

they lose their fat and get thin. Man himself gets fat in summer and grows thin in winter from the demand on this store for heating purposes. Hibernating animals go to their winter sleep sleek and fat, but wake up in the spring lean and meager, from the loss of fat in maintaining the animal heat necessary for life. Fat is thus seen to be an essential of animal life. Where there is too little deposited for the purposes of life, then serious disease has already commenced or may set in; while on the other hand a redundancy of this deposit may seriously interfere with the functions necessary to life.

It is from this point of view that the value practically of a knowledge of the height and weight of individuals becomes apparent. When the weight of a person is much below his height, then it may be suspected that some disease has set in, which may go on to the destruction of life. One of the earliest symptoms of consumption, the most fatal disease of the civilized inhabitants of Europe, is a tendency to loss of weight. Long before any symptoms are present of tuberculous deposits in the lungs, this loss of weight is observable in persons afflicted with consumption. And at this stage a large amount of evidence renders it probable that the fatal advance of this disease may be prevented.

Within the last thirty years a practice has been resorted to with great success of administering to persons losing weight and threatened with consumption, cod-liver oil, pancreatic emulsion, and fatty substances, as articles of food, for the purpose of preventing or arresting the tendency to loss of fat, which obviously results in the production of fatal disease. In fact, it may be stated generally, not without exceptions, that wherever the weight is much below the height, there the commencement of dangerous disease may be suspected, and precautions taken to prevent the loss of fat. That this treatment has been successful in really preventing disease, and loss of life as the consequence, is the conviction of a host of intelligent practitioners of medicine. At the same time, it should be remembered that it is not only necessary in these cases to administer cod-liver oil or pancreatic emulsion as medicines, but that the consumptive should have recourse to a fatty diet, and should eat butter, cream, cream-cheese, fat and fatty articles of diet.

#### Obituary.—Samuel V. Merrick.

It is with great regret that we are called upon to record the death of Mr. Samuel V. Merrick of Philadelphia, Pa., the Founder and President of the Franklin Institute, and for many years an esteemed client of this office. A man of inflexible integrity, liberal culture, and great business capacity, he has for a long time been one of the most honored of the citizens of Philadelphia. His connection with the Franklin Institute has made his name familiar to the scientific world.

A meeting of the Board of Managers of the Institute was held to notice his death, and a series of highly complimentary resolutions were passed in relation to the character and acts of the deceased.

We also notice the recent death of T. A. Wasson, the well known car builder, at Springfield, Mass.

#### Province of Quebec Fair.

The Province of Quebec Fair of 1870, will be held at Montreal, Sept. 13, 14, 15, 16. \$15,000 prizes.

American exhibitors are admitted on the same footing as Canadians. An entrance fee of one dollar covers all entries and entitles the exhibitor to four tickets to the grounds. Custom duties to be refunded. It is expected that American manufacturers, stock breeders, etc., will be fully represented. Entries for implements, etc., on or before the 3d September. For further particulars apply to the Secretary, Council of Agriculture, Montreal.

#### Ridicule.

Sometimes our correspondents make the mistake, in their replies to published letters, of attempting to heap ridicule upon the opinions expressed by other correspondents who happen not to agree with their theories. We are obliged to decline all such letters. Abuse is one thing, fair criticism is quite another, and the latter only is acceptable to us.

**WATERING STREETS WITH SALINE SOLUTIONS.**—It is stated that, of the two deliquescent salts which have been applied for this purpose—viz., the chlorides of magnesium and calcium—the last-named suits best, the quantity being adjusted at one half a pound per square yard. In 1860 and 1863, the Place Bellacour, at Lyons, France, was (experimentally, and during great heat) watered with a mixture of chloride of calcium and commercial hydrochloric acid, properly diluted in water, the effect being highly appreciated by the inhabitants also on account of the perceptible purification of the air.

