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A Wonder of the Desert.

One of the most interesting events which have recently transpired in California, is the discovery in the southern part of the State, in the neighborhood of the Colorado, of an immense pyramid of hewn stone. It has a level top of more than fifty feet square, though it is evident that it was once completed, but that some great convulsion of nature has displaced its entire top, as it evidently now lies a huge and broken mass upon one of its sides, though nearly covered by the sands. This pyramid differs, in some respects, from the Egyptian pyramids. It is, or was, more slender or pointed, and while those of Egypt are composed of steps or layers, receding as they rise, the American pyramid was, undoubtedly, a more finished structure; the outer surface of the blocks were evidently cut to an angle that gave the structure, when new and complete, a smooth or regular surface from top to bottom. From the present level of the sands that surround it, there are fifty two distinct layers of stone, that will average two feet each; this gives its present height one hundred and four feet, so that before the top was displaced, it must have been, judging from an angle of its sides, at least twenty feet higher than at present. How far it extends beneath the surface of the sands, it is impossible to determine without great labor.—such is the age of this immense structure, that the perpendicular joints between the blocks are worn away to the width of from five to ten in. at the bottom of each joint, and the entire surface of the pyramid so much worn by the storms, the vicissitudes and the corrodings of centuries, as to make it easy of ascent, particularly upon its sides. A singular fact connected with this remarkable structure is that it inclines nearly ten degrees to one side of the vertical or perpendicular.

What Sensible People Think of the Scientific American.

Messrs Editors—Your paper grows better and better every week, and I cannot very well get along without it. I find it difficult to get a class of people whose business it is to till the soil, to subscribe for a scientific journal; they think they can dig rocks, plant corn, cut grain, or dress flax, without studying science, but if they would study their own interests, they would not be without the American, which would keep them thoroughly posted up on all the improved machines for doing the very same work that they now have to do by hand at five times the expense of *machine* labor, besides, the many valuable receipts which it contains more than pays for each volume; in short, it is the best and cheapest scientific paper in the world, if my judgment serves me.

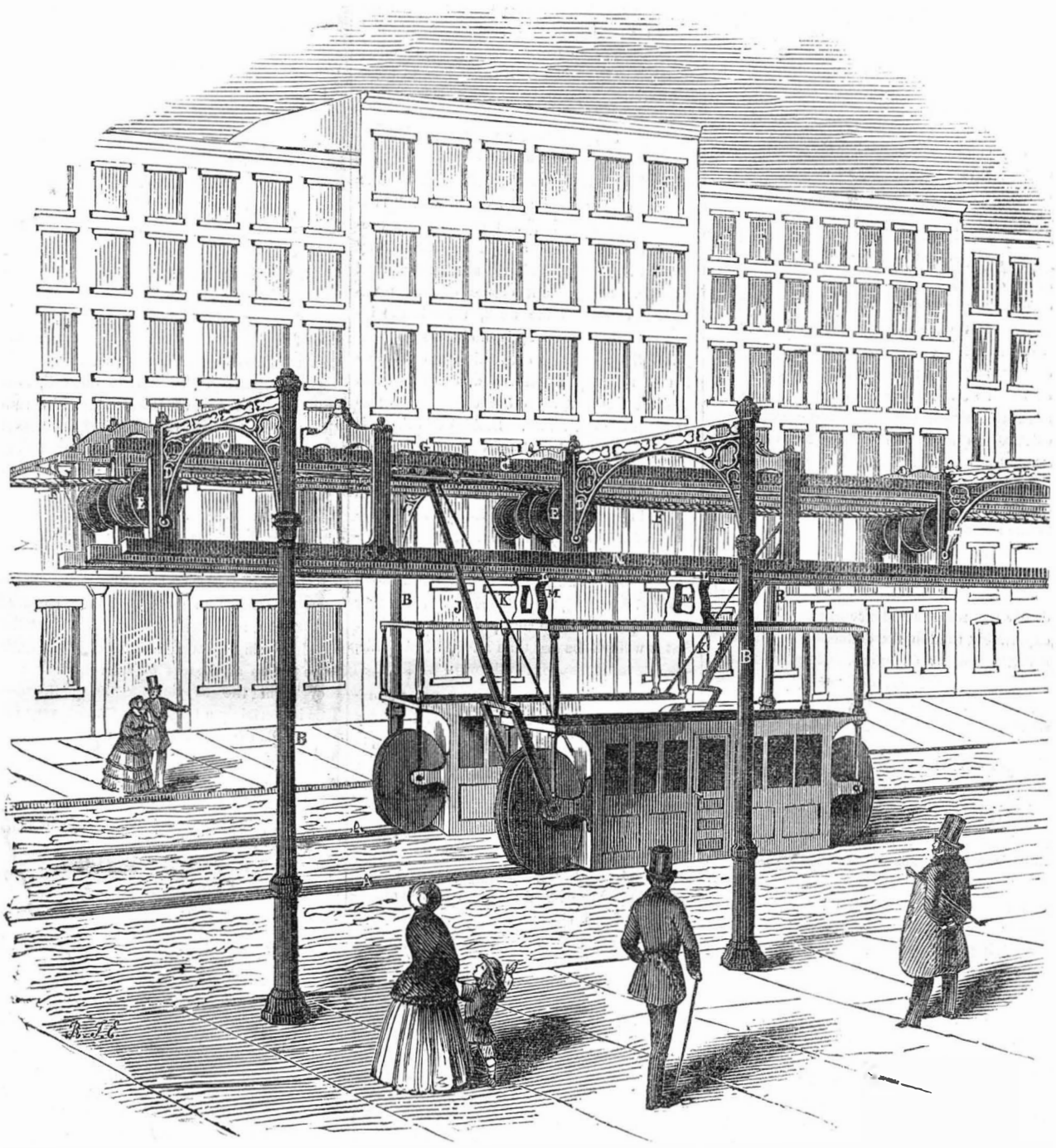
L. M. Parker.

Shrewsbury, Mass.

The Sugar Crop.

The sugar crops of the Louisiana plantations are remarkably good this season. One-third of the planters have already commenced rolling, and a hogshead and a half of sugar is made from an acre of cane.

NEW RAILWAY FOR BROADWAY.



The annexed engraving is a perspective view of a new railroad for Broadway, by William Deitz, of the city of Albany, N. Y.

In the center of the street, say within six feet of each other, are two iron tracks laid down in the usual manner, upon which it is intended to run two lines of cars, each, say four feet wide, and of any convenient length, one line up on one rail, the other line down on the other rail. The wheels of the cars are placed under the center lines of these frames, ranging with each other. The balance of the cars is preserved by another set of wheels placed in line above the first set, and which run under or between elevated rails placed fifteen to twenty feet above the ground rails. These elevated rails are supported upon cross bearings and framing, which connect a double row of pillars about forty feet apart, or rather from curb to curb, leaving fourteen feet when the cars are side by side, that is, each side of Broadway, and in the absence of the cars leaves 34 feet The cars are to be propelled by an endless rope extending from Union Square to the Bowling Green, and running over the upper set of wheels. One of the most ingenious arrangements of this plan is that by which the rope is supported overhead, and connected or disconnected with the cars at will. The rope is supported at intervals by pairs of sheaves or pulleys, placed exactly opposite to each other, in prolongation of their axes, and about an inch apart, each of the sheaves in form that of the one-half of a grooved pulley, the pulley being cut asunder through the middle of its groove; these pulleys run each on its own axle, which is secured to a standard rising from the frame that supports the upper rails. From the car there rises an upright post, which carries on its upper end a thin stem, J, capable of passing between the pulleys and supporting a grip brake of peculiar construction, which, by a rod and spring, can be made to grip the moving rope or let it go instantly, so as to permit the car to stop and take in or leave passengers.

A A are the two single rail tracks; B B are the supporting posts, and D D are two of the support arms thrown across the street for supporting the frame with its driving pulleys. This frame is double, one side for cars going down, and the others for the cars going up. C N represent an upper and lower longitudinal bearer—two of these on each side, and a pair in the middle, with their vertical and the cross braces, form the pulley frame. E is one of the coned sheaves for driving the endless band or rope, F. G is the *grip*, or device for connecting the car with the endless rope, which it encircles, and for arresting the car. It is attached to the car by a blade, J, in front; it is hollow, formed in two sections, the upper one being hinged at one side to the lower one. The upper half has a spring on it, which tends to throw it open. K is the brake rod attached to the upper half. The conductor, when he wishes to set the car in motion, pulls down on the rod, K, and attaches it to a hook on the car; this clamps the grip to the running endless rope, F, and this runs the car forward. By disengaging the rod, the upper half of the clamp or grip, G, opens and the driving rope runs freely through the clamp. There are small grooved pulleys on the sides of the clamp, and I are their guide rails. M represents a cuneform block on each car, and L are anti-friction steadying rollers to guide the car; they run against the inside of the lower bearers, N. The pulleys are driven by stationary steam engines—one or more, as may be necessary. This is certainly a good plan for a ground railway, to economise the space in the street, and to obviate the use of horses and yet employ steam power.

It is some time since we first saw Mr. Deitz's model, and since that time our attention has been directed to a plan by Patrick O'Neil, of Brooklyn, which embraces the above method of propelling the cars; but Mr. O'Neil's plan is for an elevated continuous railroad, embracing an arcade, covered with glass, and is really a magnificent project.

Hot Air and Steam.

As we stated last week the "Caloric" engine in a new shape is about to be tried again. This fact has been heralded by the press generally, but they seem a little more cautious than they were at this time last year. A burnt child, it is said, dreads the fire. Since those trial trips last winter, some of the "scientific" journals have been proposing various modifications, which were to increase marvellously the powers of the Hot Air Engine, and have backed up their "improvements" by mathematical calculations, which simply served to show that however well conversant they might be with algebra and Differential Calculus, they were sadly deficient in practical engineering. The very fact that different mathematicians have come to such widely different results in calculating the power of the "Ericsson's" engines should teach us to be very cautious in receiving *theoretical* calculations as to the capacity of any untried motive power. It is often very easy to say what such engines *cannot* accomplish, while it may be equally difficult to determine what they *can* do.

We do not undervalue mathematics: the solution of an intricate problem in analysis or calculus has been often the business of our leisure hours. But we simply mean to assert that where so many of the data are necessarily uncertain, as they must be in all cases of the kind of which we have been speaking; experiment, not mathematics, must be relied upon. Such calculations may sound large, but in reality amount to but very little. The case is altogether different when experiment has determined a fixed value for the elements of calculation as in the steam engine.

Ericsson, however, although he made quite a show of figures in attempting to keep up with Major Barnard, in "Appleton's Magazine," evidently has more confidence in the teachings of experiment than in the deductions of his own mathematical investigations. He proved, then, that his engines should possess 1313 horse-power, setting aside the losses, and says that the reason why they did not approach this figure in their trial was because "the yielding of the wrought-iron heaters prevented full pressure from being carried." To remedy this, he proposed to make them of cast-iron, but he wisely abandoned this scheme. At the time of writing his article, however, he still held that his regenerator was "the principal source of heat," and censures Major Barnard and others who had criticised the performance of his engine, for having overlooked this fact. Why, then, does he now employ "coolers?" Simply, we think, because although he has suffered himself to be deceived for years by the fallacious idea of using heat over again, he has at last been taught, and in a pretty dear school too, that we were right, and that he and many, others, of whom, from their claims to scientific knowledge, we expected better things, were wrong. Hence he may have produced an engine superior to his old one, but as he taught that the marvellous power of his engine was stored in the regenerator,—that it was by means of this that, in the language of another, "an ounce of coal could be made to pump the Niagara dry,"—that in the regenerator consisted the superiority of the hot-air over the steam engine—we would like to hear what new or marvellous principle he can claim for this one, in presenting it as a rival of the steam engine.

But as we said last week, the question now is solely between the relative merits of Hot Air and Steam, or in other words, will a given amount of heat produce a greater expansive force, when applied to air, than when applied to water, and if so, can it be used with the same economy? We have already stated (page 189, Vol. 8) that it takes 791 volumes of air, if heated 1180° above the temperature of the cold air to equal, in expansive force, one volume of water heated from the freezing to the boiling point, and converted to steam, in which process the same amount of heat is consumed (180° sensible heat and 1000° latent.) The effective horse-power of the Arctic is 2290. As the evaporation of a cubic foot of water per hour is called equal to the generation of a horse-power, this would require the evaporation of 2290 cubic feet of water $\times 791 = 1{,}811{,}390$ cubic feet of air heated 1180° above atmospheric temperature. But taking it for granted that air cannot be readily heated in an engine of this kind more than 393⅓° above the atmospheric temperature, or to about 430°, and this is more than the "Ericsson" did, and the above amount will have to be increased three-fold, $1{,}811{,}390 \times 3 = 5{,}434{,}170$ cubic feet of air as the aggregate amount which will have to be expanded per hour to produce an engine of the power of the Arctic. But let it be borne in mind that while the above calculation states the actual duty of the Arctic's engines, it makes no deductions for any losses on the part of the hot air, and the trial trip of the "Ericsson" showed enormous losses somewhere, although her engines were acknowledged to be of superior workmanship.

