

These particles reflected the light, and gave the water a paler tint, in consequence of their own sandy hue. Far out, the sea was tolerably clear from this suspended matter, and therefore the pale reflection was absent. The more free from mechanical impurity, the less able was the water to reflect light. Hence an apparent darkness.

Every one knows how a dark room is often lit up by a passing cloud, simply because the cloud reflects more light than the sky. So in like manner cloudy water may at a distance look brighter than clear water. Thus it came to pass that the clear water resulting from the "A. B. C." process was unable to reflect so much light as the sandy fluid into which it was ejected, and consequently the clear stream appeared comparatively black. To the fishes gazing upwards the effect must have been reversed, the clear stream transmitting a greater proportion of light than the sandy sea.

The phenomenon was the same as that of Newton's rings. When one lens is pressed down upon another the eye gazing from above sees in the center a black spot. But if the eye gaze up from beneath, so as to catch the transmitted instead of the reflected light, the black spot becomes white.

It is hoped that the "local authorities" of our sea-coast towns are either acquainted with the laws of optics, or will take a few lessons in this interesting science, lest they should fall into the mistake of pronouncing water as black as ink which in reality is as clear as crystal. In the absence of the necessary scientific knowledge, these gentlemen will perhaps be ready to declare that our argument is an attempt to prove that black is white.

#### Statue of Professor Morse in Central Park.

The Commissioners of the Central Park are understood to have given their consent for the erection of the statue of Professor Samuel F. B. Morse upon the Mall, and an appropriate site will be selected. This is the first acknowledgment ever proposed by Americans to Mr. Morse for his great invention. From the sovereigns of Europe, however, he has received numerous honors. By the Sultan of Turkey he has been presented with the Order of Glory; from France, the cross of the Legion of Honor; from Italy, the cross of a Chevalier of the Order of St. Maurice and Lazarus; from Portugal, the cross of Chevalier of the Order of the Tower and Sword; from Spain, the cross of a Knight Commander of the Order of Isabella; from Denmark, the cross of a Chevalier of the Order of Dannebrog and Knight Commander; from Austria, Prussia, and Wurtemberg, the National Scientific Gold Medal; and from the Special Congress of ten nations in 1858 an honorable gratuity of 400,000 francs. It is proposed to unveil the statue on the 27th of April next, his eightieth birthday.

THE first medical degrees conferred in America were by Kings College, New York, in 1769. The first medical work published in America, was "A Brief Guide on Small-pox and Measles," by Thomas Thatcher, of Massachusetts, in 1667.

#### Inventions Patented in England by Americans.

(Compiled from the "Journal of the Commissioners of Patents.")

##### PROVISIONAL PROTECTION FOR SIX MONTHS.

- 1,337.—STEAM VALVES OR COCKS.—G. S. Redfield, E. A. Rock, and J. S. J. Ludlow, Vt. May 12, 1870.  
 1,361.—WINDOW FASTENER.—W. L. Clark, New York city. May 12, 1870.  
 1,333.—SEWING MACHINES.—E. G. Marshall, Rochester, N. Y. May 14, 1870.  
 1,336.—WASHING AND RINSING APPARATUS.—G. G. De L. Byron, New York city. May 16, 1870.  
 1,394.—RECOVERING SULPHURIC ACID USED IN REFINING PETROLEUM AND OTHER OILS.—M. Barratt, M. D., Toronto, Canada. May 16, 1870.  
 1,401.—BEARINGS, SLIDES, AND PACKINGS FOR STEAM ENGINES, ETC.—E. D. Murfey, New York city. May 16, 1870.  
 1,412.—SHUTTER HOLDER.—S. L. Loomis, South Byron, N. Y. May 17, 1870.  
 1,413.—STEAM PUMPING OR BLOWING ENGINES.—J. R. Maxwell and Ezra Cop, Cincinnati, Ohio. May 18, 1870.  
 1,417.—INKS.—Lewis Francis, New York city. May 17, 1870.  
 1,438.—CIGAR MACHINE.—American Cigar Machine Co., New York city. May 18, 1870.  
 1,428.—KNITTING MACHINES.—D. McC. Weston, Boston, Mass. May 18, 1870.  
 1,437.—LOOMS.—E. B. Bigelow, Boston, Mass. May 18, 1870.  
 1,451.—LAPPING COTTON, ETC.—R. Kitson, Lowell, Mass. May 19, 1870.  
 1,485.—MODE OF SUPPLYING AIR TO LAMPS.—J. H. Irwin, New York city. May 23, 1870.  
 1,491.—MACHINERY FOR SEWING SHOES, ETC.—C. Goodyear, Jr., New York city. May 24, 1870.  
 1,498.—PILES FOR ENGINEERING PURPOSES.—T. W. H. Moseley and F. A. Leigh, Boston, Mass. May 24, 1870.  
 1,557.—MODE OF PRODUCING ROTARY MOTION.—M. W. Robinson, New York city. May 27, 1870.  
 1,596.—CORRUGATING AND MOLDING SHEET METAL.—A. Johnson and W. Thornton, Brooklyn, N. Y. May 25, 1870.  
 1,569.—SOCKETS AND FERRULES.—R. Briggs, Philadelphia, Pa. May 30, 1870.  
 1,569.—APPARATUS FOR DRAWING TUBE SHEETS.—R. Briggs, Philadelphia, Pa. May 30, 1870.