How perfectly almanac makers hit it, was verified in the weather word in one of the almanacs against the second Sabbath in August. "Scorching" was its prophecy. It was about the only Sabbath that was not scorching, and was the only one to which it applied that epithet. Thick clothes were its uniform. The almanac guessers should employ better mediums.

CANADIANS can now apply for patents in the United States upon the same terms as citizens. Full information can be obtained by applying to the publishers of the SCIENTIFIC AMERICAN.

In the year 1811 Kirchoff, a celebrated German chemist, discovered that it was possible to convert starch, by means of sulphuric acid, into sugar.

#### NEW BOOKS AND PUBLICATIONS.

**ON MICROSCOPICAL MANIPULATION.** Being the Subject-Matter of a Course of Lectures Delivered before the Quekett Microscopical Club, January-April, 1869. By W. T. Suffolk, F.R.M.S. Illustrated with forty-nine Engravings and seven Lithographs. Philadelphia: J. B. Lippincott & Co.

The microscope and the spectroscope are now leading the way to the interpenetration of Nature's profound mysteries. Not that when all that human mind and human hands can do has been done there will remain nothing mysterious, we look for no such consummation; but to these instruments science is indebted for keys by which it has been enabled to enter whole realms of effects utterly inaccessible without them. But these keys are of but little value unless used in the proper manner. Fortunately for those unskilled, the manipulations necessary to success in microscopy can be so described in books that an intelligent person may practice the most of them after a few attempts. But that this desirable result shall be attained it is necessary that the book upon which he relies for guidance be prepared, not only by one who understands the use of the microscope in its most approved forms, but is able to convey his knowledge and experience in plain unmistakable language. The book under present consideration is written by a man who ranks high among the many accomplished English microscopists. This is a sufficient guarantee that his knowledge and experience are ample for the task he has undertaken. The pages of the book bear the evidence of his ability as an instructor. The book contains seven chapters, with an appendix and notes, containing full information upon the construction of the instrument, its various parts, their uses, and adjustments; the mechanical processes of glass cutting, drilling, bending, and working of tubes; how to select the various tools and implements, and to keep them in perfect order; how to mount objects dry, in balsam, and in fluid; illuminating apparatus, comprising all the most approved devices for this purpose; polarized light, and its uses in microscopic examination; drawing and micrometry, etc.; six lessons upon the examination of various representative substances, with notes upon various collateral subjects connected with the art of microscopy. The work is handsomely printed and bound, and is really the most practical and complete manual for beginners in this delightful field of science we have ever met with.

**THE PRACTICAL AMERICAN MILLWRIGHT AND MILLER.** Comprising the Elementary Principles of Mechanics, Mechanism, and Motive Power, Hydraulics and Hydraulic Motors, Mill-Dams, Saw Mills, Grist Mills, the Oat-Meal Mill, the Barley Mill, Wool Carding and Cloth Fulling and Dressing, Windmills, Steam Power, etc. By David Craik, Millwright. Illustrated by numerous Wood Engravings and Folding Plates. Philadelphia: Henry Carey Baird, Industrial Publisher, 406 Walnut street. 1870. Price, by mail, free of postage, \$5.00.

See notice in editorial columns.

#### 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.

M. G., of N. Y., asks whether there would be any power gained by placing a turbine wheel higher in the draft-box—or tube which conveys water to the wheel—than the height to which atmospheric pressure will sustain a column of water in a tube from which the air is exhausted, at the locality in which the wheel is placed, say, as an outside figure, thirty-three and one third feet above the tail water. We answer, that as all the water below the wheel can do, is by its weight and motion in falling to overcome the pressure of the atmosphere against the flow of the water through the wheel (the same as the condensation of steam in the steam engine removes the pressure of the atmosphere from the advancing piston), it is evident that when the wheel is placed at a height sufficient to secure this action below the wheel, nothing can be gained by placing it higher. On the contrary, loss must result, from the diminished head above the wheel. In fact there can be no gain in placing the wheel above the level of the tail water, although it may for convenience be raised, without loss, within certain practical limits, varying somewhat with circumstances, but always less than the theoretical height above specified.

