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### Steam-Boilers.

M. Fontaine-moreau, of Finsbury, England, has recently patented two new arrangements of boiler and furnace for steam-engines and other purposes. One of them consists of a cylindrical boiler above and two smaller ones below, connected with the upper one by vertical tubes of nearly similar diameter to the smaller boilers. On each side of the furnace are large vertical hoppers, reaching higher than the top of the boiler, in which the fuel is supplied, and falls down as the ignited part beneath the boiler burns away, being thus self-feeding after the hoppers are once filled. The furnace is supplied with proper air valves, and the peculiar construction of the grate affords the means of cleaning the furnace and boilers, without interrupting their operation, combustion being maintained on one side while the other is suspended. The slags are collected in heaps beneath the fire-bars, and expelled through an aperture at bottom. The claim is for a double feeding apparatus, the part immediately leading to the furnace being inclined, and for the constr ction of a double acting grate. The other improved arrangements consists in having any number of metal tubes placed beneath the boiler, their extremities being fixed in two chambers, one in front and the other behind the boiler, one of them only communicating with the boiler, for the passage of steam. This communication can be intercepted by a stopper when required. The supply of water to the boiler is regulated by a valve connected with the feed pump, and a gauge cock shows the height of the water.—The tubular apparatus is set on each of two boilers, independent of each other, and possesses the advantages of allowing one of them to be taken out and cleaned without disturbing the other, or stopping the working of the engine.

### Improvements in Furnaces.

R. Gordon, of Heaten Norris, Lancashire, Eng., has patented a peculiar construction of furnace, in which the fuel is deposited in a hopper at the mouth, and slowly carried forward during the combustion on the upper surface of revolving cylinders, until it is deposited in the form of ash at the bridge gate. The air necessary for complete combustion is supplied through hollow tubes and openings, in several discs. The speed at which the revolving bars cause the coal to travel through the furnace is regulated according to the time required for complete combustion.

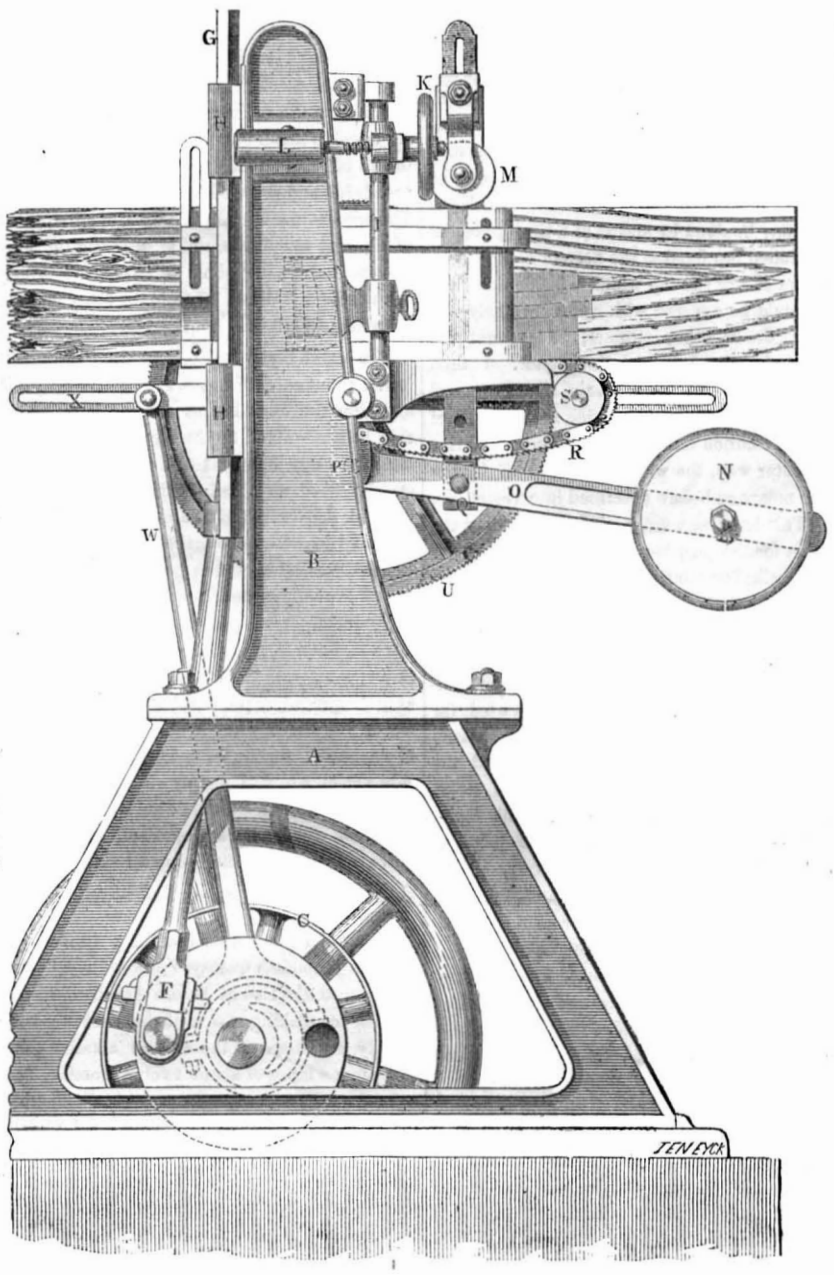
### Steam on Canals.

The Baltimore "Patriot" describes an experiment soon to be made on the Chesapeake and Ohio Canal to propel the boats by steam instead of horse power. It is thought by those having the matter in charge, that it will succeed. There is to be a regular line of steam coal boats, and a company is now organized for that purpose.

### California Wine.

A cask of California wine has been presented to the President of the United States by Senator Gwin, in the name of Mr. Purdy, Lieutenant-Governor of California, and Collector Hammond, of San Francisco. It is the grape and manufacture of the State.

## DEAL SAWING MACHINE.




We present our readers this week with an illus ration of a deal sawing-machine, recently patented in Engl nd, by Mr. Archbutt, of Chelsea. It embraces a novel feed motion, which will be interesting to our readers. We have had it engraved from illustrations in the Practical Mechanic's Journal.

The main framing consist of a pair of lower vertical standards, A, bolted down to a stone foundation, and carrying two upper standards, B, bolted on by intermediate flanges, to form continuous pillars. The whole of the movements are worked from the fast and loose pulleys, C, attached to the projecting end of the horizontal shaft, carried by an end bearing on the stone foundation, and a second bearing in the base of one of the standards. This shaft, which is fitted with a small fly-wheel, to steady the motion, has on its inner end a crank disc, E, from the face-pin of which a connecting-rod, F, passes upwards to the saw frame. The machine is duplex, taking in two deals, the working frame being divided down the middle, so that the upper end of the actuating connecting-rod joined to the centre of the frame, thus saving height, without interfering with the efficient action of the machine. The slide-pieces, G, of the frame, are guided in the stationary eyes, H; and on the opposite side of the standards are two parallel spindles, I, carrying adjustable lever pressure pulleys, J, for bearing up against the timber in passing through. These spindles are grooved, to allow of the setting up or down of the pulley-holders; and the requisite set-up is accomplished by the hand-wheels, K, set on screw spindles, passed through nut levers on the upper ends of the spindles, I, spring-boxes, L, being fitted to the framing, to secure the necessary elastic action in working. The bearing down-pulleys are at M, in adjustable eye-pieces above the timber, the bearing pressure being obtained from the weights, N, hung to the free ends of a pair of pressure levers, O. These levers are suspended from fixed stud centres, P, and links, Q, pass upwards from them to the pulley holders, sliding in slotted guides above. This pressure keeps the deal well down upon the feed chain, R, which is carried at one end of a stationary pulley, S, and at the other upon a similar pulley on the spindle, T, of the large ratchet-wheel, U. Each sawing action has, of course, a separate chain and pulley arrangement, and both are worked from the eccentric, V, on the first motion spindle, D; a rod, W, from which passes up to a rachet-lever, X, working the rachet-wheel, U. The exterior working edges of the bearing surface or edges of the chains, R, are serrated, so as to obtain a hold upon the timber; and as the eccentric, V, revolves, it actuates the ratchet-wheel, U, and through it the chains, R, thus feeding the deals steadily up to the cut. This ingenious movement forms a very efficient feed, without involving the use of anything more than the simplest mechanism, and fewest possible working parts.

### Recent Foreign Inventions.

Weaving Ginghams or Ornamental Fabrics.—John Lyle, of Glasgow, Scotland, patentee.—In manufacturing goods according to this invention, the different colors of the weft to form the desired pattern are measured off in separate lengths, and these are tied together in a continuous piece, and the whole is then wound upon a reel as if the weft were one single colored piece. This chain of colors is made to correspond to the fabric in such a manner that each increment of each colored section of yarn shall form a certain defined length of color in the woven fabric. The weft so prepared is then wound upon spools or pirns, and transferred to the shuttle in the usual way. The weaving of the colored fabric then goes on from the shuttle by successive spools, each color being woven into its destined position in the piece, just as if a separate shuttle were used for it. This invention is to obviate the use of more than one shuttle in a loom. The idea is a good one, but we think it will be very difficult to make the weft match; to do so, the loom must work with the accuracy of a chronometer, and the spooling must be very carefully performed. It is a subject worthy of the attention of our carpet and gingham manufacturers.

Solar Watch.—Alfred Sandoz, of Pentz, Switzerland, patentee.—This is an instrument upon which the shadow cast from a thread upon a dial, is made to indicate the hour of the day.

Lubricating Material.—Louis Defever, of Bruges, Belgium, patentee.—This preparation is composed of four gallons of colza oil, in which two pounds of india rubber is dissolved under a consi erable heat. While the mixture is still hot, it must be filtered through a cloth, to remove all impurities.

Producing Designs and Patterns in Wood.—S. George, of Worcester, Eng., patentee.—The inventor takes tolerable thick pieces of wood of various colors and forms, according to the pattern to be produced, and then mounts them in a frame side by side, in the direction of their length. He then removes the frame and glues each piece of wood to that which is next to it, and then presses the whole together by a binding hoop, or by cords. When the glue is completely dry he cuts off transverse veneers in slices, all of which will bear the same uniform pattern, and applies them as veneering to inlay the articles to be ornamented.

Smoke and Steam Engine.—John Imrey, of Lambeth, Eng., patentee.—An apparatus is divided into suitable compartments, into which are introduced fuel, and air for its combustion, and also water, so that the heated gases arising from the combustion of the fuel shall pass over the surfaces of the apartments containing water, and also be forced through it in small divided currents to heat the water, and catch all impurities in the smoke. The steam thus generated is applied to drive machinery—a steam engine—and the smoke obtained in a deposit at the bottom of the heating apparatus can be used for chemical purposes.

This invention is not an improvement.

Among the new patents is one to Adolphus Theodore Wagner, of Berlin, in the kingdom of Prussia, professor of music, for the invention of "a psychograph, or apparatus for indicating persons' thoughts by the agency of nervous electricity."

[Collated from our foreign cotemporaries, the "Mechanics' Magazine," "Newton's Journal," "Artisan," and "Mining Journal," London; "Genie Industriel," "L'Invention," and "La Lumiere," Paris, and the "Glasgow Mechanics' Journal."]

Gen. Robert Armstrong, of the "Washington Union," died suddenly at Washington, on the 23rd inst. He was a highly esteemed friend of Andrew Jackson, and possessed many very estimable qualities.

### Patent for Manufacturing Starch.

The annexed specification is a true copy of the American patent of Orlando Jones, of England, for manufacturing starch. We have obtained this copy officially from the Patent Office, as it is a very important and valuable patent, and an application has been made for an extension of its term for seven years from the 12th of next month, the day when the present term expires:—

"To all whom it may concern.—Be it known that I, Orlando Jones, accountant, in the Kingdom of Great Britain, have invented or discovered new and useful improvements in 'treating or operating on farinaceous matters to obtain starch, and other products in the manufacture of starch.' And I hereby declare the nature of my said invention, and the manner in which the same is to be carried into effect are fully described in and by the following statement (that is to say) all substances containing starch are composed of vegetable matters besides the starch itself, and in the manufacture of starch it is desirable to separate it from other vegetable matters with as little waste of, or injury to the starch as possible, and in such manufacture as at present generally practiced, (although other processes have been used) it is usual to steep the substance from which the starch is to be obtained, for some weeks in water, for the purpose of separating by fermentation the starch from the other matters, and by such process, not only is the starch or a portion of it injured, but a considerable portion of it is retained in the other products, and such other products, with the starch associated therewith, (usually more than one half of the whole weight of the substance employed) are of comparatively little value, owing to the fermentation through which they have passed. Now by my invention, not only may a larger product of starch of the best character be obtained from a given quantity of wheat or other substance containing starch, but the time expended in the production of it, is materially shortened. And further, some of the other products of the substance employed can be obtained fit for use from their not having gone through the process of fermentation, and thus they will be found suitable, with an admixture of wheaten or other flour for the making of bread, buiscuit and other preparations of food, and particnlarly, I am enabled to apply my invention to rice, which has not hitherto been rendered practically available as a source of starch, so as to obtain starch of good quality. And further by subjecting rice to part of my treatment or operation, as hereinafter explained, I can obtain as a product, a flour divested of its harsh character, and resembling wheaten flour in appearance, and touch, which flour is appplicable to various useful purposes to which starch of a low quality could be applied, and it may be used as a low quality starch itself, whether for distillation, stiffening fabrics, making paste, or other such like purposes, and also useful as an article of food. My invention relates to a mode of treating or operating on farinaceous matters, to obtain starch an other products, submitting such farinaceous mattters to a caustic alkaline process as hereafter explained. I have not however, yet found that my invention can be applied with advantage to make starch from potatoes.