#### NEW BOOKS AND PUBLICATIONS.

PROTECTION TO NATIVE INDUSTRY. By Sir Edward Sullivan, Bart., Author of "Ten Chapters on Social Reform." London: Edward Stanford, No. 6 and 7 Charing Cross. Chicago: Bureau Printing Co. New York: S. R. Wells, 389 Broadway.

This is an argument in favor of an English protective system, written by an Englishman, who, to use his own language, sees clearly that "protection to native industry is not a question of sentiment or theory, but of fact and common sense." It is evident that the policy of protection is daily gaining favor in England, and as an expression of this growing opinion, Sir Edward Sullivan's book will be sought for, and read with interest on both sides of the Atlantic.

THE PRESENT AND LONG-CONTINUED STAGNATION OF TRADE. Its Causes, Effect, and Cure: Being a Sequel to an Inquiry into the Commercial Position of Great Britain, etc. By a Manchester Man. Revised and Large Edition. Manchester: John Heywood, 141 and 143 Deansgate. London: Simpkin, Marshall & Co. New York: S. R. Wells, 389 Broadway.

CITY SUBSCRIBERS.—THE SCIENTIFIC AMERICAN will be delivered in every part of the city at \$3.50 a year. Single copies for sale at all the News Stands in this city, Brooklyn, Jersey City, and Williamsburgh, and by most of the News Dealers in the United States.

#### Business and Personal.

The Charge for Insertion under this heading is One Dollar a Line. If the Notices exceed Four Lines, One Dollar and a Half per line will be charged.

The paper that meets the eye of manufacturers throughout the United States—Boston Bulletin, \$4.00 a year. Advertisements 17c. a line.

Wanted.—Situation as Superintendent or foreman in Machine Works. Fifteen years' experience. Address P. O. Box 1016, Worcester, Mass.

Foundry and Machine Shop for sale, with fine lot of patterns. Is doing a good business; excellent location for general jobbing, and for m'g agricultural implements. Address S. Moore & Bro., St. Peter, Minn.

Patent Water-proof Building Paper for Carpet for halls and stairways, shoe stiffening, walls, ceilings, and roofs, manufactured by Mc Neil, Irving & Rich. Patentees, Elwood, Atlantic Co., N. J., or 59 Duane st., New York, 520 Commerce st., Philadelphia, Pa.

Wanted.—A man of thorough knowledge or practical experience in casting white metal, buffing, burnishing, and silver-plating, to go West. Address, with references, P. O. Box 5302, New York city.

Wanted.—A Partner, with capital, to help manufacture and introduce a new safety steam generator, patented. One in successful operation. Economical and durable. Address S. T. Russell, Springfield, Ohio.

Double Steam Engine, Boiler, etc., for a small pleasure yacht, hand lathes, slide rests, drop and foot presses, just finished, first-class, and ready for shipment, at the works of J. Dane, Jr., Newark, N. J.

White Brass Wanted.—Address Jas. Jacobs, Maysville, Ky.

Wanted.—A good and cheap 4 or 6-horse locomotive boiler. Address, with price, S. Dickey, Mercersburg, Pa.

Important to Patentees.—The undersigned desires the General Agency for New England States, or Massachusetts, for salable patent articles, through agents and retail dealers. Address Hosmer & Co., 30, Old State House, Boston, Mass.

The best hand shears and punches for metal work, as well as the latest improved lathes, and other machinists' tools, from entirely new patterns, are manufactured by L. W. Pond, Worcester, Mass. Office, 98 Liberty st., New York.

The best boiler tube cleaner is Morse's. See cut inside page.

Crampton's Imperial Laundry Soap, washes in hard or salt water, removes paint, tar, and grease spots, and containing a large percentage of vegetable oil, is as agreeable as Castile soap for washing hands. "Grocers keep it." Office 84 Front st., New York.

Peck's patent drop press. For circulars, address the sole manufacturers, Milo Peck & Co., New Haven, Ct.

Millstone Dressing Diamond Machine—Simple, effective, durable. For description of the above see Scientific American, Nov. 27th, 1869. Also, Glazier's Diamonds. John Dickinson, 64 Nassau st., N. Y.

Wanted.—A second-hand back-gear No. 3 or 4 Stiles' Power Punching Press. Address P. O. Box 701, N. Y. city, giving full particulars.

The entire Right of the best Wrench ever Patented, for sale. For Drawings, address J. F. Ronan, 36 Orchard st., Boston, Mass.

John Dane, Jr., 61 and 63 Hamilton st., Newark, N. J., builds screw, power, screw, and foot presses, lathes, improved jewelers' rolls, watch & jewelers' machinery, new inventions perfected, and any work to order.

40,000 to 60,000 good tempered clay brick per day, made by "Winn's Portable Steam Brick Machine." Responsible parties furnished machines on trial. Address Wright & Winn, Lock Haven, Pa.

\$15 for the best Saw Gummer out. Address The Tanite Co., Stroubsburg, Pa.

Pictures for the Parlor—Prang's latest Chromos, Hart's Seasons. Sold in all Art Stores throughout the world.