T. S. K., of Ill., and several others, write in regard to the balancing of shafts and pulley systems, all agreeing that pulleys should be balanced separately, if they are to be run together, and also that the heaviest sides should be placed opposite each other on the shaft, so that centrifugal force shall act equally on opposite sides. This would not of course work where the number of pulleys is odd, and each required balancing; nor would it answer in all cases where the number of pulleys is even, as some may need more counterpoising than others. Most agree that the shaft should be large enough so as not to spring by the tension of the belt. One correspondent, however, erroneously thinks this of little consequence. For ourselves, we still adhere to the opinion that where pulleys have wide faces, and thin rims, they should have more than one spider, and the spokes ought also to alternate, so as to prevent springing of the rim. We also would make the arms of the spider straight and radial, instead of bent, or tangential to the hub, as is often done, as we believe a pulley unevenly weighted at the rim, and running at high speed, will maintain its shape better with straight, radial arms.

W. H. S., of Va.—Thin rubber, of the kind you describe, and used for tying over the tops of jars, as well as for other purposes, may be obtained at all the dealers in rubber goods. It is, however, not wholly impervious to water when long immersed, and gases will also pass through it. It will not do to seal fruit jars in this way, unless the fruit be preserved in sugar "pound for pound," according to the old rule, in which case a loose cover will be as serviceable as the rubber.

J. D. B., of Pa.—It is impossible, without knowing the exact consistency of the varnish you have invented, to advise you what material added to it will make it dry more rapidly. If the vehicle is alcohol, it ought to dry quickly without such addition; if siccativ oils are used, acetate of lead or litharge will make it dry quicker.

H. B. D., of O.—Wheels for ordinary canceling presses are made of composition, and cannot be used for perforating. Perforating stamps should be made of steel, and hardened, and it is better to make the figures separate, and set them in, so that in case of falling or breaking, they can be taken out and replaced.

H. W. G., of Mich.—To clean brass or silver, and polish the same, use aqua-ammonia and rotten stone, followed by rouge, applied with soft leather.

D. S., of Md.—The steam plows in use in this country are very few, and so far as we know, have been imported from England. We do not think they can be obtained in this country.

F. H., of N. Y.—What is called "lodestone" is simply a species of magnetic iron ore.

G. L., of Kan.—We cannot give you the address of an emery and crocus cloth manufactory.

S. S. H., of Ala.—English flint glass expands 1 part in 1,248 in length, and 1 part in 316 in bulk, in heating from 32° Fah. to 212° Fah. Brass expands under the same treatment 1 part in 536 in length, and 1 part in 179 in bulk. Iron, 1 in 846 in length, and 1 in 282 in bulk. These substances will expand nearly in the same proportions for higher temperatures below the point of fusion. Brass melts at 1,650° Fah. Iron at from 1,920° Fah. to 2,910°. Glass requires a very high temperature to fuse it to anything like fluidity. It, however, becomes soft and plastic at a red heat. It varies much in this respect, according to composition, that containing soda being more fusible than those containing potash.

J. F. G., of Mass.—In computing the power and resistance that will produce equilibrium in hydraulic presses or accumulators, it is the areas of pistons only that is taken into account, the areas of the supply pipe sections have no bearing upon the subject, other than that if too small they will increase the friction.

#### Business and Personal.

The Charge for Insertion under this head 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

For Sale—One half the interest in McGee's Patent Self-boring Faucet. Address T. Nugent, Morristown, N. J.

The best selected assortment of Patent Rights in the United States for sale by E. E. Roberts & Co., 15 Wall st., New York. See advertisement headed Patentees.

Wanted—A good Steam Engine of from 80 to 100-H. P. Address, with particulars, Box 1969, New York.

