lov'd thy voice to hear, To other lands are gone.
"Dear fountain of our natıve glen? Beloved by us in vain,
That pleasant sound shall never glad. Our pensive ears again.
" Dear fountain of our native glen?
Which we no more must view, With breaking hearts thy children pour Their long-their last adieu."

## 1 See a Man.

I do not see his shauby dress, I see him in his manliness. I see his axe; I see his spade; I see a man that God has made; If such a man before you stand, Give him your neart-give him your hand And praise your Maker tor such men ; They make this old earth young again.

## PRATI'S

## IMPROVED GRAIN AND SEED PLANTER.



This engraving is a longitudinal section view of a machine invented by Mr. Reuben Pratt, of Riverhead, Long Island, N. Y. It is intended for manuring land and planting seed at one operation. There are two cog wheels connected with the two displayed in the engraving which are not seen, but their absence is not $o^{c}$ much importance as the principle is exhibited. There is one thing that will readily strike the mind, viz. that if a wagon could be projected that would make the proper deposit for the seed, and by a mechanical arrangement deposit the manure first and therseed on the top of it, and then cover all up regularly and quickly, that a very 1 m portant object would be gained. This machine is intended to accomplish this purpose and on light soils and level lands Mr. Pratt, who intends to apply for a patent, will warrant a perfect operation.
Description.-A, is the box for holding the poudrette or whatever fine fertilizer it may be. B, is the grain box. The order of these two boxes, however, may be inverted. It is just as easy to place A below B to answer the same purpose, if required. C , is a slide board to drive out and deposit the grain, and $D$, the same for the upper box. H L , is a crank or eccentric connection for opening and closing the openings of the boxes $A$ and $B$. This crank is as broad nearly as the bottom of the wagon and is operated by cams G G, on the cog wheels.E E These cams as the wheels revolve catch hold of the crank at proper places and by slipping and catching it will be observed from their shape that a traverse motion will be given to feeders D and C , opening and closing the orifices of these boxes at the time required-the upper one opening a
Receipt for making New York Millk.
"Take two pounds of lime; two and a quarter pounds of chalk, one and three quarter pounds starch, 20 quarts of rain water, and to every quart of the solution add two tablespoonsful of the droopings from a cow, so as to give it the right color. Shake it about ten minutes, then settle it with a soft brickbat; then strain it through a pair of window shut-ters-and you will have the pure Orange county milk."

Geological Researches.
Dr. Lillewalch of Stockholm, having caused searches to be made in the marshes of Scania, has discovered the sikeletons of men and animals in a remarkable state of preservation. Near them he also found arms, instruments for sport and fishing, and utensils of different descriptions, all of which are in stone, showing that the use of metals was unknown when they were made. They belong ! to those primitive people of whom traces re-
second before the lower, and then both are closed again. F F, are two scoops, the one on the front axie to make the opening for the hill, and the one on the second to cover it up. These scoops as well as the cams are fixed on the axles $E E$, and the cog wheels work into one another, so that the scoops can be placed at the exact distance on the axles to insure correct operation, and the cams also to work the crank. This any person will understand and see can be done. K K, are the axles of the wagor wheels.
Operation.-Suppose the wagon to be moving. The scoop $F$, has already made the bed for depositing the seed and is going round again. G, has already operated on the notch of the crank and the manure and seed box have been opened by that operation, for I, a catch, connects them both together. F, the scoop, now upon the second axle, as it is moving in a contrary direction from the motion of the first wheel, is about covering up the seed, while G, on the same axle, is closing the openings of the boxes and thus a continual revolution of manure and planting is kept up as the wagon moves along. It can be made to plant in drills or hills as the case may be, and with a boy to guide the wagon and paying a little attention to the manure box not a few number of acres can be planted in a day. The operation of the feed boards C D, like those of slide valves, will always insure correct operation, They must work or the wagon must stop, or something give way, and on this, the feeding part, the whole success of power planting depends-there must be no chance work about the depositing of the seed and manure, and Mr. Pratt intends that there shall be none.
main in the traditions of the North, but whose race is now extinct.
Those who discover evidences of the Celts of Ireland or Wales, having discovered America before Columbus, be it remembered have only the claims of the same arms as found in Sweden, being found in Florida.

## Origin of Stays.

Stays were flrst invented by a brutal butcher of the thirteenth century, as a punishment for his wife. She was very loquacious, and finding nothing would cure her, he put a pair of stays on her, in order to take away her b eeath, and so prevent her, as he thought, from talking. This cruel punishment was inflicted by other husbands, till at last there was scarcely a wife in all London who was not condemned to wear stays. The punishment became so universal at last, that the ladies in their defence made a fashion of it, and so it has continued to the present day.

## RAIL ROAD NEWS.

Providence Rallroad.
On the Providence Railroad the cars commenced their regular trips between Pawtucket and Boston on the 16th inst., making use of the new branch road to the former place The cars will leave Pawtucket at 8, A. M., and Boston at 3.30, P. M. This new arrangement, says a correspondent, has been brough $t$ about mainly by the exertions of $W$. Raymond Lee, Esq., the efficient superintendant of the Boston and Providence Railroad.

## Great Western Rallropd.

A vigorous effort is about to be made by our friends in Canada to gather up the amount of stock yet required for the completion of this road which is to unite Michigan with Lower New York, by a few hours ride. Eight hundred and seventy-five thousand pounds, are yet wanting to complete the sum requisite to build the road.

Ohio and Baltimore Railroad.
It appears from an article in the Baltimore Patriot that it is at least a settled point that the railroad is to strike the Ohio river at Wheeling. The Patriot says in the article in question:
The directors of the Baltimore and Ohio Railroad, with great unauimity, advised the acceptance of the law for making the road to Wheeling, and the stockholders, in general meeting, by a great majority of votes, decided to accept it, and did accept it.
The Maryland Legislature, by the action to which we have referred above, have approved of this decision of the board and stockholders and, by retaining in office, the directors on the part of the State, have confirmed their particular course in this matter.

Mississippi and Ohio Rallroad.
The great Railroad which is to link St. Louis and Cincinnatı together is a grand project. We understand that the route through the State of Indiana, by Vincennes, is preferred to the central route through Indianapolis, because it is 75 miles shorter. The Indianians are determined to prosecute the work with the same vigor that they have pushed the bill through the Assembly.

Iowa Rallroad.
Measures are being taken to connect Dubuque, Cedar Rapids, Iowa city and Keokuck by railroad, and also for a line from Davenport to Council Bluffs, Mo Johnson County, Iowa through which these lines pass, will ship this year 800,000 pounds of pork and 75,000 bushels of wheat.

## Railroad Signals of Danger

Detonating balls as well as red lights are used in cases when trains are detained on the English Railways. Under the wheels of any approaching engine the balls explode with an exceeding loud report.

## Raliroad Iron.

A lot of English Rails has been sent back from this City to Liverpool, because no sale could be effected on account of their inferiority to those now made in America. The rails made at the Trenton, N. J., Iron Co., are worth $\$ 8$ per ton more than English rails. There is no use of exporting a poo: article, it is sure to find its level and its character.

## Telegraph Improvement.

The transmission of despatches between New York and Washington has been greatly expedited by the insulation of the second or independant wire being completed so perfect ly that the fluid can pass from one extremity to the other, and of course obviates the necessity that formerly existed for all messages being re-written by the operators at the Philadelphia office. This is an improvement that will be appreciated by all who have dealings with the lightning lines, as a medium of communication with their correspondents.


## France.

"There is but one step from the sublime to the ridiculous." These words were uttered by Napoleon, when amid the flames of Moscow he was obliged to dictate the retreat of the grand army. By the last steamer from Enrope, we learn some very important particulars regarding France. Louis Phillipe was a king one day, and on the next a fugitive and in a few days he is found on the ocean in an open boat with the partner of his rega? honors. struggling against wind and tide to reach a foreign strand. He was picked up and carried to England without a change of clothes and but a solitary five franc piece in his pocket. Sad comment on the stability of thrones in our day.
France has been declared a Republic, and one feature very different from the old RevoIution is, that Religion is respected. The people tound an image of the Saviour in the Tuilleries and the crowd even in the midst of revolution, bowed before it. We hope that peace and concord may be withFrance, if she be virtuous she will be happy. There appear's to be some disturbance amongst the working classes-this is an element that may yet bring the rich and poor into fierce collision There have been riots in Edinburg and Glasgow, Scoiland, and a number have been shot. All Europe is in commotion, and there is one feature pervading the entire population of these countries, and one that many are overlooking, viz. that all this strife is but a presage of coming events and those events are " the rights of labor." It is the toiling millions of Europe whe are arousing to demand-not to beg-of man to enjoy the fruit of their toil.

## Jethro Wood's Patent Plough.

Mr. Farrelly of Pennsylvania, from the Committee on Patents in the House of Representatives, reported against extending Wood's patent, so on motion the bill was laid on the table. To the credit of the House of Representatives be it spoken, the merits of the application of Wood's heirs was far more correctly examined by them than by the Senate The patent had been in force twenty-one years. Our words have not been ineffectual in warning and iebuking. Mr. Farrelly deserves much credit for his interest in the true and legitimate rights of inventors, and the rights also of the community. He is the gentleman who so torcibly advocated a good salary to competent Patent Office Examiners.The Bill, from the motion to lay on the table, may be said to be defeated. We always thought that the Bill in itself, at ary rate, was unconstitutional, at least some of its previsions, and could not be enforced in the States.

## Explosion.

The boiler of the foundry, of Curtis and Randall, East Boston, exploded on the 23d ult and instantly killed the engineer, and dangerously wounded five or six others-one of whom has since died. It blew the roof from off the building, and blew down the side wall The cause of the explosion was supposed to be the exhaustion of the water in the boile while the workmen were gone to dinner. When they came back the Engineer started the force pumps to fill the boiler, when an imme diate and dreadful explosion followed.
The fire should have been immediately taken from the boiler instead of letting in cold water.

## Harry's Tricopherons

There is no preparation which we have ever tried for the hair that gives us such pertect satisfaction as has the use of Barry's Tricopherous. It is effectual in removing all dandriff from the head, and keeps the harr in a soit and glossy state, yet entirely free from giving it a greasy or oily appearance. Prepared on. ly by Barry, 137 Broadway. Price 25 cents per bottle.

## Carlous Efrect or Oin.

The effect of oil in smoothing the surface of the troubled waters is well known. Attention was directed to the fact by Dr. Franklin more than half a century ago; but this property of oil was known many centuries since, and has furnished not merely matter of speculation and amusement to philosophers but, has been applied from time immemorial by the natives of various and distan $t$ countries, to the most important uses of procuring provisions. The fishermen on the coast of Provence, it is said, ages ago, adopted this plan to enable them to see the muscles and other shell-fish at the bottom of the sea. The same plan was also adopted by the same order of men in the Tagus, near Lisbon and by the inhabitants of the Hebrides, even of the most emote isles, St. Kilda.
There was once a law in force in England that when a ship was in danger during a tem pest, and it was necessary to throw overboard goods to lighten the vessel, if oil was on board and could be rached, that must be thrown over first, that it might produce the effect of smoothing the waves, and prevent danger by shipping seas. Eren at this day the Ragusians, when they go on fish-spearing excursions, throw oil upon the water with a brush that they may thus obtain a clear pros. pect of the bottom. The transparent openings thus formed they call windows. Doubtless oil could sometimes be used to advantage in this way by the fishermen in our harbors

## A New Life Preserver

The Detroit Daily Advertiser relates the following incident which is rather a pozer for our ligbt fellows:-
A remarkable accident occurred a few days since to a worthy citizen of Detroit, Mr. Roger Fitzpatrick, brewer. Mr. F. bad been across the river, and on returning in a canoe, with two others. the frail bark was capsized near the middle of the stream. The weather was extremely cold, and the river was filled with masses of floating ice. Mr. F. unable to swim, threw himself upon his back, folded his arms across his breast, and calmly submitted himself to the action of the wind and waves. Being a corpulent man, and wrapped in a large overcoat, he kept on the sur face of the water, but in a few moments be came unconscious. The wind was blowing fiercely, and Mr. F. floated towards her majesty's dominions. Some persons happened to see the body, and dragged it on the beach and sent for one of the Queen's Coroners The usual methods of restoring drowned persons were resorted to-the jaws pried open and brandy poured down the throat: -Mr . Fitzpatrick opened his eyes and very coolly inquired what they " wanted to do with him." We saw Mr. Fitzpatrick yesterday, quietly pursuing his vocation.
There now, all those lean fellows, who ne er wish to die by drowning, must laugh and grow fat on beef and beer.