Wm. Roberts & Co., Designers and Engravers on Wood, 36 Beekman st., New York, would respectfully announce that they are now prepared to receive orders from Manufacturers, and others, for engraving of machinery, views of stores, factories, trade marks, etc., etc.

Carpenter Planes, the best quality, made by Tucker & Appleton, Boston. Send for list.

Scientific American.—Back Nos., Vols., and Sets for sale. Address Theo. Tusch, City Agent, Sci. Am., 37 Park Row, New York.

For foot-power engine lathes address Bradner & Co., Newark, N. J. Machinists and others using Fine Tools, send for illustrated catalogue. Goodnow & Wightman, 23 Cornhill, Boston.

Tempered Steel Spiral Springs for machinists and manufacturers. John Chatillon, 91 and 93 Cliff st., New York.

One 60-Horse Locomotive Boiler, used 5 mos., \$1,200. Machinery room two 500-ton propellers, and two Martin boilers very low. Wm. D. Andrews & Bro., 414 Water st., New York.

Kidder's Pastilles.—A sure relief for Asthma. Price 40 cents by mail. Stowell & Co., Charlestown, Mass.

Pat. paper for buildings, inside & out, C. J. Fay, Camden, N. J.

For solid wrought-iron beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Keuffel & Esser, 71 Nassau st., N. Y., the best place to get 1st-class Drawing Materials, Swiss Instruments, and Rubber Triangles and Curves.

For tinman's tools, presses, etc., apply to Mays & Bliss, Plymouth, st., near Adams st., Brooklyn, N. Y.

Glynn's Anti-Incrustator for Steam Boiler—The only reliable preventative. No foaming, and does not attack metals of boiler. Liberal terms to Agents. C. D. Fredricks, 587 Broadway, New York.

To ascertain where there will be a demand for new machinery or manufacturers' supplies read Boston Commercial Bulletin's manufacturing news of the United States. Terms \$4.00 a year.

Cold Rolled—Shafting, piston rods, pump rods, Collins pat. double compression couplings, manufactured by Jones & Laughlins, Pittsburgh, Pa.

For mining, wrecking, pumping, drainage, and irrigating machinery, see advertisement of Andrews' Patents in another column.

Winans' boiler powder, 11 Wall st., N. Y., removes Incrustations without injury or foaming 12 years in use. Beware of Imitations.

Inventions Examined at the Patent Office.—Inventors can have a careful search made at the Patent Office into the novelty of their inventions, and receive a report in writing as to the probable success of the application. Send sketch and description by mail, inclosing fee of \$5. Address MUNN & CO., 37 Park Row, New York.

Caveats are desirable if an inventor is not fully prepared to apply for a patent. A Caveat affords protection for one year against the issue of a patent to another for the same invention. Patent Office fee on filing a Caveat, \$10. Agency charge for preparing and filing the documents from \$10 to \$12. Address MUNN & CO., 37 Park Row, New York.

#### Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address correspondents by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$1.00 a line, under the head of "Business and Personal."

All reference to back numbers should be by volume and page.

H. A. S., of Me.—The U. S. Dispensary gives the following recipe for phosphorus paste to kill rats. Triturate six parts of phosphorus and one part of sulphur with six parts of water till they liquefy. Then mix in two parts of flour of mustard, eight parts of sugar, twelve parts of rye flour, and ten more parts of water, and stir to form a soft paste, which must be kept in pots thoroughly stopped. Oil of rhodium, and oil of anise, are sometimes used to scent phosphorus paste, as most animals are attracted by their odor. Care should be taken in its use, as there are instances of children being poisoned by it, on record. The antidote for it, should such an accident occur, is magnesia, given freely in sugar and water.

W. J. Y., of N. Y.—There is a market in New York for sumac. The kinds popularly known as the staghorn, and the smooth sumac, are the kinds most common in this country, affording marketable products. The parts of the tree which are gathered are the leaves, the peduncles, young branches, and panicles. They are dried, and may be sold in an unground state, but the market is uncertain for the product unless ground. Gifford, Sherman & Innis, 120 William street, New York, are dealers in this commodity, and will, we presume, give information to those who desire to find a market for it.

G. G. K., of Mo.—To sweeten and purify moldy casks, wash them thoroughly with hot water. Then dip linen or cotton rags in melted sulphur, set them on fire and put them into the casks, so that they will be suspended by the bungs when the latter are driven in. The burning will continue for a time after the bungs have been driven in, and will fill the casks with sulphurous acid gas. This will destroy all the germs of the mold vegetation, and effectually purify the cask. Remove the bungs after two or more hours, and rinse the casks with pure cold water, and the casks will be found perfectly free from all musty smell.

D. D. R., of Ca.—The arched form of the rainbow, as seen by any particular person, is due to his position, the height of the sun above the horizon, the globular form of the refracting and reflecting drops, and the fact that all the rays by which vision is produced converge toward the eye of the observer. For a more perfect explanation of this phenomenon, we refer you to elementary works on physics, all of which discuss this subject fully.

A. A. Paris, France.—Mr. Charles Hodgson is the inventor of the wire rope tramway alluded to in your letter. By addressing him, to the care of the editor of the Engineer, 163 Strand, London, England, you will probably get full information. Scientific Opinion is published by Charles William Henry Wyman, 74 & 75 Great Queen Street, London.