Every Reader of the Scientific American, who will send his address to S. R. Wells, 389 Broadway, New York, with 15c., will receive a specimen of The Phrenological Journal, a first-class Family Magazine published at \$3 a year, 20 cents a number.

John Dane, Jr., Newark, N. J., builds the best Hand Lathes slide rests, presses, all kinds, Jeweler's rolls, models, dies, all kinds of light machinery and work, to order. Send for circular.

Six new and perfect Automatic Gas Generators, Wood's Patent at a low price. Or will sell the air pumps alone. Address David Street, 273 Franklin st., Cleveland, Ohio.

Owners of Worthington Pumps can hear of something to their advantage by addressing Jno. Clark, Water Works, Harrisburg, Pa.

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

Enterprising men wanting a genuine Patent Monopoly, please address, immediately, C. H. Hudson, 174 Washington st., New York.

Wanted—Salesman in the mechanical branch of business. Only experienced need apply at S. Firuski & Co.'s, 20 Cedar st., New York.

See advertisement on New Work on "Soluble Glass," published by Dr. L. Feuchtwanger, 55 Cedar st., N. Y. Price \$3.12, mailed free

Dickinson's Patent Shaped Carbon Points and adjustable holder for dressing emery wheels, grindstones, etc. See Scientific American, July 24th, and Nov. 20, 1869. 61 Nassau st., New York.

Peck's patent drop press. Milo Peck & Co., New Haven, Ct.

"507 Mechanical Movements."—Over 18,000 copies of this book have been sold. This is by far the largest illustrated table of movements ever published. An invaluable aid to mechanics, inventors, etc. Price \$1. By mail, \$1.12. Address Theo. Tusch, 37 Park Row, New York.

Best Boiler-tube cleaner—A. H. & M. Morse, Franklin, Mass.

A Good Machinist, with about \$3,000, can have an interest and entire charge of a paying manufacturing business. Address Machinist, Box 507, Baltimore, Md.

Tools and Machines for special uses built to order. Chas. N. Trump, Port Chester, N. Y.

For Sale or to Lease—A never-failing water-power at Ellenville, N. Y., ½ mile from depot of the Ellenville Branch N. Y. and O. Midland R. R., and only 80 miles from New York city, by rail. For full particulars address Blackwell, Shultis, Gross & Co., Kingston, N. Y.

Gatling Guns that fire 400 times per minute are now made at Colt's Armory, Hartford, Conn. Send for pamphlets.

Pictures for the Library.—Prang's latest publications: "Wild Flowers," "Water Lilies," "Chas. Dickens," Sold in all Art Stores.

Japanese Paper Ware—Spitoons, wash basins, pails, milk pans, etc. Perfectly water-proof, and will not break or rust. Send for circulars. Jennings Brothers, 352 Pearl st., New York.

"Your \$50 Foot Lathes are worth \$75." Good news for all. At your door. Catalogues Free. N. H. Baldwin, Laconia, N. H.

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.

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.

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

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

Keuffel & Esser, 116 Fulton st., N. Y., the best place to get 1st-class Drawing Materials, Swiss Instruments, and Rubber Triangles and Curves.

For tinmen'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.

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.

It saves its Cost every sixty days—Mitchell's Combination Cooking Stove. Send for circular. R. B. Mitchell, Chicago, Ill.

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.

**Facts for the Ladies.**

I have used one of Wheeler & Wilson's Sewing Machines (No. 2,762) nearly fourteen years, making cloaks for the last eleven years, and doing all other kinds of sewing down to book muslin. It is now in perfect order, has never had any repairs, and I have not broken a needle since I can remember. I appreciate my machine more and more every day, and would not exchange it for any machine that I know.  
M. BUDLONG.  
Utica, N. Y.

**Recent American and Foreign Patents.**

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

**HORSE HAY RAKE.**—James M. Colson, Morrill, Me.—This invention has for its object to furnish an improved horse hay rake which shall be simple in construction, easily operated, strong, durable, not liable to get out of order, and effective in operation.