I will describe the process, as practiced by me, and which, so far as my experience goes, I have found the best for effecting its object, and as I find the most advantageous results from the application of my invention to rice, I will first describe the method of applying it thereto.

I find it convenient to have the following vessels:—No. 1, one or more vessels of iron, tinned or copper lined, or such vessels may be of stone ware, wherein to mascerate the rice in a caustic alkaline solution, previous to grinding as hereafter explained, and also for washing the rice after the process of masceration. I would observe that no vessels ought to be used liable to materially acted upon by the alkali. No. 2, one or more vessels of iron tinned, or copper tinned, or of stone ware, wherein to mascerate the rice flour, in a caustic or alkaline solution, as hereafter explained. No. 3. one or more vessels of wood wherein the deposite of the starch is effected. No. 4, one or more vessels of wood, wherein the deposit of the gluten and other matters combined with the caustic alkaline solution is effected. No. 5, one or more vessels of wood to contain the water after washing the rice as stated above.

First, I procure or make by the well known methods described in chemical works, a solution of either caustic soda or caustic potash in water, and by means of a test acid which will be found described under the head of "Alkalimetry," in chemical works I ascertain with great care the exact percentage of water and caustic alkali (that is real soda or real potash) contained in the solution, and I dilute it till I find the solution to contain about two hundred grains of real soda or real potash to the gallon.

To every 50 gallons of this caustic alkaline solution (which I put into vessel No. 1,) I add one hundred pounds of rice and allow it to maserate from twenty to twenty four hours. Secondly, when the masceration has been performed as above explained, I draw off as much of the alkaline solution as possible into a vessel, No 4. This may be done by means of a tin syphon, or of a tinned tap fixed at the bottom of the vessel, the end of the tap which is inside the vessel should be covered with a piece of finely perforated tin or other strainer, to prevent the rice passing through with the liquor. I then pour as much cold water on the rice in vessel No. 1, as will be equal to twice the quantity of alkaline solution taken off after stirring the rice and water well, the water is drawn off by the same means as before described into vessel No. 5. This latter process, wich I call washing the rice, is for the purpose of freeing it from the caustic alkaline solution. The rice is then removed into sieves to drain. Thirdly, when the rice has done draining which can be ascertained by its ceasing to drip, I reduce it to flour by crushing or grinding it with rollers or millstones, or by other mechanical means used for such purposes. The flour is then passed through sieves by means of brushes, and the particles which will not pass through a sieve, called by sieve makers, a coarse silk sieve, should be returned to the crushing or grinding machine to be reduced sufficiently fine and then passed through the sieves until the whole (except a small portion of the outer skin or bran which is refuse) is thus disposed of.

Fourthly, I proceed to mascerate the flour thus obtained for which purpose I put it into a vessel No. 2, a solution of caustic alkali of the strength before named, (about two hundred grains real soda or real potash to the gallon) and to every one hundred gallons of this caustic solution, I add one hundred pounds of the rice flour, taking care to stir it gradually into the solution, until it is uniformly mixed leaving no portion knotty or partially damped. Into this mixture I put any deposit which may have taken place in vessel No. 5, (wherein the water with which the rice was washed has been put) which deposit is obtained by drawing off the water therefrom by a syphon, or by taps, or other obvious means. The contents of vessel No. 2, should be stirred up together repeatedly during twenty four hours and tnen allowed to stand for about seventy hours to settle or deposit. The process of this deposit is as follows: The first deposit is composed of fibrous matters with a little starch, the second is starch, the gluten with traces of other matter is held in combination with, or in solution in the caustic alkaline liquid, which in consequence is a brownish yellow color, more or less turbid. When the starch is deposited, which may be ascertained by drawing off from time to time a portion of the liquid into a glass, when if any starch remains suspended it will be easily detected and further time must be allowed for the deposit; I draw off the brownish yellow liquor or caustic alkaline solution (which is at the top) into vessel No. 4, without disturbing the starch for which purpose, I use a tin syphon. A quantity of water, equal to about twice the bulk of caustic alkaline solution taken off, is now to be poured on to the deposit in vessel No. 2, for the purpose as well of washing out the alkali as for drawing off the starch, from the other matters, and the whole well stirred up. This liquor is to be allowed to rest about an hour, when the matters other than starch (which deposit much quicker than the starch) will subside, carrying therewith a small portion of the starch but will leave by far the greater bulk of the starch suspended in the liquor. The liquor thus containing the starch, I then draw off by means of a tin syphon, passing it through sieves such as are commonly used by starch makers, and called by sieve makers, fine silk sieves (in order to remove any small portion of outer skin or bran) into a vessel No. 3. In drawing off I commence at the top of the liquor, keeping the end of the syphon about an inch under the surface, till I come to the liquor, containing principally other matters than starch which may be determined at any time by running a little of it into a glass vessel, when if it contain any of the other matters insoluble in the caustic alkaline solution, the same will soon subside and become apparent. When I have drawn off the liquor containing the starch, I pour into the vessel No. 2, (containing the other matters) a quantity of water equal to about one-third of the starch liquor drawn off, and stir it up and allow them again to subside and draw off as already described.—The process of adding more water, of stirring up, of allowing to subside and of drawing off may be repeated till the whole or nearly the whole of the starch is drawn off from the other matters as before described.

The starch liquor in No. 3, is then to be allowed about seventy hours to settle or deposit and after the deposit has taken place, which may be ascertained by the means before described, the waste liquor is to be drawn off, and the starch stirred up blued (if thought necessary) drained, dried and finished in the usual way.

I have described above the mode of obtaining the best quality of starch but I propose to procure a lower or secondary quality by the following process. In one process I mascerate the rice, wash it, drain it, grind it, pass the flour through sieves, mascerate the flour and wash the starch as in the preceding process, but instead of drawing off the starch while in suspension by means of a syphon from the other matters mixed with it in vessel No. 2, I simply strain the mixture (after well stirring it) into vessel No. 3, through a fine silk sieve before described, so as to remove any small portion of outer skin, or bran or other matter and treat the starch as in the preceding process.

In another process for obtaining starch of a lower or secondary quality, I proceed as follows: I mascerate the rice as before described in the process for making starch of the first or best quality, and draw off the caustic alkaline solution after a lapse of about twelve hours. The same quantity and strength of fresh alkaline solution is then added to the rice and allowed to remain for the same time and is drawn off as before. This operation is repeated three or four times until as much of the gluten or coloring matter is removed as may be desired, the rice is then to be washed, drained, dried and ground into flour, and the flour is to be passed through sieves as before, to remove any small portion of outer skin or bran, and the flour thus procured may be used as starch of an inferior quality. This inferior starch may be used not only for the purpose of stiffening fabrics, but also for that of distillation, making paste, and in short, for all purposes to which a low quality starch may be applied. It may also be used as food, but if intended for that purpose it is to be prepared by the second or last process above described for making starch of a lower and secondary quality, with the exception that instead of three or four macerations, one only is necessary. In making bread, biscuit, or other articles of food, I have found that a very beneficial proportion in which this flour may be mixed with wheaten or other flour, is one part of the former to three parts of the latter. And here I would observe that the process of maceration which I have recommended to be applied to rice in its whole or usual state of commerce, I also apply to all grain of a harsh or brittle character.

To make starch from wheat or other similar grain suitable for making starch, I crush or grind it into meal in the usual way: into a vessel No. 2, I put a solution of caustic alkali as before stated (strength about one hundred grains of real soda, or real potash to the gallon) and to every one hundred gallons of the caustic alkaline solution, I add fifty pounds of the meal, taking care to stir it in gradually till the whole is uniformly mixed; this process of stirring should be repeated frequently, during about twelve hours, when I allow it to stand seventy hours, or thereabouts to settle or deposit. The first deposit is the outer skin or bran, the second vegetable fibre, and the third starch, the gluten with traces or other matters is held in combination with, or in solution in the caustic alkaline liquor which is above the deposits, and becomes of a brownish yellow color.

When the starch is deposited, which may be ascertained by the means before mentioned, I draw off the brownish yellow liquor, which is on the top, into a vessel No. 4, without disturbing the starch, for which purpose I use a tin syphon, I then pour on the deposit in the vessel No. 2, as much water as will be requisite to pass it through sieves of the usual description used by starch manufacturers for separating the bran, and I run the liquor into a vessel, in order to separate the starch from the other matters as before described. The process from this point will be the same as that described under the head of Rice starch.

I shall now describe the method of obtaining the gluten for use. As soon as the brownish yellow caustic alkaline liquor containing it, is drawn off into vessel No. 4, as much sulphuric acid as will neutralize the alkali is to be cautiously added. The starch manufacturer will know when he has added a sufficient quantity of acid by using the well known test of litmus and tumeric papers. I then allow it to stand about twelve hours to settle or deposit, after which I run off the clear top liquor by means of a syphon; the deposit is then mixed with a quantity of clear water equal to what was drawn off, allowed to settle or deposit and drawn off as before. The deposit is then to be drained and dried in stores, then ground or crushed by a mill, or by rollers, or by any other mechanical means and for such purposes and the flour thus produced may be mixed with wheaten or other flour for bread or biscuit or other articles of food, and I have found that a very beneficial proportion in which this flour may be mixed with wheaten or other flour, is one part of the former to three parts of the latter. The other matter than starch which is separated in the manufacture of the better quality of starch may be mixed with the gluten and the whole drained, dried, ground and appropriated with the gluten as above described.

Having thus described the nature of my invention, I would have it understood that although I have been particular in describing the process and quantities of matters as practiced by me, and which I have found to be the best best for giving effect to my invention, I do not confine myself thereto, but what I claim, is, first, the mode of treating or operating on farinaceous matters to obtain starch and other products especially flour or powder produced from rice and in the manufacture of starch by submitting farinaceous matters to a process of caustic alkaline treatment as herein described, and secondly, I claim the mode of manufacturing starch from rice by the process or processes herein described. ORLANDO JONES.

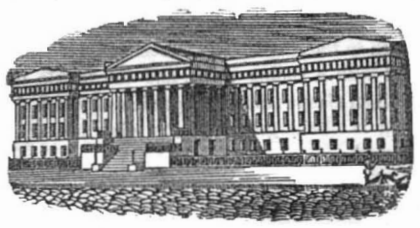
Patented in England April 30th, 1840; Patented in United States March 12th, 1841.

### Asparagus Seed as a Substitute for Coffee.

Asparagus seeds are thus recommended by a gardener as a substitute for coffee:—"Asparagus," he remarks, "contains, according to Liebig, in common with tea and coffee, a principle which he calls 'taurin,' and which he considers essential to the health of all who do not take exercise, this led me to think that asparagus might be made a good substitute for coffee. The young shoots which I first prepared, were not agreeable, having an alkaline flavor. I then tried the ripe seeds; these, roasted and ground, make a full-flavored coffee, not easily distinguishable from fine Mocha. The seeds are easily freed from the berries by drying them in a cool oven, and then rubbing them on a sieve." Try it, farmers.

Beautiful marble, susceptible of a high polish, and said to be equal to many of the imported marbles, has been discovered in Illinois.

Large coal mines have been discovered in Washington Territory.



[Reported Officially for the Scientific American.]

## LIST OF PATENT CLAIMS

**Issued from the United States Patent Office**

FOR THE WEEK ENDING FEBRUARY 21, 1854.

OPERATING SAWS.—Frederick T. Andrews, of Georgetown, D. C.: I claim the method herein described of communicating the advance and receding motion to the saw, and for the purpose set forth.

I further claim the combination and arrangement of the half beam lever and rocking link with the saw when operated by a crank or its equivalent, and pitman, connected at any point between the fulcrum of said lever and saw.