[For the Scientific American.]

Subterranean Railroads.

I noticed in a late number of the "Scientific American" an article under the title of "Tunnel Railways in Cities," and consider the proposition to construct a subterranean railway through London beneath the streets, as behind the age. Independent of the enormous expense attendant on the work, there is the inconvenience and interruption to business arising out of the necessary excavation, accommodation of masonry materials, deposits of earth excavated, and many other objections consequent on the operations. Besides this there is the injury to the health of the passengers in travelling through such a tunnel from the rumbling noises above their heads and fears excited by the knowledge of where they are. The expense of this subterranean system may be inferred from this statement:—"The company commence (this work) with a capital of £1,500,000" ($7,500,000); the distance is not named nor the final cost of the work, but we may infer that it will not be less than £100,000 per mile,—whatever it may be it will prove a failure.

In the same number of your paper, you refer to a similar proposition of a tunnel railway through Broadway, in your city. According to the view I have taken of this plan, I consider it objectionable on the grounds referred to in noticing the proposition in London, stated above. While it is possible to effect the same object above ground, which the plan referred to proposes below the ground, there is every reason to prefer the former to the latter. Independent of the comfort and pleasure arising from passing through the city above ground, there is the great difference in expense between the two plans. The object of resorting to the subterranean plan is to avoid the danger of the train running through a crowded city street. But cannot this be effected equally above ground as below it? Certainly, must be the response. Then why should we resort to the under-ground plan, which is both inconvenient and expensive? Let us show a better system of passing our railroad trains throughout cities, by elevating them here so that the trains will pass above the heads of the pedestrians travelling at the same time.

I would submit this plan to the good sense of my fellow citizens, when they shall require its execution under like circumstances, and should this communication reach the eye of our British friends, I would respectfully submit it to their consideration and adoption. Many years ago, when the railroad, as a system, was first introduced into our country (1820), I took into consideration this very problem, how these roads should pass through the crowded thoroughfares of our cities? The proposition then was to elevate such roads here, above the heads of the street passengers. The necessity of such a case as this has never occurred in our cities. The crowded state of Broadway, in your city, has called for some plan of getting rid of the travel of the numerous omnibusses along its causeway, and I have suggested to the Municipal authorities of your city to place the system of omnibuses upon an elevated railway over the edge of each sidewalk, so high as to enable passengers to land upon the second floor of the houses there. These omnibuses may be of a peculiar structure, so as to run upon a single rail only, which need no platform above, and thus do no injury to the light below, and which will require but a single range of pillars for the support of the car track above, and thus not the least injury to the light, or the passage below will be experienced. As there will be a similar track on the other side of Broadway, provision will be made for the going out and returning trains without interfering with each other.

This brief exhibit will convey some idea of this plan and its advantages over the subterranean track. May we not hope that where the necessity exists in cities to resort to some plan of passing a train of cars through their thoroughfares, the air plan here suggested will be preferred to the subterranean or tunnel plan.

ROBT. MILLS,
Washington City. Engineer and Architect.

[We do not look with much favor upon the plan of elevating omnibusses upon a railway above the heads of pedestrians. The same objections which are urged against the subterranean railroads, "noises above the heads of the people," can be urged against the elevated omnibus track.

A very good plan has been proposed to us lately, to relieve Broadway of its dangers and troubles to foot passengers. It is very often both dangerous and difficult to cross from one side of that street to the other, owing to the great number of omnibusses and carriages passing and repassing. To obviate this evil, it is proposed to have elevated iron sidewalks running the whole length of the street, on a level with the second stories of the buildings, and to make these intersect one another at all, or nearly all the crossings, in the form of an × across Broadway, the center being a platform supported by the stairs at each corner. By this plan, stores on the second stories might become as valuable as those on the ground floor. To allow pedestrians to cross Broadway, elevated foot tracks merely might be erected at the crossings only. Stairs, of course, would have to be put up at the foot of each crossing, and they form the support for the platform.—This is certainly a feasible and a not very expensive plan for the relief of Broadway to foot passengers.

The Nervous System.

In two lectures recently delivered in this city by Marshall Hall, M. D., of England, he demonstrated the new discoveries which he had made in relation to the nervous system.

The nervous system is divided into the cerebral, spinal, and ganglionic. Through the cerebral we are brought in connection with the external world. We perceive through it, and through it we recognize sensations of pleasure or pain. The spinal system presides over all our ingestions and ejections; guards all the avenues that connect the internal organs with the external world; governs the spincters; retains what we have within; and prevents the introduction from without of what would prove noxious if admitted. The ganglionic system relates to all the operations of assimilation; manages the secretions; presides over the growth of the body; and, when deranged, is the immediate cause of marasmus.

The action of the nervous power upon the muscles is threefold:—direct, reflex, and retrograde. Of the direct action, it is a general law, which is centuries old in the books, yet, while, it was supposed to be the only action of which the nervous system was susceptible, never was applied to physiology,—that it is always downward, *i. e.*, from the center to the extremity; from the point where the action commences along the course of the nerve till it is too small further to be traced. The doctrine of the reflex action is Dr. Hall's own. He was studying the phenomena that transpire within the lungs of of the frog, when he noticed that a slight irritation of the toe of the animal created a spasm of the extremity. He fell to wondering what was the cause of the spasm. He had excited nervous action, but he had not touched the brain. He had stimulated the excitability of the muscles of the part, doubtless, through the spinal system, since all motion is communicated to the muscles through the medium of that system, yet he had not reached the medulla oblongata. The jerking of the frog's foot was to him like the apple falling to Newton. He suspected, and subsequent experiments confirmed his suspicions into convictions, that in touching the skin he had touched the extremities of nerves, whose office it was to carry back to the centers, messages of communication with the external world. This point established, the circle was completed, and the threefold nervous action—direct, reflex, and retrograde, was easily demonstrated. In illustration of these principles, Dr. Hall performed some experiments.

He divided the spinal marrow of the frog.—By this operation all sensibility was removed. He laid it upon its back; there it would lay till it was dead, unless something should irritate the skin, and through the reflex action spoken of, cause the muscular contractions.

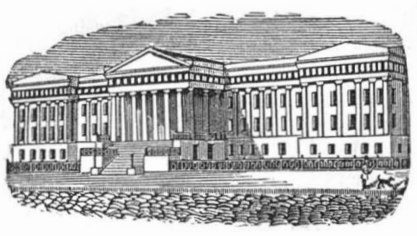
The frog was then pinched, but did not respond by a spasm. This state of shock, said the Doctor, is temporary. It passes rapidly away. And in a moment after, pressing on the skin of the toe, the whole body was convulsed. Here was an illustration of Dr. Hall's new law, of an ascending movement from the skin to the center, yet not acting through the brain, but reflected from the spinal center.

Next he took off the skin of one foot. No irritation of the denuded flesh caused any excitability of the muscles. Next he grasped the spinal nerve in his forceps, and both legs were violently convulsed. Then he severed the lumbar nerve of the extremity that was not denuded; the part supplied by that nerve was convulsed. Now, no irritation of the skin produced any spasmodic action, for, though the cutaneous nerves carry the impression to the center, there was left no medium for their direct action to reach the muscles.

The learned lecturer then deduced some very important practical lessons from these experiments. A paralysis caused by a shock is generally curable. Sometimes the patient's paralysis passes away while he does not know it, but from disuse of the paralyzed part, the inaction in it may remain. The determined will of the enlightened physician works almost miracles in such a case, and the bystanders may add the case cured by moral means, to the list, wherein the imagination is said greatly to aid the cure. Paralysis, in which there is no spasmodic action is very generally of cerebral origin. Where there is spasmodic action, the spinal column is also affected. The practical physician will see how his treatment should vary with these varying causes and seats of the disease.

The lecturer dropped a small quantity of the solution of strychnine upon another frog, and, whereas he had before been dull and half asleep, as is his custom in winterish weather, he suddenly exhibited a great deal of life and energy. Soon his muscular activity took the form of hydrophobia. When let alone, he lay still and motionless. Touching him ever so gently on the back produced a spasm. These spasms being frequently provoked, he stretched himself out, and, to all appearances, died. Rubbing him would secure a slight spasm, but each returning one grew fainter and fainter, till the muscles ceased to respond to the irritations of the skin. Dead as he seems, remove him to a cool place, and in the morning he will be well and strong, and ready to be useful as the subject of another experiment. Just so it is with patients suffering under hydrophobia. We must place them in quiet, cool and comfortable quarters, and, for their lives' sakes, let them alone. Handling them hurries back the spasm, and each new spasm hurries the life out of them. Hydrophobia kills in three ways: First, by laryngismus; second, by the repeated excitation causing repeated shocks: and third, by the effect of the poison upon some internal organ.—Tracheotomy is the remedy for laryngismus.—Perform it, and death from that cause is impossible. The second cause is removed, if at all, by perfect quiet and the avoidance of every possible thing that can annoy the patient. The third, when the disease reaches that stage, is probably beyond the cure of man.

Baron Humboldt proclaims himself the first introducer of guano to the world as a manure. He explained its advantages, published an analysis of it, and endeavored to introduce it extensively, for forty years, but in vain.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 15, 1853.

LOOMS FOR WEAVING PILED FABRICS—By E. B. Bigelow, of Boston, Mass.: I claim, first, the method of constructing and operating the pincers or other equivalents for successively operating the pile wires, so that they shall carry said pile wires forward to the face of the cloth and hold them in position with their proper edges upwards, until they are otherwise secured, as specified.

I also claim constructing the pincers for successively operating the pile wires with grooved jaws opening and closing in a line with the pile wire, and with a motion in advance of the lathe, as specified, whereby collision with the lathe is easily avoided.

I also claim the application of long horizontal guides, as specified.

I also claim the application of a vibrating box or holder, in combination with the pincers or other equivalents, for successively operating the pile wires, as specified.

I also claim, in combination with the pile wires a bar or guide which shall successively press against said pile wires to keep them in a proper position during the operation of cutting, as specified.

And, finally, I claim the method of applying the tension weight and brake to the whip roller by means of the arms, as specified.

POWER LOOMS—By John Gledhill, of New York City: I claim, first, the combination of the main connecting rods, links, and radius rods, as described, for giving the lay a motion, the forward part of which is accelerated, and the backward part is retarded, for the purpose set forth.

Second, the "automatic server," consisting of a block or head, furnished with any number of hooks, or analogous devices, arranged in any number of series according to the number of bunches of filling hair or threads, and in order of succession, the said block or head being hung, as described, on a pivot, in such a position that when a proper amount of circular motion is given to it by suitable mechanism, the hooks will withdraw the hairs from one or other of the bunches, and bring them to a suitable position to be taken by the nippers or other device which draws them through the warp.

Third, a pair of nippers which are operated by suitable mechanism, as described, to make their jaws pass through the warp from one side thereof, every time the shed is opened seize one or more hairs or threads from the opposite side, and return through the open shed with the same, and release the same when it is beaten up and the shed is closed.

Fourth, the combination of the fixed stud, finger, lever, spring, and arm, as described, the stud finger and spring being for the purpose of producing a proper tension on the hairs or threads, as they are being drawn through the shed, and the lever and arm being for the purpose of moving the finger to allow the nippers to pass in coming to fetch the hairs or threads.

[An engraving of this invention was published on page 316, Vol. 8, Sci. Am.]

SUPPLEMENTAL VALVE TO THE EQUILIBRIUM PIPE OF THE CORNISH ENGINE—By H. P. M. Birkinbine, of Philadelphia, Pa.: I do not confine myself to the particular form of supplementary valve described, or to the particular method of actuating the same, a slide valve might answer the same purpose as the former, and various mechanical devices might be substituted.

I claim the use of the adjustable valve apparatus described, or any equivalent to the same for intercepting more or less the steam in the equilibrium passage so as to regulate the rapidity of descent of the plunger, according as the head of water may require.

DAGUERREOTYPE APPARATUS—By James Brown, of New York City: I claim the employment of a diaphragm, with a suitable opening through which the person or subject is presented to the camera, when the said opening is surrounded by ornament or embellishment, as described, for the purpose of producing a portrait or picture with an ornamental or embellished border.

[A notice of this invention is published on page 268, Vol. 8.]

