Scientific American.

NEW YORK, JULY 29, 1854.

Improvements in the Use of Steam.

Our constant readers will remember that we published on page 24, Volume 5, "Scientific American," the Report of the Rumford Committee of the American Academy of Arts and Sciences, at Cambridge, Mass., of which Prof. Hosford was Chairman, on the alleged discovery of new properties in steam, by the late James Frost, of Brooklyn.

Count Rumford left a sum of money to Harvard University, directing the interest thereof to be distributed to any discoverer of new and useful properties of heat, and Mr. Frost submitted his invention to the faculty of the University claiming the honorary reward. The discovery claimed was new properties asserted to be acquired by steam when heated apart from water. The University turned the subject over to the Rumford Committee named, which ignored the claims of the discoverer in a curt manner. On pages 179 and 195, same Volume "Sci. Am." we illustrated Mr. Frost's experiments, and brought the subject prominently before the public. A patent had been denied in Washington, but one was obtained in England, and E. K. Collins, Esq., after some experiments made for his own satisfaction, paid the discoverer some consideration for its use. On the 25th of May, 1853, C. E. and S. Wethered, of the city of Baltimore, obtained a patent for the use of common steam and superheated steam (Frost's "*Stame*,") in combination, for actuating engines, thus showing that the Patent Office had become more liberal in its management, it being for some years before notoriously tyranical and despotic. With Mr. Frost's discovery and the invention of the Messrs. Wethered, a new impulse, it is stated, is about to be given to steam navigation, whereby an entire revolution in the saving of fuel is to be effected.

Important operations have been going on for some time in the Collins' steamer "Arctic," for the purpose, we understand, of using *stame* and steam combined, instead of simple steam, as heretofore. A portion of steam, after being generated in the boiler, is carried by pipes through the furnaces, when it becomes *stame*, and from thence passes to the steam chest, to be mixed with an equal portion of simple steam, before it enters the cylinders and actuates the pistons. It is asserted that by this means a saving of at least forty per cent. of fuel will be effected, amounting to no less than $62,000 per annum to the Company. These changes in the principle of operating the engines of the "Arctic," have not been hastily undertaken. Through the spirit and liberality of Mr. Collins, a series of experiments were made to test the merits of this invention in this city, in the months of November and January last, upon a scale, reasonable in itself, to settle the question in all its bearings. The first experiments were made with a stationary high pressure engine, kept by Mr. Collins for such purposes, and were perfectly satisfactory; but it was resolved to test the invention on a larger and more practical scale, and for this purpose the tug steamboat "Joseph Johnson" was procured and fitted up on the North River, with the tubes running from the boiler through the furnaces, to convey and super-heat a portion of steam and conduct it to the cylinder, where it was mixed with an equal portion of simple steam. By this arrangement the simple and super-heated steam (*stame*) could be used singly, or combined, and they were thus tried. From tables kept by D. B. Martin, Engineer-in-Chief U. S. N., and furnished to B. F. Isherwood, Chief Engineer, who communicated a paper on the subject to our respected cotemporary, the "Journal of the Franklin Institute," it appears that the economy of using the simple and super-heated steam combined, was 53½ per cent. over the use of simple steam. This was less than by the stationary engine, in which the gain was 72 per cent. in saving fuel.