## Lots of Fish for the Cookneys.

It is stated that 86,000 bushels of soles have been forwarded during the last year, to the London market, from the Silver Slip, a kind of hollow about three quarters of a mile long, and about sixteen fathoms deeper than the neighboring sea, which was accidentally discovered six years ago on the Yorkshire coast 14 miles off Flamborough Head, and which is said by the fishermen to have contained a bed of fish five or six feet deep.

## Guano.

By accounts from Peru, the Government of hat country have fixed the price of guano at $£ 3$ per ton, free on board; and it is said, if the last years consampt be regarded as the average.there is supply for nearly a hundred years.

## Gold in Russia.

The produce of the gold mines in Russian Siberia is increasing so much, as to render it certain that the value of this metal must be seriously affected. In 18:27 the product was four and a half millious of dollars. In 1846 it was 17 millions and the Russian Govera. ment expects a steady increase for years to come. -Tbis we extract from a printed report by the British Parliament.

Parker's House Clsterns. Thy Mr Parposes invent ed by Mr. O. Parker of \$sracuse are construc ted in the following described manner.
The cistern is built of cement without brick or stone, say one-third cement, two thirds of coarse gravel mixed together like common mortar-the hoie in the ground being dug large enough to admit a wooden frame, made in pieces of two feet high by three feet long, the pieces being fastened firmly together by hooks and staples; the frame is set off from the sides, say $2 \frac{1}{2}$ to 3 inches, according to the nature of the soil, commencing with one row of pieces ; the composition (cement and gravel) is then turned in slowly, another set of pieces then broken on, adding composition as before. As the composition hardens, the frames are removed, and it is finished inside with a trowel, like the wall of a house. The top is arched, leaving a hole at top say 24 inches square, to admit a person for the pur pose of cleaning it when neccssary. The bottom is flat, and made after the sides and top are finished.
For pipes for carrying the water in, and waste pipe, use a round stick, say 3 to 5 inches in circumference, and from the composition around the stick, withdrawing the stick, as the pipe is formed
The cover to the hole on top of the Cistern is generally of wood, in which you insert either wooden pipe or lead pipe, though a lead pipe can be easily inserted into any part of the Cistern by boring a hole through the cement after it is throroughly hardened.
The cisterns that are built with the Heidelberg flag stone in Albany County, howev$r$, are the best and cheapest in the world.

## Green Weod.

No person should ever burn green wood. It is full of water and much carbon is wanted o dispel the water contained in the wood. There is about one fourth of water in every cord of wood.
To ascertain the caloric lost, we must find the weight of water in a cord of wood. In his careful experiments on the combustion of wood, Count Rumford proved that a cord of dry beech weighs about 2,800 pounds; which must be three-fourths of the weight of the green beach; that is, a cord of green beach must weigh 3,700 pounds, or taking the mean between one third and one fourth, must be more than 4,900 pounds. In burning a cord of green beech, at least one thousand pounds of water must be evaporated, and 1000 pounds of water would fill three barrels of 32 ale gal ons, or nearly two hogsheads of sixty-three gallons wine measure. The quantity of calric lost in this way may be estimated in a rough way by the quantity of wood consumed in evaporating three barrels or two hogsheads of water.
In the combustion of 20 cords of green wood, 60 barrels of water must be evapora ted. Now, it takes six times as much heat to evaporate a pound of water, as to heat a pound from 50 degrees of temperature to the boiling point.
The economy in using dry wood is well understood by many. These views give adequate reasons for it. Yet it is to be feared that many a farmer does not use proper care in drying and housing his wood.

## Union Magazine,

The April number is just issued and well sustains the reputation which the former numbers have made for the work. The Union is the best monthly literary publication in the country and we heartıly recommend it to the public. Israel E. Post, Publishers, 150 Nassau st.

## Holden's Dollar Magazine

The number for April of this cheap magazine is out and comes to us as usual stored with a great variety of original and int
matter.-Published at 132 Nassau st.

Two weavers have been convicted at the Court of Common Pleas, Taunton, Mass., for riot. This was for the turn out at Fall River

The guns captured from the Sikhs are to e placed muzzle to mazzle in a column 150 feet high, at Calcutta; and the top of the pillar is to be surmounted with a figure of Britannia, supported by two seapoys.

The consumption of this article is increas ing vastly-much beyond the general calculation and belief. One principal source of this increase is in the use of the distilled spirits of turpentine, known under the name of Camphene, and is used in 1 lace of oil in almost every family. Camphene is not explosive, although its combination with alcohol is, and it is therefore safer to use except where there nay be a number of children in a fanily. In making tuipentine a medium sized pine tree, with large top, furnishes the turpentine best. In North Carolina, however, trees of only eight or nine inches diameter are often selected.The tree is tapped for its sap in the months of December, January and February. The first turpentine which flows is called virgin turpentine, and care is taken to preserve the pure white color which is natural to it-rosin made from the virgin turpentine is transparent. The sap is distiled like malt and the result is turpentine and rosin and tar. More turpentine is now made in North Carolina and Georgia than in all the rest of the world put together, and the distillation is conducted in the forest, saving all unnecessary transportation of refuse material. Twenty years ago, there was more spirits of turpentine distilled in Europe than in the United States, but the tide has now turned and Europe gets turpentine from America.

Honor to the Femate Brave.
A Beautiful Silver Tankard with an appropriate inscription has been presented to Mise Sarah E. Rogers, of Richmond, Va., " for her presence of mind, courage, and fortitude, in saving the life of Joseph Robinson, caught in the machinery of the Virginia Woolen Fac tory, March 14th, 1848.

The powerful solvent capabilities of chloroform are now by experiment fully estaj. ished. Caoutchouc, resin, copal, and gumlac, bromine, iodine the essential oils, \&c. yield to its solvent powers. This property may it is believed, prove extensively of advantage in very many of the fine and useful arts.
The " Metalized India Rubber," made for the purpose of being placed under iron rails, where they have a bearing on iron or wood, with a view to diminish in the wear of engines and cars, is to be tried on the Stonington route, four miles of which will be laid with it by the 1st of May.
The wires of House's Telegraph has beet struck across the North River two hundred feet above the water. Thus we shall now have two lines from this City to the Southwest.

A merchant died recently at Hamburg, worth $\$ 4,200,000$ who began life without 2 penny. He could not have been very honest if he was so very rich.
The European Association for propagating he Roman Catholic faith in America have granted to the missions, this year, the large sum of $\$ 211,410$.

Some Cornish miners have proceeded to Chili, for the purpose of working the copper mines of that country,

No fewer than sixty ceasting vessels are now owned by the aboriginal inhabitants of New-Zealand.
A cannor shot without legs travels faster than a caterpillar with lots of that same. It is because the caterpillar goes of its own accord, but the cannonshot is sent.
If a good name were purchaseable, how few would avail themselves of the luxury, if had to pay ready money for it.
Mr. Crawford's beautitul statue of the Dying Indian Girl, will soon be shipped from Rome for New York.
Hugh H. Grant, Esq. of South Carolina, has in his possession a sample of rice grown on his father's plantation in 1809.
Navigation between this city, and Albany opened sixteen days earlier this year than the opene
last.

## or the Scientific Americen.

## (Continuted from our last)

The succession of colors must be determind by means of a design paper, which represents the design or figured pattern intended to be produced by plain weaving of the par-ty-colored yarns. Design paper used by weavers for figured weaving, being ruled with squares, which are numbered across the top and down the length, and it must contain the entire figure of the pattern which it is intended to produce in the fabric, and which pattern is to be repeated thereon at regular intervals along the piece; and, supposing that the ground whereon the pattern is to be represented, is to be all of one uniform tint, the whole of the threads may be dyed with that color previous to applying the party-col-ors,-the dye being chosen of such a nature that it will readily give place to the stronger party-colors which are to be applied. The party-colors which are to be applied. The
size of the cylinder must be so chosen that size of the cylinder must be so chosen that
its circumference will be equal to the length of yarn which the warp will take up for weaving, from the commencement to the end of the pattern, where it will join to the preceding, and to the succeeding repetition of the pattern, taking into consideration the contraction of the length of the warp which will result from the gathering up of the yarn in weaving, and which contraction varies very greatly in different kinds of fabrics. Whatever number of squares the length of the design paper occupies, the circumference of the cylinder must be divided into a like number, or the double or the treble that number, if the cylinder is large in proportion to the pattern; which is easily done by applythe pattern; which is easily done by apply-
ing a tape painted with suitable divisions uping a tape painted with suitable divisions up-
on it around the circumference of the cylinon it around the circumference of the cylin-
der, and fastening it with pins to the blanket cover. The design paper should be laid out in large squares, as the printer has to distinguish readily the succession and order of the different colors. It may either represent a figure to fill the breadth of the intended fabric, or one which is to be repeated several times side by side in the breadth, and each square may either represent a single thread or a number of threads according as the texture is to be fine or coarse. Repetitions of the same figure in the breadth will admit of several threads being colored alike at one operation, and the trouble of separating threads may be avoided by keeping the coils of the different threads distinct from each other upon the cylinder. In applying the colors to each set of yarns, either the first or the last of these impressions, which is made when the cylinder stands at its division 1 , must be of such a decided character, that its place on every thread can always be distinguished with certainty; or a narrow black impression may be made across every set of the threads when the cylinder stands at its division 1 , as a common starting place for all the threads. and for all the sets of threads; which decided im. pressions, or narrow black impression, in consequence of the circumconvulsions which the threads make around the cylinder, will bo repeated at every place along the length of each thread, when the repetitions of the pattern are intended to begin and to end. In short, when the party colored threads are afterwards formed into a warp, the marks will indicate the junctions of the successive repetitions of the pattern: and if the threads are .all so adjusted that those marks on each thread will range in a straight line, square across the breadth of the warp, then a correct pattern will be formed by the party colors of the threads; and all the precaution that is required during the progress of the weaving is to keep all the threads so adjusted in length that all others of the marks at every succeeding repetition of the pattern, shall continue to range in straight lines and square across. To ensure this condition, a clamp is used, To ensure this condition, a clamp is used,
which is composed of two straight rulers, united by screws, which draw the edges of the two rulers together, and their adjacent edges are covered with cloth. This clamp is applied across the warp, with one of its rulers above the yarns and the other below them, near to the place where the marks must range in a straight line, square across the warp, and there the clamp is fastened by its screws, so
as to hold all the threads fast between the edges of its two rulers, in order to confine
them to their relative positions end-ways, in them to their relative positions end-wass, in ceeds, the clamp advances along with the yarn; and when the length of the pattern has been woven, the weaving must be suspended, while the screw of the clamp are loosened, to set it free on the yarns, and it is then taken back along with ihem, to the next succeeding marks ; and, if those marks do not range in a they ought to do, those yarns which are forward must be pulled back or stretched until the marks are made to range and then the clamp is to be again screwed fast on the yarns to confine them in their true relative posi tions, whilst another length of pattern is woven; after which the clamp is again shifted to the next succeeding set of marks and so on until the weaving of the whole piece is completed. This method of working with the clamp during the progress of the weaving is only requisite in case the yarns are drawn of at once from the bobbins to form the warp in the loom as the weaving goes on without using a yarn-beam :-but, if the warp is formed and gathered on a yarn-beam by a previous operation to the weaving, then the clamp must be used in the manner above described during the operation of beaming, but will not be afterwards required during the weaving. Gilrox.