**GRASS-SEED SEPARATOR.**—D. B. Dixon, Unionville, Mo.—This invention has for its object to furnish an improved device for separating and preserving the seed of timothy or Hungarian grass, when being fed to horses or other stock.

**RAILROAD CAR WHEELS AND AXLES.**—Frederick Sturneyk, Saint Paul, Minn.—This invention has for its object to improve the construction of railroad wheels and axles so as to almost entirely overcome the friction between the wheels and the rails when the cars are passing around a curve in the track.

**PLOWS.**—Robert Dickie and Hugh K. Johnston, Bunker Hill, Ill.—This invention relates to improvements in plows, and consists in attaching the beam to the plow in a novel manner, for adjusting it horizontally, for varying the breadth of the furrow, and vertically, for varying the depth.

**FERRULE FOR PAINT BRUSHES.**—Wm. B. Burnett, New York city.—This invention relates to improvements in the metal ferrules used for confining the butts of the bristles and the handles together, and it consists in an improved ferrule, made of sheet metal, by stamping up in dies.

**COMBINED SHAFTS AND POLE.**—John G. Burchfield and S. W. Brock, Niantic, Ill.—This invention relates to improvements in buggies and other light wagons, and consists in an arrangement of shafts so that they may be used as a pole, also, by slightly shifting them, thereby saving the expense of a separate pole and the labor of detaching one and attaching the other.

**MEDICAL COMPOUND.**—Lewis L. Gebhart, M.D., New Providence, Ind.—This invention has for its object to furnish what has been long sought for, viz: an agent that would not only be beneficial in its local action, when applied to the surface of the body, but, at the same time would be taken up by the general circulation, both of the blood vessels and the nerves.

**PAINT BRUSHES.**—Wm. B. Burnett, New York city.—This invention relates to improvements in attaching the bristles and handles together, and consists in securing a handle having a disk on the end, of the size of the upper end of the ferrule, which is larger than the end receiving the bristles, by means of a screw or pin, passing through a conical plug, driven in at the center of the bristles in the same way the handles are in the common construction of brushes, the said disks being also glued or cemented to the ferrules and the ends of the bristles.

**TUBING CLAMP.**—Wm. H. Downing, Pioneer, Pa.—This invention relates to improvements in tubing clamps or clutches, used for attaching the hoisting chains to oil-well tubing, for hoisting it out of the wells, and consists in the application to a circular hub on the top of a bifurcated block, adapted to receive the tube below the enlarged coupling joint, and for attachment to the hoisting chain of a ring, with an opening, arranged to be set to coincide with the bifurcation, for the reception of the tube, and for turning of the ends to confine the tube therein.

**COMBINATION SCRUB BRUSH.**—E. K. Wood, De Witt, Iowa.—This invention relates to a new and useful improvement in a scrub brush, with which is combined a water can and rubber dryer or wiper, to the head of which, the brush, water can, and dryer are attached.

**SEED PLANTER.**—Levi Smith, Chester Center, Mass.—This invention relates to improvements in machines for planting seeds, more especially designed for planting corn, but applicable to other kind of seeds.

**HAND CORN PLANTER.**—Hugh Dyer, Fort Scott, Kansas.—This invention has for its object to furnish an improved hand corn planter, simple in construction, and effective, reliable, and uniform in its operation.

**MACHINE FOR MAKING TILES, AND ALSO MOLDS FOR THE SAME.**—Joseph Christen, New Orleans, La.—This invention relates to a new and useful improvement in a machine for forming tiles for roofs and floors, and for ornamental work for building and other purposes, from clay, cement, or plaster of Paris.

**SCALES.**—George W. Dickinson, Charleston, Ill.—This invention has for its object to furnish a simple, convenient, accurate, and reliable scale, for weighing light or heavy articles.

**ROTARY PUMP.**—George W. Heald and L. D. Sisco, Baldwinville, N. Y.—This invention relates to a new and useful improvement in rotary pumps, whereby they are made more useful and more durable than they have hitherto been, and consists mainly in connecting a lifting or suction pump thereto, for priming or filling the same.