No information has been furnished respecting the economy of using super-heated steam (*stame*) alone, although we have been informed that it is intended to use it in this state in the "Arctic." It appears to us that a portion of moisture in the steam (*stame* and steam mixed) must be more profitable than the *stame* alone. Steam in its nature is a partial lubricator, and must make a piston play more sweetly in a cylinder than dry super-heated steam. The high heat and dryness of *stame*, in licking up oil and injuring the packing, are also objections to its use, (these are also insuperable obstacles to the use of hot air as a motive agent),—and on a long voyage, we think, it would be objectionable, but the "Arctic" will determine this question fully. And here let us say, that although a sound judgment and scientific knowledge may reasonably lead men to form a very correct opinion of what may be the results; still, it is experiment, fairly and fully tried, not for a day nor an hour, but for weeks and months, that can alone settle the whole of the economical questions involved—fuel being but one of them. We hope and trust, however, that the invention will prove to be perfectly successful, and if so, we anticipate an increased speed in our Atlantic steamers. Thus if the saving of fuel amount to fifty per cent.—as the consumption of coal is now about eighty tuns per day, and a voyage ten days—no less than four hundred tuns of freight—dead weight—will be saved, which ought to shorten the voyage one day at least. Viewing this question in all its bearings, and looking with hope to new and important achievements in ocean navigation, we cannot but lament that so little credit has been given to the man who brought the subject before the public, and whose mind first conceived the project of heating steam apart from water for motive purposes:—we allude to the late Mr. Frost. We have looked in vain for the record of any other person so treating steam, and as "Honor to whom honor is due," is our motto, we allude thus feelingly, while presenting this information to our readers, because a number of paragraphs and articles on the subject have appeared in other periodicals, (some anything but correct), and in which much credit has been given to various parties, while the name of the *real genius* was never introduced. Yea, more than this, Capt. Ericsson, in one of the most brazen-faced letters we ever read, which was published in the N. Y. "Herald" of the 20th inst., claims to be the first who employed super-heated steam as a motive power, but he does so in such a clumsy manner, that the absurdity of the claim is as transparent as his heated air.

The Asteroids.

The Nebular hypothesists, in their efforts at uniformity in the Solar System, have never for a moment hesitated to propound the most absurd views in support of their notions. They set out with assuming that all the matter of our solar system was once in a state of gas, and that by cooling (where did the heat go?) and gravity it began to whirl round faster and faster, throwing off ring after ring, forming Neptune, Uranus, Saturn, Jupiter, &c.,—all of them, by some method not explained, becoming for a while globes of fire—the larger one on the outside, and the others growing smaller and smaller, until we arrive at Mercury. The relationship of these rings they calculated with assumed gravity, and held up their theory as the most beautiful and harmonious ever conceived. There was always one flaw in it, however,—that was the space between Mars and Jupiter, which, according to their views, should have contained a large planet, but instead thereof, it was found to contain a great number of exceedingly small ones. But never at a loss for some covert to hide their absurdities, they assumed that these small planets were the remains of the large one which should be there, and which, by some unexplained cause, had become a mass of ruins. D. Vaughan, who seems to delight in marshalling the starry hosts, and bringing them full tilt against one another, like knights upon the tented field, settled the matter of the Asteroids to his own satisfaction, by assuming them to be formed from the collision of two planets (a light and a heavy one). But the great astronomer, Le Verrier, in an article in a late number of the "Comptes Rendus," entirely demolishes all such nonsense. He says, "instead of explaining the existence of these bodies, by supposing an alteration in the primitive system of the universe, we are now led to believe, rather, that they have been formed regularly, like the others, and according to the same laws."

Instead of the matter of which the Asteroids are composed—according to the nebular hypothesis—being greater than the earth, he also says, "it cannot exceed *one-fourth* its mass."

That the matter in our solar system may, at one time, have been in a state of gas, we do not deny nor affirm, for no one can tell what was its primitive condition; and that the planets, large and small, were formed by certain laws, no sane man will doubt for a moment, for the great Creator works by means. But what is a law but the fiat of an intelligent being, consequently the laws which reign in the universe, which formed the stars and which guide them in their courses, as they did not create themselves, are simply the expression of the Divine Creator and Governor's will.

The discovery of the Asteroids belongs to the present century, the first having been seen on the night of January 1, 1801. Other planets have been known from the earliest times. New Asteroids have been discovered from time to time, especially of late years, and there are now known to be no less than *twenty-nine* of them, and perhaps as many more may yet be discovered. Those men who overlook common sense, in their zeal for such speculations—as the conflict of planets—are sure sooner or later to meet with discomfiture.

Royal and Republican Perfumes.

The London "Court Journal" announces the very important information "that it was Mr. Higgins who had the honor of supplying the toilet table of the Queen at the opening of the Crystal Palace, with the Kensington perfume, Lavender, Rose Water, and Eau de Cologne."

At the opening of the American Crystal Palace, President Pierce was supplied with a generous shower of rain which compelled him to seek a change of his wardrobe; this momentous fact may not be familiar to our brethren across the water, and it is perhaps equally important to know that M. Mass, a very polite Frenchman, had the honor also of supplying the President with a glass of brandy on the same occasion, it being feared that his Excellency would take cold without something to produce the re-action occasioned by the chill. Whether Mr. Barnum received any of those polite attentions or not at the re-inauguration, has not yet publicly transpired. It would seem prudent to suppose, however, that he did not, or else some public announcement would have been made of the fact.