P. C. G., of Me.—If your desire is to learn mechanical and geometrical drawing only, we recommend you to obtain the Cyclopaedia of Drawing, published by D. Appleton & Co., of New York. If you wish to learn free hand sketching, you had better employ a skilled teacher, but next to such a teacher we believe Ruskin's Elements of Drawing the best work ever published upon this subject for a beginner.

S. H. K. sends us from Arkansas, a dried specimen of centipede, which is quite perfect, though of small size, being two inches long. It has nineteen pairs of legs and formidable nippers, double-hooked extremities, etc. Our correspondent states that he lately killed one in his bed that measured five inches in length. We wonder if such bed-fellows are common in Arkansas.

H. L. C., of Mich.—Your question cannot be answered as you put it. There is no constant coefficient as you suppose. You will find all the information you need in "Box's Practical Treatise on Heat," published by Henry Carey Baird, 406 Walnut street, Philadelphia.

R. C., of N. Y.—The valves of large marine engines are generally balanced, that is, some device is used to counteract the pressure to which they are subjected and reduce the friction that would otherwise result.

C. D. L., of Ohio.—To clean alabaster ornaments, take out grease with spirits of turpentine, then wash with soap and water, and rinse with clean cold water. Are you sure the ornaments are alabaster? From your description we think there may be a mistake.

J. R. M., of N. H.—Wash the red spots on your harness with soap and water to remove the oil, rinse and then wash them with a solution of copperas (sulphate of iron). This will turn the red spots black, after which the leather may be again oiled.

J. K. P., of Cal.—Gesner's "Practical Treatise on Coal, Petroleum, and Other Distilled Oils," published by Henry Carey Baird, 406 Walnut street, Philadelphia, contains the information you desire.

D. K. V., of Tenn.—Silica has been used for filling teeth. It was mixed with plaster of Paris iron filings and mastic or copal varnish. We don't believe any one uses it now.

J. A. C., of Mass.—The term "mud sill" is properly applied to the sills of bents which support the superstructure of wooden bridges.

C. H. S., of Pa.—Silver steel has in it a proportion of silver which ordinary cast steel does not have.

#### Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

STEERING APPARATUS.—C. M. Hayden, South Thomaston, Me.—This invention relates to a new and useful improvement in apparatus for steering marine vessels, whereby the power applied to the hand wheel is greatly increased by means of gearing, and the invention consists in the use of bevel wheels, pinion wheels, and sector gears.

MILK CAN BOTTOMS, ETC.—T. M. Bell, New York city.—This invention has for its object to improve the means of securing the bottoms in milk cans, and the heads in metallic barrels, which shall be simple in construction, and will make said cans or corks strong and durable.

LIBRARY SHEARS.—Louis Prang, Boston, Mass.—This invention has for its object to furnish an improved library shears, which shall be so constructed as to serve as a shears, paper knife, eraser, letter folder, and seal, thus comprising within itself many of the tools that a librarian or clerk most frequently requires, and which shall be so constructed as to be as conveniently used for each of its uses as if that particular use was the only one for which it was intended.

STEAM HAMMER.—O. C. Ferris and F. B. Miles, Philadelphia, Pa.—This invention relates to certain improvements in the construction of the frame and valve gear of steam hammers, which are used in the original manufacture, and in the subsequent forging of iron and steel. The object of the invention is to simplify the construction, and at the same time increase the efficiency of the steam hammers, and to thereby facilitate the handling of the same in every respect.

HARVESTER RAKE.—C. B. Brown, Springfield, Mo.—This invention has for its object to furnish an improved self-raking attachment for harvesters, which shall be simple in construction, and effective and reliable in use.

**COMBINED CART, WHEELBARROW, AND TURNIP-DRILL.**—A. M. Newland, Olivet, Mich.—This invention has for its object to furnish a simple and convenient machine, which shall be so constructed and arranged that it may be easily and quickly adjusted for use as hand cart, wheelbarrow, and turnip drill.

**CHURN.**—Cyrus A. Maltby, Roland, Ill.—This invention has for its object to furnish an improved churn, simple in construction, and effective in operation, bringing the butter in a very short time; and which shall be so constructed that it may be conveniently taken apart to be washed.

**MEAT CHOPPER.**—J. H. De Poe, Boonton, N. J.—This invention relates to improvements in hand meat chopper, and consists in the arrangement of the meat holding vessel and the operating gear for the cutters on a platform side by side, and in working the cutter, which is mounted on a bent arm pivoted to the said platform, and the pawl for turning the meat holder by one crank on a short shaft provided with a balance wheel, and driven by a large wheel and pinion.

**SAWING MACHINE.**—F. Rhoad, Liberty Center, Ohio.—This invention relates to improvements in sawing machines for cross cutting logs or timber and consists in improved arrangements of feeding apparatus both for feeding the log lengthwise in front of the saw, and to or from the saw.

**ROLLING STEEL, IRON, AND OTHER METALS.**—James Horner, New York city.—This invention relates to a new and useful improvement in the process of rolling steel, iron, and other metals, more especially designed for steel in the round form, but applicable to other forms, whereby such steel or other metal is produced free from scale, in the most rapid manner, without the use of oleaginous or lubricating substances, as in the ordinary process pursued in rolling these metals.