ELECTRO MAGNETIC ANNUNCIATOR—By C. S. Bulkley, of New York City: I claim the circuit closer, constructed in such a manner in combination with the permanent arrangement of the several numerical characters and words or sentences necessary to designate the number of each room, and the ordinary desires of the lodgers upon concealed register plates, which are connected with and operated by electro-magnets through suitable escapement, or other equivalent devices, that by a single sweep of the key to the point denoting the particular communication the lodger wishes to make the circuits of the said magnets will be closed and broken the required number of times to strike the bell and exhibit through apertures in the face of the register, that number and word or sentence of the said register plates, which respectively designates the number of the lodger's room and the communication made by him, as set forth.

DRESSING STAVES—By J. D. Elliot, of Leicester, Mass.: I claim the combination of the transversely inclined bed with the swivelled roller, for the purpose of adapting the machine to the dressing of riven staves with the grain of the wood, whether thick or thin, tapering or inclined from edge to edge, without any separate adjustment for the various sizes, as described.

CHUCK FOR CUTTING BARREL HEADS—By Franklin Fruit, of Jefferson City, Mo.: I claim the chuck constructed as described, viz., two circular discs connected by studs, and centers, placed between the studs, any proper number of studs and centers being used, said centers passing through both the front and back discs, and having collars upon them, each center being provided with a spiral spring, which is placed between the collar and the inner side of the back disc, and by which springs each center will yield or give, independently of the others, so that the different pieces forming the barrel head may vary in thickness, and still be properly adjusted and secured between the faceplace and chuck, as set forth.

[See notice of this invention on page 148, Vol. 8, Sci. Am.]

PROPELLERS—By Banford Gilbert, of Pittsburg, Pa.: I do not desire to claim the use of submerged propellers, actuated by a reciprocating motion, nor the use of propellers with two levers or floats, hinged at or near their point of connection, and operating by opening and closing as they pass to and fro through the water, as in the case of the duck's foot propeller.

I claim the combination of the anchors with the double floats or paddles, suspended so as to hang vertically in the water when in use, and operating with a horizontal reciprocating motion, one of the floats in each set propelling the boat in one direction, and the other float in each set propelling it in the opposite direction, one anchor being combined with each set of double floats for the purpose of retaining one float in a horizontal position, so as to pass through the water with the least possible resistance, when not in use, and sustaining the pressure of the water against the paddle in use, when in the vertical position, which the anchor compels it to retain while propelling the boat, and leaving it free to assume the angle of least resistance while returning through the water. The simultaneous reversing of the double paddles being accomplished by means of a handle which shifts the connecting rod, to which all the anchors in one frame are attached, as described.

DRESSING CIRCULAR SASH, &C.—By Leonard Gilson, of Brighton, Mass.: I claim, first, the swing bed frame and adjustable bed plate in combination with the lever, clamps, and set screws, as set forth.

Second, I claim an angle frame with a joint at or near the vertex, to increase or diminish the angle, and a movable segment plate thereon, in combination with the bed plate and cutter for circular work, as described.

CREASING STRAPS OF LEATHER—By D. H. Hovey, of Kilborn, Ohio: Having described my improved machine for creasing straps, &c., for harness and other purposes, I claim the combination of the self-adjusting creasers, springs, vibrating cam, and pressure roller, arranged and operating as described.

VENTILATORS—By Joseph Leeds, of Philadelphia, Pa.: I claim the combination in one case or shell of the series of downwardly inclined curved openings in the outer shell, for taking in and directing downward a column of pure air, with the center pipe or opening crowned with the two frustums of cones with their apices towards each other for producing a counter current, and carrying from the apartments to be ventilated the impure air, and increasing said ejecting current, as described, the whole requiring but a single opening in the roof.

COATING BOX FOR DAGUERREOTYPE PLATES—By William Lewis & Wm. H. Lewis, of New York City: We claim, first, the metallic base, formed as a box, to which either cold water or heat are to be applied to regulate the temperature of the chemicals in the coating box, as described.

Second, suspending the glass pot within the coating box, by means of a flange or bead on the upper edge thereof, taking the upper surface of the box, as specified.

Third, the rollers in combination with the ways, formed with the inclines to relieve the friction, as specified.

Fourth, the rollers on the cover, combined with the ways and inclines on the slide, to lift the cover and relieve friction, as specified.

Fifth, the rebates to support the glass on the lower surface thereof, in combination with the screws, to retain the same against the rebates, as specified.

Sixth, we claim securing the metal yoke in place by ribs, on the inner of the vertical parts thereof, and the slides, as described.

Seventh, the hub on the yoke, taking the socket in the cover, and containing the spring, whereby the cover is retained in place but allowed to take its proper bearing, as described.

SELF-ACTING DAMPERS FOR AIR-TIGHT STOVES—By S. P. Lyon, of Farmington, Mich.: I claim the arrangement of the lever having the valve on its lower end, and a curved portion and flat spring on its upper end, in combination with the lever pivotted between the curve portion and spring (said lever attached to the upper valve), the thumb screw, and expansible plate, the whole operating automatically in the regulation of the draught of air to the fire, and also to the induction of air to the flue, as set forth.

PADDLE WHEEL—By Wm. H. Muntz, of Norton, Mass.: I claim, first, making the supports of the buckets, a cut-water wheel, and two wheels of smaller diameter: second, forming each bucket of a float and guard made to stand at any angle to each other; third, making the guard to extend from the rim of the cut-water wheel to the other or smaller wheel, and so that the guard shall not only pass edgewise through the water but endwise into the water, the float being made to project inwards from the guard, as stated.

And in combination therewith I claim making the float narrowest at its outer end, or at the cut-water wheel, and gradually in width towards the inner end, as described.

SEED PLANTING CULTIVATORS—By George Phillips, of Philadelphia, Pa.: I claim the arrangement and combination of the side pieces, slotted beam and slotted bars, and the hollow sectional axle or shaft, for the purpose of allowing the expansion and contraction of the side pieces, as ses forth.

I also claim attaching the driving and graduating wheel to the back part of the machine, by means of the notched bars, secured to the upright post of the center or draught beam by a bolt, upon which they move, and suspending above the same pawls, with either of the notches, thus enabling said wheel to perform its functions of regulating the height of the back part of the machine, and driving the distributing shafts, and to be drawn or thrown under the center or draught beam to form a pivot wheel, upon which the machine can be raised from the ground and turned in the manner specified.

MOP HEADS—By Timothy Randlett, of Enfield, N. H.: I claim the binder and revolving tightener, combined with and embracing the united cross-head, the socket, and ridge, as set forth.

FEED ROLLERS OF STRAW CUTTERS—By Robert Sinclair, Jr. & R. F. Maynard, of Baltimore, Md.: We claim for straw cutters the employment thereon of alternate right and left fins, so arranged as to form a double spiral or screw, said fins being formed as set forth, and operating together so as to prevent the straw from crowding to the right or left, and to compress the straw laterally as it is passed to the knives, and constituting altogether what we denominate the double screw propellers for straw cutters.

MACHINE FOR TRIMMING SOLES OF BOOTS AND SHOES—By John H., James M. & H. Q. Thompson, of Holderness, N. H.: We claim a machine in which the sole is trimmed by revolving knives and guided, as fed along, by the operator, by an adjustable gauge bar against which the edge of the pattern plate abuts, as described.

HOT-AIR REGISTERS—By Wm. H. Towers, of Philadelphia, Pa.: I claim placing within the jambs of each register the means of moistening the heated air, as described.

LOOMS—By Wm. Townshend, of Hinsdale, Mass.: I do not claim the levers in themselves, as these have before been used; neither do I limit myself to the number of heddles and treddles, and I do not claim the pattern chain in itself, as this is well known.

But I claim the levers and a slotted fulcrum with their latch pieces, or their equivalents, combined with the levers, by which arrangement the levers are connected to either lever by means of the end motion, and carried up and down by competent power applied to the levers.

FINISHING THE ENDS OF STAVES—By J. E. Warner, of Boston, Mass.: I do not claim a feed bed revolving in fixed bearings; but I claim a feed bed revolving in bearings which are capable of being moved by weights, springs, or other means towards the beds or stops on which the back or outer side of the stave is supported, the extent of such movement depending upon the thickness of the staves operated on.

I also claim the combination of said feed-beds with the saws, cutters, fixed stops, and movable frame, and what are substantially their equivalents, operating as described, for the purpose of finishing the ends of staves.

SAFETY VALVES FOR LOCOMOTIVE ENGINES—By Henry Waterman, of Hudson, N. Y.: I claim the piston attached to the weighted end of the valve lever within the cylinder, and immersed in the liquid in the cylinder, combined and operating as described.

UNITING SHOVEL BLADES TO HANDLE STRAPS—By Jonathan White, of Antrim, N. H.: I claim uniting by welding the iron handle straps to the sheet cast-steel blade, as set forth.

ROTARY CHURNS—By H. H. Grover, of North Cohocton, N. Y. I do not claim a tub in the form of an inverted cone or conic frustum with revolving dasher, either with or without breakers, as such churns, with breakers and dashers extending from the bottom to the top of the tub, or with dashers without breakers, have been used before: but what I do claim is a churn consisting of such conical tub, furnished with a vertical revolving dasher at its bottom combined with breakers at the top, as set forth.

DRESSING CROOKED TIMBER—By E. H. Branson (assignor to Franklin Slaughter), of Fredericksburgh, Va.: I claim supporting the arbor of one of two pulleys carrying an endless belt of knives for dressing crooked timber upon elastic bearings, for the purpose of yielding to any undue strain upon the knives, as described.

RE-ISSUE.

PLANING MACHINES—By A. A. Wilder, of Detroit, Mich. Patented Dec. 21, 1852: ante-dated July 17, 1852: I disclaim the invention of planing by a reciprocating plane which planes on its forward stroke, and feeds the board on its backward stroke, the whole distance of the stroke of the plane, as in other machines of this class.

I claim, first, the reciprocating beds, arranged with respect to the stationary beds, as described, in combination with the clamps, or their equivalents attached to them, whereby the board is clamped between said movable bed and the clamps, and is free to move over the stationary planing bed, and is fed during the backward stroke of the planes the whole length of said stroke.

Second, I claim the method as described, of clamping and feeding timber to knives or chisels.

Reform of the Patent Laws.

Your valuable journal is doing good service in pointing out defects in the Patent Laws, and suggesting needed reforms. Allow me to direct attention to two points, which demand notice.

First, the law provides for the adding of a new improvement to a patent, by the original patentee paying $15. The framer of that law looked upon the filing of a specification and the issuing of a patent as cotemporaneous events—nearly—not the intervention of several months, as is now the case, between the former and the latter—the very time when improvements are most likely to be made. The law is *strictly* construed at the Patent Office, and for all such improvements, a new patent must issue, and a fee of $30 be paid.

Second, the law requires that one invention shall be the subject of one patent, evidently meaning that the inventor of a churn and a cotton press shall not have both examined under one fee; but this is so interpreted by the Patent Office, that if the inventor of a cotton press improves the mode of pressing, filling, and discharging, each improvement must be the subject of a separate patent. Could such have been the original intent of the law?

FRANCIS H. SMITH.

[We are not acquainted with a single case like that mentioned by our correspondent under his first head. It has hitherto been the custom to grant a patent for a new improvement to an original patentee for a fee of $15; the improvement dating from the commencement of the original patent. This is according to the strict language of the law; it says, (Sec. 13, Act. 1836) on the payment of fifteen dollars, the original patentee, whenever he shall be desirous, may have the specification of any new improvement of the original invention or discovery, annexed to the original description and specification." This is so plain as to require no comment, excepting to say that our correspondent has rendered the matter somewhat opaque. He means that the spirit and intent of the law is to allow a patentee to add an improvement to the original patent, at any time, for a fee of $15, but that the Patent Office construes the law to make the patentee pay $30, and take a separate patent for every new improvement.

The *New Rule* of the Patent Office mentioned under the second head above should be abrogated at once. It is doing great injury to many inventors. It never was intended by the framers of the patent law, that an inventor who had made several improvements at once on *any one* machine, should be required to file a specification and pay a separate fee for each. A machine is a harmonious whole, made up of several parts, and is not a complete machine, if one part is wanting. It is indeed true that of two machines devoted to the same objects, such as the steam engine, one may have its valves worked by hand like Newcomen's before H. Potter made them self-acting, and the other may be as perfect as the best now made, still the latter only is the complete machine. A machine is never complete while an improvement can be added; it is surely wrong then to demand several fees for improvements made by one man at one time, to make a machine complete. An inventor is always allowed a patent for any improvement he may have made on any part of a machine, therefore, when we know that all the separate parts of a machine are so dependent on one another, that the improvement of one very often leads to the improvement of another as a necessary consequence, it is surely both just and right that an inventor should be allowed to include any number of original improvements on one machine in one patent. We mean to be understood as limiting the claims to a distinct machine to accomplish a certain object or objects, and not those kind of claims which embrace indefinite *definitions*, including all time, space, power, action, and proportion. We hope the Commissioner of Patents, who is a thorough lawyer, and whose mind, when particularly directed to a subject, can soon trace effects to their proper causes, will see fit to abrogate the New Rule, not many days hence.