The "Ericsson" turned into a Steamer.

It is creditably reported in our city, that the repairs which have been quietly making in this vessel for some time, have for their object the employment of steam as the motive agent; the *hot-air* project having been returned, *non est inventus*. Thus it is, "wonders will never cease," for this agent, after having extinguished Watt and Fulton through the medium of some of our very scientific cotemporaries, for a brief and intoxicating period, last year, has at last "fallen, fallen, fallen from its high estate," and bowed the knee to the gray-haired veteran in mechanism—steam.

This information we have received from more than one source, and as we have been unjustly the subject of much vituperation, for the candid views we expressed in reference to the affair, we will take occasion, at an early opportunity, of alluding to the subject at greater length.

Pateut Laws.

If any of the grave Senators could occupy a desk in our office for about a week, we are satisfied that they would not hastily pass a patent bill containing so many absurd and really ridiculous provisions as are embraced in the one just reported by Senator James.

Objections to it are coming to us from all quarters, and it gratifies our pride not a little to find them sustaining such views as we have already presented. Let inventors be active in remonstrating against its passage, and if they do not succeed in defeating it, there will be some satisfaction in the consideration of having performed their duty.

A Sewing Machine in a Palace.

We have received information from our foreign correspondent, that the Emperor of France, has purchased the French Patent of Avery's American Sewing Machine, for 95,000 francs. The inventor, Dr. Avery, had an interview recently with the Emperor surrounded by his ministers, at the Palace of St. Cloud, and he exhibited his machine amidst the plaudits of the Court. Louis Napoleon is a man of profound penetration, he can see into the merits and demerits of men and things with great rapidity, and he has displayed no small amount of sagacity in cultivating the good will of America by in the purchase of the above named patent, which was obtained through and arranged by our agents in Europe.

Steam Fire Engine.

A committee appointed by the Common Council of this city, has visited Cincinnati, at their own expense, for the purpose of seeing the efficiency of the Fire Department of that city. In order to show the New Yorkers what that city firemen could do, an alarm of fire was given, and in seven minutes thereafter every engine in the city was on the ground ready for work. Among these were the two steam fire engines, which were throwing streams of water in nine minutes after the torch was applied to kindle the fires under their boilers. Both engines threw eight streams through three-quarter inch nozzles a distance of one hundred and twenty feet. They were tested in every possible way, and the Committee, we understand, are well pleased with what they witnessed.

Ohio State Fair.

We understand that Joseph E. Holmes, late Superintendent of the Machinery Department of the Crystal Palace, has been appointed to superintend the Machinery Department of the next Ohio State Agricultural Fair, to be held at Newark, O., in the month of September next. The Ohio State Agricultural Society has always been distinguished for patronizing mechanical improvements; in this respect we think it has rather surpassed the one belonging to New York, which in other respects has no superior. The late Mr. Delafield, its President, however, was a warm patron of improvements in Mechanical Agriculture, as many of his communications to us can testify.

Nova Scotia Industrial Exhibition.

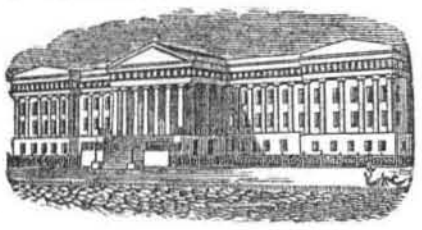
An exhibition of industry is to be held in Halifax this fall, and it is expected that the adjacent Provinces will be ably represented there. We hope the mechanics and farmers of New Brunswick, Prince Edward's Island, &c., will be largely represented on the occasion. These Provinces are rich in natural resources, and we know they contain a great number of enterprising and intelligent mechanicians.

Kentucky Mechanics' Fair.

It affords us pleasure to direct the attention of our inventors, mechanics, and manufacturers to the advertisement an another page, of the Kentucky Mechanics' Institute, Louisville, in relation to its next Annual Exhibition, to be held in that city on the 26th of next September. We have no doubt but the Fair will be conducted ably and to the satisfaction of exhibitors. The mechanics of Louisville have a high character for skill and intelligence, and whatever they undertake to do, they perform with credit to themselves, their city, and State.