**COMBINATION LOCK.**—William Kock, Cincinnati, Ohio.—This invention relates to a new combination safe lock, of that class in which a series of circular tumblers are hung upon a spindle, which is connected with an outer knob to be revolved by the same, the tumblers being carried around by a pin that projects from a disk on the spindle, so that, by regulating the motions of the knob in accordance with the figures or marks on a fixed dial notches in the tumblers may be brought in line with the locking lever, to permit the withdrawal of the bolt.

**HAND SUPPORT.**—Daniel A. Sanborn, Brooklyn, N. Y.—The present invention relates to a new and useful device for supporting and forming a rest for the hand while writing or drawing, and is also intended to be used in schools for the purpose of training or teaching persons to hold their pens in a proper position.

**STEAM GENERATOR.**—Joseph A. Miller, New York city.—This invention has for its object to largely increase the heating surfaces of steam boilers with a view of obtaining greater evaporating power in a boiler of comparatively small dimensions, and also to increase the evaporating surface of a comparatively small quantity of water.

**SPOOL PRINTING MACHINE.**—Gardiner Hall, Jr., South Willington, Conn.—This invention relates to a new machine for imprinting labels directly to the ends of spools. The invention consists chiefly in the employment of rotary printing blocks, which operate in conjunction with a spool guide, that carries the spools in a straight direction between the said printing blocks.

**AUTOMATIC WASH BOILER.**—Henry R. Robbins, Baltimore, Md.—This invention has for its object to produce a circulation of the water within a wash boiler in a continuous current by means of a pipe placed underneath the boiler and opening at its ends into the same; and to keep such pipe always in contact with the fuel in the fire-box, whether the quantity of fuel be large or small.

**SADDLES.**—George Horter, New Orleans, La.—The object had in view in making this invention was the production of a very cheap and, at the same time, a very durable saddle, mainly for use in districts like the Southern and Southwestern parts of the United States where horseback riding is the chief means of locomotion, and where most of the inhabitants are very poor.

**MECHANICAL MOVEMENT.**—E. Melton, Flemingsburg, Ky.—This invention consists in an apparatus for communicating motion from a motor shaft to a driving shaft through the agency of an intermediate system of leverage instead of by direct circumferential contact of the wheels.

**PLANTATION BRIDLE.**—George Horter, New Orleans, La.—This invention consists in making the headstall check rein or any other part of a common plantation bridle, which can be so made of webbing instead of leather for the purpose of combining durability and cheapness.

**PROPELLING VESSELS.**—E. T. Ligon, Demopolis, Ala.—The object sought to be effected by this arrangement is to diminish friction, render the vessel more buoyant than she would otherwise be, and directly assist in her propulsion.

**PINS FOR CURLING HAIR.**—Paul Ceredo, Dusseldorf, Prussia.—This invention consists of a device composed of a short piece of ductile wire with a textile fabric envelope or covering to be used in place of pieces of paper in dressing the hair in curls. The ordinary way of dressing hair in curls, as is well known, is by pieces of paper formed in the shape of pins, around which the hair is wound; these are at once untidy, and disfigure the head of the user, and also being irregular in shape do not give that uniform and graceful bend of finish to the hair which the present invention is capable of.

**CHURNING APPARATUS.**—James Letort, Wytheville, Va.—This invention has for its object to furnish a simple, convenient, and effective churning apparatus, which shall be so constructed and arranged as to do its work quickly and thoroughly, and with a comparatively small outlay of power.

**COTTON SEED PLANTER.**—Jordan Riggsbee, Chapel Hill, N. C.—This invention has for its object to furnish an improved cotton seed planter, simple in construction and effective in operation.

**COTTON AND HAY PRESSES.**—Charles J. Geaseley, Petersburg, Va.—This invention relates to improvements in power presses for hay, cotton, and other like articles, and consists in an arrangement of jointed arms, cords, and pulleys, whereby the follower is made to move by the cords mainly, and at a quick motion at the beginning, and by the lifting action of the arms, and at a slower motion, and more powerfully at the latter part of the movement, when the resistance increases. The invention consists in an improved arrangement of the belt tightener for being automatically raised to let the belt slip and stop the motion when the follower is raised to the required height, also for action as a brake to regulate the fall of the follower.

**ARBOR FOR TURNING CLOTHES PINS.**—B. B. and A. J. Ockington, Stratford, N. H.—This invention relates to improvements in machinery for turning clothes pins, and consists in a hollow arbor with roughing cutters at one end for reducing the stick fed in thereat, and with a finishing and heading cutter arranged in a longitudinal slot in the side of the arbor, and provided with a spring to cause it to act on the stick, and a sliding wedge to throw the knife up for the discharge of the pin when finished.

**BUNGS.**—David M. Cumings, Newburyport, Mass.—This invention relates to improvements in bungs for beer and other casks, and consists in an arrangement for clamping the cover down upon a ring of packing placed on a flange at the bottom of a bush by a cam lever having journals let into grooves in the side walls of the bush. The invention also consists in providing a flange on the under side of the cover to confine the packing ring on the flange.

**COTTON AND HAY PRESSES.**—Uriah Page, Ringgold, La.—This invention relates to improvements in presses for hay and cotton, and consists in the arrangement in a vertical frame with the packing case at the top of a vertically moving follower, having a strong stem projecting downward, and provided with gear teeth, connecting with a toothed pinion for operating it, which is placed on a horizontal shaft having a winding drum on one end and a cone for operating it, a horse-power or other suitable means to which it is to be attached. The invention also comprises an improved and simple arrangement of the packing case at the top in which the pressing is effected; and also an arrangement of the journal boxes for the support of the shaft, and a presser roller behind the toothed stem of the follower.