ATTACHING HORSE BELLS TO STRAPS.—Jason Barton, of Middle Haddam, Conn.: I claim attaching spherical bells to straps by means of wires or rods, the bells being attached to the wires or rods as described, and the wires or rods secured in any proper manner to the other side of the strap.

WINDOW CORD PULLEYS.—Jeremy W. Bliss, of Hartford. Conn.: I do not claim, separately of itself, making the box part of the shell and its face piece in halves, and fitting together by angular tags and recesses, as specified.

But I claim the shell and its face piece in halves, fitting loosely together, as described, when combined with the wedge formed seat and projecting tooth constructed and arranged as specified, so that the pulley may be fitted together and in its place with despatch, and be readily removed and taken apart for the convenience of cleaning, repair, or adjustment of the cord without detaching the latter, and whereby the shell, with its pulley, when in their place cannot be moved outwards without raising the sash, and its weight, fastening screws are dispensed with, the chafing of the cord avoided, and the entry and removal of the pulley facilitated, as specified.

I further claim the combination and arrangement of the back locking bolt, with the wedge-formed seat and projecting tooth, as described.

CURVED SASH BOLT—E. G. Connelly, of Indianapolis Ind.: I claim the combination of the gravitating catch or bolt, with the metallic case or box, giving said catch the form of an annular segment, or the segment of 90 degrees of a circle, combined with said metallic case of similar form, constructed and applied in such a manner that the expansion of the wood cannot retard or obstruct said catch or bolt, as it inserts itself into the recesses or notches in the frame. I do not claim the recesses or the material of the metallic case, or the catch, but the construction, formation, and application of said metallic case and catch, as set forth.

STONE PICKING MACHINES—J. T. Foster, of Jersey City, N. J.: I claim the use of a cylinder for picking stone or other articles, in combination with drop teeth and cam and spurs for operating the same, as specified.

I also claim the use of the solid discharging plate and its combination with the drop teeth in a cylinder, and operated substantially as set forth, and the combination of the drop teeth, with the adjustable rake.

OAR-LOCKS—Wm. P. Glading, of New York City: I claim the application to oars of a cylinder surrounded with a band and bolt, as described, for preventing the oar from wearing off against the row-lock, and preventing the oar from slipping out of its place.

DERRICKS—J. B. Holmes, of Boston, Mass.: I claim, first, the combined arrangement of the collar upon the mast; the revolving platform supported upon it, and clamped below it, and the tension rods from said platform to the revolving mast-head cap, as described.

Second, pivoting the heel of the derrick boom upon the revolving platform in the locality, as described, that is, upon that portion of the platform, which is beyond the center of the platform when measuring from the point of suspension of the weight.

STRETCHING AND DRYING CLOTH—D. & H. Stearns, of Pittsfield, Mass.: We claim, first, the means shown for stretching the cloth while wet, and carrying the same parallel while being dried, consisting of the endless belt of tenter hooks traveling in adjustable ways to accommodate different widths of cloth, which ways are parallel to each other, except at the ends, where they converge to allow the cloth to be hooked on and stretched the same as it is moved forward, as specified. And in combination with the above parts for stretching the cloth, we claim converging the ways at the delivery end to relieve the strain on the cloth, and allow the same to pass off the tenter hook, without tearing, as specified.

Second, we claim the heating cylinder and its adjustable roller, so arranged as to keep the cloth in contact with any desired portion of the cylinder, to heat and partially dry the cloth, the amount required before it is stretched on the tenter hooks, as described.

WEAVING WIRE SCREENS—J. M. Schuyler & Wm. Zern, (assignors to D. L. Easterly) of Pottsville, Pa.: What we claim in the weaving of wire, is causing the warp and weft wires to bend each other by means of clamps, levelers, or their mechanical equivalents, operating upon the warp wires each time the lay beats up the weft, for the purpose set forth.

We also claim connecting the lay and clamp movement, so that the motion of the lay shall give motion to the clamps, as set forth.

CONTRIVANCES FOR PROTECTING PASSENGERS IN RAILROAD CARS—S. F. Holbrook, of Boston, Mass.: I do not claim to support the back rest by inflexible bars hinged to the floor, and made to turn so as to bring the back from over one side of the seat to over the other side of it, in order to enable a person to sit with his face in one direction or the opposite, as may be most convenient to him. Nor do I claim the placing in the partition of a carriage, and opposite to and about the hight of the face of a passenger, a broad band of padding extending from one side of the carriage to the other, and to serve as a protection to the head of the passenger in case of accident.

I claim, as applied to a railway car or carriage, the above described improvement, for supporting the back and head rests, or either, viz., by means of strong flexible bands, or their equivalents, extended from or near to the floor, to or near to the roof of the car, as specified.

And in combination with the flexible bands, I claim the set of slide rails or equivalents, made to support the bands at one end of each, and to allow of their being moved from their angular inclination from one side of the vertical to a similar angular inclination on the opposite side thereof, in the manner and for the purpose as stated.

TOOL FOR DOVETAILING—A. P. Hughes, of Philadelphia, Pa.: I claim the arrangement and combination of the chuck, bit, saw, and plane iron, or their equivalents, as specified.

CORRUGATING METAL PLATES—Richard Montgomery, of New York City: I claim the method described of forming corrugated metal beams by passing a plate of metal of the proper size through a series of crimping dies, as set forth.

WHIFFLETREE HOOKS—Martin Newman, 2nd, and N. C. Whitcomb, of Lanesboro, Pa., and G. C. Cole, of Hartford, Conn.: We claim the construction of a trace fastener on the ends of a whiffletree, consisting of a swing latch turning on a pin, detents, and spring, in combination with a hook and catch or detent thereon, operating in the manner and for the purpose of preventing accidental displacement of the end of the cock eye on the end of the trace.

We do not confine our claim to the use of the socket in connection with the spring latch arrangement, as the spring latch and hook may be used either on a socket plate or shank, as occasion may require, or in any other manner, as set forth.

ATTACHING HUBS TO AXLES—Elnathan Sampson, of Claremont, N. H.: I claim the united band and tube, secured to the inner end of the hub, combined with the tube and the axle by means of the single screw, in such a manner as to securely confine the hub to the axle, and also exclude the dust from and retain the oil within the hub, as set forth.

MACHINE FOR SLITTING CLOTHES PINS—J. B. Smith, of Sunapee, N. H.: I claim the sliding saw frame or frames operated on adjustable ways in combination with the movable groove bed, as described.

I claim the grooved or fluted bed, whether said grooves are parallel with the shaft on which said bed is placed, or radiate from its center.

I claim the manner of setting off the groove bed by means of a ratchet or its equivalent, a worm wheel operating on the nubs of the index, these nubs being the same in number as the grooves in the groove bed.

I claim the lever paws, operated by springs or their mechanical equivalents, pressure rolls to hold the pin while being slitted.

I claim the application of the gauging spring for driving the approaching pin towards the end of the groove into which it has fallen.

I claim the safety slide for the purpose of preventing the wrong passage of the saws, in short, I claim the construction of a self-acting machine for slitting clothes pins, by means of one or more saws, making one or more kerfs in to the same, or separate pins at one advance of the saws, having the same appurtenances, and operated as set forth.

SEAL PRESSES—James Foster. Jr., of Cincinnati, Ohio: I do not claim substituting percussion force for pressure in presses generally, nor even in seal presses: nor do I claim returning the piston or die of a press with a spring.

I claim, in seal presses, the combination of the following elements, viz., a framework to sustain the boxes, and guides for the piston, a spring piston bearing the die, and surrounded by a knob or suitable provision for receiving the blow of the hand, and guided by the groove and guide pieces, or their equivaleats, as set forth.

TREATING HAIR FOR WEAVING—John Gledhill, of New York City: I claim preparing hair for being woven into cloth by raising a bulb or knob at either end, as described, whether by the action of heat or any chemical agent, whereby the hair is made capable of being readily seized and as readily relinquished by a device which serves it to the operating parts of the loom.

MACHINE FOR CUTTING LATH—C. F. Packard, of Greenwich, Ct.: I do not claim, separately, the knife working vertically, for that is well known, neither do I claim the toggle-joint for working the cutters, for that is a well known device.

I claim cutting laths from a log or block by means of the knife or cutter, having a vertical reciprocating motion, and the knives or cutters having a horizontal reciprocating motion, the cutters being arranged and operated as described.

SPOOLING YARN FROM THE COP—Smith Thompson, of Newburyport, Mass.: I claim the regulator guide, as combined with the friction beam, and made to hang on the yarn, and be capable of being raised by it, as specified.

THRESHERS AND SEPARATORS OF GRAIN—John Zink, of Greenville, Va.: I claim the arrangement of the straw carrier and apron on the same shaking frame, with the screen, so that the same motion which shakes out the grain from the straw, and carries the latter forward and out of the machine, shall also carry forward on said apron the grain to the screens and blast, as described.

MACHINERY FOR MAKING CORDAGE—Rufus Porter, of Washington, D. C. (assignor to George Stephenson, of Northfield, Ind.: I claim the arrangement, as described, and the combination of the flyers, rollers, and drum, by which the longitudinal motions of the strands between the flyers and the laying point are equalized, the said rollers being made to rotate on their respective axles by the tension of the rope and strands.

PARTI-COLORING MACHINES—Solomon Smith (assignor to himself and Wm. Schoaler), of Acton, Mass.: I claim dividing each of the horizontal layers or frames into two sections, and carrying the cloth from the lower to the upper side of such sections between the contiguous inner ends of said sections.

And in combination with the said mode of using sections and carrying the cloth between them, I claim making the end of one section lap by that of the other, so that the same contrivances used to compress the several frames together, or down upon one another, may also operate to compress the two sections together, and upon the cloth extending between them, as specified.

APPLYING COLORS TO STONE—Hiram Tucker, of Cambridgeport, Mass. (assignor to himself and Joseph Storey, of Boston, Mass.) Patented in England Sept. 24, 1852: I do not claim the common process of applying water colors to paper by the use of a bath or size, and mixing such colors in water; nor do I claim the union of linseed oil and varnish made from kauri, in its use in connection with a pigment, and in the common process of painting or spreading colors on a surface by means of a brush, my invention having special reference to the application of colors to a surface, by means of a liquid or water bath; nor do I claim therein the use of either kauri or oil alone.

I claim my improvement in the process of marbling whereby an oil color (or pigment mixed with a drying oil) when applied or spread on the surface of a bath of water or other suitable liquid, shall have imparted to it the property above mentioned, such improvement consisting in employing in such process the gum kauri, or a like substance, combined as specified with the drying oil, the same enabling a person, by means of a bath, to apply to a surface of stone or other material, oil colors, so as to present the natural effects or appearance of any polished stone it may be desired to imitate.

DESIGNS.

COAL STOVES—Conrad Harris & P. W. Zoiner, of Cincinnati, O.

GUITAR—W. B. Tilton, of New York City.

### A Splendid Diamond.

The following paragraph in regard to a remarkable diamond found in South America, appears in the money column of the "London Times:"—

"One of the largest diamonds known was deposited yesterday at the Bank of England, by a London house, to whom it was consigned from Rio Janeiro. Its weight is 254 carets, and its estimated value, according to the scale, £280,000. It is said to be of the finest water, and without flaw, and was found by a negro slave, who received his freedom as a reward.

### Earthquake in Spain.

A terrible earthquake took place in Fiana, in Almeria, in Spain, on the 13th of January. The Spanish papers say: "The town of Fiana has just been visited by a frightful misfortune. On Friday last, between two and three o'clock in the morning, during complete darkness, and while every one was asleep, the soil was suddenly shaken and turned over by a series of violent shocks, following each other in rapid succession, and accompanied by a prolonged noise, resembling the roaring of thunder, and followed by numerous fissures. It crumbled down the greatest part of the Alcazaba, (an ancient castle of the Moors,) broke houses to pieces, and caused large chasms in nearly all the streets. Eight persons were afterwards dug out in a terrible state of mutilation."

### Professor Faraday on Electricity.

The opening lecture of the Royal Institution of London, this season, was delivered by Faraday to a very crowded audience.