New Pavement.

Nassau street opposite the Custom House is in a state of civil blockade in consequence of the laying down of a new cast-iron pavement for the purpose of testing its qualities. It appears to be an excellent invention for the purpose, and we hope it may prove itself to be so. Those who have any desire to learn its character can do so by referring to page 244, Vol. 8, "Scientific American," where it is illustrated and fully described.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 18, 1854.

STEAM BOILER—W. E. Bird, of Cahawba, Ala.: I claim the combination of the lower boilers or boiler, and the upper boilers or boiler with each other and with the furnace, in such a manner that the top of the furnace will be formed by the upper boilers or boiler, and the rear of the furnace be principally formed of the lower boilers or boiler, while the flue space from the said furnace passes between the said upper and lower boilers, and communicates with the flues returning through the lower boiler or boilers, as set forth.

COTTON GIN RIBS—I. F. Brown, of Columbus, Ga.: I claim the employment of a series of cast-iron hubs, each having two or more arms cast with them, each of which arms is of proper form to combine with a short rib, and with it form a complete rib, whereby when the said hubs are secured upon a shaft arranged in a proper position, their arms may be successively brought into combination with the short ribs, for the purpose of renewing the wearing parts, as described.

PREPARING FLOCKS FOR FELTING—L. W. Boynton, of South Coventry, Conn.: I am aware that brushes have been used for preparing flock, and analogous substances, and that the use of a wire screen is not new, I therefore do not claim either of them as such.

But I claim the combination of a wire screen, with a revolving cylindrical brush and one or more stationary brushes, when the screen is placed below the revolving brush to prevent any of the flock from falling on to the web of wool, before it is fully prepared, and also to assist in preparing the flock when the whole is constructed and combined as described.

COATING IRON WITH BRASS OR COPPER—Hugh Burgess, of Kentish Town, Eng. Patented in England Feb. 17, 1853: I desire to state that I do not claim any of the apparatus or the process to which they refer.

I claim the coating of iron sheets, bars, bolts, and other forms of iron with copper or brass, by a combination of processes as follows: by first cleaning, then coating them over with a solution of cadmium or zinc, drying and dipping them into a bath of melted copper or brass, and raising them out of the bath into an atmosphere of steam and carbonic acid flowing in streams or in jets, as described.

BLOCK SLIDE VALVES FOR STEAM ENGINES—L. R. Conard, of Philadelphia, Pa: I claim forming the passages through said valve, so that the oblong steam and exhaust openings shall enter from the upper and lower surfaces, longitudinally to its motion, and leave the opposite surfaces transversely thereto, as described.

MAKING PRINTING BLOCKS.—Thos. Crossley, of Boston, Mass.: I do not claim the use of gutta percha as a material for making printing blocks; neither do I claim sawing blocks into prisms, for the purpose of more easily removing those portions of the block not required for the figure.

But I claim the described method of making printing blocks, the surface of gutta percha being applied to the surface of the wood, as set forth.

BRIDGES—Samuel and Thomas Champion, of Washington, D. C.: We claim, first, the combination of the tubular braces or struts made smaller by gradation, or tapering as they extend from the pier or support, with suspension rods, also made smaller by gradations, or tapering, as they extend from their pier or support, as specified.

We also claim the arrangement, as described, of the struts, suspension rods, and clamp posts, viz., the oblique struts between the center posts, and horizontal strut, being placed in lines radiating from a common center, and the suspension rods being also placed in lines radiating from a common center, above that from which the struts radiate in such manner that each suspension rod shall extend from the top of the column or post over the pier or support, to the foot of one of the clamp posts, while each oblique strut shall extend from the foot of the post, over the pier to the head of each clamp post, as described.

We also claim the construction of tapering tubular struts of bridges of not less than two concentric sheets, layers, or thicknesses of metal, the sheets of each layer abutting, and those of one layer breaking joints with the next, as specified.

OPERATING EXCAVATING MACHINES—J. A. H. Ellis, and Alexander Gordon, of Rochester, N. Y.: We claim, first, placing the operating machine within the circuit of an endless chain, which passes over a pulley anchored at one point, and over or around a capstan at another point, so that the excavator shall form a part of the endless chain, and be drawn forward or backward and operated by it, as described.