## (To be Continued.)

## Starch.

Starch is a white pulverulent substance, composed of microscopic spheroids. Ordina. ry starch may be extracted from the following grains:-wheat, rye, barley, oats, backwheat, rice, maize, millet, spelt; from the silioquose seeds, as beans, peas, lentiles, \&c. : from tuberous and tap roots, as those of the potato, the manioc, arrowroot, bastata, \&c. Different kinds of corn yield very variable quantities of starch. Wheat differs in this respect, accor ding to the varieties of the plant, as well as the soil, manure, season and climate. Wheat partly damaged by long keeping in granaries may be employed for the manutacture of
starch, as this constituent suffers less injury starch, as this constituent suffers less injury
than the gluten, and it may be used either in the ground or unground state.
Starch with unground wheat.-The wheat being sifted clean, is to be put into casterns, covered with soft water, and left to steep till it becomes swollen and so soft as to be easily crushed between the fingers. It is now to be taken out and immersed in clea water of a temperature equal to that of malting barley, whence it is to be transferred into bags which are placed in a wooden chest containing some water, and exposed to strong pres sure. The water being rendered milky by the is poured in, and the pressure is repeated. Instead of putting the swollen grain into bags some prefer to grind it under vertical edge stones, or between a parr of horizontal rollers and then to lay it in a cistern, and then separate the starchy liquor by elutriation with successive quantities of water well stirred up with it. The residuary matters in the sacks or cisterus contains much vegetable albumen, and gluten, along with the husks, when ex posed to fermentation, it affords a small quan tity of starch of rather inferior quality.
The above milky liquor, obtained by ex pressien or elutriation is run into large cis terns, where it deposites its starch in layer
successively less and less dense; the upper most containing a considerable proportion of glutea. The supernatant liquor being drawn off, and fresh water poured on it, the whole must be well stirred up, allowed again to set tle, and the surface liquor again withdrawn. This washing should be repeated as long as
the water takes any perceptible color. As the first turbid liquor contains a mixture of gluten, sugar, gum, albumen, \&c., it ferments readily, and produces a certain portion of vinegar, which helps to dissolve out the rest o the mingled gluten, and thus to bleach the starch. It is, in fact, by the action of this fermented or soured water, and repeated
washing that it is purified. After the lastdeposition and decantation, there appears on the starch a thin layer of a slimy mixture of glutea and a!bumen, which, being scraped off,
serves for feeding pigs or oxen; underneath will be found a starch of good quality. The layers of different sorts should be then taken up with a wooden shevel, transferred into separate cisterns, where they are agitated with ater, and passed through fine sieves. Afte vater is drawn off, the starchy mass is taken out, and laid on cotton cloths in wicker baskets, to drain and become partially dry. When sufficiently firm, it is cut into pieces, which are spread upen other cloths, aud thoroughly dessiccated in a proper drying room, which in winter is heated by stoves. The upper surface of the starch is generally scraped, to remove any dusty matter, and the re sulting powder is sold in that state. Wheat yields upon an average, only from 35 to forty per cent of good starch. It should aff ord more by skilful management.
Another plan is to crush wheat between iron rollers, and then laid to steep in as much water as will wet it thoroughly, in four or five days the mixture ferments, soon afterwards settles, and is ready to be washed out with a quantity of water in the proper fermen ing vats. The proper time allowed for the steep. is from 14 to 20 days. The next pro cess consists in removing the stuff from the vats, into a stout round basket set across a back below a pump. One or two men keep going round the basket, stirring up the stuff with strong wooden shovels, while anothet keeps pumping water, till all the farina is washed from the bran. Whenever the subjacent back is filled, the liquor is taken out and strained through hair sieves into square frames or cisterns, where it is allowed to set tle for 24 hours: after which the water is run off from the deposited starch by plug taps a different levels in the side. The thin stuff called slimes, upon the surface of the starch, is removed by a tray of a peculiar form Fresh water is now introduced, and the whole being well mixed by proper agitation, is then poured upon fine silk sieves. What passes through is allowed to settle for 24 hours the liquor being withdrawn, and then the slimes, as before, more water is again poured in, with agitation, when the mixture is again thrown upon the silk sieve. The milky liquor is now suffered to rest tor several days, 4 or 5, till the starch becomes settled pretty firmly at the bottom of the square cistern. If the starch is to have the blue tint, called Poand, fine salt must be mixed in the liquor of the last seive, in the proportion of two or three pounds to the $\mathbf{c w t}$. A considerable portion of these slimes may, by good engagement be worked up into starch by elutriation and traming.
The starch is now fit tor boxing, by shovelling the cleansed deporite into wooden chests, about 4 feet long, 12 inches broad, and 6 inches deep, perforated throughout, and lined with thin canvass. When it is diained and dried into a compact mass, it is turned out by inverting the chests upon a clean table where it is broken into pieces four or five inches square, but laying a ruler under the cake, and giving its surface a cut with a the hand will make the fracture. These pieces are set upon half burned bricks, which by their porous capilliary imbibe the moisture of the starch, so that its under surface may not become hard and horny. When sutficiently dried upon the bricks, it is put into a stove, (which resembles that of a sugar refinery,) and left there till tolerably dry. It is now removed to a table, when all the sides e carefully scraped with a knite; it is nex packed up in the papers, in which it is sold hese packages are returned back into the stove, and subjected to a gentle heat during soms days, a point which requires to be akilully regulated.
A patent was obtained for bleaching starch by chloride of lime in 1821. Chlorine water would probably be preterable, and might prove useful in operating on damaged wheat. During the drying, starch splits into small prismatic columns of considerable regularity When kept dry it re mains unaltered for a ve y long period.
Mr. Armes, an American artist, has bee IX. and has commenced the work.

Hore about Staite's Electric Light. At a recent lecture at New Castle upon
Tyne, Mr. Staite observed that the experiment of the charcoal points, and the phenomena of the voltaic arc, with powerful batterie were well known. The difficulties hitherto experienced had been-1. The economical production and application of the electric cur-rents.-2. The discovery of a suitable mate rial for the developement of the light.-3. The rendering of the light permanent (the greatest difficulty of all.) By what means, and to what extent, he had overcome these difficulties Mr. Staite informed his audience. He pro duced, under a glass receiver, a brilliant light before which the gas jets of the lecture-room turned, not pale, but yellow. The peculiar characteristics of the electric light were its purity and volume. The most delicate shades of color might be detected, while the eye was not distressed by its effects. The same quan tity of light, developed by gas, or any other known means, would be absolutely unendura ble. That the light was not the result of combustion, strictly speaking, was evident.There could be rac combustion without the presence of oxygen; and, as the light was de veloped to the best advantage under a closed glass, from which supplies of atmospheric air were excluded, it was quite certain that com bustion had rothing to do with the matter -The light in fact, the lecturer remarked, could be produced as readily in water as out of it.He showed its peculiar applicability to coalmining, for it could not explode the foules atmosphere. He then came to the compara tive cost of the electric and other lights.With a battery consisting of four sinall cells a light was developed equal to 350 mould candles (sixes,) or 64 cubic feet of the best gas burnt in the standard burner.
This was effected by a consumption of zinc equal to 77-100ths of a pound, being little more than $3-41 \mathrm{~b}$. of zinc per hour. When the light, however, was brought to it maxim um , by increasing the distance of the electroids to their limit, the light was increased nearly threefold, while the current itself was reduced to about three-fifths in quantity. This curious fact (continued Mr. Staite) I have fre quently observed before. So that the light when developed under the best circumstance consistent with its permanence, was produc ed by a consumption of a seventh part only of a pound of zinc per hour-and the light equal to 330 tallow candles. Assuming that the zinc so consumed was worth one half penny and that the cost of the working solution, deducting the value of the products (sulphate of zinc, \&c., ) was as much more, we have the following comparative result :-Electric light, 1d per hour; gas light, equal thereto, 6d to 8 d ; tallow candles, 7 s 6 d . In conclu sion, M. S observed, " By a careful compari son of all modes of effecting artificial illumination, I think I am justified in saying that there is no light so cheap as that evolved by voltaic currents of electricity; and there is certainly none which exhibits such pure and brilliant results. The absence of all smoke and flame, and noxious gases-the non-con. sumption of oxygen-the impossibility of its igniting surrounding substances, - and the simplicity of the apparatus are powerful reccommendations for the adoption of the light in all places where purity, and brilliance, and safety, and econorny are sought for."

Leather.
In consequence of the unfavorable accounts from the tanners respecting the scarcity of bark to $\tan$ the stock of hides now out, and the consequent delay which is likely to oc cur in bringing the spring stock of leather to market, and also the great reduction of the stock on hand, caused by the heavy auction sales, through the summer, months. Prices have improved and may now be quoted at one cent higher than the last year's sales.

Dlamonds in North Carolina.
The Raleigh Register, says:-" We have been presented by Beaumont, the intelligent correspondent of the Southerner, printed at Richmond, Va., with a piece of flexible sand stone, found at the Linville mountain, in Burke county, the presence of whioh is said about."


## New Inventions.

## Machinc for the Manufacture of Coffe <br> \section*{lims.}

Mr. A. F. Ward, of York, Pennsylvania has invented a machine for cutting the teeth in wrought iron coffee mills. It is so arranged asto cut both the ring and the burr in one machine, and it will in about four minutes make a mill far superior to that made by hand and thus making them too about fifteen times as fast. It is so arranged that any desired slant may be given to the teeth and also any desired slant given to the ring and burr by ve ry simple alterations. It can be propelled by about one horse power and can be attended by one boy of ten years of age. Thus a boy and a horse will do in one day. what fifteen men $b y$ hand would be required to do, and at the same time making far superior work. It will also answer all the purposes of punching, \&c. belonging to coffee mill business.

## Improvement in Carriage Springs.

Mr. E. T. Sprout, of Springville, Pennsyl vania, has invented a new improvement in the carriage, by connecting the spring and reach together-the spring forming part of the reach. They serve thus combined as braces to the hind axletree. The body loops are also a spring, and there is nothing but steel from the axletree and bolster to the body of the carriage. The motion of the carriage is there by rendered very easy, and only about fifty pounds of common steel spring is needed for a one horse vehicle. By this improvement carriages can be made lighter, cheaper, more simple and more durable. The spring used is the half elliptic, and the benefit of the whole elliptic is gained for the motion of Mr. Sprout's improvement, an engraving of which we shall be able to present in a future num ber. Application has been made tor a patent.