The subject was the development of electrical principles produced by the working of the electric telegraph. To illustrate the subject there was an extensive apparatus of voltaic batteries, consisting of 450 pairs of plates, supplied by the Electric Telegraph Company, and eight miles of wire, covered with gutta percha four miles of which were immersed in tubs of water, to show the effects of submersion on the conducting properties of the wire in submarine operations. The principal point which Professor Faraday was anxious to illustrate was the confirmation which experiments on the large scale of the electric telegraph have afforded of the identity of dynamic or voltaic electricity with static or frictional electricity. In the first place, however, he exemplified the distinction between conductors and non-conductors, impressing strongly on the audience that no known substance is either a perfect conductor of electricity or a perfect non-conductor, the most perfect known insulator transmitting some portion of the electric fluid, whilst metals, the best conductors, offer considerable resistance to its transmission. Thus the copper wires of the submarine-electric telegraph, though covered with a thickness of gutta percha double the diameter of the wire, permit an appreciable quantity of the electricity transmitted to escape through the water; but the insulation is, nevertheless, so good that the wire retains a charge for more than half an hour after connection with the voltaic battery has been broken. Professor Faraday stated that he had witnessed this effect at the Gutta Percha Works, where one hundred miles of wire were immersed in the canal. After communication with a voltaic battery of great intensity, the wire became charged with electricity, in the same manner as a Leyden jar, and he received a succession of forty small shocks from the wire, after it had been charged and the connection with the battery broken. No such effect takes place when the coils of wire are suspended in the air, because in the latter case there is no external conducting substance. The storing-up of the electricity in the wire when immersed in water is exactly similar to the retention of electricity in a Leyden jar, and the phenomena exhibited correspond exactly with those of static electricity, proving in this manner, as had previously been proved by charging a Leyden jar with a voltaic battery, that dynamic and static electricity are only different conditions of the same force; one being great in quantity but of low intensity, whilst the latter is small in quantity but of great intensity. Some interesting facts connected with the conduction of electricity have also been disclosed by the working of the submarine telegraph, which Professor Faraday said confirmed the opinion he had expressed twenty years ago, that the conducting power of bodies varies under different circumstances. In the original experiments by Prof. Wheatstone to ascertain the rapidity with which electricity is transmitted along copper wire, it was found that an electric spark passed through a space of 280,000 miles in a second. Subsequent experiments with telegraph wires have given different results, not arising from inaccuracy in the experiments, but from different conditions of the conducting wires. It has been determined that the velocity of transmission through iron wire is 16,000 miles a second, whilst it does not exceed 2,700 miles in the same space of time in the telegraph wire between London and Brussels, a great portion of which is submerged in the German Ocean. The retardation of the force in its passage through insulated wire immersed in water is calculated to have an important practical bearing in effecting a telegraphic communication with America; for it was stated that, in a length of 2,000 miles, three or more waves of electric force might be transmitting at the same time, and that if the current be reversed, a signal sent through the wire might be recalled before it arrived at America. Prof. Faraday concluded by exhibiting a beautiful experiment illustrative of the identity of voltaic and frictional electricity. The terminal wires of a powerful secondary-coil apparatus were placed seven inches apart within the receiver of an air pump, and when the receiver was exhausted, a stream of purple colored light passed between the wires, resembling, though more continuous and brilliant, the imitation of the aurora borealis produced when an electric spark is passed through an exhausted glass tube. The voltaic power employed to produce this effect of static electricity was only three cells of a Grove's battery.

[The above is from the London Mechanics Magazine. The information will be interesting to all our readers, as it conveys information of a new and striking character relating to the subtility of electricity.

### Impure Gas in Philadelphia.

In the last number of the "Scientific American," we pointed out some of the evils of impure gas, and directed public attention to them. Since then—on the 23d. inst.—a correspondent of the "Philadelphia Ledger," has written a communication to that paper, stating that the gas used in Philadelphia contains the impurities we pointed out. He refers to the gas supplied by the Northern Liberties Gas Works of that city, says:—

"It will no doubt have been by many as it was in fact observed by me, that, ever since last "quarter-day," the gas has emitted a very offensive smell, resembling somewhat burning sulphur, poducing a very choky effect upon the lungs, so much so, that several of my acquaintance have been taken sick from the effect. A friend of mine has had all his canary birds (which he keeps in his store) killed from this deleterious effect of the gas. This matter has become an intolerable nuisance, and ought to lead to proper inquiries from the proper authorities; but, alas! I believe there are no constituted anthorities outside of the company itself that is authorized to make the necessary examinations. I would respectfully suggest that there be a meeting called by citizens of the district, for the purpose of taking into consideration the propriety of urging upon the Legislature to appoint, or enact such a law by which the citizens can elect an inspector of gas, whose duties shall be such as will relieve the public from this as well as other frauds which the companies have in their power to commit. It is a farce in the company to reduce the price of gas 10 per cent, and allowing 20 or 30 per cent, of inpurities to be mixed with and charged for as pure gas."

### The King and Seidlitz Powders.

On the first consignment of Seidlitz Powders to the capital of Delhi, the monarch was deeply interested in the accounts of the refreshing box. A box was brought to the king in full court, and the interpreter explained to his majesty how it should be used. Into a goblet he put the twelve blue papers, and, having added water, the king drank it off. This was the alkali, and the royal countenance expressed no sign of satisfaction. It was then explained that in the combination of the two powders lay the luxury; and the twelve white powders were quickly dissolved in water, and as eagerly swallowed by his majesty, with a shriek that will be remembered while Delhi is numbered with the kingdom, the monarch rose, staggered, exploded, and, in his full agonies, screamed, "hold me down!" Then, rushing from the throne, fell prostrate on the floor. There he lay during the long-continued effervescence of the compound, spirting like ten thousand pennyworths of imperial pop, and believing himself in the agonies of death, a melancholy and humiliating proof that kings are mortal.

### Beet Root Wine.

It appears, according to Galignani, that a a very good champaigne wine is made from beet-root. When the juice has been purified by the ordinary process, and a pure solution of sugar and water has been obtained, it is evaporated to a suitable density, after which it is fermented by adding cream of tartar, and the required bouquet is given by means of aromatic plants.

# New Inventions.

### Improved Street Sprinkler.

Daniel Worthington, of St. Louis, Mo., has invented an improved Street Sprinkler, on which he has made application for a patent. The nature of the invention consists in arranging the water vessel in a vertical instead of a horizontal position for the purpose of securing greater pressure in the sprinkling spout, until the water in the vessel falls below a certain point, and in introducing the water into the sprinkling spout by means of two branch pipes leading from the main supply pipe which connects with the water vessel. The sprinkler is also made of a semi-elliptical form, so that the water may be thrown from the sides as well as the ends of the spout.

### Car Trucks.

Amos Johnson, of Laporte, Ind., has invented an improved Car Truck, the novelty of which consists in constructing each truck with three separate frames, and connecting the middle one to the others, which turn upon a king bolt, by means of loose joints or pins, which allow the front and rear frames to adjust themselves to the shape of the curve over which the cars may be running. This central frame is so connected with the main frame that it will be caused to move laterally inward and outward while moving round a curve. The invention also embraces a novel mode of attaching railroad wheels to their journals. A patent has been applied for.

### Machine for Making Barrel Heads.

N. W. Robinson, of Keesville, N. Y., has invented an improvement in machinery for making barrel heads, on which measures have been taken to obtain a patent. The invention consists in the combination of the rotary cutting discs, stationary bed, movable slide, and clamp, arranged in such a manner that barrel heads may be made out of one or several pieces of stuff, without changing the position of the piece until the head is finished. The cutting discs are so constructed that they may be firmly attached to the arbors, and a free passage given to the shavings. The clamp is made adjustable so that it may be made to fit heads of different size and thickness.

### Sawing Machine.

J. Myers, and R. G. Eunson, of this city, have invented certain improvements in machinery for light sawing, such as stuff for mirror backs, on which they have applied for a patent. The nature of the invention consists in the employment of deflection plates placed at the sides of a circular saw, so as to prevent the stuff from coming in contact with the sides of the saw, and also to expand the saw kerf, and thus prevent the stuff from pinching the saw; a thinner kerf can thus be cut. Elastic clamps are secured to the adjustable beds, which have also upon them stationary cutters, so arranged as to trim the edges of the stuff.

### Improved Corn Planter.

Charles A. Wakefield, of Plainfield, Mass., has made application for a patent upon an improved Corn Planter, of which the novelty consists in forcing the seed directly into the soil by a plunger or its equivalent when it is constructed and arranged so as to be capable of operating the seed slide simultaneously. The handle is attached to the plunger, and the gauge or stop plate to the lower end of the machine, so that the plunger will have a slight inclination from a vertical line. The plunger is cleaned from any dirt which may be attached to it by scrapers, and is capable of being adjusted, so as to plant the seed at any required depth.

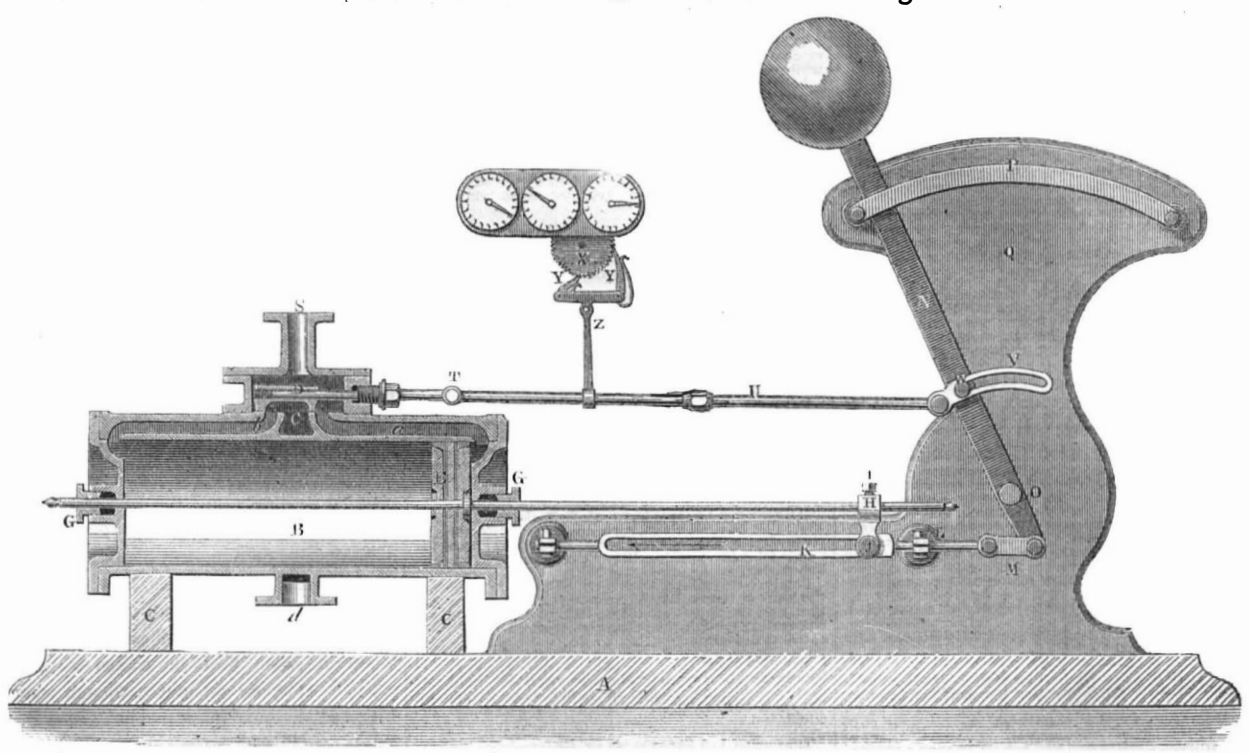
### Evaporating Pans.

H. G. Buckley, of Kalamazoo, Mich., has invented an improvement in pans for boiling salt, sugar, and other similar substances. The pan is divided into the necessary number of compartments, and through these metal pipes are arranged transversely, passing through the sides and having their ends closed with loose stoppers which can be removed for cleaning the pipes. They are connected to a single flue, which receives the heat from the furnaces. A patent has been applied for.

### Machine for Making Clinch Rings.

G. M. Patten, Bath, Me., has invented an improvement in machines for punching clinch rings, such as are frequently employed as washers. The nature of the invention consists in a novel arrangement of levers, by which the upper die is punched through the ring for forming the central hole, and the lower die is at the same time made to give the proper shape and finish to the rings. The punching die is provided with a sliding collar, and the female die with an elastic seat, by the action of which the ring is discharged from the dies after it is formed.

## HARTIN'S CYLINDER WATER-METER---Figure 1.




This Meter which has been patented in this country and England, is a simple arrangement of a cylinder and piston, fitted up with slide-valves, for the ingress and exit of the water to be measured; the cylinder, which is the actual measuring vessel, being filled at each stroke of the piston, after which the slide-valve is reversed, when the water escapes, and a fresh supply is admitted on the opposite side of the piston. This action therefore keeps a reciprocating movement of the piston, and the registration of the measured fluid is effected by a counter attached to the valve-spindle, and actuated by the slide movement.

Fig. 2.