**ANIMAL TETHER.**—T. N. Wheeler, Blue Earth City, Minn.—This invention relates to improvement in apparatus for picketing animals, and consists in an improved arrangement of means for maintaining sufficient tension on the cord to prevent it from getting around the legs or necks of the animals and yet permit them the full range of it.

**GRINDING MILLS.**—S. T. Eck, Taneytown, Md.—This invention relates to improvements in apparatus for discharging the meal or other ground substance from the space between the curb and the rim of the stone more firmly than is done at present by the frictional action of the periphery of the stone on the ground substance. The invention consists in the application to the periphery of the running stone of scrapers attached to a flexible or other belt stretched around the stone, or it may be scrapers attached to a wheel placed in the space and worked by a pinion on a shaft rising up through the floor and gearing by suitable means with the stone operated or other suitable drawing gear.

**SELF-FEEDING FOUNTAIN.**—E. Amende, Paris, Ky.—This invention relates to improvements in fountains, such as are operated by compressed air, impelling water which is returned and used over, and it consists in a novel arrangement with an air vessel, two water vessels, and the basin, of a system of flexible air and water pipes and stop cocks for the application of the compressed air to force the water alternately from one of the water vessels while it flows back to the other, and vice versa.

**PRINTERS INK.**—Marshall Turly and B. F. Thomas, Carmel Bluffs, Iowa.—This invention relates to a new and useful improvement in ink for printers' use.

**WATER ELEVATOR.**—M. S. McSwain, Pole Grove, Wis.—This invention relates to a new apparatus for elevating buckets in wells, and for carrying them to the open sides of the curbs.

**HAND CIRCULAR SAWS.**—John A. Wood, Far Rockaway, N. Y.—The object of this invention is to furnish a simple and effective machine for sawing timber in wood shops, and for joiners' work generally.

**GRINDING REST FOR TWIST DRILLS.**—Stephen A. Morse, Newark, N. J.—This invention has for its object to provide an adjustable rest, by means of which twist drills may be properly held against grindstones or grinding wheels, of suitable kinds.

**FRUIT-CORING KNIFE.**—A. L. Harris, Kent, Ohio.—This invention relates to a new and useful improvement in a knife for coring apples, and similar fruit, for drying or cooking, whereby time and labor, as well as fruit, are saved.

**HOT-AIR FURNACE.**—Edward Webster, Hartford, Conn.—This invention relates to a new hot-air furnace, which is so constructed as to provide for a complete circulation of the products of combustion, and also for a sufficient accommodation and circulation of fresh air to be heated.

**SUBMARINE PLOW.**—Amos Morrison and K. E. Rose, New Orleans, La.—This invention relates to a new construction of ships for removing the earth from the bottoms of rivers, banks in harbors, etc., and gathering it in suitable receptacles, or scattering it, to be carried away by the currents.

**PHOTOGRAPHIC REFLECTOR.**—Wm. Kurtz, New York city.—This invention has for its object to construct an adjustable shield, by means of which the light thrown upon articles that are to be photographed, can be absolutely controlled at pleasure.

**FILTER SUPPORTER.**—Frank C. Hughes, Frankfort, Ky.—The object of this invention is to provide a funnel-shaped supporter for filters, whereby the entire surface of the filter will be utilized, and the process of filtering consequently hastened.

**RING FOR SECURING HOSE TO COUPLINGS.**—August Schrader, New York city.—This invention has for its object to provide a ring or clamp by means of which hose of suitable kind can be secured to the metallic coupling, and the invention consists in the construction of a clamping ring, with grooved surface and projecting teeth or ears, whereby it will become entirely self-fastening, the ears being bent into the grooves for holding the ends together.

**FOLDING CHAIR.**—Martin Lechler, New York city.—This invention relates to a new folding easy chair, which is made entirely without complicated machinery, but so that it may readily be converted into a bed or lounge. The invention consists chiefly in such a construction of the frame, which connects the rear and front parts of the chair, that the said frame serves as a support for the arm rest of the chair, and as the middle standard of the extension bed.

**OMNIBUS FARE BOX.**—John B. Slawson, New York city.—It is the object of this invention to provide a box for the reception of passengers' fare on omnibuses, which shall enable the proprietors of those vehicles to dispense with the services of conductors, and thereby materially lessen the expense of running them, and it consists in certain sliding plates, stationary shelves, and transparent plates, in a suitable box, so arranged as to receive and protect the fares, and detain them for the inspection of both passengers and driver.

**GYMNASTIC APPARATUS.**—C. H. Mann, Orange, N. J.—This invention relates to a new apparatus to be used for health exercise, and has particular relation to the construction and arrangement of a platform, so connected by means of a lever or levers, to a cross bar or handles above the same, that a person standing upon the platform may, by pulling on said cross bar or handles, attain such an advantage over his own weight, the weight of the platform, and the additional pressure of his feet upon the platform, caused by his effort at lifting, as to lift himself and platform.