## Improvement in Steam Boilers.

To introduce water into steam boilers, when engines are in operation, without the use of pumps and valves, as is nov customary, has been long a desideratuin. Eliakim Ingalls, Esq. of Providence, R. I. has patented an inention securing this benefit. If we are righty informed, his improvement takes the water from almost any locality and introduces it into the boiler, while the steam is up, and the engine in operation, and it is of such construction as to be easily appended to an engine aleady in use, The same object, however, has been attained before and described in our coumns.

Manufact ure of Pure Iron.
One of our exchanges says that Mr. Dixon of Jersey City, has succeeded in making pure iron in masses of any magnitude and that this new metal will be of great utility in the arts, first for engraving, "superseding he use of steel engravings," because this pure iron can be hardened to that degree that thousands can be worked off without dimming the original lines, "especially of that kind of engraving called mezzotint."
[This scientiflc information regarding pure iron being hardened, to supersede steel wil un loubtedly make some of our iron manufac turers stare, to us it is a puzzler.

## mprovements in Ornamental Mouidings

Messrs. Dorrand, of Providence, R. I, have made some valuable improvements both in the machinery and the use of different materials for mouldings and sash work.

## Ventlllating Bed Top.

A patent has been taken out in London, by Wakeling \& Son, for a ventillating bed top which, instead of being close as usual, has a double tester or a tester made in two parts, one raised above the other, and connected by open trellis work of brass, through which on the curtains being drawn, the air, as it becomes heated, has a free escape.

Brantz's Unbranning Machine.
ne of these machines was exhibited re cently in this city, and astonished a numcently in this city, and astonished a num
ber of merchants on Change. We noticed ber of merchants on Change. We noticed
this invention last summer, a sample of its work having been sent us for examination.The machine is a grand invention. The berry comes out entire, but robbed of its brown outer covering, purely white, polished, and re embling wax. In this state it has lost all its offal, and every particle will make extra flour, the berry having wasted but about two pounds to the bushel in the operation.

## mportant Surgical Discovery.

The Boston Evening Journal states that Samuel L. Bigelow, a teacher in the Tremont Medical School, has made known a discovey of the highest importance as it regards Surgery. It consists ina new and certain me. hod of procuring the union of incised wounds by first indention in a few hours. A paper was read before the Boston Medical Society y Dr. J. H. Bigelow, a surgeon of the Hos pital, who stated that it had already been in roduced there with success. It is said to be a preparation of gun cotton and sulphuric ether-the two great lions of the day yoked in some way for drawing together wounds

## Telegraph invention

A Cincinnati paper announces that Georg . Davies, of that city, is engaged in getting up a telegraphic instrument, now nearly completed, upon an entirely new and origi nal plan; by which it is supposed that 150 or 190 letters per minute can be transmitted and read with as much facility as ordinary writing, and without the least possibility of mistaking one letter for another. Morse's Telegraph ordinarily transmits from 60 to 80 per minute.


This compact and beautiful Morticing Machine has been invented by Mr. C. Bliss, of Hartford, Conn., and for which he has applied for letters patent. The nature of it is principally the extreme portability and ease with which it can be made of greal benefit to the joiner. It is mostly all of cast iron and can be attached to any bench, and after being used can be unscrewed and laid out of the way under the bench, as it occupies but a very small space.
Description.-A, is a cast iron cylinder in which is a spiral spring attached by the upper end to the vibrating chisel stock C, and by the lower extremity to the treadle F . The chisel $M$, is fixed in the stock and the work to be operated on is placed on the rest board, or bench H, being held snug to the bench by I, a rod for that purpose, which can be shifted up and down by a screw. If the work is light the handle K , is more conveni-
ent than the tread stirrup L. By operating with the handle, or foot board, our readers will percerve at once how the chisel is work ed up and down in the slot B, and by a clamp on the top of the chisel stock, the chisel is changed or shifted with the left hand, as rapid as the hand can turn it. E, is a rack for elevating or depressing the rest bench H , and $D$ are screws for making it fast and firm at any desired point to accommodate the size of the work to be morticed. On the top of the cy linder is a slender rod with an orifice through it whereby an additional spring can be added to the machine passing over a pulley behind the machine and to be attached to the plate behind H. For strength, compactness and simplicity this machine is worthy of much commendation. Furtber information may be obtained of Mr. Bliss at Hartford.

Pneumatic Regulator.


This apparatus is the invention of Mr . Jas Harvey, of Craigsville, Orange Co., N. Y.It is the application of a double pneumatic pump to supersede the use of the governor for water wheels, especially for factories, where so much damage is often done to machinery by the breaking of some shaft, by which the speed of looms and frames are so suddenly increased before the governor acts in arresting the speed of the main driver.
Description.-A A, are the two air pumps constructed like any force pump. The air is admitted by openings from the other side and discharged through valves D D, into a cylinder B. This cylinder operates the water gate G. The pumps A A, are worked by eccentrics C C, on a shaft near the main driver, or it may be on the main shatt, and these pumps need not be above one inch in diameter-but
half an inch diameter may be sufficient. According as the shaft is running swift or slow so is the air compressed in $B$, and the piston elevates the balance beam by the shackle bar E , and depresses G , the gate. H , is a regula ting faucet with an index and hand for correct and pointed regulation, so that the exact amount of condensed air may be regulated to keep the gate to the exact point of supply, and it will easily be perceived that when any of the machinery is thrown off and the speed of the main driver increased, that it will act very rapidly to elevate E , and shut off the water entirely. I, as a rod connected with the faucet H , and can be set so as to allow the faucet to be closed by the elevation of E , or only to be closed to a certain point as may be required for quick action upon the gate.This apparatus need not occupy more room
than twelve or eighteen inches and it might than twelve or eighteen inches and it might
easily be applied to regulate the speed of locomotives, at least it is a better machine for that purpose than the hydraulic regulator invented in Glasgow and noticed some time ago in the Scientific American. The inventor we believe has taker legal measures for a peculiar way of applying it The above engraving wil oe perfectly understood by any of our mechanical readers.

## French Sewing Machine.

Late French exchanges say that Jean le Ca pelin, petit, or little John Capelin, has invented a sewing machine that makes 240 stitches per minute, which by the turn of a screw are changed from fine to coarse in a moment. It will sew, stitch, and make edgings by the


## LIST OF PATENTS

issued from the united states patent office,
For theweek ending March 21, 1848.
To Charles Perley, of New York City, for improvement in Ship's Windlasses. Patented March 21, 1848.
To Renssalaer D. Granger, of New York City, for improvement in Cooking Stoves.Patented March 21, 1848.
To Alexander H. Hart, of Chagrin Falls, Ohio, for improvement in Tuyers. Patented March 21, 1848.
To John Coates, of Manchester, England, for improvement in preparing fabrics for printing. Patented March 21, 1848. Date of Erting. Patented March 21, 18
glish Patent April 27, 1847.
To Chauncey W. Case, Syracuse, N. Y., for improvement in apparatus for Turning. Patented March 21, 1848.
To Stephen Porter, of Geneva, N. Y., for for improvement in Washing Machines. Patented March 21, 1848.

## DESIGNs.

To Peter Van Ness and Abraham Wood, of New York City, for Design for Forks, Knives and Spoons. Patented March 21, 1848.

## INVENTOR'S CLAIMS.

## Planing Metals.

By Alfred C. Jones of New Orleans, La. Improvement in Portable machinery for Planing Metals. Patented 17th September, 1847 Claim-Having thus fully described the maner in which I arrange the respective parts of any portable machine for planing metals, what I claim therein as new and desire to secure by Lettere Patent is the particular manner in which the slides and the apparatus for moving them are combined and arrangəd with each other, and with the bar, by which arrangements and combination the said instrument is rendered portable, and capable of being attached to a work bench or to the work upon which it is to operate. I do not make claim to either of the individual parts when taken alone, as of my invention, slides such as I have described, and the giving motion to them by means of screws or of racks and pinions, being well known devices. I herefore, as above stated, limit my claim to the particular combination herein set forth, by which I have proauced a tool which is substantially true and of great utility.

## Smut Machine.

By Jacob Benner, of Liberty, Penn. Imrovement in Smut Machines. Patented 11th September, 1847. Claim.-What I claim as my invention and desire to secure by letters patent, is the making the outer case of the machine in several compartments, one above the other as described, in combination with the tubes or spouts attached to the periphery of, and opening into the outer casing, to conduct the grain from one compartment to another in uccession as described. And I also claim in combination with a casing so constructed as above claimed, the beaters attached to the peiphery of a perforated or wire gauze cylinder open at both ends that the rotation of the beaters may induce a current or currents of ir outwards to discharge the dust and other impurities through the apertures between the bars of the outer case, and to aid in delive:ing the grain to the conducting tubes as des. cribed.

A singular accident happened to J. Colex, Esq., of Taunton, England. While pulling up his boots, he strained the lids or his eyes so wuch as to break a small blood vessel, which caused the loss of sight of one eye, and much injured the other.


NEW YORK, APRIL 1, 1848.
Lead Pipe for Domestic Purposes. We have received a number of communica-
tions lately requesting our candid opinion relative to the good or evil effects from the using of lead pipe to conduct water for domes tic purposes. We have expressed our opinion before on this subject, and have lately made many inquiries and collected opinions on the subject from a number of living sources, and have reason to change but little from the opinion we formerly expressed that "lead pipes were dangerous to use for domestic purposes." In some situations lead pipe is perfectly safe, and more sate to use in the conducting of river water than water from many springs. London, New York and Philadelphia, we believe have suffered nothing from the use of lead pipe. We believe it is perfectly safe to use lead pipe in the conducting of filtered rain water, that is, those cisterns where the rain water is filtered through a bed of sand or charcoal. They are common in many parts of the country, and when the rain water is conveyed from tin roofs, it comes from the cisterns, if they are well built and bedded, as limpid as erystal and sufficiently imbued with carbonic gas to make it healthy. Mr. Hardy, in a communication to the Massachusetts Ploughman of the 5th of February, on this subject, seemed to be impressed with the belief that the water in all our wells was filtered rain water. He forgot the sulphusated hydregen springs of Clinton and the salt springs of Salina.

We have had some experience in the use of water conveyed through lead pipes and have never felt any evil effects-but we have both seen and heard of the evil effects of it upon others. We have also had no little experience in the chamical preparations of lead, copper and arsenic, and have no hesitation in saying that lead at least can be used in some places with impunity, while in other situations the use of it would be at the peril of health and life. The editor of the Christian Citizen, in an article published not long since, and when just recovering from disease, uses the following language: "We take this cpportunity to state that the sole cause of all the illness we have suffered the past year, has been the use of water pumped from a well through a lead pipe. With almost every particle of food and drink we have taken into our system for more than a year, we have taken, by this means, small particles of the worst mineral poisons; and the result has been ddys and weeks of the most intense suffering." And in another article, the same paper states that an attack of severe illness experienced by Dr. Woodworth of the Massachusetts State Lunatic Asylum, in Worcester, was caused by the use of water conve, $m$ through lead pipe. The oxide of lead was detected in the water by analysis and the State removed the pipes, although the water works were in perfect order; and not long ago Mr. E. Highley of Templeton, came to his death by the use of water drawn through a lead pipe. The acetate of lead is a bad poison and was the means of creating numberless terrible ciseases in Herefordshire, England, among the cider makers, who at one time used lead in their presses. The antidote to acetate of lead is glauber salts which converts the acetate into inert sulphuret. The use of river water and that of many springs by carbonizing, or creating the sulphate on the inside of lead pipes, renders them safe, but the carbon crust if broken off and drank, is dangerous. The bichromate of potass will detect lead in wa ter. A small quantity of the water should be placed in a watch glass, and if a drop of the chrome be dropped into it and a light curdy yellow matter be procipitated, it is an evidence of lead, and for such water lead pipe should not be used. Or if the lead is in the water in a state of white carbonate, if a little of the supercarbonate of ammonia be put into the wa-
ter to precipitate the lead, and it the precipitate be taken and dissolved in sulphurated hydrogen water and become black, it is a sure sign of the carbonate of lead being in the water.
The condition of water for supplying villages and cities through lead pipes should be carefully attended to. The presence of lead in water may be detected by agitatıng the water well in contact with air and then subjecting the deposite to analysis. If by exper:ment any water be found to act upon lead and hold it in solution, such water should not be conducted for use through lead pipes, but if the water be found not to hold the lead in solution, it is perfectly safe to use for domestic purposes conveyed through lead pipes. Water can be conveyed from sulphur springs through lead pipes with impunity but not from springs where there is uncombined chlorine or caroonic acid. The lead ores are generally combined with sulphur, hence the safety of water taken from such situations.
If hydrochloric acid be added to water and a precipitate is formed, and it ammonia be added and the precipitate remains unchanged, it is a sign that the precipitate is the chloride of lead. Sulphuretted hydrogen gas produces black precipitates of lead.
Every person knows that lead is a poison in almost all its combinations, and as the salts of the oxide of lead are colorless any person can apply the above tests and decide for themselves.