Buying Congress.

We are destined to have stationed in Washington during the approaching session of Congress from thirty to sixty ex-members, who come to sell their personal influences in hard cash on the nail and contingencies; their influence aforesaid for such consideration to be used to get through Congress any legislation whatever desired to put money in the pockets of the payees. Some of these gentlemen have followed this business for years past, until they are well known around the halls of Congress as "lobby members." Their former position in the public service gives them at all times an entree into both chambers, which affords advantages for electioneering for schemes on the treasury, for which speculators pay liberally.—Their knowledge of the rules governing the transaction of business also makes them somewhat desirable agents. These advantages, backed by the fact that they are notoriously less scrupulous in their means of carrying their points than most others, have up to this time rendered them so successful as professional legislative drummers that they have among them shared much of the public money which never should have left the treasury of the United States. Little good it does them, however, as, in spite of our laws and the efforts of our police, faro banks still flourish in Washington. We shall have to keep our attention upon them affectionately. As they show their hands we shall inform the public, and more especially honest members of Congress, what schemes on the treasury each may have in hand, so that they may beware of the plots of these gentlemen. The rules of the House and Senate should promptly be so amended as that ex-members, claim agents, or drummers, shall be excluded from the halls, as other claim agents are excluded.

[The above is from the "Washington Star.' It describes a system of corruption as disgraceful as it is dishonorable. It may be said, "Congress cannot hinder such characters as choose to act the part of political jackalls from coming to Washington, and endeavoring to get particular measures passed for their own interests." This is true, but the inference is that such characters would never be found hanging round the Halls of Congress if they did not receive encouragement in the practice of their lobbying arts. It is thus that Congress is implicated in such conduct. We are well aware that many *honest* men have often gone, and may have to go again, to Washington, in order get just claims enforced; we do not refer to this class of men, but to those whose claims are selfishness, whose ideas of justice consist in getting as much out of Uncle Sam as they can, and whose patriotism is bounded by the amount of dollars and cents they can make out of special privileges. Some means should be adopted by Congress to prevent this outside pressure upon legislation, and remove a foul blot upon our federative legislation.

We clip from "L'Invention," an excellent French journal devoted to the Arts, the following paragraph:

"M. Niepce de Saint Victor has sent to us for transmission to Messrs. Munn & Co., of New York, four magnificent heliographic engravings upon steel, after the process common to him and to our skillful engraver, M. Lemaitre. Messrs Munn & Co., who have always been so just towards the nephew of the father of photography, will receive these four engravings with the greatest pleasure."

We shall indeed, for we are always ready to appreciate merit, whether in our own or foreign lands.

A Great Gun.

A gun for duck shooting has been imported from England by a gentleman of Baltimore.—This handy little plaything is only 8 feet in the barrel, 5 feet in the stock—one foot and a half around the breech, and an inch and a half across the muzzle! So says the "Baltimore Times.

The rail-car making business of the United States is said to involve $5,000,000 capital, giving employment to several thousand men, and producing a value in property, estimated at $17,000,000 per annum.

New Inventions.

Rotary Pump.

Jerome B. Manny, of New York City, has invented an improved rotary pump, the peculiarity of which is in constructing two of the arms of the inner revolving cylinder hollow, so that the water may flow from the center through them into the vacuum chamber, and in forming on each side of the space in the arms a vertical chambers, one of which is open at the top and the other at the bottom. In these chambers are pistons with spiral springs around their rods, which allow of their moving inward at the point of discharge, or as they alternately come in contact with an abutment on the inner periphery of the cylinder, and also serve for throwing them out again as soon as they pass the abutment. Two cams are also placed in such a manner as to cause a gradual movement of the pistons, and the edges of the inner cylinder are packed with india rubber. The inventor has applied for a patent.

Improvement in Fences.

Moses Thomson, of Henrico Co., Va., has invented an improvement in furnaces for burning tan bark, saw-dust, &c., or other varieties of fuel, and has applied for Letters Patent. The invention consists in the employment of a series of fire-chambers arranged side by side, or in any other manner, permitting them to communicate with a single flue, which communications may be closed or opened at pleasure, by means of dampers. This arrangement is for the purpose of enabling the fuel to be heated to an intense degree in a nearly air-tight chamber, and then admitting a free supply of air to promote its rapid combustion.

Reaping Machine.

Benjamin Smith, of Batavia, Ill., has invented certain improvements in reaping machines, on which he has applied for a patent. The invention consists in a new mode of elevating or depressing the sickle-bar, by means of which it is enabled to pass over any obstructions, and also in the employment of a pressure roller to prevent the grain or grass of an adjoining swath from being drawn into the fingers by the sickles. The sickle bar is also peculiarly constructed, and a friction roller is attached to the connecting rod for the purpose of diminishing friction and ensuring a steady movement of the knives.

Fire Grate.

John Winer, of Hamilton, Canada West, has applied at Washington for a patent upon an improved mode of heating air for warming apartments by the waste heat of a fire-grate. It consists in placing in the lower part of the flue or chimney, one or more layers of tubes, which communicate in the rear with the external air, and in front with a hot-air chamber, from which a pipe may pass to the room above. This strikes us as an excellent idea, and one well worth the attention of those interested.

Improved Lock.

H.J. Crygier, of New York City, has invented an improved lock, which differs from other in the use of lever guards so arranged as to be thrown into circular toothed discs, when the bolt tumbler is raised by the key, which guards are operated by the bolt tumbler, instead of being operated directly by the key. He also employs a peculiar mode of effecting the changes or of altering the position of the indices, whereby the changes can be made with greater facility. He has applied for a patent.

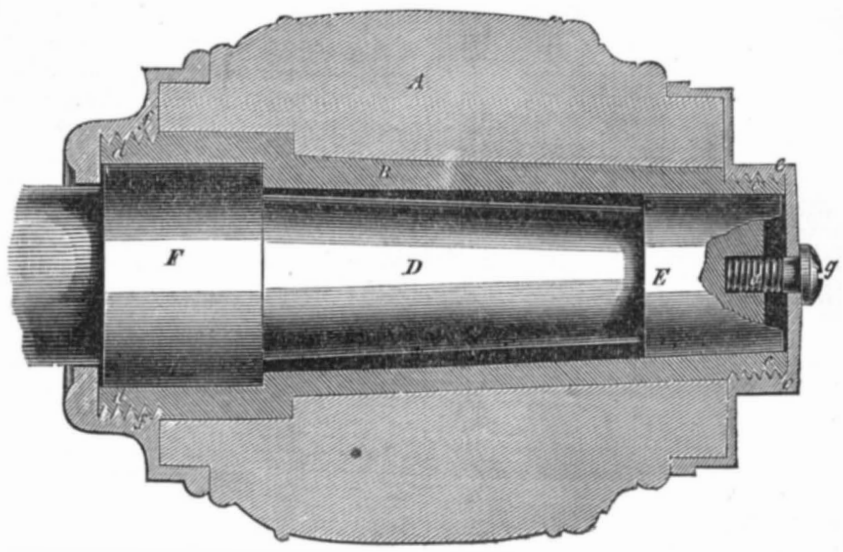
Raking Apparatus.

Cyrus Roberts, of Bellville, Ill.,, has applied for a patent upon an improved raking attachment to harvesters. The invention consists in having a rake placed underneath the platform, and so constructed and operated that its teeth shall shut down while passing in one direction, and be erected through apertures in the platform, while it is passing back. This is used in combination with a fork, which is so operated as to throw the grain quickly from the fingers.

Auxiliary Railroad Brake.

James H. Reynolds, of Olcott, N. Y., has taken measures to secure a patent for an auxiliary railroad brake. The nature of the invention consists in attaching to an ordinary truck a pair of eccentrics, which are placed upon one shaft, and so constructed that when they come in contact with the rails, the car directly over the eccentrics will be slightly elevated, the eccentrics, turning but a portion of a revolution upon the rails, are then stopped by a bar. The eccentrics, as they turn upon the rails, act upon the ordinary brake and cause the shoes to act upon the wheels of the truck before the eccentrics are stopped by the bar mentioned. This improvement is for arresting the progress of a train in a much shorter time and space than other brakes.

SECURING AXLES TO HUBS.

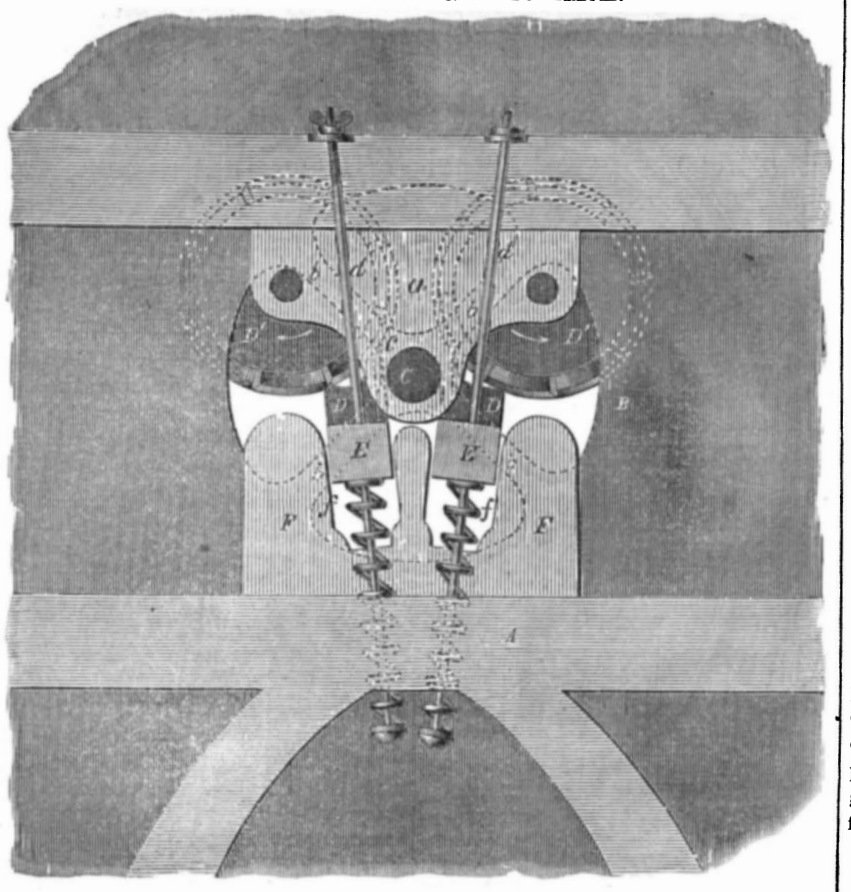


The annexed engraving is a vertical longitudinal section of an improvement in the manner of securing hubs to their axles, invented by John Lamb, of McDonough, N. Y., who has taken measures to secure a patent for the same. The axle box has a shoulder near its inner end, against which the collar of the axle bears. Each end of the axle box has a screw thread for caps to screw up the axle on the hub. There is an oil cup formed at the end of the axle, which is supplied through an opening in the cup, into which is fitted a screw stopper.

A is the hub; B is the axle box, which is secured in the hub and prevented from turning by feathers cast on it; D is the axle; E F are the collars or skeins. The skein, E, extends over the outer end of the axle, forming an oil chamber, as shown by the dark shading. The skein, F, bears against the shoulder of the box, B; *c d* are right and left hand screws formed on the ends of the box; *e f*, are right and left hand screw caps, which fit on the ends of B. These screw caps screw the box and hub firmly together; *g a* is the screw stopper which closes the hole by which the oil cup is supplied with the lubricating material. This is a very simple and good plan for securing the hub, box and axle together. It will be perfectly understood not only by those engaged in the manufacture, but any person.

More information may be obtained by letter addressed to Mr. Lamb.

FLOCK CUTTING MACHINE.



The annexed engraving is a vertical transverse section of an improvement in machinery for cutting or grinding woolen rags, &c., into fine flocks. The inventor is Joseph N. Pitts, of Blackstone, Mass., who has taken measures to secure a patent. The nature of the improvement consists in combining and arranging within a revolving cylinder two inward revolving rollers which have spiral cutters on their peripheries. These act in combination with one another, and with two stationary adjustable cutters or ledger blades placed beneath them, whereby the flocks are subjected to a shear cutting action. The spiral rollers have a swift motion, and they feed and cut the flocks; the large cylinder in which they revolve has a slow motion on its axis, and it thereby carries round the flocks, and continually feeds and refeeds them in between the cutting rollers, until the whole quantity which forms a batch, is reduced to the proper state of fineness.