We also claim attaching one or both ends of the chain to a drum or shaft connected with the machine, so that the slack of the chain may be taken up on said drum or pulley shaft, to cause the machine to move steadily without sudden strain; or to let out the chain when it becomes necessary to draw it out of its direct line for guiding the machine in any desired direction, as described.

WINDMILL—Jacob Erdle, of West Bloomfield, N. Y.: I claim the manner or mode of filling the whole wheel with fans or wings, which causes the wheel to be more powerful than it otherwise could be, as it receives the power from the whole current of air that strikes within its circle, and the mode or form of regulating, stopping, and starting the wheel through the center of the main shaft.

TANNING—Roswell Enos, of Woodstock, Ill.: I claim commencing the tanning operation upon the sides, by the use of a salted infusion of sumac, and then completing said tanning operation by the repeated use of the strong oak or hemlock bark liquors, as set forth.

SEPARATING IMPALPABLE POWDER FOR PAINTS—Geo. W. Griswold, of Oarbondale, Pa.: I claim the process of separating and collecting impalpable from coarser substances, such as ground coal, &c., for the purpose of paint, by the means described.

RAISING VESSELS—Felix Huston, of New Orleans, La.: I am fully aware that auxiliary floats to raise vessels have been used, some of which have been so geared as to be rotated for winding up the raising lines or chains, and that levers and weights have been used in connection with dry docks for raising vessels in said docks. These I do not claim.

But I claim the raising of sunken vessels by means of the careening motion of the slide or auxiliary vessels, whether such careening motion is procured by weights run across the decks from side to side of said vessels, or aided by arms projecting beyond said slides, as described.

HORSE POWERS—Wm. R. Palmer, of Elizabeth City, N. C.: I claim the combination of the rib or projection upon the arms, with the bent pin or iron, or their equivalents, constructed and arrangrd, as described, for the purpose of giving a short bend to the rope or band, and thereby prevent its slipping, as set forth.

SCOURING PIECE GOODS—J. A. Roth and Joseph Lea, of Philadelphia, Pa. Patented in England Feb. 7, 1854: We claim the combination of the series of distributing rollers, &c., and the dasher wheels with the vat, as described.

CUTTING TOBACCO—Ebenezer Murdock, of Albany, N. Y.: I claim the process of manufacturing cut tobacco, by mixing with the leaves, as stripped of the stems for cutting the stems previously cut up to a certain degree of fineness (the object being to facilitate by the use of said stems, the advantageous cutting of the leaf itself,) the mixed mass then to be cut up together to the requisite fineness, and then the stems to be separated from the cut leaf, which is then ready for use.

LAMPBLACK HOUSE—Wm. G. W. Jaeger, of Baltimore, Md.: I claim the division of the house lengthwise with the aperture, and the connection of the two houses by chambers, by which I am enabled to carry the smoke around the whole length of the house, and return it by means whereof a superior quality and a greater quantity of lamp black is condensed.

I also claim the use of the two furnaces, as described, by which the manufacture can be carried on uninterruptedly.

I also claim the waste chimneys, that open some distance below the roof, constructed and arranged as set forth.

HERMETICAL SEALING—Jas. Spratt, of Cincinnati, O.: I do not claim the gasket and screw, nor the wax trough, separately considered; but I claim the screw cap or cover and neck, as described, provided with a gasket of gum elastic, or like substance, at their inner junction, when this is combined with a trough for containing cement around their outer junction, for the hermetical sealing or closing of preserve canisters.

STEAM GAUGES—Thos. Stubblefield, of Columbus, Ga.: I claim the combination of the hollow cylindrical box, perforated at both ends, with a hollow cylinder of india rubber open at one end, and performing the duty of a manometer spring, as described, and also separating the perforations in the opposite ends of the box, the several parts being constructed and arranged, and the case connected with the boiler, and the india rubber with the index, as set forth.

WASHING MACHINES—H. C. Stevenson, of Georgetown, Ky.: I claim the arms and the springs, in combination with the rubber and plate, constructed and arranged as described.

WEAVERS' HEDDLES—Jacob Senneff, of Philadelphia, Pa.: I claim forming the eye of the heddle, by casting or otherwise securing around and between the strands or threads composing the same, metallic clasps in lieu of the cumbersome knots heretofore employed, curved on their sides and made concave and smooth on their ends between the strands or threads, where they form the ends of the eyes, as set forth.