Infringement of Patents.
The unselfish part of community is begin ning to be thoroughly roused to do something for the protection of Inventors' rights. Too long have men of genius been deprived of their just rights. Inventions have been stolen and patentees have been plundered and have not been able to get a redress of their grievan ces. In a great number of instances specula tors have made themselves rich by by the in ventions of men who had to sell their paten rights for a mere pittance, and while the purchaser, or purloiner has been enabled to flaunt in silk and lace, the inventor has often walked the streets in rags. Many suppose that as some patents have been infringed with impu nity because the patentee was either too poo or averse to law to prosecute for infringe ment, that patents have become like wate spilt upon the sands. But justice will not always slumber-retribution will yet take hold of those who do wrong. Agents of patents should not be usurers to irritate public feeling by exorbitant prices, or a narrow selfishnessthe public good should aiways be looked after and then the public will protect the patentee.

## Yankee Manufactory.

In the village of Birmingham, Conn., there is a machine for making brass chains, and works as if endowed with human instinct. By every turn of the driving wheel the wire for the chain is wound off a reel and pulled forward to its proper place and position, the end running through the last formed link, exactly the length for two links cut off, first one end turned over into a link, then the other, the former dropping down through the machine, former dropping down through the machine,
leaving the latter projecting above, so that the wire can be instantly pushedthrough it, when it is cut off, two more links formed, and so on, until a large roll of wire is transformed into a perfectly-formed chain by the unaided ope. ration of self-acting machinery, hardly a finger having been lifted during the process.

Important to Emigrants.
An important bill has been reported by Mr Grinnell, from the Committee on Commerce, a few days since, which provides for the ventilation of vessels conveying passengers between Europe and this country. Companion ways are to be erected over the apartments, so that one door may be always open. Metallic ventinlators are to be placed. in the apartments with receiving and exhausting caps, to receive fresh air, and expel foul air The bill also provides for commodious cooking ranges. A penalty of $\$ 200$ for each violation of these rules. There are other regulations which Mr. Grinnell intends to introduce as amendments, which he thinks will prevent ship fevers and other kinds ef sickness among immigrants. The bill repeals the laws limiting the number of passengers


The above cut is a representation of a me hod for removing many incrustations that are the attendants of steel pens. It is the contrivance of a Mr. Hancock, and is not new now, having been described some time since in the Glasgow Engineers' Magazine. But as it is very simple and we have not seen it in use, we think that some of cur Eastern friends should introduce it, as they can do up these things about the slickest of any other folks, the neat handed Italians not excepted.
This instrument is simply a piece of very fine wire card, such as is used in carding the finest wool, and it is mounted on a neat mahogany frame, or the frame may be made of fine bird's eye maple or good black walnut. On the wo ends of the frame is placed a piece of velvet, and when a steel pen becomes clogged or rusted, or it greasy, a few wipes over the card drawing the pen towards the velvet end of he instrument, will immediately make a new pen of it. This is superior to a glass full of hot and it can be made very neat and cheap, so as to look handsome upon, a desk. A brush made of stout bristles placed very compact and made in the very same manner, will answer the same purpose, but the bristles must be of the best and most rigid quality. As stee pens save much valuable time to the pensman proaching when ink is apt to ferment and in that state have a strong affinity for the metal, the above little instrument may in that case be a friend to many, who like ourselves are of ten in trouble with our pens for want of such a friend to let off their turgid spleen by a gract ful wipe.

Transmission of Motion, Speed and Power Wheels are the most beautiful as well as the most econor.ical means of transmitting points of connected machinery. No driven part of machinery can exert more power than is in the main driver-there is always a loss however small by friction (resistance.) And whenever friction or resistance is entirely overcome in a machine then may we look for perpetual motion, and not before. Cog wheels are much used in the transmission of power and speed, to the rotary motion of which, as Ewbank says, " we are to attribute the great superiority of modern over ancient mechanimm" In factories the belt and pulley have justly supplanted the old cog wheel movements, but there are other small machines such as lathes and clocks, that are mueh beter operated by $\operatorname{cog}$ wheels than any other mechanical means. If a great number of shafts are wanted to be driven and only a smal space to pack the machinery, cog wheels are the best for this purpose.

## The Hydraulic Ram.

The object of the hydraulic ram is to raise water above its natural level, which is done by a simple hydrostatic principle. If a bar of iron be made to stand uprigh, it will press with its whole weight on the point on which it rests; but if a column of water be poured down a perpendicular tube, it exerts a force not only downward but laterally, so that it would have a tendency, if the tube was closed at the bottom, to expand the bottom of the tube into a globular form, by pressing on each side equally. If the tube be very long it must be capable of resisting a great pressure at the lower end or it will burst. If now a smaller pipe be made to connect with this tube at the bottom, and a stop cock be placed at or near the point of junction, the pressure where the stop denly opened, sogreat is the pressure that a jet of water will rise in this pipe to a considerable distance above the top of the otker pipe. If the cock be opened and shut succes sively, a continued stream is obtained from the smaller pipe. This is the simple princi ple of the Water Ram.

The two Grandest Works in the World. niagara suspension bridge.
' I raised (says the distinguished Engineer) my little wire cable on Saturday, and anchored it securely both in Canada and New York To-day, (March 13,) I tightened it up, and suspended below it an iron basket, which I had caused to be prepared for the purpose, and which is attached to pulleys along the cable. On this little machine I crossed over to Canada, exchanged salutations with our friends there, and returned again, all in fifteen minutes. The wind was high, and the weather cold, yet the trip was very interest ing to me-up as I was 240 feet above the rapids, and viewing as I did, from the centre of the river, one of the most sublin.e pros pects which Nature has prepared on this Earth of ours.
"The machinery did not work so smoothly as I wished, but in the course of this week I will have it so adjusted that any one may cross in safety."
trial of an iron tube.
The first of the eight great iron tubes, says the Liverpool Albion, required for carrying the Chester and Holyhead Railway over the Menai Strait was tested on Saturday, at Chester, in the presence of Mr. Stephenson the projector, and a large number of engineers. All support being removed, the tube had a clear span of 400 feet, each end resting on a stone pier. The experiment was then tested by running locomotives and heavily laden ballast wagons through-one train of 28 wagons filled with iron, weighing upwards of 300 tons. The deflection of the tube was not more than a few inches.
It is strange that both the above trials were made on a Saturday.

The Climate of Mexico.
The climate of Mexico, is peculiar ; beautitul, calm and serene, but the atmosphere has so much less oxygen in it than ours that the whole economy of life is changed. The pulsation is increased almost double in frequency and there is a want of that vigor and robust feeling which our climate affords a healthy man, and once reduced by disease there, it is almost impossible to regain health and strength. The mornings are cool, too cool, for a man in a relaxed state of health to exercise without danger of taking cold which is.almost as bad as any other disease there; and the days are so hot that the rays of the sun cannot be borne without producing fever. The natives wrap up in cloaks in the morning and retire at noon.

## Notice

In connection with the able articles from the pen of Mr. Gilroy, we will commence next week a series of articles on the "Economy of Power in Cotton Factories," from the pen of a scientific and thoroughly practical gentleman, long and intimately engaged in he cotton manufacture.

A new steamboat built of live oak and cy. press, has just been launched on Lake Erie. She is to be called the " Maid of the Mist."
Sclentifie American-Bound Volumes. The second volume of the Scientific Ame-
ican, bound in a superb manner, containing 416 pages choice reading matter, a list of all the patents granted at the United States Patent Office during the year, and illustrated with over 300 beautiful descriptive engravings of new and improved machines, for sale at this office—Price $\$ 2,75$. The volume may also be had in sheets, in suitable form for mailing t ${ }^{2}$.
The back Nos. of the present volume may also be had upon application at the office.

## THE <br> SCIENTILIC AMIERICAN.

Persons wishing to subscribe for this paper have only to enclose the amount in a letter di rected (post paid) to

MUNN \& COMPANY,
Publishers of the Scientific American, Nert York City
Terms.-\$2 a year; ONE DOLLAR IIv ADVANCE-the remainder in 6 months
Postmasters are respectfully requested to receive subscriptions for this Paper, to whom a discount of 25 per cent will be allowed.
Any person sending us 4 subscribers for 6 months, shall receive a copy of the paper for the same length of time