A is a stout frame; B is a large revolving cylinder, with short stub journals secured in metallic bearings. It has a small opening in each end; *b b* are its arms, and *c* its hub; D′ D′ are the two revolving rollers with spiral knives around their peripheries; these rollers have their bearings in the metal framing, *a*, and are made to revolve very rapidly towards one another, while the large drum, B, revolves very slowly on its journals; D D are two stationary cutters or ledger blades. They are made adjustable and yielding by means of the setting screw rods, *d d*, and the coiled springs around them; these latter abut on the cups below, and the ledger blocks, E E, above.—These springs allow the stationary cutters to accommodate themselves to the amount of flocks passed betwen the spiral cutters; the screw rods regulate the distance between the stationary and revolving cutters. The stationary cutters are attached to ledgers, E E, which are capable of being raised or depressed in the slots, *f f*, of the standards, F F, which latter are secured to side pieces on the frame, A.

Operation.—The proper quantity of flocks to be operated on, are packed into the cylinder, B, through a slide door on its side, and all the knives being properly set, the machine is put in motion. The cutter rollers, D′ D′, as will readily be observed, will feed in the flocks between them, and the action of the spiral cutters in combination with the stationary ones, will be a kind of shearing cut. This machine is double acting, and by the continual operations of feeding and refeeding the flocks—turning them over by cylinder, B—as already explained, they are soon reduced to the proper fineness, when they are taken out and a new batch placed in the cylinder.

Woolen flocks are employed for a number of purposes, such as making velvet or flock paper, and beds (these are quite common in localities near woolen and satinet factories) and they are also used in the manufacture of cloth (not for its benefit) by mixing it with good wool. The manufacture of cloth from old woolen clothes, by reducing them to short wool, and mixing it with long staple, is carried on extensively in England. Woolen rags are as much an article of trade in Yorkshire as fresh wool from Australia or the mountains of Wales.

More information may be obtained by letter addressed to Mr. Pitts.

Western Locomotives.

We have received a letter from John Steptoe. of the firm of Steptoe & McFarlan, Cincinnati, for which he has our thanks. It relates to a short notice which appeared on page 50, wherein it states that a locomotive recently built at Chicago, is the first which has been constructed west of the Alleghenies. Mr. Steptoe informs us that he has no doubt but Anthony Harkness, of Cincinnati, has built a hundred locomotives during the past five years. Niles & Co., of the same place, have built twenty-nine during the last eighteen months; J. L. Greer, of Covington, Ky., has a large locomotive shop.—Olmstead & Co., have two shops—one in Louisville, Ky.; there is a large shop in Aurora, Ind., and one in Zanesville, Ohio.

Locomotive machine shops have increased so rapidly throughout the length and breadth of our land, that it has been impossible for us to obtain a knowledge of them by ordinary means. Unless some of the engineers inform us of the same, it cannot be expected that we can know them all. We are always happy to publish useful information about the progress of engine and machinery manufacture, and it is our earnest desire to be always correct. The paragraph referred to was taken from a Chicago paper, and as we trust little to cotemporaries for any information, we must trust them still less.

Cotton.

The frauds in ginning and packing cotton at Nashville, and other parts of Tennessee, have become so common that the principal dealers have published a caution to all ginners and packers that whatever frauds are detected, they will publish the names of all concerned, demand all costs attendant upon the fraud, and prosecute under the law.

The electro-magnetic machine described on another page has a claimant for the invention in Prof. Jacobi, of Russia.

Scientific American.

NEW YORK, NOVEMBER 26, 1853.

American Machines---A Remedy for England.

A strange fact relating to the increase of population in England is, that in the manufacturing districts it has been as thirty to one per centum, in comparison with that of the rural districts. It is therefore evident that the rural has been drained of their population to supply the manufacturing districts. This is "a great evil under the sun," as it has been the means of crowding the people into cities, and subjecting them to the numerous fluctuations which are the constant attendants of commercial life. The frequent outbreaks by the manufacturing population of England against their employers, do not excite any surprise in us; they are the natural results of a most pernicious system, which originated with the landed aristocracy many years ago. This was the destruction of the small farm system, and the buying up of small freeholds, to convert them into large and extensive "lease holdings." For many years this policy appeared to work well, but when we hear of 25,000 persons deprived of employment in the manufacturing town of Preston, England, out of a population of 69,000, as is now the case, and along with this, the sacking and plundering of the mill owners' houses, it is time that some attention was directed to remedy this evil. Intelligence will not make a starving people happy nor content, and wherever there is a population subject to frequent fluctuations in their pursuits of life, there, for a certainty, is to be found suffering and fierce discontent. What is the remedy? we answer, "more permanent employment." To obtain this, let the rural population be increased, and the landlords go back to the old small farm system of sixty and eighty acre leases, and rear up the lost virtuous peasantry of other days. A farmer with but a small capital cannot lease a large farm in England, because it requires no small amount of money to stock it with all the machinery and implements necessary to cultivate it properly; and a person with a small farm, unless he has all the required appliances to compete with one who has a large farm, must fail in the struggle of competition. It surely cannot be doubted that a farm of fifty acres can be cultivated as well and as profitably as one of 200 acres; but to do so with comparative economy, the small English farmer must have cheap and good machinery adapted to the circumstances and the work he has to perform. The remedy for him must come from America; our excellent and cheap portable thrashing and winnowing machines, grist mills, &c., and our superior hand implements, are the remedies we suggest for a return to the small lease-holding system.

When in Britain some years ago, a very intelligent farmer (to whom we had a letter of introduction from his son in this State) seeing that our attention was principally directed to his farming machinery and implements, asked our opinion of them, and was more than surprised when we answered that a Yankee farmer could make better hoe handles, scythe snaths, and rakes with his axe, than those which his workmen and women were using; we admitted that his wrought iron plows, with steel shod shears, also his harrows, and some other implements could not be surpassed, but we also assured him that Yankee plows could be furnished to do as good work, for one-fourth the price, and as for his threshing machinery, an American machine which might be wheeled on a barrow would do as much work in a day as his, which occupied a space not much less than a decent sized barn.

The triumphant success of the American reaping machines at the World's Fair in London, has aroused British agriculturists to a just sense of the value of American machinery; and the "London Times" notices with acclamation an American threshing machine, lately introduced by the celebrated Mr. Mechi, which it says does as much work as the best English ones of the same class, and cheerfully adds "it can be furnished for one third the price." This is good news, and not a little flattering to the honest pride of our countrymen. As the World's Fair of 1851 was a republic of science and art, we trust its effects will never die; and we confidently hope that if our good political institutions cannot be engrafted upon that country, that American genius, as displayed in our agricultural machinery, may be the means of remedying the evils to which we have alluded.

Patent Office Report for 1852---No. 5.

Examiner Lane.—This examiner has charge of no less than 7 classes of instruments, machines and other articles, namely, "mathematical and philosophical instruments, lever and screw power machines, stone, clay, and glass manufactures, leather, household furniture, wearing apparel, and churns and implements for working butter." The examination of some kinds of household articles appear to be divided between Examiners Gale and Lane. We are informed in this Report that 437 cases were acted upon by this Examiner, but no mention is made of the number he passed, or the number rejected—a great oversight. Very good notices, however, are given of some of the inventions passed by him. The first is that of a new mode of killing whales, &c., by powerful electric discharges. The whaleboat is supplied with a powerful magneto-electric machine, constructed with large permanent magnets and rapidly revolving amatures surrounded with coils. One pole of this machine is connected by a thick wire with the copper sheathing on the bottom of the boat, thus establishing a large surface connection of that pole with the water of the sea. The other pole of the machine is connected with the harpoon by means of a gilded copper wire covered with a coating of india rubber. After the machine has been put in motion, the harpoon is thrown, and the instant it strikes the whale, the electric discharges of the machine take place in rapid succession from the harpoon head through the body, returning through the sea, (which forms part of the circuit) to the other pole of the machine. "Serious doubts," says the Report, "were entertained by the Patent Office of increasing the power of electric shocks to a sufficient degree to over-power such a large animal as a whale, yet we are informed that the experiments already made upon whales have been successful." Our doubts are not yet removed. A patent was granted for self winding up the *register* of the Morse telegraph; to it, an electro-magnet with an amature is applied, this operates a lever and pawl, which act upon a ratchet wheel that continually winds up the main spring for driving the clock work of the register. The extra electro-magnet is operated upon by the same current which actuates the recording instrument; provision is made to prevent over-winding up. One patent was granted for striking bells by electro magnetism. This patent was illustrated in Vol. 7, Scientific American, and constitutes the Boston Municipal Fire Alarm. A patent was also granted to the inventor of the electric fire alarm for an improvement in galvanic batteries; it consists in having only a section of the interior cup porous, instead of the whole of it, as was formerly the case. Two patents were granted for improvements on the points of lightning rods, having for their object the prevention of melting off the whole point by an electric discharge. The principle in both is the use of metallic alloys of different degrees of fusibility.

Bourdon's pressure gauge for steam boilers, &c., is briefly noticed. The principle of this gauge consists in having a metallic tube much flattened, then bent into a curve, which may amount to nearly a whole circle, one of the flattened sides forming the concave, and the other the convex side of the curve. The interior of this tube is made to communicate with the confined fluid, the pressure of which is to be measured. This pressure tends to force the flattened sides of the tube apart, and according to the amount of this action, the pressure of the steam is measured by a pointer connected with the tube by pinion and lever, which tells what the amount of pressure is in pounds, by pointing to figures on the face of a dial. If the interior of this tube is exhausted of its air and made a vacuum, it will become a barometer. We have seen one of these mechanical barometers, which was brought from Paris, and cannot but speak in the warmest terms of it neatness and correctness; we certainly like it better than the mercury barometer.

A patent was granted for an alarm time-piece for lighting lamps. A spirit lamp and match are so arranged and combined with the works of a clock, that at the hour when the alarm of the clock is set to ignite the match, a hooked pawl is disengaged by the machinery, the match is rubbed and ignited, and then brought in contact with the wick of the lamp, which is thereby inflamed. This is a very convenient invention for persons who are obliged to get up from their slumbers at various hours during the night.

Parker's machine for pressing plug tobacco, on exhibition at the Crystal Palace, and which was illustrated on page 4, this volume of the Scientific American, is favorably noticed.

Eastman's stone dressing machine, illustrated on page 60, this volume, Scientific American, also on exhibition at the Crystal Palace, is very favorably noticed. The truth is, that if an improvement of any value at all, is made on a machine, that improvement is worth patenting, and those who think otherwise neither reason well nor wisely. We have not been able to notice all the important patents passed by this Examiner, but will complete the list in our next number. We have endeavored to present the nature and action of those we have noticed, in clear and intelligible language. We are confident that our remarks will be understood, and impart no small amount of useful and interesting information to many of our readers, who are unable to procure an official Report.

Leather and its Improvements.

Leather is an article of universal use; it is worn by the civilized and the savage, the high and the low, the rich and poor of all nations, from the icy regions of the North to the burning sands of the tropics. It was known and employed by man long before the first alphabet was invented,—the waters of the Deluge had rolled over the face of our planet,—the Tower of Babel was erected, or the foundations of the all-enduring Pyramids were laid. Leather is an article of manufacture entirely, a compound substance, a chemical product; although it is made of the skins of animals, it is as different from the raw material as oil is from soap, which is one of its two ingredients. Skins are principally composed of gelatine, which is soluble in hot water, and is converted into glue by repeated steepings in warm water. Leather is simply the raw material combined with some other substance, which renders it elastic and insoluble in water. Various substances are employed to obtain this result, and different qualities of leather are produced by the different ingredients employed, and the modes of using them in its manufacture.

The process of manufacture is named Tanning, and the principal substance employed is tannic acid. This acid is found in various substances, but principally in the fruits and barks of certain trees and shrubs. Good upper leather should have the following qualities—elasticity, softness, and insolubility in water. Good sole leather should be close in the grain, firm but slightly elastic, and perfectly water-proof.

The tannic acid is extracted from barks, &c. by immersing them in water, hot or cold, and by simply steeping the hides in this tan liquor, the tanning leaves the water, combines with the gelatine of the skin chemically, and forms that useful compound substance which forms our *understandings*, and which we term "leather."

This is the theory of tanning, but in carrying it out into practice the manipulations are exceedingly various, and the qualities of the leather manufactured embrace a very extensive range of processes, machinery, and chemical substances. It is not our intention to describe any of these minutely.