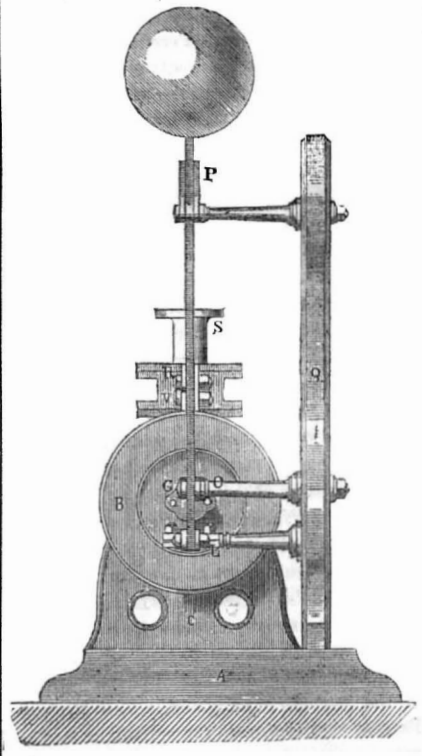
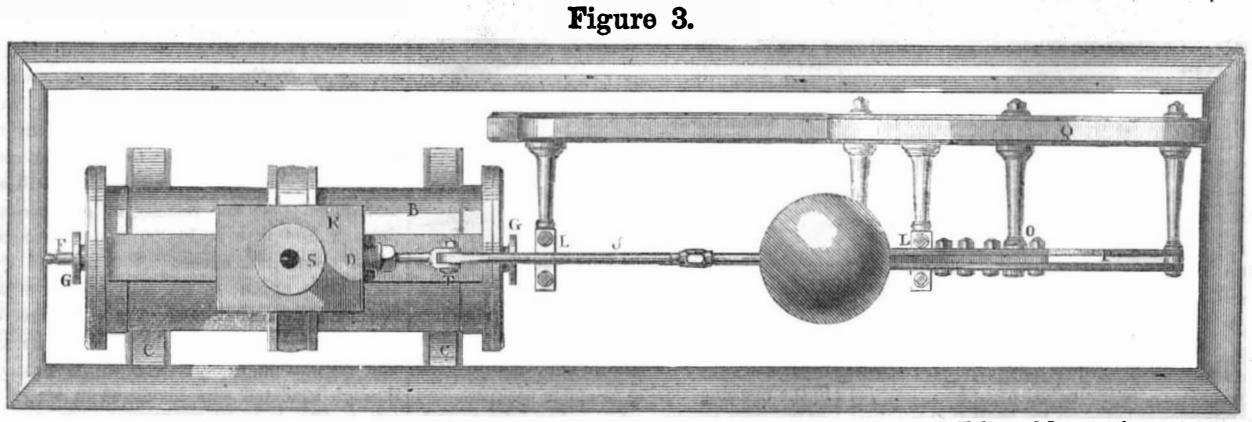



Fig. 1. is a sectional elevation of the meter complete; fig. 2 is a corresponding end view of the meter; and fig. 3 is a plan. At A, is a wooden or base-plate, for supporting the cylinder and working parts of the apparatus. The cylinder, B, is carried by the two vertical supporting brackets, C, and is fitted by a slide-valve, D, and piston, E, screwed on to the piston-rod, F. This rod passes through a stuffing-box, G, in each end of the measuring cylinder, and has a short adjustable arm, H, screwed to it near its outer extremity by a pinching screw, I. The lower end of this arm is fitted with a stud-pin, J, which works in the longitudinal slotted rod, K. This rod slides in the fixed bearings, L, which are bolted to the main vertical portion of the framing. The outer extremity of the slotted rod is connected by a short link, M, with the lower end of the vertical weighted tumbling lever, N, working on a fixed centre, O. The upper end of this lever is guided in its movements by the segmental guide-plates, P, which are carried by a pillar, O, bolted to the main framing. The slide, D, is contained in the chamber, R, which is furnished with an inlet-pipe, S, and the spindle of the slide is jointed at T, to one end of the adjustable connecting-rod, U. The opposite end of this rod is jointed to the segmentally-slotted plate, V, in which works a stud-pin, W, fitted into the lever. The slot on this segmental plate is rather shorter than the traverse of the pin in the lever, so that, when the lever is caused to oscillate or vibrate, a certain amount of traverse is given to the slide, D. The movement of the lever, N, is effected by the stud-pin in the slotted rod, K, the slot in this rod being shorter than the stroke of the piston; and consequently, when the pin arrives at the end of the slot, the further traverse of the piston slides the rod, K, in its bearings, and thereby turns the lever, N, on its fixed centre, O. The registration is effected by the rachet-wheel, X actuated at every stroke of the slide by the pawls, Y, fitted to the T-lever Z, which is secured to the connecting-rod of the valve-spindle.

In measuring fluids by this meter, the fluid to be measured enters by the inlet-pipe, S, into the chamber, R, whence it passes along the open part, *a*, into the corresponding end of the cylinder, B. The pressure of the fluid forces the piston to the opposite end of the cylinder, thereby causing the pin, J, to traverse along the slotted rod, K, and move it in the direction of the arrow. This movement of the rod reverses the lever, N, which effects the movement of the slide, D, by means of the stud-pin, W, and slotted link, V. By this means, the port, *b*, is opened suddenly, and the fluid is allowed to enter the opposite end of the cylinder, thereby, forcing the piston back again, and consequently expelling the fluid which was contained above the piston; this fluid escapes by the egress port, *c*, which is now in communication with the inlet thoroughfare, *a*. A hollow zone or belt is cast round the cylinder, and forms the outlet for the fluid which pours into the source-pipe through the branch-pipe, *d*, cast in one piece with the cylinder. By fitting a moveable false bottom or end to the cylinder, so as to be capable of adjustment by an external screw or other movement, the capacity of the cylinder may be regulated to the greatest nicety, by smply screwing or setting in or out the internal false bottom.

The American Patent of this invention was issued May 24, 1853. Any further information can be obtained by addressing the inventor, J. Hartin, 273 West 37th street, N. Y.

## Figure 3.




### Valves of Locomotives.

On the 23d inst., a freight train on the Hudson river railroad ran into another, because the engineer was unable to reverse his engine, by the great pressure on the slide valves. Balance valves are wanted for our locomotives. One man was killed, and an another severely injured.

# Scientific American.

NEW YORK, MARCH 4, 1854.


### What we Drink; Tea and Coffee.

A correct knowledge of the beneficial, or deleterious effects of any kind of meat or drink, can only be obtained by experience. The food of man is exceedingly diversified, and so is his drink. No person can set up his standard of meats and drinks, as the best one for all others. The food and drink most suitable for people living in a certain locality, may be totally unsuited to people living in a different one. —And besides, it is impossible for a person living in the arctic regions to obtain the same food as one residing in the tropics. The Esquimaux cannot raise wheat nor the Laplander maize, or rice; they must therefore use just such food as their own climates can produce.—Some assert that water alone is the natural drink of man; this may be true, but how can we be satisfied of its correctness? It may just as truly be said, that all grains, vegetables, fruits, and flesh, should be used without being cooked—in their natural state—as to assert that water alone is the natural beverage of man. Human beings are not guided by instinct, but reason and experience, and this is the reason why civilized men neither eat nor drink like the brute creation. All nations and peoples, above the very lowest stages of barbarians, use some kind of beverage, as a necessary concomitant of life—just as much as their solid food. We find that many nations, have used different beverages at different periods of their history; this is manifested in a most extraordinary manner by the general use of tea and coffee at the present day, by European nations, and by ourselves—beverages with which our forefathers three centuries ago, were totally unacquainted. These beverages, when first introduced into Europe were denounced from pulpit and press, as being temptations of the evil spirit, and yet for all this, neither pen nor tongue have been able to stay their use or progress. This is a serious question, for 37,669,312 lbs. of black and green teas, were used in the United States in 1853, and no less, we are sure, than 225,000,000 lbs. of coffee, the latter averaging 8½ cts. per lb. and the former 37½ cts. per lb., the value of which is $33,250,991. Taking our population to be 27,000,000—not far from the mark now—and allowing for infants, children and those who do not use such beverages, it is a fair estimate, to assume, that the amount of tea and coffee were consumed by one third of our population, which would amount to 25 lbs. of coffee, and nearly five pounds of tea for each, but even allowing that one half of our population indulge in the use of these beverages, it amounts to 15 lbs. of tea and coffee per annum, for each—an enormous quality. If these beverages are injurous to health, it follows that we exhibit the very essence of foolishness by paying $33,250,991, per annum, for them in their raw state; certainly this cannot be very creditable to our boasted civilization.

The prevailing opinion of scientific men at the present day, is not unfavorable to their use; Knapp asserts, that tea end coffee as beverages, are more than mere habits, and Liebig is friendly to their use, asserting that tea contains the active constituents of mineral springs.

In some parts of the world the inhabitants —such as the nomadic tribes of Tartary, who are a sturdy and healthy race—use tea both as a beverage and a solid food. They use the leaves as we do dried apples, and the beverage as we use soups. A man and a nation may abuse a good beverage, and then blame the beverage for the evil results of their own imprudence. A change of food is beneficial to man, and so it may be with drink. A certain kind of food or drink may agree with a person's constitution for a number of years, and then it may cease, (perhaps from some cause totally unexplainable) to be beneficial, or rather, he will find it conducive to his health to change it for some other. There are habits of a very bad character, which are so transparent as to be seen at a glance,—but it is not so with tea and coffee. As this question has a very important bearing on the health and the purses of our people,—it deserves more than common attention. Food, drink, clothing, houses, and fuel, are the grand physical necessaries and comforts of life. We could do very well without gold; it does not add a single essential comfort to life, but it is very different with any of our common foods or drinks. The richest man in this world merely gets his living; he cannot eat and drink more than the well-fed peasant—so far as the essentials of existence are concerned, there is not difference between them. Every question, then, of food or drink, is of incalculable importanee; far more so to us than those which relate to Court dresses or Russian wars. This question—the use of tea and coffee—is one respecting which no person should feel indifferent. If such beverages are injurious, as some say they are, let us save our money and health by abandoning them forever,—but first of all, let us have the conclusive proof, by accumulated evidence, of their deleterious influence established.

### An Efficient Steam Navy.

If the above title was applied to our navy, it would certainly be a ridiculous misnomer. At the present moment there are not over two—certainly not more than three—efficient steamships belonging to our navy, and these, if efficient, are not *sufficient* for the wants of our country. When news of the San Francisco's disaster (it having been seen in a disabled state) arrived at our navy headquarters, there was not a competent steamship belonging to our navy at hand that could be sent to the rescue. Was this creditable to our government? No. Did it dishonor us in our own eyes as a people? Yes. We feel humiliated as Americans when we reflect upon the miserable state of our naval steamers, and this is the reason why we have so often spoken out on the subject, and why we will speak out again and again until this blot on our national character is removed. It was fortunate that the last Congress paid no attention to the recommendation of the late Secretary of the Navy to build a hot air frigate; but at the same time such a vessel might have done as well as some of our steam frigates, namely, four miles per hour with a fair wind and a favorable tide. There is a new steam frigate belonging to our Navy, named the Princeton; we have spoken of it before, and have no intention of saying any more on the subject at present, than merely to state that extensive repairs have been made upon her, in this port, and she proceeded to sea last week to make a new trial trip, on which she behaved with dignified slowness. We allude to this at present merely to suggest to the Secretary of the Navy, if he wishes to confer honor upon his name, and redeem the character of our Navy, he must see to it that no more Princetons are constructed during his term of office. We suppose that this vessel, from first to last, has cost about $800,000, and and yet at best it is neither an efficient nor creditable steamer.

By late accounts from Europe it appears that the British steam marine amounts to 55,000 horse power—enough to match all the steam fleets of the world put together. This force has been increased from 15,000 horse power up to its present astonishing amount in about 18 months. Such an exhibition of energy and go-aheaditiveness is more American-like than that which our own government officials have hitherto exhibited with respect to our navy. We do not need such a large steam navy as this, but we certainly do need a better and much larger one than that which we have at present. We ought at least to have twelve or fifteen *first-class* steam frigates, whereas we have *not one*. We have now a surplus revenue coming into the national treasury; this is fortunate; we need it all to raise up an efficient steam marine.

It indeed affords us some pleasure to know that our government has at least awakened to some sense of the necessity of a naval reform. On the 23rd ult. the Senate passed a bill appropriating $3,000,000 for the construction of six new steam frigates; this is well, but it would have pleased us better, if ten instead of three millions had been appropriated for building ten first-class frigates. We do not believe that a *first-class* steam frigate can be constructed for less than a million of dollars. We need at least twelve new steam frigates, but we are grateful for the small appropriation which has been made; it is a good beginning. If they are well built—and they will be if the practical engineers of the navy have their say—we shall feel some pride in having been the constant advocate of a steam naval reform. We do not expect war, we do not want it, we hope we may never see it, but it is best to be prepared for the worst.

We consider war, however, only as a subordinate occupation for our steam navy. We want such vessels principally for the performance of acts of national humanity to our commerce on every sea,—*that* should be their chief business.