For the Scientific American.
The Eiectric Telegraph.
(Concluded from our last.
1747.-Franklin communicated his obser vations, in a series of letters to his fruend Collinson, and explained in a satisfactory manne the phenomena of the Leyden phial. Dr. Watson, and others, conveyed the elec tric fluid across the Thames, at Westminstar bridge, making the width of the river a part of the circuit. He proved that the ground also conducted the fluid, by an experiment with a wire 150 feet long, supported upon ba ked sticks, using the ground as half the circuit. In another experiment he made the dry ground a part of the circuit for a mile and found it to conduct equally as well as water. The transmission of electric fluid wa instantaneous.
Mr. Ellicott constructed an electrometer for measuring the quantity of electricity, and Mr Maimbury, of Edinburgh, electrified two myrtle trees in the month of October, and they put forth small branches and blossoms sooner than those which had not been electri fied. The same experiment was tried upon seeds sown in garden pots, with the same success. Mr. Jallibert, Mr. Boze, and the Abbe Menon, at Angers, tried the same experiment upon plants by electrifying bottles in which they were growing. They proved that electrified plants always grew faster, and had finer stems, leaves and flowers, than those that were not electrified.
1748.-Franklin and his friends held an electrical feast on the banks of the Schuylkill near Philadelphia, which was amusing as well as scientific. He gives an account of it to bis crierd Collinson in these words:"Chagrined a little, that we have hitherio been able to produce nothing in this way of ase to mankind: and the hot weather coming on, wher electrical experiments are notso a greeable, it is proposed to put an end to them for this season-somewhat humorously, in a party of pleasure, on the banks of the Schuyl kill. Spirits at the same time to be fired by spark sent from side to side through the wate without any other conductor than the water an experiment which we sometime since performed to the amazement of many. A turkey is to be killed for our dinner by the electric shock, and roasted by the electrical jack, be fore a fire kindled by the electrified bottle: when the healths of the famous electricians or England, Holland, France, and Germany, are to be drank in electrified bumpers, and under discharge of guns from the electrical bat tery."
1749.-Franklin first suggested his idea o explaining the phenomena of thunder gusts, and of the aurora borealis, upon electrical principles; and in
1752.-He completed his grand discovery, by experiments. Fie constructed rods, and brought the lightning into his house, to ascertain whether it was of the positive or negative kind. He succeeded in the experiment for the first time in April, 1753; when it appeared that the electricity was negative. On the 6th June, he met with a cloud electrified positively. His discoveries roused the atention of all Europe, and many distinguished electricians repeated them with success.
Towards the end of the 18th century, the science was extended by numerous and suc cessful experiments.
1787.-Mr. Lomond, of France, invented the first electric telegraph of which we have an account. He communicated with a person in a neighboring chamber, by means of elec-
tricity : but it does notappear that it was used on extended lines.
1794.-Reizen made use of the electric spark for telegraph purposes, but never tested to any extent.
1798.-Dr. Salva, of Madrid, made a simi lar telegraph to that of Reizen. No descripion of his plans were ever seen, and proba bly were never given to the public.
Galvani, in 1890, and Volta in 1800, made as is well known, many very innportant disco veries.
1809 -Samuel Thomas Soemmering inven ted his voltaic electric telegraph.
1816.-Ronald invented an electrical telegraph, and tried it at his house, Hammersmith. 1832.-Prof. Morse was the inventor of the electro magnetic telegraph, and the first real-
iy practicable telegraph on the electric princi ple. All the telegraphs in Europe are invented subsequently.
1833.-The Baron Schilling, of Russia, constructed an electric telegraph, which was received with approbation by the emperor, who desired it established on a larger scale; but the death of the baron prevented it.
Counsellor Gauss and Prof. William Weber constructed one.
1836. - Taquin and Ettieyhausen made experiments with a telegraphic line over two streets in Vienna.
1837.-Alfred Vail invented an electromagnetic printing press.
Wheatstone made an electric needle telegraph.
Steinhell (Dr.), of Munich, erected between that city and Bogenhausen, a magnetic clectrical telegraph. In the account he gives of his own telegraph, he says, that Belancourt established, in 1798, a communication from Madrid to Aranjuez ( 26 miles,) by means of a wire, through which a leyden jar used to be discharged, which was intended to be used as a telegraphic signal.
Mason, Professor of philosophy at Caen, (France,) made trial of an electric needle teiegraph, at the college of that city, for a distance of about six hundred yards. He has since endeavored to simplify and 1 mprove his apparatus.
1837.-Davy's needle and lamp telegraph. 1838.-nitr Amyott, proposed in Paris to construct an electric telegraph.
Edward Davy-electric telegraph
1840.-Alexander Bain-electric printing tegraph.
1841.-Wheatstone's rotating disc telegraph.

## Ultramarinc.

(Concluded from our last.)
To prepare ultramarine or lapis lazuli for painting, the mineral is first made red hot in the fire and then thrown into water to make it easy to pulverise. The best way however is o heat it in a crucible to keep it clean and then quench it in vinegar and keep it therein for a few hours, when the vinegar is poured off and the lapis lazuli ground fine in a flint mortar, when it may be calcined again and treated in the same manner to make perfectly impalpable. A paste is then made of 9 ounces Burgundy pitch, 6 of white resin, 6 of Carolina or Georgia turpentine, a small quantity of wax and 2 ounces of linseed oil. This is mixed all together in a stoneware vessel and boiled therein untii it will form a lump when pourec' into cold water. The cement thus formed may be poured out of the vessel into water and made into cakes for use. Take then an equal weight of this cement and the calcined lapis and melt all in a glazed earthen vessel adaing the calcined matter by degrees, stirring with a glass rod till all is well mixed, when it is pretty well heated and thrown into a large basin of cold water. When it is cooled it is kneaded like the dough of bread and rubbed over with the hands with linseed oil till the whole are well incorporated. Then put this cake into an earthenware vessel, the bottom of which should be rubbed with oil, and pour on it water of the warmsh of blood. Let this stand for a short time and as the water softens the cake, it will lose the finest part of the calcined matter, which on gently stirring the water, or separating any of the parts of the cakes, will be suspended in water, and must be poured off with it into another vessel. The quantity of water must be then
renewed and the same operation repeated a second, or third time and as the mass appears slow iin giving the color it must be moved or stirred in the manner of kneading with a glass spitula, but not broken into small parts and so much of the color is extracted as to render it necessary for obtaining more, the water is heated to a greater degree. The result of these washings is the ultramarine. These three washings are then mixed with a boiling hot solution of two ounces salt of tartar or pear! ashes dissolved in a pint of water and filtered through clean paper. This is cooled and when the powder has fallen to the bottom of the vessel, the clear must be poured off and the po'vdered must be wasned until all the pearlash or tartar is carried away. The ultra marine is then dried and is duly prepared for

Another method of purifying the ultrama rine from the cement may be used, which is by pricking the yolks of eggs and moistenlng the matter with what will run out and work ing them together in a flint mortar, after which the mixture must be putinto a lixivium of th tartar, or pearlash and proceeded with as be fore directed.
In order to free the ultramarine from that part of the water which cannot be poured off from it without carrying away part of the powder, let it be put into a deep coffee cup, and put candlewicks so as to hang over the edge with one end in the liquor and the moisture will be removed by capillary attraction when the matter may be dried on polished marble, or glass. Another method from the one above, is to use beeswax and white resin mixed together in equal quantities instead of the compound pitch cement, and which on its being infused in water very warm, will make the lazuli give out its color much sooner.
Ultramarine may also be prepared withou any cement simply bv calconing it and leviga ting with pearlash, and washing and then soaking it in distilled hot vinegar. A greater quantity will be produced in this way, but lighter in the color. To make a fine ultramarine the lapis lazuli must be good, and to test this, if a small piece be made red hot and re tain afterwards its hardness of color, it may be accounted good, but if it crumbles or turn brown, or dull and full of specks, it may be suspected. Ultramarine mixed with white flake and oil by the pallette knife can be compared with other parcels and judged of by its depth and clearness of color. Ultramarine from its great price is apt to be adulterated by a precipitation of copper and an alkali, an also fine smalt. Copper is a dangerous mix ture, it will turn black in oils and green in enamels, as soon as fluxed. It is not so easy to adulterate with fine cobalt as it is difficul to mix on account of its hardness and is scarcely to be levigated by art to be as fine as the ultramarine rendered impalpable by the calcination it has undergone. The adulteration with smalt does not hurt it for enameling and it will stand as well for water painting but it does not mix well with oil and it will fall from it if the mixture be very moisty, or become pasty if stiffer and never wooks freely. Copper adulteration may be easily detec ted by pouring some diluted nitric acid on a small quantity when it will soon dissolve and leave a greenish blue solution. Smalt may be detected, by trying it with oil, or mixing in water when the coarseness of the smalt will soon be detected.
The lapis lazuli is, when perfect, a very light blue color, with a transparent effect in oil, and in some degree in water, and will stand when used in painting without fading with whatever pigment it may be mixed. For these reasons ultramarine is of the highes value in every kind of painting, beng equal ly serviceable in all, even in enamel, and though the Prussian blue on account of its cheapness may have lessened the use of it, yet this is to be considered as an injury to the art, as the skies of landscapes and many othe parts of modern pictures shew their loss of it by their changing from a warm clear blue to a faint greenish tint.

## Chemical Analysis.

The following is the plan pursued by Pro essor Loomis to detect prussic acid in th stomach of Mr. Matthews, murdered at Hal lowel, Maine. The most volatile poison is prussic acid-therefore it was searched for nen cloth, leaving the solid parts in the cloth The fluid was placed in a retort, and heated, and the vapor condensed. Previously a smal part of the fluid was taken on a piece of paper; and a drop of the solution of pure po tassium, a drop of the solution of sulphate of iron and a drop of sulphuric acid put on the paper-this gave a blue color as far as it spread. It indicated the presence of prussic acid, though not with positive certainty. He then took the distilled portion and divided it into three parts. To one portion he added a small quantity of potassium, then a solution of iron, and a drop of sulphuric or muriatic acid. The potassium produced no effect-the sulphate of iron showed a turbid yellow-the
ted prussic acid. The second portion was tested with potassium, sulphate of copperthen with muriatic acid. The effect of the potassium of sulphate of copper was much as before; but when the acid was applied it produced a white color partıally clouded, which soon subsided. This too, indicated prussic acid. The third portion was tested with nitrate of silver-it gave a white curdled precipitate. This white precipitate would be produced by prussic acid and by several oth er substances-but nothing but prussic acid would produce the curdy appearance. This precipitate was dried, heated, and a lamp applied to the retort. If there had been pure acid sufficient to fill the retort with cyanogen, it would have produced a peach-colored flame which in this case was not obtained. This experiment was repeated on the following Monday, and, during the intervening time, the retort was carefully corked. Then wit ness washed the solid portion left in the cloth The washing having been added to the liquid before in the retort, from the whole there was now distilled nearly an ounce of transpa rent liquid. This was treated with nitrate of silver, which produced the curdy precipita te efore described. This precipitate was dried, and placed in a glass tube an inch and a half in length, sealed at one end, and drawn out oo capillary tube at the other. On heating the precipitate, thus enclosed, cyanogen esca ped from the capillary extremity, which instantly ignited, producing a distinct peach blow flame. This flame is produced only by cyanogen gas, which is the base of Prussic acid. These tests are the ordinary and approved tests of Prussic acid. The first test applied was sulphate of iron. Hydrocianic acid is a compound substance. The substance that produces the blue color is cyanide of iron. Cyanogen is derived from Prussic acid. There is no other combination of the elements present that will give this color Cannot say how long the tests now used for the discovery of narcotic poisons have been employed-know that there is no other combination of iron that will produce this color as well as he knows any other principle in science. The odor of Prussic acid owes its peculiarity to neither of the elements independantly but to the elements in their compound state. There is an odor to cyanogenwitness had experiments with it. It is always gas. The silver test produces a curdy precipitate which must be a compound of silver. Pure cyanogen will produce the peach blow flame It will combine with other subtances.
The above experiments will be read with interest, as they contain important information relative to chemical analysis.