All the processes of tanning are laborious, expensive, and tedious. It requires not only weeks- but months, to tan a hide well; and the cost of manufacturing leather in our country, from the raw material, amounts to no less than thirteen and a quarter millions of dollars annually. A great variety of new substances have been employed, and many curious plans adopted, to shorten the period required in making good leather, nearly all, if not all, of which have proved entire failures.

We have published the patent specifications of Hibbard, Eaton, and Kennedy, for reducing the time of tanning. The object embraced in all of these patents, is the employment of some salt, gas, or acid, to open the pores of the hide and allow the tannic acid (which first combines with the gelatine, &c., of the skin at the surface) to enter into the core of the hide rapidly. The object to be obtained is the proper one, but the manner of accomplishing it is not correct, for if the pores of the skin are unduly expanded by any chemical action, that action must be injurious. Old and experienced Tanners have informed us that the remarks which we made respecting each of the tanning patents published by us, were theoretically correct and practically sound.

Good leather is not produced by the indiscriminate contact of hides and tanning liquor. We have been credibly informed by those largely engaged in the business, that not a single one of what are called "short processes," has been successful, or is now much used in our country; there seems to be a general feeling among practical tanners to scout the idea of new improvements in this extensive and most valuable manufacture.

Our principal object in writing this article is to point out the unreasonableness of such feelings. It surely cannot be denied that improvements in this art, as well as every other art, are desirable; and that man cannot have the true American spirit, who believes that tanning, as now practiced, is perfect and cannot be improved. While we make it a duty to comment freely on what we consider defects in any new or old plans, in machines or processes, we like to see every new plan (if it does not wear absurdity on its face) fairly tested and candidly judged of. This is the only way to progress and improve, and the failure of a thousand plans should never be held up as a bug-bear and a barrier to arrest the introduction and trial of a new and reasonable one to improve any art. It is our opinion that improvements will yet be made in the manufacture of leather, of such a character as will reduce its manufacturing cost at least one half, for it cannot possibly be considered a fixed fact, that this art has arrived at its "manifest destiny" of perfection.

Steam Fire Engines.

Miles Greenwood, chief engineer of the Cincinnati fire department, has succeded in decreasing the weight of the steam fire engine eleven hundred pounds, and that too without impairing its efficiency in the least. The enormous weight of this machine has all along been its chief objection.—[Ex.

Professor Renwick.

Prof. Renwick, who has occupied the chair of Natural and Experimental Philosophy and Chemistry in Columbia College, for more than thirty years past, has resigned, but at the request of the trustees of the Institution, he has consented to continue his course of lectures until March next. President King announced the resignation of the venerable Professor to the students on the 16th inst.

Elias Hall, of Louisville, Ky., informs us that he invented the new percussion priming described on page 10, this volume, "Scientific American," as being recently patented by J. Winnewater, of London. Mr. Hall states that in 1845 he informed the Secretary of War, and the Russian Minister of his invention, and he can prove it.

General Remarks—The Juries at the Crystal Palace have entered upon their duties. They have been appointed from all parts of the country, with reference to their acquaintance with the particular branches entrusted to their examination. They are mostly able men, and fully competent to decide understandingly. We cannot afford the space to name the whole of them, but we give those on Classes V. and VI., and X.

Jury D.—Machines for direct use :
Gen. James, Providence, R. I.
James Bogardus, New York City.
Victor Beaumont, "
W. B. Leonard, "
J. W. Ayres, "
John P. Bell, Pittsburg, Pa.
Samuel Woodruff, Hartford, Ct.
Geo. Geddes, Fairmount, N. Y.

Jury F.—Scientific Instruments, &c.
Prof. James Renwick, New York City.
Prof. T. D. Buckingham, Philadelphia.
Geo. W. Blunt, New York City.
Dr. Gaillardet, "
Dr. A. Clark, "
Henry R. Kimberly, "
Prof. Carnochan, "
Capt. Fox, "
Thos. S. Cummings "
Dr. E. S. Ludlow, "
Dr. W. Parker, "
J. Parkman, Boston, Mass.
W. D. Campbell, Quebec, C. E.
A. Noble, "

Capts. Du Pont and Davis have resigned their connection with the Crystal Palace Association. Their resignation was caused by the pressure of other duties.

Agricultural Implements—*Corn Sheller.* There is in the Machine Arcade a corn sheller exhibited by Wm. Reading, of Washington, D. C., which has one advantage over most others the ears may be shovelled into it instead of being placed in singly by hand. It is a horizontal cylinder of sheet-iron, perforated at the bottom with holes large enough to allow the corn to pass out, but not the cobs; through this passes a revolving shaft fitted with cogs or spurs arranged spirally around it. It was patented July 13, 1852.

Clod Crusher—In the English Department stand several agricultural implements from the manufactory of the celebrated Crosskill. The most peculiar of these is an implement called a clod-crusher, which is wholly unlike anything in use in this country. It is a roller consisting of a series of cast-iron discs placed loosely upon an axle, independent of each other, these are serrated upon the edges. Each alternate one is smaller than the other, and consequently must revolve more times. This communicates a side motion between them which, with their serrated edges, must be very effective in crushing hard lumpy ground, the purpose for which it was designed.

Printing and Type Machinery.—A. Delcambre, of Paris, is the exhibitor of a machine for setting, and another for distributing type. The former of these is very ingeniously constructed. The compositor sits down before a finger-board, on which is arranged all the letters of the alphabet, small and capital, with the customary pauses, &c. These are placed upon keys communicating by wires with the case at the top of the machine. This is formed by placing thin strips of metal in a vertical position, leaving sufficient space between them for a single type. Between these the type are arranged in columns, with their faces in one direction. From each of these columns of type passes a groove or channel down an inclined plane at the rear of the machine, all these uniting in one at the bottom where by a simple contrivance, the type, as it passes down, is shoved into the composing stick. By the action of another machine, not easily explained without drawings, it is distributed in columns ready to be placed in the case.

There is also on exhibition a machine for casting type. The metal is placed in a small metallic box, which is heated by a charcoal fire, and by the action of a forcing piston a small portion of this is injected into a mould which opens and drops the type, then closes, and returns to a proper position for receiving another portion of the injected metal. The machine may be turned by hand or driven by steam or other power. It is from the manufactory of L. Johnson & Co., Philadelphia : it is the kind in common use.

Jones' Typographer, illustrated by us on page 268 of our last volume, is also on exhibition. This is a very ingenious machine, and we want to see it introduced into general use. A specimen of its printing is shown with the machine. It is certainly executed in a neat manner. [We would advise the inventor to construct his machine so that the space between the letters should not be quite so great.] His address is John Jones, Rochester, N. Y. The machine was patented June 18th, 1852.

We are sorry that there are none of Hoe's Mammoth presses in the Exhibition. They would have given foreigners an idea of the *power* of the Press in our free country, as well as a very good idea of what American ingenuity can do. There are in the East Nave, however, one of A. B. Taylor & Sons, and one of the Adams' presses, employed in printing the Weekly Journal of the Association.

Joseph Laing, 66 Fulton street, New York City, exhibits a lithographic press, which is part of the time in operation. It attracts much attention, and is constantly surrounded by a throng of the curious. This art has been carried to great perfection, and proves a formidable rival to the older arts of steel and copperplate engraving,—many of the periodicals of the day being partially embellished with lithographs. The art is one of increasing importance.

Charles Starr, of the American Bible House in this city, exhibits a Backer and Finisher, used in binding books. They are ingenious and well made machines.

Cracker Machine.—W. R. Nevins, of 87 Eldridge street, New York City, exhibits one of the cracker machines illustrated by us on page 305, Vol. 5. Two rollers are placed at the top of the machine for rolling out the dough and passing it to the cutting roller, which is of horizontal shape, having arranged upon its faces the cutters, which are worked by springs and have followers upon their sides to clean them from the dough. From the cutters the dough is carried away upon an endless apron to the person who tends the oven. This is an excellent machine.

Carriages—The show of carriages is very good, but there is little of novelty here. There is a very good Broadway omnibus from the manufactory of John Stephenson, of this city, which is highly finished and elegantly painted.

Wood, Tomlinson & Co., of this city exhibit a buggy, the springs of which are of the ordinary elliptical form, but are of a solid plate of steel.

Bradley & Woodruff, of Rahway, N. J., are the manufacturers of three buggies, exhibiting Hubbard's patent carriage gearing, described by us on page 106, Vol. 8; the springs are four wooden rods, two of them attached to the hind axles and front of the box, and two of them to the front axle and rear of the box. They are certainly very cheap, strong and easy, and we must give them a decided preference over the ordinary elliptic springs.

J. N. Edson, of New Orleans, La., exhibits a very nice open buggy with the springs at the side, terminating over the axles in a coil of thin steel plate.

There are many others worthy of notice only from their beautiful finish, and as all possessed this merit in a greater or less degree, we cannot notice them for this. There are some elegant French carriages in the Exhibition, too heavy, though, for less than four horses.

A Short Voyage.

The screw steamship Argo, an English vessel, belonging to the General Screw Shipping Co., has performed the voyage to Melbourne, round the Cape of Good Hope, returning by way of Cape Horn, in the astonishingly short period of five months and nineteen days, six weeks of which period was spent in Australia. The actual time of the ship under steam and canvas was only 121 days—giving an average per day of 230 miles, or a little more than nine and a half miles an hour. The consumption of coal during the whole voyage was but 2,105 tons, giving an average of about 17 tons per day. The English papers state that the Argo made, with a fair wind, thirteen or fourteen knots for days together, and eleven or twelve knots close hauled—in both cases with the screw feathered.

Recent Foreign Inventions.

Improvements in Treating Copper Ores.—Mr. A. E. L. Belford, of England, has secured a patent for certain methods of treating copper ore, in the specification of which it is stated that—1. The calcined ore is washed with water in vats of masonry, lined with wood or lead, to avoid infiltration, and placed at different heights, in order that the liquid which they receive may pass from the first to other vats by means of cocks, the material being kept agitated until the whole of the salts of copper, formed by calcination, are dissolved. The wash is then run into spare vats, and left to clarify. 2. The wash is concentrated in leaden evaporating vessels, and powdered vegetable charcoal is added, the mixture forming a paste, which may be made into bars. 3.—The bars or bricks are then melted and passed to a reverberatory furnace, to be formed into ingots.

Improved Iron Manufacture.—H. Leachman, of Compton-terrace, Islington, England, has patented a process in the manufacture of iron, in which he adds common brickdust, salt, and black oxyde of manganese, to pig-iron in the boiling process. The proportions for mixing the materials in the first instance, are brickdust, 120 lbs., salt 600 lbs., and oxyde of manganese 280 lbs. The quantity of this mixture to be added to the iron varies from 20 to 50 lbs. per ton, less being used as the iron is of superior quality.

Improvements in Rolling Iron.—Mr. C. May, of London, has patented some machinery for an improved method of rolling iron. Four steam cylinders act upon one large main wheel, and the rollers are so arranged as to be driven alternately in opposite directions, without reversing the machinery. The pile or rail may be passed backward and forward through the rolls, and be elongated in both directions, without the necessity of lifting it over the rolls.—Another claim is for arranging a series of rolls, so that they shall be at such distance apart that the iron may not be between two pairs at the same time, and yet so that the succeding pairs of rolls may be so near as to receive the iron immediately after it has quitted the preceding pair.

Improved Piston.—Mr. R. E. Peterson, London, has patented a new piston, consisting of a flexible or elastic material, of a hollow hemispherical or conical shape, provided with a rim or flange round its outer edge, held fast by screw bolts between the flanges of two metallic hemispherically-shaped vessels, which form the cylinder, within the upper of which the flexible piston is placed, so as to form a steam-tight chamber between its upper surface and the inner one of the metal hemisphere. The piston-rod passes through a stuffing box attached to the top of the upper hemisphere, and securely fastened to the upper part of the flexible piston.

Improvements in the Manufacture of Sulphuric Acid, &c.—Mr. G. Robb, of Glasgow, Scotland, has recently taken out a patent for improvements in the manufacture of sulphuric acid, alkalies, and their salts.. The claims are for the use of powdered pyrites, cinder, oxyde of iron, or oxyde of manganese, formed into masses with clay or alumina; a mode of keeping up the heat of the kiln or furnace by the use of heated air, carbonic oxyde, or other cheap combustible gas, or heated products of combustion. For the decomposition of common salt in a state of admixture with oxyde of iron, pyrites, cinder, or oxyde of manganese, by passing the vapor of sulphurous acid through such compound; operating on pyrites for producing sulphuric acid, the heat being obtained from the combustion of such pyrites. The use of bicarbonate of soda, as the source of carbonic acid, for effecting the decomposition of sulphuret of sodium; and the use of sulphate of lime, and the agents before mentioned, in the reduction of sulphuret of sodium to sulphate of soda.