BUCKLES—Wm. W. Smith, of Marshall, Mich.: I claim the stationary hook or tongue attached to the body of the buckle as described, as an improvement on the old or loose tongue and buckle, not only in the cheapness of manufacturing them, but in their strength and durability and the ease with which they are or can be buckled and unbuckled.

RAILROAD CAR TRUCKS—Abram Snyder, of Hawley, Pa.: I claim making the bearing surfaces of the disks on which the load swivels, and is supported of an undulating form, as described.

MAKING STEEL DIRECT FROM THE ORE—G. H. Smith, of Rochester, N. Y.: I claim the process of converting the iron ores, known as the oxyds and carbonates, directly into steel, by subjecting the ore in the comminuted state with carbon, and with or without other flux, in a close oven, retort, or other vessel, to a high degree of heat, say about the temperature of what is known as white heat, and then separating the metallic particles from the impurities, and either melting them in crucibles to produce cast steel, or welding and balling them in a re-heating furnace, and subjecting the mass to pressure by rolling or hammering to produce spring steel, as specified.

APPARATUS FOR LAYING OFF THE SCYE, IN CUTTING GARMENTS—Peter Spilman, of Richmond, Va.: I do not claim the laying down of lines on a diagram for determining points of the arm holes of coats, considered irrespective of the precise manner in which these lines are placed relatively: for I know that diagrams with lines on them, but differing entirely from those which I have invented, have heretofore been made.

But I claim the apparatus, consisting of the diagram constructed and operating as described.

METALLIC FIRE PLACES—J. F. Snyder, of Culpepper, Va.: I do not claim suspending a screen in front of a fire place, which may be operated by means of weights and pulleys, as that is an old device.

But I claim forming the screen with narrow metallic strips having a concave surface connected by links, making them flexible and easily coiled into a small space on a cylinder, the whole being arranged and constructed in the manner and for the purpose set forth.

HOLDING DOCKS OF HORSES—Seymour Tomlinson, of Pleasant Valley, N. Y.: I claim the stuffed section or pads, or their equivalents, so constructed as to support the tail of the animal in the required position by its sides, and the hair upon the sides, so as to leave the cut, pricked, or scarified portions untouched, thereby permitting them to heal much sooner than if the fixtures which support the tail come in contact with them. Not intending to claim any of the other parts described.

WINDING ROPE, CORD, OR YARN—P. B. Tyler, of Springfield, Mass.: I claim, first, the combination of the friction brake, operated as described, and the sliding belt or its equivalent, as specified.

Second, I also claim driving the reel by its outer periphery by the employment of the finger or dog, as described, in combination with the guide, for causing the reel to traverse, the reduction of friction caused by the mode of driving enabling the guide to cause the reel to traverse without too much resistance.

PAPER FROM WOOD—Chas. Watt, of London, and Hugh Burgess, of London, Eng. Patented in England August 19, 1853: We do not confine our claim to the apparatus or utensils, or the manipulations named, as they may be varied to suit the circumstances of the case.

But we claim the pulping and disintegrating of shavings of wood and other similar vegetable matter for making paper, by treating them with caustic alkali, chlorine, simple or compound, with oxygen and alkali, in the order described.

THREADING SCREWS—G. F. Wilson, of Providence, R. I., and J. M. Whitney, of North Providence, R. I. Patented in England April 4, 1854: We do not claim the use of a gang or series of cutters, which are allowed to return after each operation and previous to making a new cut, as this has been done before.

But we claim arranging the cutters upon the periphery of a disk, or its equivalent, and bringing them up to the blanks by a continuous motion, as described.

Second, we claim the peculiar manner in which the chasers are made and secured to the cutter head, they being let into grooves or recesses in the head, and having their upper portions hinged to their lower portions, which latter are secured to the head by screws or otherwise, by which arrangement, while the chasers are held secure from all possibility of displacement they may be easily and expeditiously brought up to their work, as required.

CARRIAGE SPRINGS FOR LIGHT VEHICLES—Mary Burns (admtirx. of Robt. Burns, Jr., dec.), New York City. Patented in England June 7, 1853: I do not claim the helical metallic spring inside of the india rubber spring, as set forth.

I claim the combination of india rubber or other compressible material with a bar spring having a toggle-joint in its center.