## MO CORRESPONDENTS.

' J. O. of N. Y."-The reaction wheel would be the best for your purpose. We have been informed that Mr. Ross's impruved reacion wheel is the best in use, but it is difficult or us to tell, as there is wanting a taole of experiments to guide us. We have endeavored to get a table but cannot, except for Par ker's which is now in our possession. A good plan formanulacturers to pursue would be to advertise for proposals, stating the work to be done, the fall and the amount of water.
"S. H. A. of N. Y."-We have not a draft f Mr. Egan's invention, and we have pubished in the article you refer to, all that we know of it. A caveat we believe has been filed for it, but we do not know of an application for a patent. We shall be happy to reeive your description and sketch. When any discovery is made the best thing the inventor can do for himself is to get the leading feaures of it noticed in our columns. Thus a witness is had for the invention.
"E. A. D. of Madrid."-We shall give you communication due attention.
"L. W. D. of N. Y."-Your letter has just come to hand and we will attend to vour request. The Balance is good because simple and correct.
"S. L. of Pa."-We shall get your engravng fuilshed as soon as possible. You perceive he true way to let your invention be known. The benefit you will yet experience. As you have observed, " how can our people, now
arless publicly made known to them, and what vehicle like tise Scientific American with its well known unexceptionable charac ter and wide circulation."
"H. S. of Mass."-It is the best thing you can do to get an engraving of your machine published in the Scientific American. It will cost you only $\$ 6$, and the cut will be yours afterwards.
"S. H. of N. J."-The use of the copperplatina pointed rod in connection with the steam boiler has been tried in experiments by Mr. Wall, in England, and with success in obtaining powerful shocks. We do not know that it has ever been applied to prevent ex plosions.
"H. C. D. of Va."-You can obtann a pa tent for the discovery ot any new improvement, or for a new style of painting. The distinction mu
"J. S. D ot N. H."-The Music Box could not be patented, as numbers of the same description are already known. We have no doubt, however, but it is original with you.
"M. R. of Pa."-The claim of Mr. Adams is not in our possession. It can be got by application at the Patent Office and by payment for the amount of words that is required to transcribe 1t. His address also can thus be obtained. We should have been happy to have supplied the necessary information free of expense, but cannot at present
A. H of Maine."-Applications for patents made last July are only now in the course of examination. This is the fault of Congress not the Patent Office. There have not been enough of Examiners. No more than three months ought to transpire alter application before a patent is rssued for a new invention, allowing time too, for all necessary corrections.
" L. M. of N. Y."-'The inventor ought distinctly to under stand his own business. If he does not, who is to blame? He surely cannot expect another to do his business and assume his responsibility-this would not be honest nor just.
A. H, of N. Y."-We regret exceedingly that we cannot furnish you with those odd numbers which you seem so much to desire, as we have not a single one of them.
"D. S. M. of N. H."-The kind of pumps you speak of have been long known and cannot now be covered with a patent. Mr. Fulton, of Baltimore, has lately applied it to boats but with what success we cannot tell.
"B.F.G. of N. Y."-Your letter with the two drawings, \&c. have been recenved.
"E. L. of Va."-The answer was to Mr. Nevins of this State.
"J. H. A. of Mobile."-We sent to you a copy of vol. 2, bound, and all the numbers of the present volume by the bark Pilgrim, which sailed from this port March 23d.
"R. \& C. of Pa."-We have received the money for a copy of the patent laws and sent one, but if Mr W. has not receised it we will send another.--Please inform us.
"E. A. B. of Vt."-We cannot furnish the first Nos. of rol. 2, unless you order a whole velume.
"C. O. R. of Mass."-The information you require will cost you $\$ 5$.
"J. L. F. of Va."-We have answered you by mail. Also A H. of N. H.; D. of R. I., and D. W. of Vt.
To Correspondents. - Be pleased to write plain, brief, and clear. If in some instances an answer has been neglected, our subscribers will be pleased to consider it not intentional, but an overlook which must frequently happeu with the best, and more often where the amount of correspondence is so large as ours.

## Patent Agency.

Applications for Patents made at this office, on the most reasonable terms. Neat drawings, specifications, and engravings of the first character, and cheaper than any where else. No tices of new inventions, Agency for the sale of Patent Rights, and all business of that nature, promptly attended to. Those who have patent rights to dispose of will find a good opportunity and field for their sale-such as Horse Power Machines and Waterwheels of every description. The largest circulation in the Feed for advertisements of inventions, \&c.

## Advertisemtents.

20- This paper circulates in every State in the Union, and is seen principally by mechanics and anufacturers. Hence it may be consimport or manedium of advertising, forsics whols, or such wares nd materials as are generally used by those classes. The few advertisements in this paper are regarded with much mos.
printed dailies
Advertisements are inserted in this paper at the following rates:

| One | uare | eig |  | on | inse | n, | \$ 050 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| - | " | " | " | two |  | do. | 75 |
| " | " | " | " | three | e | do., | 100 |
| " | * | * | " | one | mon | nth. | 125 |
| " | " | " | ," | three | e do |  | 75 |
| " | " | " | " | six | do |  | 750 |
| " | " | " | " | twel | lve | do | 1600 |



Clasp Coupling Joint.
M or Agents of Steamboats, proprietors of Factories an others, to their new and improved method of jointing
steam and other pipes together, by which means an
person is person is enabled to connect them. For simplicit
and perfection they are not equalled, and the pric and perfection they are not equalled, and the price
of their Clasp Joints will be found cheaper than the others, as the y do not require any flanges, braized or
soldered on the pipe, no holes to drill, or grummets soldered on the pipe, no holes to drill, or grummets
to make, nor whiteor red lead used to make them
tight ; and their weight is not one half that of the old Flange Joint, They may be seen and obtained
at the oftice of the Patentee, 29 Centre street, near
the City Hall, where all orders left will ve punctu at City Hall, where all orders left will be punctu-
the
ally attended to. This is to certify that I have examined what is cal
led West \& Thompson's Clasp Coupling Joint, for
pipes to conduct steam and other fluids, and consider pipes to conduct steam and other fluids, and conside
it to bea new and most invaluable improvement.
moBERTL. STEVEN. AMERICAN HARDWARE.
THE SUBSCRIBER having been engaged in sel years, solicits consignments from manufacturers, an


## Premium for Back Numbers,

 We will pay 10 cents each for 100 copies, No. 16
Improved Magnetic Machines.

Fow fork City, bcientific americat

## Boston, .-

Stoxes \& В Ввотнев
AIbany, - LOCAL AGENTS.
Bermuda Island
Cabotville, Mas
Concord, N.H.
Rain


Now | Now |
| :---: |
| Now |
| Now |
| Now |
| Now |


 $\qquad$
CITY CARRIERS.
Clabi Selleck, Squire Selleck.
ons residing in the city or Brooklyn, can have ing theiraddress to the office, 128 Fulton st., $2 d$ floor

## STEAM ENGINES

THE Subscriber has in proc ess of manufacture 150
Steam Engines from 5 to 20 horse power which
will willbe finished by the 1 st of May Also 50 frons 2.
to 100 horse power, to be finished in June and July The subscriber hasbeenlong engaged in the manu-
facturing of Stationary Engines, and makes a busi-
of thatalone. He feels assured that he can make a better article a nd for less money than any other es
tablishment in the country. The engines are fitte tablishment in the country. The engines are fitted
up with heavy iron bed, planed and finished the
whole length, with cast steel piston and valve rods. The shafts and connecting rods are of the bes moought it don. The pistoul is an entirety new are agantst lealage and wil
mast for years. They are fitted up with a patent cut off, of $\varepsilon$ n entire new construction, simple in itsar
rangement, not liable to get out of order, and can b
adjusten audjusted to cut off with any length of stroke while
the engine is in operation, or thrown of entirely i
required al $14 t^{*}$
required.
No. 102 Front st, Brooklyn, L.I.
WELLS' PATENT SLITTING SAWS.
Manufactured at the foot of 29th Street, N. R ' ${ }^{\text {HE superiority }}$ of these Saws over all other a doirg good work, and also for being less liable to got out of repair. They may be be seen in opera
tion at the above place. They have inevery instance
given entire satisfaction, and the demand for the given entire satisf action, and the demand for them,
far exceeds the most sangune expectations of the
Inventor. Also, manufactured att kinds of Sawmill machinery, Straight Saws with
Carriage, Veneer, Scrowl, slitting and Circular
Sows, Carriage, Yeneer, Scrowl, Slitting and Circular
Saws; shafting, eaeing and other machinery.
P. s. inave made arrangements for the manufac
turing of turing of D. Barnum's self-acting safety apparatus
forsupplying steam boilers with water. T. W. WELLS.
al $2 \mathrm{t}^{+}$
$\begin{aligned} & \text { T. }\end{aligned}$

## To Mill Owners.

HAVILAND \& TUTTLE'S Patent Centre Ven in successful operation in many towns in Mane,
Massachusetts, and Rhode Island, and are found to Massachusetts, and rhode island, and are found to
surpass in power and facility of adaptation any wa
ter wheel now in use. This wheel was awarded the ter whel now in use. This wheel was a awarded the
silver medal at the Fair of the Americ an Institut recently held in New York and a diploma at the
Mechanics' Fair in Boston. The wheels are manufactured and forsale by the
FULTON 1 RON FOUNDRY CO., South Boston Mass.,- where the wheels can
mation cencerning them had.
Patent Rights


## "Lamp Depot."

Nos. 134 and 136 Fuiton st., Sun Bullding J. O. FAY has just received fom the manufactory ment of Solar Lamps for Parlors, warranted perfect
unequalled in style and beaty of finish - new pat
terns, the handsomest heapest Lamp Store in New York.

Premium Slide Lathes.
HE subscriber is constantly building hiss inprov
ed Lathes of all 1 sizes, from 7 to 30 feet long, and
Hadson Machine Shop and I.on Works,
mil tu Hadson Machine Shop and I.on Works,
Hudcon, N. $\mathbf{Y}$.

the shortest notice and on the most reate all ordersat ENGRAVING ON WOOD, DESIGNING $\mathbf{T}_{\text {public that he is prepared to furnish Engrave }}^{\text {HE Subscriber }}$ ings on Wood, in every style of the art, upon the
most reasonable terms
alls ons designs and drawing most reasonable terms, also designs and drawings
of machinery, for specifications, at the shortest no-
tice and with the mostundevating punctuality of machinery, for specincations, an the storlest
tice and with the most ndervating punctuality.
Views of Manufactories and Country Stores engraViews of Manufactories and Country Stores engra-
ved on Wood from Daguerreotype plate with correctness.
All wor
All work executed by the subscriber warranted
to give atisfaction. References can be given te
some of the best mechanics in the country as regard ability, \&c. $A$ R. HAIGHT, $12 s$ Fulton street, N. Y.
j15 $3 \mathrm{~m}^{*}$
Roora No. 1 , Sun Buildings.

## CHARLES IM. KELLER,

For procuring and defendiny Patents. Office-No. 304 Broadway,

## j1 3m*

 NEW YORKGENERAL PATENT AGENCY.
THE SUBSCRIBER has removed his Patent Agen The object of this Agency is to enable. Inventors to
realize something for their inventions, either by the realize something for their inventions, either by the
sale of Patent Goods or Patent Rights.
C Charges moderate, and no charge willbe made un
tilthe inventor realizes something from his unvention. tilthe inventor realizes something from his invention.
Letters Patent will be secured upon moderate Letters Patent will be secured upon moderate
terms. Applications can be made to the undersign
ed, personally or by letter post paid. terms. Applications can be made to the undersig
ed, personally or by letter post paid.
S 8 SAMUEL C. HLLS, Patent Agent

## IVIachinists Tools.

Tarticle of Lurger is now manufacturing a superior
Hurning and screw Cutting pectiully call the attention of or Machinists and others requiring the above articlos, Also, Machinery of ev
ery description, manufactured to order, at 42 Gold
street, New York.
G. B. HARTSON.

Steam Boilers
$\mathrm{B}_{\text {any size, shape or power, made the }}^{\text {ENTLEY'S Pateat Tubulers of }}$
is
A good secon Wanted.
A horse powe hand Ateam Boiler of 8, 10 or 1.2


For the Scientific American.