Improvements in Ship Propellers.—W. J. Burch, of Crag, near Macclesfield, England, patentee.—The propulsion is not effected by a disc, but by vanes or helical sections, which he calls "fins," set in the circumference of a disc, or wheel, to which the corresponding lines of the vessels are prolonged, so as to form a kind of cylindrical-shaped projection, from the position of the disc tapering aft to the stern post, and forwards forming a continuation of this *quasi*-cylinder, or trunk, to a little abaft the beam.—Above and below the disc are apertures for the passage of the fins. Six vanes are set upon the disc, and, revolved by the motive power, propel the vessel. The advantages alleged are, that the truncated lines act in the manner of Griffith's globular center, in nullifying the central resistance, which chokes the ordinary screw, an object which is a grand desideratum, if attainable. "The advantages," says the inventor, "gained by this arrangement, consist in shielding the ineffective surface of the propeller from the passing current, and leading the water upon the fins at such a radial distance from the axis as will secure the whole power applied in the right direction. By this alteration of the locality of the screw, the current is thrown direct on the helm."

[Collated from our foreign exchanges, "Mechanic's Magazine," "Newton's London Journal," "Artizan," "L'Invention," Paris, &c.

Foreman's "Electric" Process for Raising Ships.

We were present a few days since at the Atlantic Dock, Brooklyn, to witness the raising of a "ship of one hundred tons burden," by the above process, which has just as much to do with Electricity as it has with the Moon, and no more.

Two cast-iron generators were partly filled with wet gunpowder and connected with a cast-iron retort or purifier filled with water, from which passed a coil of cast-iron tube of about ninety feet in length. The whole apparatus was placed in a box about six feet square and two feet high, which was filled with water. From the end of the coil a hose, dividing in two parts, passed to six casks lashed to the sides of an old canal boat which was sunk in about fifteen feet of water.

The powder in one of the generators was then ignited by a pistol which was fired into it, and by its slow combustion carbonic acid and carbonic oxyde gases were of course generated; these passed through the hose into the casks previously filled with water, and displaced it—holes having been made in the bottom of the casks for the water to pass out. In a little less than two minutes after the powder was ignited the boat rose to the surface, but before all the casks had filled the hose burst and prevented any further success.

We are inclined to think very favorably of this process, but the experiment, though trumpeted by some of the papers, as "eminently successful," proved nothing. When we arrived at the spot the canal boat, which had been filled with water and pretty well loaded with stones, was yet floating; after an additional quantity of ballast had been added, it sank. But mark, an amount just sufficient to sink it was used, so that a very slight change of specific gravity would cause it again to float. Hence it would have been strange indeed if it had not risen.

But as we have said, we think well of the plan; it is certainly far cheaper, simpler, and more speedy than those previously employed—the whole apparatus takes up but little room, and can be transported by railroad to any part of the country. The inventor contemplates using flexible camels instead of casks, and the employment of some other material besides gunpowder for the generation of the gases. We are fearful, however, that the bursting of his hose will prove a serious difficulty. It is all we conceive that stands in the way of complete success.

TO CORRESPONDENTS.

S. W., of N, Y.—You say you have been a subscriber to the Scientific American "four or five years," and still you feel compelled to ask where you can obtain planing machines. Almost every number since you became a subscriber has contained a "Planing Machine" advertisement, and in No. 7 of this Volume, under head of "Crystal Palace," you will find the subject of planing machines discussed. How can we do more for your enlightenment on this subject?

C. A. W., of Ala.—Ranlett's Architect is as good as any known to us; a good work was last year published in Philadelphia, but we did not receive it, and consequently do not know the publishers.

C. B. F., of Pa.—We cannot give the information you solicit about the size of the Marston Rifle ball.

E. N. F., of S. C.—Use the 24 and the 9 inch pulleys. There is no use of employing larger when the smaller will answer the same purpose. We cannot tell what would be the difference of power required.

J. P., of Ark.—Your case is a hard one; you cannot recover anything from Mr. C., and so far as the injunction is concerned, your testimony might remove it, but that would depend on the will of the Court. In a trial at common law, if it can be proven that a patentee is not the original inventor, the patent may be declared null and void by the Court. In your case it would become public property, as you have allowed it to go into public use.

J. P. C., of N. Y.—Your intention has evidently been to abandon the invention; if not, why have you not taken out a patent before? If it interferes with Mr. A.'s, your remedy is laid down in the law; as a matter of course we cannot become parties to an opposition to his case.

E. W. N., of Pa.—The illustrations of patented improvements in all kinds of machinery, which have appeared in the Scientific American, have been the means of doing more for the benefit of patentees than any other means ever used by them. Every person who desires to be posted up in improvements consults our columns; the reason is obvious, the "Scientific American is the Repertory of American Inventions."

J. B., of N. H.—The improvement you describe in railroad trucks is not new.

W. P. P., of Vt.—There is no Commissioner of Patents in Canada.

W. W. B., of Ind.—We have no plans of houses suitable for your purpose. You had better consult Ranlett's Architecture if you wish a cottage.

O. W., of Pa.—You must be your own judge in regard to the propriety of purchasing "Bulkley's Dryer." We have no doubt of the correctness of the principle, but have never seen it in operation.

J. L. L. M., of Pa., & F. M., of Ill.—We have written to Washington to get an estimate of the cost of constructing your models, and as soon as we hear from them we will address you by mail.

G. & O., of Ohio—Scott's Engineers and Machinist's Assistant is a good work for you; price $24.

G. R. A., of Ct.—Your proposed plan for applying water is not patentable and contains no advantages.

J. W. M., of Ala.—There is no patentable novelty in the improvement you describe for threshing grain.

G. H., of C. W.—We do not know of any machine such as you require.

H. M., of Ohio—We cannot furnish the back numbers of this volume. Pummace can be pressed in the manner you propose: it is an old method. The question you ask respecting the earth's polarity is not clearly stated: we don't know what you mean.

E. F. F., of Vt.—For information in regard to Daniel's Planing Machine, address Ball & Rice, of Worcester, Mass.

R. D., of N. Y. City—You may call at our office and we will take your statements and advise you.

W. T. C., of Ky.—Machines for crushing rock are well known, if you have any improvement send us a model or sketch of it.

D. H., of Ohio—Nothing new in your suggestion.

O. C., of Ohio—Both of the devices described in your letter of the 12th appear to possess patentable novelty. We do not know of anything to prevent you from procuring a patent. Send models,

J. N. W., of Tenn.—We do not discover any thing new in your alleged improvement in water wheels; spiral-shaped buckets have long been known for the purpose, and no claim could be made on them now.

A. T., of Phila.—Yours is received.

J. H., of Ky.—You are surely entitled to a patent; but you are perhaps the best judge of its importance.

B. L., of Mass.—You can make as many fire-proof buildings as you please with plaster of Paris—no person will molest you.

T. P., of Md.—No patent could be obtained on your coffin except on the design—this relates to its ornamental character.

A. N. N., of Ind.—We have never seen a "spirit level" so constructed as to indicate the inclination of an object in degrees, and we believe one that would accomplish such a purpose would be new and patentable, but we cannot conceive how it can be done. We have seen the same ends you propose accomplished by mechanical means. The Plumb and Level Indicator, sold by us some years since, was for that purpose.

E. E., of Me.—It is impossible for you to obtain a patent for the application of one metal for another, in the manufacture of an article in the manner described: it does not constitute a patentable subject according to the practice of the office.

T, A. R., of Pa.—The india rubber balls are made hollow; you can procure the article of any India Rubber Company.

J. T. W., of Pa.—Several indicators for the same purpose and similar to yours, have been proposed. We cannot advise you to spend money upon it; R. R. Companies will not pay the expense of their introduction.

S. C. C., of Ill.—We decline to give you an opinion in reference to the alleged novelty of Mr. M.'s invention; it is not proper that we should advise with any one in regard to it, except the inventor or some one he may permit to represent his interests, which you are not authorized to do.

H. B., of Ct.—We cannot satisfactorily answer your inquiry in reference to the value of the Steam Valve. We think its value in a merchantable sense is doubtful.

G. F. S. Z., of Va.—There is no value that we can discover in your paddle wheel for steamboats. You cannot make the parts sufficiently strong to bear up against the severe pressure to which wheels are subject, without rendering them cumbrous and useless. We advise you by all means to drop it.

R. A. J., of Va.—The books you name we cannot furnish, as we have no duplicates on hand.

O. W. M., of Conn.—Your method of using engraved rolls for the purpose of ornamenting the surface of metals, is not patentable. We understand your meaning.

F. P. C., of S. C.—In No. 3, Vol. 2, Sci. Am., you will find a steam boiler feeder operating in the same manner as you have described.

O. D., of Md.—You can send additional subscriptions on the same terms as the former club; we shall be glad to receive them. The method you describe for forcing water is old; better plans are used at present. Your raker may be new; you can send us a sketch of it for examination if you wish to, and we will further advise you.

O. C., of Mass.—We undoubtedly secure more patents every year than any other two agencies in the country; of course we cannot always succeed, since more than one half of the entire number of applications are rejected; but we never encourage an inventor unless we have confidence in his ultimate success. This course we have always pursued, it is the only one honorable to the profession. We have frequently received complaints against agents located in Washington: sometimes they are just, but in most cases they are against irresponsible agents, who assume to withdraw and retain fees due on rejected cases, when they have no rightful claim to the money: respectable agents will not do this without the cognizance of their applicants.

W. H. M., of N. C.—Your plan is good, and has been sometimes successfully practiced, but not with a bow and arrow.

J. P., of N. Y.—The waste heat of lime kilns and smelting furnaces has been employed for generating steam under a boiler; but this is different from your plan, which is to burn your lime with hot air. Your plan is not so good, in our opinion, but it is new; if found useful it is patentable.

J. M., of Ohio—Double piston pumps operating in the manner shown in your communication are very common. Kase's patent pump is constructed upon the same principle; you cannot procure a patent on it.

J. A. T., of Mass.—Many substitutes for the crank have been proposed, but they all possessed some inherent defect: hence none are in use. If you have any thing new send on a sketch of it for examination.

A. H. J., of N. Y.—A wheel of the very same kind as you describe was long ago published in the Scientific American.

J. A., of N. Y.—You can procure the articles you want of E. N. Kent, 118 John st, this city.

☞ Unsigned Communications are rejected unless there is abundant reason to believe that the writer is ignorant of his duty in this respect. It is not at all likely that we shall make an unwarrantable use of the names of our correspondents, therefore why withhold them?

Money received on account of Patent Office business for the week ending Saturday, Nov. 19:—

A. G. C., of Me., $55; G. W. C., of Mo., $50; W. Z. W. & J. W. C., of N. Y., $30; E. S. S., of N. Y., $30; W. C. W., of Mass., $15; T. G., of R. I., $30; H. S. W., of O., $30; S. B., of Ct., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Nov. 19:—

L. & M. T., of Wis.; C. & S., of L. I.; A. N. N., of Ind.; C. R., of Ill.; L. & C., of Ohio.

A Chapter of Suggestions, &c

ALL GONE, ALL GONE.—At the commencement of the present volume, we printed 5,000 extra copies, which we concluded would be sufficient for the subsequent demand. It is now but eight weeks since Volume Nine was commenced, and to the disappointment of many we are obliged to announce that the entire editions of two numbers, 1 and 2, are all gone, and that we shall not be able to furnish the back numbers to any parties who order after this date.

MISSING NUMBERS—Mail Subscribers who have failed to receive some of the numbers of Vol. 8, are informed that we are able to supply them with any of the numbers, from 1 to 52, EXCEPT the following, and these we are ENTIRELY out of—Nos. 2, 3, 4, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 47, 48. 49, 50, 52.

PATENT LAWS, AND GUIDE TO INVENTORS—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, all; price, in sheets, $2; bound, $2,75.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given and often with the name of the post-office also omitted Persons should be careful to write their names plainly when they address publishers, and to name the post-office at which they wish to receive their paper, and the State in which the post-office is located.

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

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

UNITED STATES PATENT OFFICE,
Washington, Nov. 12, 1853.

ON THE PETITION of Samuel S. Allen, of Salem, in the County of Salem, and State of New Jersey, formerly of Miamisburg, Ohio, praying for the extension of a patent granted to him on the 15th day of January, 1840, to which improvements were added on the 29th day of March, 1841, for an improvement in Machines for Husking and Shelling Corn, for seven years from the expiration of said patent, which takes place on the 15th day of January, eighteen hundred and fifty-four—

It is ordered that the said petition be heard at the Patent Office on Saturday, the 14th of January next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

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

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvania, Philadelphia, Pennsylvania; Evening Post, and Scientific American, New York; Boston Post, Boston, Massachusetts, and Patriot, Concord, New Hampshire; Enquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the fourteenth day of January next. CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 11 3

Scientific Museum.