It affords us some gratification to know that amid the political rancor exhibited at Washington, some important national interests are not being overlooked. It is our duty to agitate this subject upon all proper occasions and we shall cease not to do so, until every American citizen can lift his voice in exultation and say, "now we have an Efficient Steam Navy."

### Platinum in American Gold.

In conversation with a gentleman, a few days since, who employs a great quantity of gold and iridium in his business, and who must have these two metals, separate, and in a state of great purity, he remarked, "it is strange that although there is iridium in our California gold, I have never seen any of it for sale. I am also sorry to say that I find grains of platinum and iridium oftentimes in our American coins, which should not be found there, and which unfits such gold for my business. The irridium which I use is obtained from Russia, and the gold mostly all foreign coin." This is as much as to say, "our California gold is not so well purified as it should be, and as iridium commands a higher price in the market than gold, it should be extracted from the latter w th great care."

Gold Separation—In a letter to the "London Mining Journal," J. H. Rundle, of the Colonial Gold Works, at Rotherhite, states that mercury, in the separation of gold from auriferous sands, unites with it in varying quantities. The quantity of gold absorbed by mercury depends, he says, on the following conditions:—First, the more or less finely divided state of the gold in the ore; second, the length of time during which the mercury remains in contact with it; third, the temperature at which the amalgamation is conducted; fourth, the presence of other metals in the amalgam.

The following method of separating gold from the mercury, when the latter by assay is found becoming too rich, is employed by him at the aforesaid gold works:—

"The mercury, after being strained, is assayed; granulated zinc, previously cleaned with dilute sulphuric acid, is then added to it. As soon as the zinc is completely amalgamated, which takes place in a few hours, the mercury is well stirred and re-strained; a solid amalgam is obtained, containing, practically speaking, the whole of the gold, and the greater part of the zinc which has been added. The proportion of zinc necessary is about one-third the weight of the gold to be extracted—*i. e.*, an equivalent of zinc to one of gold. With less, the whole of the gold is not obtained. If more than an equivalent be employed, the mercury retains a considerable quantity of zinc; the difficulty of refining the gold is also increased. When the object is to extract all the gold, it is advisable to use a small excess of zinc, as there are generally traces of other metals in the mercury, which interferes with the uniformity of the results."

### Interesting Papers on Flax.

We shall soon commence the publication of a series of articles on Flax, Hemp, and the Tropical and Sub-Tropical Fibrous Plants, considered botanically, historically, commercially, and statistically, with a special reference to their bearing upon the agricultural and industrial interests of the United States. The articles will embrace the results of a Commission recently instituted by the French Government, to inquire into the condition and progress of the Flax Culture and Manufacture in Europe, not heretofore translated. It will form a most interesting subject for all classes of our readers.

### Value of Foreign Patents.

Fortune of a Young American Inventor. One of our foreign clients—a young American —has just sold his British patent for the extraordinary large sum of £120,000, (nearly $600,000) and his patent for France, on equally advantageous terms. This certainly affords great encouragement to those of our countrymen, who have valuable inventions adapted for successful introduction into foreign countries. It would appear, from the success of this young American abroad, that whenever the real merits claimed for his invention were established, his fortune was made. No class of men are better entitled to fortune and fame than our inventors; their works confer benefits upon all mankind. The astonishing success of our countryman, spoken of, abroad, is more than we expected when he left our city for London, but it shows us, that the days of making fortunes rapidly are not yet over.

There are many inventors among our countrymen whose future career may be as prosperous. A good invention patented abroad and well managed there, is perhaps more profitable than a patent at home. A valuable invention, however, may, from bad management, bring no remuneration to the ingenious inventor; this oftentimes occurs,—it is a pity that it should be so. The inventor spoken of, who has sold his patent in England on such advantageous terms, had his machine illustrated in the columns of the "Scientific American," and he obtained all his foreign patents through our Agency.

### Dr. Lardner and Ocean Navigation again.

Not long ago Dr. Lardner was re-attacked through some of the London papers, by anonymous correspondents, for having predicted "the physical impossibility of navigating the Atlantic by ocean steamers." To these attacks he has replied through the London "Times," stating that what he d d say respecting regular steam navigation across the Atlantic, in 1836, he now reiterates with emphasis; and he accuses those who have misrepresented him, with ignorance of what he did say, and what has since transpired to verify his predictions. His assertion was, "that in the then present state of Atlantic steam navigation, voyages could not be maintained profitably." The results have shown this to be true,—the first vessels that were employed to establish Atlantic steam navigation, all failed as commercial speculations. Without large government subsidies, neither the Cunard nor Collins steamers could be sustained.

### Nutritive Value of Rape Cake.

Prof. Emil Wolff, of Germany, has made some valuable experiments with the cakes of compressed rape seed. The experiments were made with cows, in order to see what effect the use of rape-seed cake, as a portion of feed, would produce upon the milk.

It was found that when too much of the cake was fed out, it imparted a bad taste to both the butter and the milk, but that 1 lb. of the rape cake, was equal to two pounds of hay for the purpose of maintaining an average living weight, both in cattle and in sheep. It was also found that about 1½ lbs. of the cake was sufficient to be fed out to one milch cow every day, which quantity had a very beneficial effect in the production of milk. Both as respects the production of milk in cows, and for fattening cattle and sheep in general, Prof. Wolf has come to the conclusion that no food exceeds rape-seed cake, when prudently fed in small quantities along with other common food, such as hay, potatoes, beets, &c.

### Report of the Commissioner of Patents.

We have had the pleasure of examining some of the proof sheets of Commissioner Mason's annual Report of the Patent Office. We will present the leading features of it to our readers as soon as it is published. It contains some very important suggestions which will be received with pleasure by every reader of the Scientific American.

Some of our cotemporaries state that the hull of the "Great Republic," is to be used for that of a steam frigate for a foreign government—not likely, we think.

### Calico Printing.

Calico Printing is an art possessing an interest for all, inasmuch as it is one of adornment, to which all persons in every civilized community are much indebted. We believe that the great majority of our people are not acquainted with the modes of producing such beautiful fabrics; this, so far as the sphere of the "Scientific American's" influence extends, shall be the case no longer.

Calico Printing consists mainly of two branches, viz., hand and machine printing. Its nature is the same in both branches, so far as the ultimate objects to be attained are concerned; this is to impregnate cloth with different colors, in such a manner as to form an ornamental pattern or design.

For the engravings to illustrate this subject, we are indebted to the "Encyclopedia of Useful Arts."

Hand Printing—This is accomplished by blocks, on which the pattern is cut, which take up the color from a seive and transfer it to the piece of cloth. The process is applicable to linen, silk, worsted, and mixed fabrics, but we usually refer it to cotton cloth. Hand calico printing is a very old art, and resembles the old Chinese mode of book printing. The annexed cut (fig. 1) represents a block used in this kind

Fig. 1.

of printing; the pattern is cut out in relief upon the face of the block, which is a piece of sycamore or pear tree (hard maple would no doubt answer well). The backing of such blocks is pine—they were at one time made wholly out of sycamore wood. These blocks are of different sizes; those which are now used in France are the old fashioned small kind, by which the printers make very neat work, but much less of it in the same time, than English calico printers. The finer kind of such blocks have the patterns made on them by the insertion of narrow and round strips of copper and brass into them, the interstices being filled with fine felt, named *hat*. The art of calico block cutting is entirely different from that of engraving on boxwood for book printing.

Figure 2 shows two printers at work on different tables. These tables are exactly like a book printer's "imposing stone," they being generally composed of a strong wooden frame with a smooth stone flag for the top. The table is snugly covered with two or three thick woolen blankets, to render it soft yet firm. The piece of cloth to be printed is prepared for that purpose, by boiling, bleaching (if necessary), and a partial calendering, to smooth its surface, take out all the wrinkles, and make it track square on the printer's table. As it is printed, it is rolled up over rollers, one above the other, and not suffered to be folded up until the colors, which are printed, are quite dry. The block of the printer is charged by pressing it, for every impression, upon the color on the surface of a felt cloth stretched tightly over a woolen drum; this is called a *sieve*,—it floats in a tub of thick gummy varnish, for the purpose of giving it elasticity. This *sieve* contains the color which the printer puts on to the cloth. If it is purple it may be made of a very strong decoction of logwood thickened with British gum and *raised* with a little of the chloride of tin and alum. This color is kept in proper order by a boy, named a *tearer*, who takes up a small quantity of color from an earthenware pot at his side, as required, with a brush, and spreads it uniformly over the surface of the sieve; and every time the printer presses the block on the sieve, the tearer brushes over its surface to erase the mark of the block and charge the surface equally with color for the next impression. A number of pieces of calico are generally stitched together or connected together by pin-sticks, and drawn off the table in lengths as printed. The print shop is kept warm, in order to dry the colors rapidly as they are put on. There is a pin on every corner of the block, by which the printer is guided where to set down every new impression by matching two pins in the two end marks of the previous impression. When the block is laid down on the piece of cloth, it is struck smartly by the printer, with the bottom of the shank of a mallet, the head of which is generally a piece of cast-iron or lead. This is a peculiar method of using a mallet. For some colors a slight blow with the heel of the hand is sufficient to press the color into the cloth. Were it not that the cloth has the quality of absorbing the color from the block, it is very evident that this branch of the art could have no existence. If the pattern is to consist of three or more colors, there must be as many blocks used, the raised portions of one being made to fit into the depressed portions of the other, to put in a different color, where no color was laid down by the previous block. Handkerchiefs and shawls require more work from the *tearer* and printer, as they are made with borders.

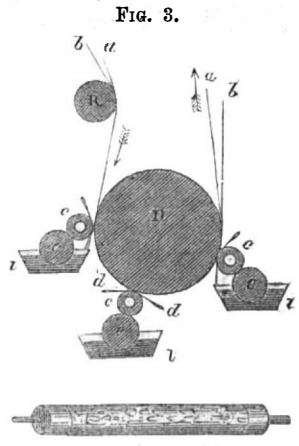
Fig. 2.

The tearer has to lay *cuts* of oiled paper at the crossings, to prevent the blocks from being laid down on the wrong place. In printing muslin de laines, which take up the color rapidly, and dry faster than cotton goods, long tables are used, and three and four men print after one another in a row, putting in the different colors of the same pattern in succession. Figure 2 represents the printers at work on tables, to show how the colors are put on. But if a design of calico consists of parallel stripes of different colors, they may all be put on with one block at once. The colors are arranged for this purpose in small tin troughs, and transferred to the sieve by means of a brush, and then distributed evenly by a roller in stripes.

Stereotyping has been applied to the production of printing blocks. A mould is produced from a pattern and copies are then made by pouring fusible metal into it.

Oil cloth printing is conducted exactly like calico printing, only a more severe pressure is applied to the block, and oil colors, instead of gum water colors, are employed for the pat-

Fig. 3.

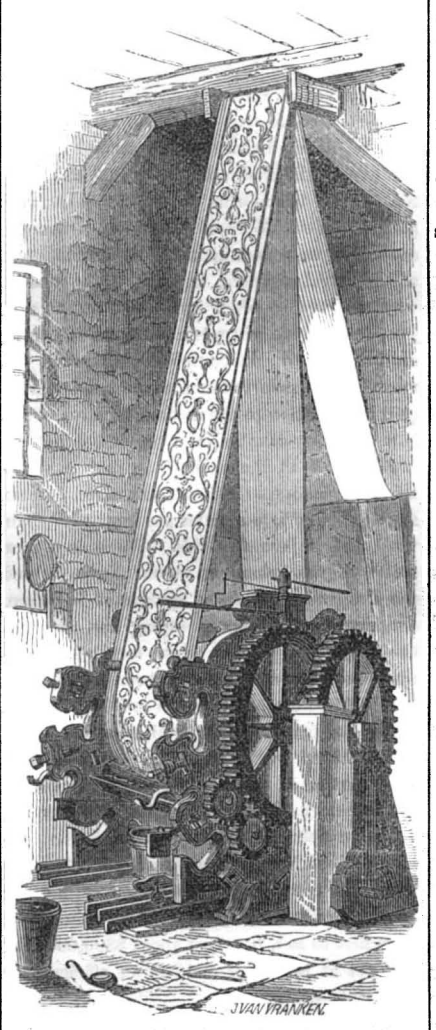


tern. Ten years ago it was proposed to employ sections of type metal to make varying pattern blocks for oil cloth printing; a patent was granted for the same improvement only three weeks ago; one of its original inventors is dead; the other, named B. True, we believe, now resides in Cincinnati.