**WARPING MACHINE.**—Levi Abbott, Lewiston, Me.—The object of this invention is to construct a measuring and stop-motion attachment for a warping machine, whereby the operation will be arrested immediately after the requisite amount of thread has been wound upon the measuring roller, or by the breaking of a thread. This invention consists chiefly in the use of a peculiar cam, which is provided with a groove for adjusting a lever, by means of which the rock shaft that locks the shipper, and that is also under the influence of the drop wires, is moved to carry the belt upon the loose pulley.

**Official List of Patents.**  
Issued by the United States Patent Office.  
FOR THE WEEK ENDING July 5, 1870.  
Reported Officially for the Scientific American

SCHEDULE OF PATENT OFFICE FEES	
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104,920.—**WARPING MACHINE.**—Levi Abbott (assignor to Lewiston Machine Company), Lewiston, Me.  
104,921.—**SELF-FEEDING FOUNTAIN.**—Edward Amende, Paris, Ky.  
104,922.—**HAY AND COTTON PRESS.**—C. J. Beasley, Petersburg, Va.  
104,923.—**INSTEP STRETCHER FOR BOOTS AND SHOES.**—Moses Beiding, Hartford, Conn.

104,924.—**MILK-CAN BOTTOMS, ETC.**—Thomas M. Bell, New York city.

104,925.—**HEATING STOVE.**—G. A. Blake and W. B. Taylor, Calais, Me.

104,926.—**SEED SOWER AND CULTIVATOR.**—George Bradley, Rockford, Ill.

104,927.—**HARVESTER RAKE.**—Collins B. Brown, Springfield, Mo.

104,928.—**CIRCUIT CHANGER.**—Watkins L. Burton, Richmond, Va.

104,929.—**METHOD OF GRAINING.**—John J. Callow, Cleveland, Ohio.

104,930.—**MINNOW PROPELLER.**—W. D. Chapman, Theresa, N. Y. Antedated May 4, 1870.

104,931.—**MACHINE FOR FORGING THE HEADS OF WRENCHES.**—A. G. Coes, Worcester, Mass.

104,932.—**FIFTH WHEEL FOR CARRIAGES.**—W. A. Collins, Bloomfield, N. J.

104,933.—**COVER FOR PAILS, FIRKINS, ETC.**—T. F. Conklin, Fond Du Lac, Wis.

104,934.—**AUTOMATIC WATER-ELEVATING APPARATUS.**—H. H. Craigie, New York city. Antedated June 29, 1870.

104,935.—**BUNG.**—D. M. Cumings, Newburyport, Mass.

104,936.—**COTTON AND HAY PRESS.**—J. G. Cummings, Columbus, Miss.

104,937.—**COMPOSITION FOR PHOTOGRAPHIC PURPOSES.**—Thomas Cummings, Lancaster, Pa.

104,938.—**SPRING BED BOTTOM.**—Lewis Cutler, Springfield, Mass.

104,939.—**MANUFACTURE OF IRON BY THE ELLERSHAUSEN PROCESS.**—Henry Davies, Newport, Ky.

104,940.—**MEAT CHOPPER.**—James H. De Poe, Boonton, N. J.

104,941.—**PAVEMENT.**—Andrew Dilger, St. Louis, Mo.

104,942.—**STREET PAVEMENT.**—Andrew Dilger, St. Louis, Mo.

104,943.—**TABLE FOR DOVETAILING MACHINE.**—Joseph Dill, Grand Rapids, Mich.

104,944.—**SALT FOR BEDSTEADS.**—A. S. Drisko and O. H. Drisko, Boston, Mass.

104,945.—**JAR FOR WELL DRILLS.**—W. W. Eastman and F. B. Marden, Meadville, Pa.

104,946.—**GRINDING MILL.**—S. T. Eck, Taneytown, Md.

104,947.—**HAY UNLOADER.**—Henry H. Ensminger, Buffalo, N. Y.

104,948.—**STEAM HAMMER.**—O. C. Ferris and F. B. Miles, Philadelphia, Pa.

104,949.—**LET-OFF MECHANISM FOR LOOMS.**—L. N. Fletcher and Ira M. Page, Lowell, Mass.

104,950.—**WATER METER.**—Willard M. Fuller, New York city.

104,951.—**MACHINE FOR PRINTING LABELS ON SPOOLS.**—Gardiner Hall, Jr., South Willington, Conn.

104,952.—**TRUSS.**—E. B. Harding, Northampton, Mass.

104,953.—**HARVESTER DROPPER.**—David S. Harner (assignor to himself and W. T. Carey), Xenia, Ohio.

104,954.—**FRUIT-CORING KNIFE.**—Alford L. Harris, Kent, Ohio.

104,955.—**STEERING APPARATUS.**—C. M. Hayden, South Thomaston, Me.

104,956.—**HEDGE TRIMMER.**—William E. Horne, Decatur, Ill.

104,957.—**METHOD OF ROLLING METAL BARS.**—James Horner, New York city, assignor to himself and John Cox, Pompton, N. J.

104,958.—**BORING TOOL.**—Albert G. Hotchkiss, Wolcottville, Conn.

104,959.—**FILTER SUPPORTER.**—Frank C. Hughes, Frankfort, Ky.

104,960.—**PAD FOR HORSES' FEET.**—Jonathan Johnson, Lowell, Mass.