Gilding---No. 2.

(Continued from page 80.)

2nd. In 1836, J. Elkington, of Birmingham, Eng., obtained a patent for gilding copper, brass, &c., by means of soda combined with carbonic acid, and a solution of gold.—Five ounces of fine gold were dissolved in 52 ozs. avoirdupois of water and nitro muriatic acid in the proportions of 21 ozs. pure nitric acid, 17 ozs. of pure muriatic, and 14 ozs. of pure water. The 5 ozs. of gold are put into this compound acid in a strong glass vessel and submitted to a low heat, by placing the said glass vessel in a heap of sand kept warm beside a stove. The gold gradually dissolves while the acids give off a dense yellow vapor. If the gold is feathered it dissolves much faster. After allowing the acidulous gold to stand for one day, until it becomes perfectly clear, it is poured off into a suitable stoneware vessel. Four gallons of distilled water, and 20 lbs. of bicarbonate of potash, are then added, and the whole made to boil moderately on a stove, for about two hours; it is then ready for use.

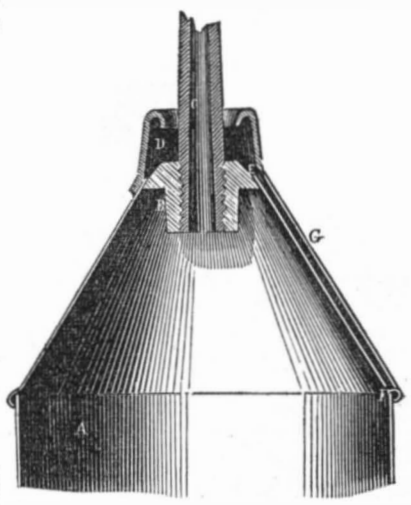
The articles to be gilded after being perfectly cleaned from scale or grease, are suspended on wires to be convenient for the workmen to dip them into the liquid, which is kept boiling. The time required for gilding any particular article will depend on circumstances, partly on the quantity of gold in the liquid, and partly on the size and weight of the article, but a little practice will enable the workman to operate correctly. Supposing the articles to be gilded, are brass or copper buttons, or small articles for gilt toys, earings, bracelets, &c.—a considerable number of which may be strung on a bent copper wire—they are dipped into the boiling gold solution, and moved gently therein for a few minutes, when they are taken out and washed well in clean water.

Considerable practice is required to manage the boiling liquid, as it is evident that the first batch of articles which are gilt will leave the liquor minus a portion of its gold; it is therefore necessary to add a small portion of fresh gold solution for every new quantity of articles to be gilded. The progress of the gilding must be noted from time to time by the workman, and care must be exercised not to expose them to the air, until they are properly covered with the gold. This method of gilding is no doubt due to an electric action. Large articles require longer boiling than small ones. If the articles gilt in this manner are required to be deadened, this can be done afterwards by dipping them in a solution of aquafortis greatly diluted with water, then washing them in clean water, and dipping them again into a warm solution of ammonia, out of which they are taken, washed well in clean water, and then dried in warm dry saw dust or bran. The deadening may also be produced by dipping the articles to be gilded (before they are boiled in the gold solution) in a very weak solution of the nitrate of mercury as described in No. 1. Or after the articles are gilded as now described, they can be deadened by dipping them in a weak solution of the nitrate of mercury, which is afterwards expelled by heat as in fire gilding.

The brightening solution employed by gilders and goldsmiths to bring out a rich color upon the surface of their trinkets, is made by dissolving one part (by weight) of common salt, one part of alum, two parts of nitre, and three parts of water. This pickle takes up both a portion of the copper and the gold of the article. The articles which are dipped into this solution, must be at once plunged into pure soft water and well washed; they are then wiped with a soft cloth and finally dried in warm bran.—Upon every occasion, articles to be gilt, and when gilding, should be plunged at once into clean water, when lifted out of any solution containing acid. The reason for doing this is that a black oxyde forms very suddenly on the surface of the article when exposed to the air, especially if lifted out of a hot solution. Pure gold is not oxydized by exposure to the atmosphere, but it must not be forgotten that the articles are made of copper or brass, metals which are easily affected with oxygen.

Oil Dripper.

This engraving is a vertical section of Draper & Scott's patent Oil Dripper. A is the body of the can; B is a socket into which the tube, C, made of steel, is secured. D is a reservoir around the tube, into which the drippings will run and pass down the channel, E, into the body of the can. It is filled by unscrewing the tube. The oiler in common use has a tin tube for delivering the oil, which is liable to become battered and its aperture enlarged. Leakage

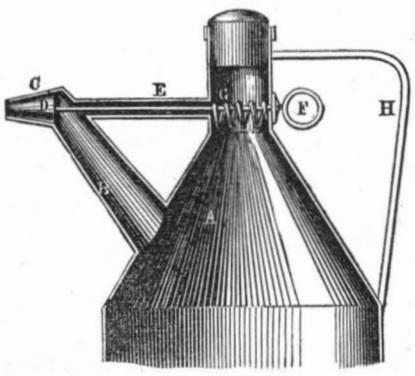


also frequently takes place at the side tube useful for filling. The tin tube being soldered to the cap, when any sediment from the oil gets into the tube and stops its running, it has to be forced back into the can by means of a wire, and of course is liable to trouble again. The tin tubed cans and all others however constructed, except this, are frequently covered with oil, dripping down on the outside, rendering them dirty, and wasting much oil.

All the disadvantages of the stopper are obviated in these cans, by unscrewing the tube to fill them. The tubes are made of cast steel and hardened so that the delivery is uniform, as the hole cannot be enlarged at the pleasure of the operative. In case these tubes get obstructed, they may be unscrewed and the sediment cleaned out. The oil that runs down the outside of the tube is conveyed back into the can, thus saving much oil, and rendering it neat to handle.

Address E. D. & G. Draper, Hopedale, Milford, Mass.

Nichol's Patent Safety Can.



The annexed engraving is a perspective view of the ordinary decanting vessel, with a sectional view of the tube, showing Nichol's improvements attached.

A is the body of the can; B is the tube with the decanting orifice; E is a metallic tube through which passes a wire connecting with the valve C. G is the replenishing tube, closed by a cork; D is the vent orifice closed by a valve at the same time with the decanting orifice. F is a ring for pulling the wire and opening the valve, C, which is closed as soon as released by the coiled spring in G.

It is well known that many serious accidents have occurred in the use of the ordinary decanting vessels, from their accidentally falling or upsetting, thus spilling the fluid and filling the room with explosive vapors. The design of this invention is to remove these dangers by the use of the self-acting valves, which keep all the orifices closed when the vessel is not in use.

It will be seen that should the fluid or the vapor of the fluid ignite at either of the orifices of the ordinary can, while filling a lamp, and from alarm the holder should allow the vessel to fall, the fluid, in a state of ignition, would be thrown upon the clothing and around the apartment, and thus an imminent danger would be incurred. With these improvements attached, such results are impossible, inasmuch as the orifices of the vessel are closed as soon as the hold is relinquished by the person using it, and should it fall no fluid can escape and no injury can result.

It will be seen also, that however careless servants and others may be, they cannot leave the vessel exposed to danger or loss by evaporation, as the valves are by their own action continued closed. It is to be understood that wire-gauze protectors against explosions are in all cases to be used in this decanting vessel.

Dr. Nichols is also the inventor of a safety fluid lamp, which we have very carefully examined. It possesses excellent qualities, and is among the very best of its class. In some respects we prefer it to any other brought to our notice. The body of the lamp is made of metal and covered with glass, which frees it from the objection usually made to the use of metal lamps, and should it fall it could not break, and there is no chance for the flame to communicate with the fluid.

Address J. R. Nichols, Haverhill, Mass., or to Peet & Nichols, corner of Broadway and John streets, N. Y.

Curiosities of Sleep.

In Turkey, if a person happens to fall asleep in the neighborhood of a poppy field, and the wind blows over towards him, he becomes gradually narcotised, and would die, if the country people, who are well acquainted with the circumstance, did not bring him to the next well or stream, and empty pitcher after pitcher on his face and body. Dr. Oppenheim, during his residence in Turkey, owed his life to this simple and efficacious treatment. Dr. Graves, from whom this anecdote is quoted, also reports the case of a gentleman, thirty years of age, who, from long continued sleepiness, was reduced to a complete living skeleton, unable to stand on his legs. It was partly owing to disease, but chiefly to the abuse of mercury and opium, until at last unable to pursue his business, he sank into abject poverty and woe. Dr. Reid mentions a friend of his who, whenever anything occurred to distress him, soon become drowsy and fell asleep. A fellow student also, at Edinburgh, upon hearing suddenly the unexpected death of a near relative, threw himself on his bed, and almost instantaneously, amid the glare of noon-day, sunk into a profound slumber.—Another person, reading aloud to one of his dearest friends stretched on his death-bed, fell fast asleep, and, with the book still in his hand, went on reading utterly unconcious of what he was uttering. A woman at Hainault slept seventeen or eighteen hours a day for fifteen years. Another is recorded to have slept once for forty days. Dr. Macnish mentions a woman who spent three-fourths of her life in sleep, and Dr. Elliotson quotes the case of a young lady who slept for six weeks and recovered.—The venerable St. Augustine, of Hippo, prudently divided his hours into three parts, eight to be devoted to sleep, eight to recreation, and eight to converse with the world.

Maniacs are reported, particularly in the eastern hemisphere, to become furiously vigilant during the full of the moon, more especially when the deteriorating rays of its polarized light is permitted to fall into their apartment; hence the name lunatics. There certainly is a greater proneness to disease during sleep than in the waking state; for those who pass the night in the Campagna di Roma, inevitably become infected with its noxious air, while travellers who go through without stopping escape the miasmi. Intense cold induces sleep, and those who perish in the snow, sleep on till they sleep the sleep of death.

Mechanic's Institute.

The first of the winter course of lectures before the Mechanic's Institute of this city, was delivered on Tuesday evening of last week, by Prof. Rainey, of this city. The lecture was tolerably well written, but we think that the mechanics, of whom it is fair to presume the audience were chiefly composed, would have liked it better if it had been more thoroughly practical. The subject was "Genius—its Aptitudes, Aims, and Ends." We hope our readers in this city are all patrons of this institution. We know of no way in which they can spend four dollars a year more profitably than by taking the "Scientific American," and becoming members of the "Mechanic's Institute." Money expended in gaining useful information is always earning a compound interest at a large rate per cent.

Premium for Prize Cotton.

The merchants of Memphis, Tenn., have presented Colonel John Pope, of that county, with a silver salver, two silver candlesticks, and a beautiful mantel clock and vase, costing in all $100, being the amount of a prize they had offered for the best bale of Memphis cotton exhibited at the Crystall Palace Fair.

Erratum.

The description annexed to Booth's patent grain winnower, in our Crystal Palace article of last week, referred to G. B. Salmon's machine, and should have appeared under his name.—The machines so closely resemble each other, that the mistake is not a singular one.

LITERARY NOTICES.

CHEMISTRY OF DYING—This is a new work published by H. C. Baird, of Philadelphia, Pa., and forms one of the best of that practical class of works devoted to the arts, for which he is distinguished as a publisher. Its author is James Napier, F. C. S., an excellent chemist and practical dyer. He was in this country a few years ago, and was for a number of years the principal analytic chemist in the laboratory of Dr. Griffiths, of London. We personally know its author, and have the utmost confidence in his abilities and knowledge. Excepting the Essays of Crum, on Dyeing, it is the only work of the kind in existence which treats of the art as a science, in the light of modern chemistry.

ANNUAL OF ELECTRO METALLURGY.—This a neat volume, by the same author and the same publisher. It is as ably written as the work on Dyeing, but does not contain so much that is fresh and instructive; it is, however, an excellent work.

A HOME FOR ALL.—Is the title of a new book, by O. S. Fowler, published by Fowlers & Wells, of this city: it is intended to describe the "gravel wall" mode of building adopted by the author; he also advocates the octagon form. The gravel wall is certainly by far the cheapest mode of building hitherto devised, but time must test its durability. We do not like the octagon form for private buildings. The book is published in popular style, and is very readable.

We have received the third number of Vol. 2, of the "Book of the World," a beautiful periodical, published by Weik & Wieck, 195 Chestnut street Philadelphia. It is beautifully illustrated, and sold at 25 cents a number.

"Dickens' Household Words," for November, is a capital number—brim-full of good things. McElrath & Baker, 17 Spruce st., N. Y., publishers.