Cylinder Printing.—There is very little hand printing done in our country—nearly all the work is done by figured rollers. This invention is the parent of the rotary newspaper printing press. It is the greatest achievement that has been made in the art. One mile of calico, by this method, may be printed with a pattern of six colors in one hour, and with more accuracy than by hand blocks. One cylinder machine, attended by one man, will do as much work as 100 hand block-printers attended by 100 tearers. This machine, above all other improvements, has greatly reduced the price of calicoes. Its invention, in 1785, is ascribed to two different men, who had no connection with one another, and who were residing in separate places when they made the invention. The one was a Scotchman, named A. Bell, who was living in Preston, England; the other, named Oberkampf, a Frenchman, residing at Jouy, France.

Fig. 3 is a transverse section of a cylinder printing machine, arranged for three colors. A roller, *c*, is engraved with its pattern for its own color. A perspective view of one of these rollers or cylinders is shown at the foot of the engraving. Each cylinder is mounted on a strong frame-work, so as to revolve against the cylinder, *e*, and the iron drum, D. The cylinder, *e*, is a color roller; it is covered with felt cloth, and dips into the trough, *i*, which contains the color. As it revolves, it gives off the color to the engraved roller, *c*. The drum, D, is covered with several blankets, so as to form an elastic printing surface, like the printer's table. An endless web of blanketing, *a a*, is made to travel round this drum, and this serves as an endless apron, guide, and defence to the piece of calico, *b b*, which is being printed by

Fig. 4.



being carried round said drum. It is evident that ten or twelve colors can be put in by such a machine, by increasing the number of color rollers and cylinders. As the cylinder, *e*, revolves it spreads the color on the pattern roller and the scraper, *d*, called the "doctor," removes the superfluous color from the face of the roller, before it touches the cloth, in order to have the color left only in the interstices of the roller. The color that is scraped off falls back into the trough, *i*. But for the "doctor," nothing but a blotch of one color, would be impressed on the cloth by each roller. There is a doctor on each side of the pattern cylinder, the one to scrape the face of the roller, before the impression is made, and the other to scrape its face after an impression; so as to remove wool and threads that may be taken up from the cloth.

Fig. 5.

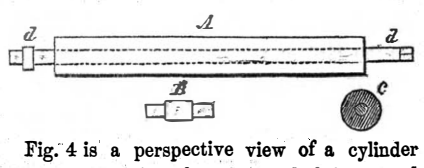


Fig. 4 is a perspective view of a cylinder machine, showing how the cloth is passed through it. A great many pieces of cloth are sewed together, and passed through in one web. As the cloth is printed it is drawn through a long gallery or stove room, which is kept at a temperature of about 200°, which dries the colors with great rapidity. The printing cylinders vary in length from 30 to 40 inches, according to the width of the calico; their diameter is from 4 to 12 inches. Each cylinder, (A, fig. 5) is bored through the center as seen by the section, C. An axis, *d d*, is accurately fitted into the bore, and on this the cylinder rotates. For some styles of patterns the engraving is done on these rollers by hand, but this is an expensive process, and the usual plan is to adopt Perkin's method of transferring engravings from one surface to another, by means of steel dies, B. This is done as follows:—

The pattern is first drawn upon a scale of about three inches square, so that this size of figure being repeated a number of times will cover the printing cylinder. The pattern is then engraved upon a roller of soft steel about one inch in diameter, and three inches long, so as to occupy its surface exactly. This small roller, which is called the die, is next hardened by heating it to redness and suddenly quenching it in cold water. The roller thus hardened is then put into a rotary press, and made to transfer its design to a similar small roller in a soft state, called the mill. The design which was sunk in the die, now appears in relief on the mill. The mill in its turn is hardened, and being put into a rotary press, engraves or indents upon the large copper cylinder the whole of the intended pattern. This is of course a work of time, and requires considerable care to make the numerous junctions of the small roller exactly fit each other upon the printing cylinder. By the method just described, a worn cylinder can be renewed and made equal to a new one. The pattern is also sometimes produced by etching, in which case the cylinder is covered with a thin coat of varnish, and on this the pattern is traced with a diamond or steel point. Nitric acid is then applied to the surface, which bites into or corrodes the parts which have been removed by the point. This point or tracer is sometimes applied in a manner similar to that of the eccentric chuck of a lathe, by which means the surface is covered with patterns, or a ground-work for patterns of great variety and beauty. The electrotype has also been used for producing the design on the printing-cylinder. The design is also sometimes cut in relief upon wooden rollers, or formed by the insertion of flat pieces of copper edgeways. This is termed surface printing, probably from the circumstance of the thickened color being applied to a tense surface of woolen cloth, against which the cylinder revolves and takes up color. A combination of wooden and copper rollers form what is called the union printing machine.

[Remainder next week.]

The Palace of Industry in the Champs Elysees, Paris, which was so immense as to inspire astonishment, turns out to be too small by one half for its destination. On being measured in every direction, it only offers a surface of 48,000 metres, and the Commission of the Exhibition, in accordance with the Engineers, declares that it can do nothing with less than 95,000 metres. A report has been addressed to the Emperor, demanding the authorization to create additions to the edifice. After some hesitation he has acceded to it, on the express condition that not a single tree shall be cut down.

### A Strike against Sewing Machines.

The tailors of Hamilton, U. C., have "struck" against the sewing machines. Recently, a reinforcement of fifty tailors arrived in that place from Yankeedom, to supply the places of the anti-sewing-machine tailors who had struck. The strikers got up a demonstration threatening the new comers, who took the evening train and left the tailors of Her Majesty's dominions in possession of the—cabbage field.

### A Bed of Amber.

In digging for a well in the coal mines near Prague, the workmen met between the bed of gritstone which forms the roof of that mine and the first layer of coals, a bed of yellow amber, apparently of great extent. Pieces Weighing from two pounds to three pounds, have been extracted.

### TO CORRESPONDENTS.

T. J. B., of Tenn.—We believe that such an improvement as that you speak of is patentable.

H. S. W., of Ohio—the application of clock-work to operate a cradle is not new; two different arrangements for the purpose have been illustrated in our paper; Walker's cradle is capital—we can speak from experience, having used it with advantage and profit on two occasions. We should not be induced, upon any consideration, to part with it for the present, as it is in daily use. There is nothing patentable in your plan.

E. C. L., of Conn.—Your arrangement for a stove is not patentable in our opinion; it is a simple plan and might operate well.

B. A. R., of Geo.—Your method of connecting rails by means of a pin cast on one to enter into a recess on the other rail, so as to dispense with the ordinary chair, is not new—the same thing has been proposed.

J. H. F., of Vt.—We have your communication in reference to the marine locomotive, and have placed it upon file: We have little faith in it.

S. J., of Me.—The plan of your rotary pump or steam engine is among the oldest known to us. Three years years since one was in operation in this city and afterwards abandoned.

X. F. B., of N, Y.—Your plan of constructing cars so as to change the point of draught possesss novelty, and we can raise no objection to it at present.

L. C., of Iowa—We do not discover any patentable feature in your plow; attaching wheels before or behind the mould board is no novelty of a patentable character. The corn planter sketch does not convey a clear idea of the invention: we cannot give an opinion without a model.

S. V. S., of Pa.—We have no printed petitions against the extension of the Woodworth Patent. By reference to the Report of the Committee on Patents, published in Vol. 7 Sci. Am., you can readily procure facts sufficient to base a good argument upon.

B. W. & W., of Ill.—A good hub mortising machine is made by Otis & Cottle, of Syracuse, N. Y. Address them.

J. G. McF., of Pa.—We will be able to tell you the price of the engraving when we see the patent, but could not at present. The only way to tell the gain of one engine over another is by a dynamometer, not otherwise, and this can be done easily; but equal quantities of s eam will produce equal effects in both, all thi gs being equal. Do not sp nd your money on the project—that is our candid advice.

T. S. J., of N. Y.—Your plan is not new: it has been experimented with before, and failed to produce any good effect. See page 302, Vol. 5, Sci. Am., for an illustration of an air- ight drum propeller. Your plan can not be made to operate.

J. C. B., of Phila.—Malleable glass could no doubt be protected by a patent.

C. A. G., of Conn.—There is no recent work on the subject you speak of published.

L. W., of Vt.—We would obtain the greatest amount of power from the reciprocating engine.

F. V., of N. H.—No power would be gained by the arrangement you have described.

L. B., of Ia.—There is no such water wheel or hydraulic ram patented.

J. T. G., of Ky.—We have carefully examined the sketch of your watch escapement, and we think it is new. We have never seen anything of the kind.

J. H. R., of N. Y.—The pressure of a train of cars of 100 tuns, on the Suspension Bridge at Niagara Falls, is the same when moving at any speed, but the dynamic force exerted on the bridge is greatest when the cars move fastest.

A. S. W., of O. W.—There may be many different opinions expressed in answer to your question: we would use 90 square feet of heating surface.

F. McC., of Pa.—Water lime will not answer for any but wet situations; hydraulic cement is another name for it.

P. L., of Mass.—Your plan is simply a blower to propel the vessel by air; it is not a useful plan and therefore not patentable.

C. J. F., of Ohio—We gave you our opinion respecting originality; its superiority can only be proven by experiment.

R. C., of B.—Your plan would answer for some machines, but there are other inventions that it could not cover, and the law should be general in its application.

T. & B., of C. W.—You ask for a Rule, that we cannot furnish, nor have we ever seen one that would do it; those which we find in some mechanical works are shams, and do evil. A universal chuck is for chucking concentrics and eccentrics.

C. F. C., of Boston—Make the solution thin and try again: it should not adhere so firmly as not to be separated.

O. W. B., of N. Y.—Try some gutta percha, and whiting for your ornaments; if we find a receipt to suit you, you will find it in our columns.

H. H., of Va.—We are not acquainted with the plan of Ericsson's flame engine, or we should have been happy to have given you the information.

J. P. E., of ——.—Wire is tempered by annealing in a furnace for that purpose. We no not know the price of the looms to which you refer, but if you write to Mr. Ames, Chicopee, Mass., he will give you all the necessary information.

H. H., of Phila.—The small wheel must slide through the whole space which it is carried, minus its own circumference.

J. R. L., of Fla.—We do not see a point on which we could base a claim for your machine. We are afraid that you will find the oat meal experiment to fail in producing the anticipated results.

C. A., of Pa.—Gum elastic is reduced to a plastic state by heat, but to a liquid state by turpentine heated in a close vessel.

W. F., of Mass.—We are well aware of what the Collins steamers can do.

C. L. C., of N. J.—Useful space would be wasted by complying with your request. There are plenty of problems for the profit of young mechanics in every good work on mathematics.

R. & B., of Pa.—We are not acquainted with anything now sold to stand the test of your fires, but is appea s to us that you might make bricks of coal ashes, black lead, and bone ashes, that would stand the fire.

T. R. J., Jr., of Va.—No wood ashes can be obtained in this city.

O. C., of Mich.—Both of your plans have to our knowledge been tried already.

A. B., of R. I.—Your object is no doubt a good one, but with your new additions will it not be more difficult to launch the life-boat?

Money received on account of Patent Office business for the week ending Saturday, Feb. 25:—

J. D., of Pa., $25; A. F., of Mich., $22; P. W. (2 c.) of Mass., $25; R. B., of N. Y., $60; J. H. S., of Md., $30; D. W. K., of Va., $35; T. R., of N. Y., $49,50; D. P., of Vt., $50: I. W. McG., of Pa.: $60; W. R. G., of Ky., $50; J. G. W., of L. I., $14: W. C., of N. Y., $30; H. T., of N. Y., $30: S. M., of N. Y., $50,25; J. P., of N. Y., $35: J. P. H. N. Y., $30. G. M. P., of Me., $25; I. F. B., of Ga., $100: W. W., of S. C. $30; E. T. B., of Mo., $30; J. D. B., of ——, $30: W. McC., of N. Y., $10: J. B., of O., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Feb. 25:—

A. F., of Mich.; W. H. A., of N. Y.; J. D., of Pa.: F. L. of N. Y.; P. W., 2nd, of Mass: P. M., of N. Y.: G. M. P., of Me.; W. W., of S. C.: A. S., of O.; D. P., of Vt.; J. P., of N. Y.

## ADVERTISEMENTS.

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UNITED STATES PATENT OFFICE.
Washington, Feb. 13, 1854.