Second, I also claim the lengthening and shortening of the toggle joint bar between the compressible spring, by means of the screw or nut, by which they are made to sustain their required weight with a proper degree of elasticicity having greater or less stiffness in the spring bracing of the carriage.

PEGGING BOOTS AND SHOES—G. J. Wardwell, of Andover, Me. (assignor to himself and Elmer Townsend, of Boston, Mass.): I do not claim the combination of a guide point with a set screw to regulate the distance of the pegs from each other.

But I claim the combination and arrangement of the guide or setting point with the handle, the awl or hole punch, the peg driving orifice and mechanism, as specified.

I also claim the combination and arrangement of the spring gauge lever or depresser and the screw with the handle and pegwood carrier, the object of the same being not only to gauge the space in the pegwood carrier so as to adapt it to pegwood of any desirable width below the maximum that can be used therein, but also to enable a person to move the pegwood downwards and back of and below the edge of the knife when necessary so that it may not be moved forwards under circumstances as stated.

I also claim the so combining the spring with the pegwood carrier, peg driver, and gauge lever that it shall not only serve to support the pegwood or constitute a bottom to the carrier, but also to force up the pegwood after it has been depressed either by the peg driver, or the gauge lever as specified.

MACHINES FOR SAWING STONE AND MARBLE—Albert H. Tingley, (assignor to himself, Edmund W. & Hervey F. Tingley) of Providence, R. I.: I claim the combination of the two spring pawls, their slotted connecting rod, the movable ratchet, and its tripping pin, with the fixed ratchet of the shaft of the sprocket wheel, the whole being operated as specified.

And I claim the series of hooked pins on the water distributor, in combination with the series of notches applied to the connecting rod for operating the water distributor, the whole being for the purpose of regulating the motion of the water distributor and of causing that motion to take place over either a portion or the whole entire surface of the stone as occasion may require.

RE-ISSUE.

SAWING MACHINE—Chas. R. Fox, of Chicago, Ill. Patent originally dated May 9, 1854: I claim the combination of the notched plate, pawl, rack, pinion, lever, and sectional pawl, arranged and operating as set forth.

Also the construction of the boxes with the opposite inclined inner faces for giving the requisite set-off to the carriage when gigging back and again setting up, when moving forward for the cut as set forth.

ADDITIONAL IMPROVEMENT.

LOOMS FOR WEAVING FIGURED FABRICS—Saml. Eccles and James Eccles, of Philadelphia, Pa. Patent originally dated Aug. 3, 1852: We intend to apply the stop motion described to looms having other kinds of shuttle box motions attached, and shall vary the form of the parts, to suit the necessities of the various cases.

We claim the mechanism described which connects and disconnects the shuttle box motions to and from the cam shaft, that is to say, we claim the bell crank lever when kept in connection with the grooved hoop or collar by a spring or its equivalent in combination with the lever and its connecting rod or any mechanical equivalent therefor, when the said lever is operated upon by a filling thread stop motion, when the filling thread breaks or becomes expended, for the purposes described.

We further claim the pattern chain composed of lags, having projections or segments of flanges on the top and blank lags, having no projections on the top, as herein described, for the purpose of operating rise and fall shuttle boxes therewith in power looms for weaving figured fabrics.

NOTE.—Several patents in the above list were secured through the Scientific American Patent Agency.

(For the Scientific American.)

Lightning Conductors for Ships.

I have long considered a good lightning conductor for ships a great desideratum, and have employed a good deal of my spare time and money in endeavoring to introduce into our Navy, and into our mercantile marine, the conductor of Sir William Snow Harris, which, in the British Navy, in the Hon. East India Company's service, and in some of the other navies of Europe, has been adopted; every ship in the British navy has Harris' conductor, and not a pound sterling nor a single life has been lost by lightning since it has been fully adopted. This is a fact which speaks to the humane, as well as to that no smaller class who look solely to their own interest.

The Harris Conductor has not been used in our navy principally because "there is no appreciation in the Navy Department for the purchase of a patent right," and it has not been introduced into our mercantile marine because it is too costly.

With a view of bringing into use the same principles at a smaller cost, I turned my attention to a modification of Harris' Conductor, and have obtained a patent for it, as you know—my improvement or modification is approved by Sir William S. Harris.