104,961.—**PERMUTATION LOCK.**—William Kock, Cincinnati, Ohio.

104,962.—**HOT-AIR FURNACE.**—Benjamin S. Koll, Pittsburg, Pa.

104,963.—**PHOTOGRAPHIC REFLECTOR.**—William Kurtz, New York city.

104,964.—**PLOW.**—John Lane (assignor to himself, C. P. Hapgood, W. B. Young, and G. H. Laughton), Chicago, Ill.

104,965.—**FOLDING CHAIR.**—Martin Lechler, New York city.

104,966.—**SPIKE EXTRACTOR.**—Louis Lehman, Buffalo, assignor to D. W. Fish, Brooklyn, N. Y.

104,967.—**HAND STAMP.**—Louis Lehman, Buffalo, assignor to Daniel W. Fish, Brooklyn, N. Y.

104,968.—**CHURNING APPARATUS.**—James Letort, Wytheville, Va.

104,969.—**TUBULAR ARCHED BRIDGE.**—W. S. Levake, Cleveland, Ohio. Antedated June 2, 1870.

104,970.—**CLAMP FOR MAKING WHIPS.**—J. P. Luther and S. K. Puck, Berlin, Wis.

104,971.—**LAMP BURNER.**—George R. Lyon, Waterbury, Conn.

104,972.—**CHURN.**—C. A. Maltby, Roland, Ill.

104,973.—**LIFTING MACHINE.**—Chas. Holbrook Mann, Orange, N. J.

104,974.—**SASH HOLDER.**—Alfred C. Manning, Norwich, Conn.

104,975.—**MITER BOX AND MITER SAW.**—Daniel McAllister, Malden, Mass.

104,976.—**WATER ELEVATOR.**—M. S. McSwain, Pole Grove, Wis.

104,977.—**MECHANICAL MOVEMENT.**—Elijah Melton, Flemingsburg, Ky.

104,978.—**HARVESTER.**—Henry Mews (assignor to J. W. Cutler), Binghamton, N. Y.

104,979.—**STEAM GENERATOR.**—Joseph A. Miller, New York city.

104,980.—**DREDGING MACHINE.**—Gove Mitchell, Philadelphia, Pa.

104,981.—**SUBMARINE PLOW.**—Amos Morrison and Rufus E. Rose, New Orleans, La.

104,982.—**GRINDING REST FOR TWIST DRILLS.**—S. A. Morse, Newark, N. J.

104,983.—**COMBINED CART, WHEELBARROW, AND TURNIP-DRILL.**—Albert M. Newland, Olivet, Mich.

104,984.—**TAP FOR AND MODE OF CUTTING DIES.**—William Newsham (assignor to Morris, Tasker & Co.), Philadelphia, Pa.

104,985.—**MACHINE FOR CUTTING DIES.**—William Newsham (assignor to Morris, Tasker & Co.), Philadelphia, Pa.

104,986.—**EJECTOR.**—Joseph Nixon, Pittsburg, Pa.

104,987.—**FILTER.**—Joseph Nixon, Pittsburg, Pa.

104,988.—**ARBOR FOR TURNING CLOTHES PINS.**—B. B. Ockington and A. J. Ockington, Stratford, N. H.

104,989.—**METHOD OF HANGING WINDOW SHADES.**—H. W. Olin-y, Pittsburg, Pa.

104,990.—**FOLDING STEREOSCOPE.**—Edwin K. Page, Havana, N. Y.

104,991.—**PRESS FOR PRESSING COTTON OR HAY.**—Uriah Page, Ringgold, La.

104,992.—**SEED SOWER.**—William Painter, Baltimore, Md. Antedated June 23, 1870.

104,993.—**HAY AND MANURE FORK.**—R. A. Peet, Caledonia township, Mich.

104,994.—**ARTIFICIAL LEG.**—Luther F. Pingree, Portland, Me.

104,995.—**LATHE CENTER.**—Henry K. Porter, Boston, Mass.

104,996.—**LIBRARY SHEARS.**—Louis Prang, Boston, Mass.

104,997.—**METALLIC LATH AND BILLETS FROM WHICH THE SAME MAY BE PRODUCED.**—Jacob Reese, Pittsburg, Pa.

104,998.—**SAWING MACHINE.**—Frederick Rhoad, Liberty Center, Ohio.

104,999.—**PEGGING JACK.**—Hubert R. Card (assignor to himself and G. F. Eaton), Haverhill, Mass.

105,000.—**COTTON-SEED PLANTER.**—Jordan Riggsbee, Chapel Hill, N. C.

105,001.—**PENMAN'S HAND SUPPORT.**—Daniel A. Sanborn, Brooklyn, N. Y. Antedated June 30, 1870.

105,002.—**SUPPLEMENTARY PEDAL ATTACHMENT FOR PIANOFORTES.**—Gustav A. Scott and William B. Frisbee, San Francisco Cal.

105,003.—**RING FOR SECURING HOSE TO COUPLINGS.**—August Schrader, New York city.

105,004.—**CHAIN LINK.**—W. C. Short, Providence, R. I.

105,005.—**FARE BOX FOR VEHICLES.**—John B. Slawson, New York city.

105,006.—**COTTON-SEED PLANTER.**—Bartemus Smith, Hood Swamp, N. C.