**ON THE PETITION** of Samuel Blatchford, administrator of Orlando Jones, deceased, of Auburn, N. Y., praying for the extension of a patent granted to the said Orlando Jones, on the 30th day of April, 1840, for an improvement in the manufacture of Starch, for seven years from the expiration of said patent, which takes place on the 30th day of April, eighteen hundred and fifty-four—

It is ordered that the said petition be heard at the Patent Office on Monday, the 24th day of April 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.; Pennsylvanian, Philadelphia, Pa.; Scientific American, New York; Post, Boston, Massachusetts and Enquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the 24th day of April next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 25 3

UNITED STATES PATENT OFFICE.
Washington, February 13, 1854

**ON THE PETITION** of John N. Vrooman, of Niskayauna, New York, praying for the extension of a patent granted to him on the 15th day of April, 1840, for an improvement in floating swing bridges, for seven years from the expiration of said patent, which takes place on the fifteenth day of April, eighteen hundred and fifty four, (1854)—

It is ordered that the said petition be heard at the Patent Office on Friday, the 14th of April 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 to 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.; Pensylvanian, Philadelphia, Pa.; Scientific American, New York; and Inquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the 14th of April next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy, and send their bills to the Patent Office, with a paper containing this notice. 25 3t

# Scientific Museum.

### Electro-Magnetic Railway Signals.

In the 'London Mining Journal' of the 24th Dec., we called attention to, and fully described a novel and effective plan of signaling on railways, through the instrumentality of galvanism, patented by Mr. Tyers. On Wednesday, a number of gentlemen connected with railways, and the members of the press, attended a private meeting, at which the Lord Mayor presided, to witness some experiments by working models, and hear an explanation of them. The patentee has succeeded in effecting by the means of voltaic electricity, with the utmost ease, simplicity, and efficiency, several important desiderata. Every train on passing a station gives notice to the station last left that the line is clear; it also at the same instant transmits to the next station in advance, by the sound of a bell, a signal of its approach. Signals can also be transmitted from any intermediate point between stations to give alarm and obtain assistance in case of break down, or any stoppage of the line; and any official at a station can communicate with the driver of a train at any distance as he is approaching—fog and auxiliary signals being thus superseded. This latter signal is made by the apparatus being caused to sound the steam-whistle, and at the stations are self-acting registers, keeping an exact account of every signal made; and in addition to stations they will prove highly valuable for tunnels, junctions, and crossings while shunting trains, and in other emergencies. The experiments were performed with celerity, were perfectly successful, and indicative of the real value of the invention when carried out in practice. The cost for each set is roughly estimated at 50*l.* to 60*l.* The apparatus has been successfully tested on the South-Eastern and Croydon lines; and the Lord Mayor expressed his gratification at the opportunity afforded him of witnessing the experiments. As great interest is now excited respecting the best means of preventing accidents on railways, this plan will, no doubt, receive all that attention from parties officially connected with them which its capabilities merit.—[London Mining Journal of the 24th January.

[Independent of any knowledge of the above invention, measures were taken to secure an American patent by one of our citizens, for a like invention previous to the date when the above invention was first brought before the public in England. It is not an uncommon thing for more than one mind to be engaged in studying out a like improvement at the same time, even when living thousands of miles apart.

### Use of Grammar.

At a late meeting of the Liverpool Literary Society, a paper was read on the existence of dialects among the different Jewish tribes, although they all spoke the Hebrew language. This was attributed to the want of a grammar, but Dr. Ihne rose up and said he was of a different opinion. The Greek language was not founded by a grammar, but by Homer, and the modern German by Luther's translation of the Bible; grammarians only took such men for their models.

### Fusible Alloy.

The law for the preservation of life on steamboats requires a particular safety fusible alloy to be used to prevent explosions of boilers.—The Treasury Department originally had this alloy made in the navy yards. Recently, Prof. Booth has been employed by the Secretary of the Treasury, at the Philadelphia Mint, to perfect this alloy by experiments. He is said to be rapidly approximating to satisfactory results.

### Brilliant Lacquer for Paper and Papier-mache.

3 oz. powdered sandarac are digested in a sand-bath in 12 oz. alcohol, 2 oz. elemi-resin added, previously fused in an earthen pot, and the whole digested until dissolved. This lacquer is brilliant, and rather durable. A good lacquer for colors is 3 oz. sandarac, 2 oz. mastic, 2 oz. pounded glass, 1½ oz. Venice turpentine, and 1 lb. alcohol. After solution, the varnish is filtered through felt. It may be colored red by annatto, dragon's blood, or redwood, yellow by gamboge or turmeric, and green by buckthorn berries.—(Polytech. Notzi.)

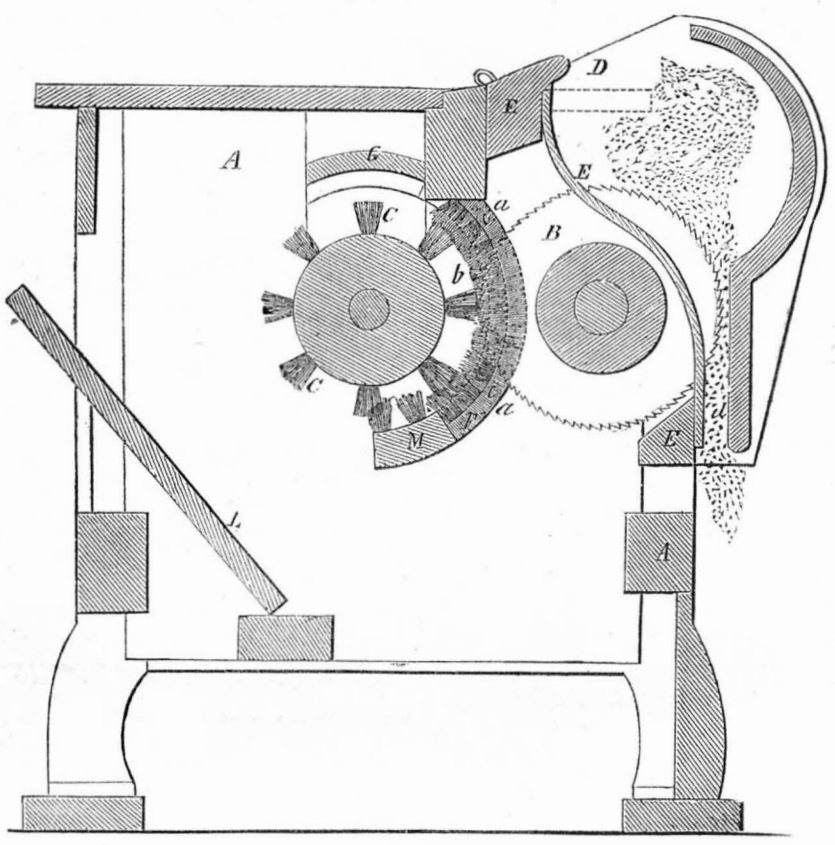
### Acid and the Teeth.

Messrs. Editors—An article in a recent number of the "Scientific American," on teeth, from the "Practical Dentist," says, "the great and all-powerful destroyer of the human teeth is acids—vegetable or mineral." I have a boy now three years old, who always enjoys good health, and all of his front upper teeth began to decay as soon as they got through the gum, and also ulcerated at the roots—all the rest of his teeth are sound. I would ask, was it acid that destroyed his teeth—a substance that he, at that time, had never taken into his mouth in any other form than milk? If acids are the cause of all people's teeth decaying, why does not the teeth of all decay, when they are young—who do not clean their teeth? E. W. D.

Norwich Town, Conn., Ct.

[The acid theory will not account for the decay of every person's teeth.—Ed.

## CAMPBELL'S COTTON GIN.




The accompanying engraving is a vertical section of an improvement in Cotton Gins, recently patented by Leonard Campbell, of Columbus, Miss., and a notice of which appeared in the second number of our present volume.

The invention consists in the employment of a concave having a series of slots cut through it for the saws to work in and carry the cotton through to the brush fan. The sides of these slots are covered with bristles, which serve as the saws force the ginned cotton through the slots, to further clean it from all impurities.

A A represents the frame of the gin, and B is a ginning saw of the ordinary construction; C, the brush fan, is also similar to those in the common gin; D is the hopper through which the cotton is fed; E is the ordinary concave through apertures in which the ginning saws revolve; F is the intermediate concave already referred to, placed between saws and the brush fan. The bristles or brushes placed at the sides of the apertures, *a a*, by metal plates. By the action of these brushes the dust and dirt which may be drawn through the outer concave by the ginning saws will be separated from the cotton as it is carried through them by the saws.

The brush fan and saws revolve together, the latter operating upon the cotton as it is fed in at the hopper, D, stripping it from the seeds, and carrying it through the slots in the concave, F, to be further operated upon by the brush fan and concave—the seed falling down through the spout, *d*, of the hopper; G is a concave top for preventing a current of air from passing down toward the brush fan and concave, thus tending to choke the machine; M is a portion of the concave, to which are affixed additional brushes for a further action upon the cotton, which escaping from them is thrown against the inclined board, L, over which it passes into the cotton room.

Experienced cotton growers have expressed themselves favorably upon the merits of this invention. We have never seen it in operation, but we are inclined to think it possesses some features which will render it capable of producing a cleaner staple than the ordinary gin.

The inventor can be addressed at Columbus, Lowndes Co., Miss.

### A Powerful Locomotive.

The motive power of the Baltimore and Ohio Railroad Company has been improved and rendered more efficient by the completion of one of those first class, powerful coal-burning passenger engines. It is designed for the heaviest of the mountain grades, commencing at Piedmont, 307 miles from Baltimore, and running about sixty miles near Three Forks the junction of the Parkersburg road. The engine has ten wheels, six of which are drivers, and a truck of four wheels. The drivers are 50 inches in diameter, and the trucks 30. The cylinders measure 19 inches in diameter, with 20 inches stroke of piston. The cylinder part of the boiler is 48 inches diameter and 14 feet long. The drivers are connected, and have a weight of 45,000 lbs., equally distributed between them by means of levers and springs. The whole weight of the engine in running order is 60,000 lbs., or 30 tons, and the entire length from back of foot-board, to point of fender in front is 28 feet. It is supplied with a cut-off, for working steam expansively. This engine is intended to draw five passenger cars up the heavy grades at a speed of twenty miles per hour; is known as No. 203, and was designed by, and built under the direction of Mr. Hays, of the company's foundry.

### Floors in Paris.

A correspondent of the New Orleans Crescent, in Florence, writes—"there is not one room in one hundred in Paris that has a carpet on it. The floor is made of brick, laid down generally in large squares, and it is cleaned by pouring on it a quantity of brick-dust, and then throwing over it a quantity of water, and then scrubbing it till it acquires a polish, fairly painful for the eye to look upon.

We have received from John Jewett & Sons, 182 Front street, a very beautiful specimen of oil cloth printing, by the method of James Jenkins, patented May 12, 1852. It is a portrait of Washington. We had not supposed that the art had arrived at such perfection.

### Niepce de St. Victor's Engravings.

The Heliographic Engravings upon steel, received by us from Niepce de St. Victor, have attracted considerable attention. Many of our artists have called to see them, and great curiosity has been expressed to know the exact process by which the result has been accomplished. Will the inventor confer upon us the great favor of transmitting to us a full account of his process in all the particulars, including the mode of preparing his sensitive varnish, &c.? Any of our friends who choose can call at our office and see these engravings.

### Cheap Globes.

Messrs. Editors.—I take the liberty of calling your attention to the necessity of the producing a cheap Globe, that is, a Terrestrial Globe, as the best means of giving correct instruction in Geography. Cannot globes be made of india rubber or gutta percha, say two feet in diameter, for a much less sum than the ones now in use? If you think it at all feasible, I trust you will direct the attention of the inventive genius to this important branch of education. J. Forbes.

St. Louis, Mo., Feb. 1st, 1854.

[This is a very important suggestion; we heartily agree with the views of our correspondent. The globes that are in common use, are far too dear. We want to see a globe of 12 or 18 inches in diameter, in every house; at present, few of our working people have them, because they cannot afford them.

### LITERARY NOTICES.

The Hand-Book for the Artisan, Mechanic, and Engineer—This is a new work, Oliver Byrne, C. E., editor, and T. K. Collins, Jr., publisher, Philadelphia. This is a very excellent work, and Mr. Byrne certainly deserves credit for the great amount of new and useful information he has collected and presented here to American Mechanics. It is principally designed for the machine shop; it is illustrated with a great number of excellent working drawings of lathes, bolt cutting machines, planers, slotting machines, geer cutting engines, drills, &c., designed by W. B. Bement, engineer, Philadelphia. The book is chiefly devoted to the use of tools, and certainly we do think it is the best work on the subject ever published in our country. It deserves an extensive circulation. For further information see an advertisement of this book on another page.

The New Englander—The present number of this able Quarterly Review, published by F. W. Northrop, of New Haven, Conn., contains 10 original articles of great power. A review of Prof. Silliman's visit to Europe afforded us much pleasure. A review of the "Bards of Scotland," published by Carter & Bros., of this city, is full of praise in respect to the character of that excellent book.

Clark's Work on Locomotives—Blackie & Son, publishers, 117 Fulton st. This able work will be complete in about 26 numbers—22 having already been issed—62 1-2 cents each.