It consists simply in leaving the masts at or near to the eyes of the lower rigging, and coming down by one of the shrouds on each side, by a system of tubes and sockets in connection with a a conductor fixed to the side of the ship. By this process the interior of the ship is avoided, and a simple yet fixed conductor is applied, by which the electric fluid is carried off; a ship can be fitted as well afloat as on the stocks, and as well loaded as when empty, and the moderate cost brings it within the range of the *general ideas* of ship owners.

The usual chain or link conductor used in the navy, and in some merchant ships, is good *as far as it goes*, but being very liable to derangement, by reason of the strains and jerks to which it is subject, it is not generally adopted, and does not meet the requirements of a permanent conductor. A copper wire of 1 1-6 of an inch in diameter, is good as far as it goes too, and the same may be said of a wire no larger than a piece of twine, or not larger than sewing silk. A small wire will carry off a small discharge of electricity harmlessly to the mast and ship, but it will fuse in the operation, leaving the mast unprotected. Now, it is desirable to have a conductor permanently fixed to, and incorporated with the masts and hull of a ship, so that a heavy discharge will be as easily carried off as a small one by a small wire.—The conductor which I have patented will do this if it has sufficient surface, and is thoroughly fitted.

I am now only waiting until I can make suitable arrangements with some well known concern engaged in the manufacture of copper, for the purpose of supplying ships with fixed and reliable conductors, which, if generally adopted, will save many lives and much property.

The underwriters of New York have agreed to make a return of two per cent of the premium on all ships furnished with suitable lightning conductors, they show a regard for the cause of humanity and for their own interests by making this return; and it is to be hoped that all underwriters will follow this good example, not that it is the duty of underwriters to encourage these means more than ship owners, but the concession will have the effect to wake up the owners of ships to a sense of their duty in this respect. R. B. FORBES.

Boston, Mass.

The Great Republic.

The mammoth clipper "Great Repubulic," the hull of which was lately purchased by N. B. Palmer, of this city, is to be rebuilt. She will have but three decks and three masts, instead of four as first built, and will be capable of carrying from 3,000 to 3,500 tuns. The cost of re-building her will be somewhere between $100,000 and $125,000. She will be employed in the China trade, under her original name. The length and model will remain unchanged. In sixty or seventy days, it is stated, she will be ready for sea.

Manufacture of Caviare.

The sturgeon fishery is very extensive in the rivers in New England. A part of the fish is valuable for the manufacture of isinglass.—The spawn is largely bought up by a German, who, for several years, has manufactured therefrom a condiment called "caviare," clear and beautiful as jelly, and which he sends to Europe, where it is esteemed a great luxury.—The sturgeon is not, as many suppose, a fresh water fish; they go up the rivers to spawn.

Distances of Routes to California.

The following are the distances of four routes from this city to California, furnished by Lieut. Maury to the Honduras Inter-oceanic Railway Company:

From New York to San Francisco, via Panama,	. . . . .	5,200
Ditto	. . . via Nicararagua,	4,700
Ditto	. . . . . Honduras,	4,200
Ditto	Vera Cruz and Tehuantepec,	4,200

No allowance is made in the above for the distance across the continent.

Silver Pointed Lightning Rods.

The Livingston County "Republican" of the 29th ult., states that the house of Mr. Cushing, about a mile north of the village of Geneseo, in that connty, was struck by lightning during a storm on Thursday the 22d. What is singular in the case, the house was protected by three silver pointed lightning rods of most approved construction, which rods, it seems, afforded no protection.

The Divining Rod.

R. Chisholm, in a letter to the Charleston "Mercury" (S. C.) asserts that good water was found for him by a "divining rod," by a person who came to his place for that purpose, in nine spots, where no water fit for any good purpose ever could be found previously. He states that he once had no faith in "Bletonism," but it would be folly for him to disbelieve any longer.

Flying.

We have received a communication from J. W., of Pa., who asserts that he has watched vultures in their flights, with great attention, with the naked eye and with a telescope, and he never saw one, according to J. B. C., "sail slowly through the air for many minutes without flapping its wings."

Peat for Fuel.

The Waterbury "American" says that two beds of peat have recently been discovered about two miles from that city, and that two joint stock companies have been formed, with abundant capital, for the purpose of supplying it as a fuel for market.