## On Gllding Paper, Par

The gilding to be used with water colors may be either with the leaf gold or powde which last when mixed with the proper vehicle, is called shell gold. The leaf gold is necessary in all cases when a shining appearance is wanted and it may be laid upon the designed ground either by ising-glass or gum water. This should be weak and not laid too freely on the ground and a prope time given for the requisite dryness and the management of the gold, the same as described below, and burnished in the same way.When colors are to be laid on the gilding, it is a good plan to brush it over with the gall of a beast, as they take more kindly afterwards.
When gold powder is used along with paint ings in water colors, it is previously formed into shell gold. This is made by tempering the gold powder with weak gum water and adding a little soap suds of pure white Castile soap to make it work freely. This gum water is made by dissolving three-fourths of an ounce of gum-arabic and one-fourth of an ounce gum senegal and adding a little white sugar candy, about a quarter of an ounce.Isinglass water is made by boiling one-half ounce in a pint and a half of water till the isinglass is dissolved when it must be strained through a linen rag and an equal measure of hot water added.

TO GILD books, or paper.
This is laid on by book binders with the tools using the gold size, and Dutch gold is frequently employed for this purpose.
embellishment of manuscripts
This is done most easily by the gold ammoniac. Take sal ammoniac and powder it and then dissolve it in water impregnated with a little gum arabic and some juice of garlic.The sal ammoniac produces a milky appearance from whence in medicine it is called lac a pencil or write with a pen on paper, or vela pencil or write with a pen on paper, or vel-
lum, the intended figure or letters of the gilding. Suffer the paper to dry, and then breathe on it till it is moistened and lay on the leaves of gold and press it down with a ball of soft leather. When the paper becomes dry, which will soon be the case, the extra gold can be gently rubbed off with a fine pencil, or linen rag, whenthe writing will all appear perfectly gold.
On old manuscripts that are highly ornamented letters of gold often rise above the sur face and others have a high polish. The one is done by friction with a solid piece of gold, the other by leat gold. The solid gold method is as follows: take crystal and reduce it to powder and temper it with strong gum water till it be of the thickness of paste, and with this form the letters. When they are dry rub them with a piece of gold of good color as in the manner of polishing, and the letters will appear as if gilt with burnished gold. These embosssed letters. are made by means of a stamp in words or letters and when the stamp is to be used each letter must be moistened with oil and as the letters are concave they are filled with the above mixture of crystaline and struck gently on the paper, which must have something soft under it. The letters will then be left in their proper places, and can be rubbed with the gold. Leaf gold cannot be used in the above way, but canbe used for embossing in the following manner : take
white of eggs and beat them to an oily consiswhite of eggs and beat them to an oily consis-
tance, then thicken them like paste with vertance, then thicken them like paste with ver-
million and form the Ietters with a stamp as before directed, and when they are become dry moisten them and no more, with strong
gum water, and when this is the right dryness gum water, and when this is the right dryness
(clammy) pt on the leaf gold and press it to every part of them with soft leather and after this is properly dry it may be polished by an agate burnisher.

Isinglass, alcohol, a little honey, and sugar candy, and a little bole ammoniac well powdered and added together is a guod size for gilding the leaves of books: or sal ammoni$a c$ and sugar candy of equal parts well powdered and white of eggs beaten to an oily consistence is a good cement and fit for use. The paper should be well cut, and polished on the edges, and strongly screwed down by the press and the above cements applied and suffered to dry. It should then be moistened with water and is in a fit state to receive the gold and the leaves may be then laid or, being cut according to the breadth they are to cover and pressed closely down with a cotton ball and after being thoroughly dry it is burnished with an agate burnisher

> gilding leather.

In bookbinding the operator lays on the leaf and presses the figures in by steel stamps made hot, when the redundant gold may be atterwards brushed off. When skins are to be gilded the firmest and softest only are chosen and after being tanned are softened for some hours in water frequently stirred, and ther taken out held by one corner and beaten against a flat stone, like flailing, afterwards they are spread on the stone and rubbed over with an iron instrument resembling a blade, holes are patched up by pieces glued with glover's size, and then the whole is sized over with very strong glover's size, stiff like jelly. The side on which the hair grew is that used for the size or silvering and the size is spread or rubbed with the hand quickly and carefully twice over with a short interval between the coats. The leaves oif silver are then laid on, and this requires great art and the whole skin must be covered with leaf after leaf, like shingling, when the leaves are then pressed down by a ball of fox tail. The skins when they are thus silvered are hung to dry on cords held by clothes pins and left to dry. They must be kept free from dirt; when dry they are fit to be burnished.

For the Scientific American
Alloys of Metals.
Gold is the most ductile metal for wire, with the exception of platina, of which wires are made finer than a spider's thread Zinc draws better than either tin or lead. The following alloys for engineering purposes are now extensively used in the arts.
To one pound of copper previously melted as described in our last article, add one and a half ounces tin and half an ounce of zinc This is a very strong and tenacious alloy. For wheels add one and a quarter ounces of tin and two ounces of brass For articles requiring turning add 2 ounces tin and 11-2 ounces brass. For bearings, nuts, \&c. add 21.4 ounces tin and $1-2$ ounces brass. A composition for general purposes, used by an engineer of eminence, add $17-8$ ounces tin and $17-8$ ounces zinc.-
For bearings to resist great strains, add $21-2$ For bearings to resist great strains, add $21-2$ ounces tin and 1-2 an ounce of zinc For an extremely hard metal, almost too hard for the file, add $21-2$ ounces tin and $21-2$ ounces zinc. For hard white button metal, add 1 ounce of tin and 2 ounces zinc. For com mon metal for ditto, add 1-2 an ounce tin and 1-2 ounces zinc. 10 lbs . tin, 6 lbs . copper, 4 lbs . brass, constitute white solder.

To Make Sweet Aimond Oil.
Select those almonds which are sound fresh and not worm-eaten, rejecting all such as are rancid, and after the careful separation of all toreign matters, introduce them into a bag, and shake up well and frequently, to de tach the fine yellow dust adhering to the cuticle. This done, they are taken out, sifted to remove this dust and reduced to a paste in a mill. With this paste you fill up canvas squares or bags, and submit thern to a gradual, but strong pressure between slightly heated plates, for experience proves, that if they or too hot the oil is liable to rancidity. The oil thus obtained, must be filtered and carefully preserved from contact with air, for on the filter is deposited a part of its mucilage. Fontinelle is said to have obtained it free
from mucilage, and capable of being preserved for a longer time, by the use of three or four times its weight of water, holding in solution one twenty-fifth of white table salt. The oil of sweet almonds, well prepared from fruit which is not bitter, is of a bright yellow
color, and has a slight and mild odor of the almonds, becomes easily rancid, and thickens. To obtain a handsomer and whiter product first scald the almonds and stir them about until their peels are detached, then drain them in a basket, douse them with cold water, pick out the skins, dry the almonds and proceed with them as before directed.

MECHANICAL MOVEALENTS.
Rotary Gymnastic Wheel.


The above is an apparatus contrived for Frenchman The people to eamused seated themselves at the extremity of each arm, and by pulling the ropes connected with the crank ef the small wheel produced to themselves a rotary motion round the large wheel. The whole framing of the arms was supported on an axis below. And the principle is the very same as that displayed in the old rotary turnpike bars.


This a method of passing a boat from one shore to another and is in common use in many countries. On the Rhine in Germany and on some of our North-eastern rivers, we be lieve the same system is practised. The effect of the stream upon the rudder placed at a certain angle with the prow of the boat carries the boatacross the stream. In the centre of the stream is an anchor, whereby the boat is held from being carried a way down stream-

## To Make Good Cheese.

The Stilton cheese is made by putting the night's cream without any portion of the skimmed milk, to the milk of the following morning ; but those who wish to make it very fine add a still greater quantity of cream, and of course the richness of the Cheese depends on the amount which is used.-Butter is also said to be sometimes mixed with it. The rennet is then added without any coloring and when the curd has come, it is taken out without being broken, and put whole into a sieve or drainer, where it is pressed with weights until completely cleared of whey; when dry, it is put with a clean cloth, into a hooped chessant (or mould) and placed unde the press, the outer coat being first salted when sufficiently firm to be removed from this mould the cheese is placed upon a dry board, and tightly bound in a cloth, which is changed daily, in order to avoid all danger of cracks in the skin, until this is found to be tolerably well crusted; atter which it is no longer used, and the cheese requires no other care than being frequently turned upside down, and occasionally brushed.

## Human Hair.

Among the different k inds of human hair, only that which is straight approximates to the cylindrical form, while the varieties which are urly are more or less flattened the compression being apparently in proportion to the curlings. Even in the straightest Caucasian hair there is a slight deviation from roundness, and in some instances at least, a little longitudinal groove is perceptible. The crisp hair of the negro has this groove deeper and presents a transverse section of the form of a bean. It was suggested that the curl or twist of the negro hair may be connected with a greater tension of the fibres along the groove, for each hair is an assemblage of innumerable minute parallel. fibres, The hair of the Bushman who was recently in this city, is much more manutely curled and closely
matted together than the negro hair; and when seen by the aid of a microscope appears quite flat or ribbon shaped, four or five times broader than it is thick. It shows no groove but very delicate parallel striœ of fibres,
These differences have much interest in their bearing upon the question of the unity of origin of the different races of man. Have these races all sprung from a common parentage, or are they as some naturalists contend derived from distinct sources, and only in that degree of relationship to each other which subsists between closely allied species among inferior animals? It is well known that the hair of the mammalia is analagous to or represents the feathers of birds and the scales of fishes. Differences in the form, structure and distribution of the feathers are among the indications which separate the opecies of birds, and Prof. Agassiz has classiGed fish by the difference in the scales. Yet there is an indubitable test of the oneness of the human family.

## Amusements of Chloroform

A practice has assumed the form of a mania in Edinburg, Scotland, certainly not less exciting than the railway mania. It consists in converting fashionable evening parties into a species of pharmaceutical association for experimenting on the effects of chloroform, and other substances of similar properties. One ot these exhibitions is worthy of notice. A number of ladies and gentlemen were invited to an evening party in the house of a respectable medical practitioner. At ten, instead of music and dancing, the learned doctor entered with flask and sponge, and every guest was treated to a trip to the realms of insensibility. Some of the ladies were foolish enough, while there, to utter such speeches as, "Oh! my beloved Charles, come to my arms," at the same unwittingly extending them to receive the dear creature. Some of the gentlemen, not having taken the precaution to swallow a sedlitz on a carminative previous to their first appearance, committed slight breaches of etiquette not very amiable.

## ing nea Kilns.

During the process of lime burning, carbo nate of lime is decomposed by means of heat, and carbonic acid driven off. Hence the fatal effects which have resulted trom persons incautiously lying down to sleep near burning kilns.


This paper, the most popular weekly pub ication of the kind inthe werld, is published At 128 Fulton Street, New York, and 13 Court Street, Boston,

## BY MUNN \& COMPANY

The principal office being at $\mathcal{N}$ ew York.
The SCIENTIFIC AMERICAN is the Advocate of Industry in all its torms, and as a Journal for Mechanics and Manufacturers, is not equalled by any other publication of the kind in the world.
Each number contains from FIVE to SEVEN ORIGINAL MECHANICAL ENGRAVINGS of the most important inventions; a catalogue of AMERICAN PATENTS, as issued from the Patent Office each week; noti ces of the progress of all new MECHANI CAL and SCIENTIFIC inventions; instruction in the various ARTS and TRADES, with ENGRAVINGS ; curious PHILOSOPHICAL and CHEMICAL experiments ; the latest RAILROAD INTELLIGENCE in EUROPE and AMERICA ; all the different MECHANICAL MOVEMENTS, published in a series and ILLUSTRATED with more than A HUNDRED ENGRAVINGS, \&c. \&c.
The Scientific American has already attained the largest circulation of any weekly mochanical journal in the werld, and in this country its circulation is not surpassed by all the other mechanical papers combined.
保-For terms see inside.