**COTTON PICKERS.**—D. M. McRae, Webberville, Texas.—This invention relates to improvements in machinery for picking cotton from the plants, and consists in a set of saws mounted on a truck, and geared with the driving wheels, to run in the tops of the plants (the lateral parts of which are brought within the range of the saws by gatherers in front) and detach the cotton, and convey it to a brushing roller above, which detaches the cotton from the saws, and delivers it into a receptacle behind.

**INDELIBLE WRITING FLUID.**—Charles Hebel, Louisville, Ky.—This invention relates to a new and useful improvement in an indelible writing fluid, or ink, designed more especially for use in banks, and for filling up notes, checks, bonds, etc.

**SHEET METAL CANS.**—Franz Albaum, Greenpoint, N. Y.—This invention relates to a new manner of securing the tops and bottoms in sheet metal cans, with the object of supporting the same firmly, and permitting their rapid application.

**COOKING STOVE.**—John M. Goodfellow, Troy, N. Y.—This invention consists in providing, in the upper part of the fire-box of a cooking stove, a bridge extending lengthwise of the box, which bridge forms the front side of an air chamber lying horizontally over the oven, and is perforated with a number of holes made for the purpose of letting out jets of heated air from the said chamber directly upon the smoke and gases rising from the fire-box, so that the same may be more thoroughly consumed; the fire-box being also provided with perforated doors so as to let in air in jets for a similar purpose. The invention also consists in the attachment to the stove of a hot water-tank combined with heating chambers; also in providing flue strips for conducting air into the central parts of air chamber over the oven.

**COMBINED GANG PLOW AND CULTIVATOR.**—Sterling C. Thornton, Macomb, Texas.—This invention consists of sundry improvements in a machine that may serve the purpose either of a gang plow, or, the position of two of the plows having been changed, of a cultivator, said improvements tending to reduce resistance and strain, experienced by the draft animals in drawing the plows through the earth, to their minimum, and to increase the general efficiency of the apparatus.

**TIME LOCK.**—Lewis A. Haines, Wakefield, Md.—This invention consists in the combination of a lock with a clockwork in such a manner that the lock-bolt may be withdrawn from the keeper at any hour to which the clock-work may be set and not a moment sooner, the lock mechanism being also constructed with peculiar safeguards against burglary.

**METALLIC SEAL.**—Alexander B. Small, New Orleans, La.—This invention is an improvement on "Mears and Houlton's" Seal for Railroad Freight Cars, etc., patented July 14, 1867, and consisting of a soft metal disk, and a wire that is first passed through staples attached to the door and door-frame of the car, after which, either the ends of the wire are bent, and then inserted in holes extending partly through the soft metal disk, or the branches of the wire are passed entirely through the disk, after which, in either case, the disk is struck with a proper die and compressed upon the wires with force enough to hold them firmly.

**BUCKET FOR THE PROPELLING WHEELS OF VESSELS.**—A. C. Loud, San Francisco, Cal.—There are certain well-known obstacles which prevent the perfect working of the paddle-wheels and screws, as commonly constructed, of steam vessels. One of these is the lifting of water by the buckets or blades as they emerge, the fluid thus lifted not only retarding the wheel, but also hanging as a dead weight on the vessel and making friction as it is dragged over the surface of the body of water in which the vessel is sailing. Moreover, the striking of the ordinary paddles against the water produces jars, which extend over, and injure the ship, besides annoying the passengers. These obstacles it is the object of this invention to overcome. To this end the invention consists in buckets or blades constructed of parallel bars, with spaces between them, or of perforated plates, or of bars formed into lattice-work, or in any other manner in which a bucket or blade may be produced which shall present a series of openings through which water may pass, alternating with a series of surfaces against which water may react.

**GAGE FOR CUTTING BIAS PIECES.**—Samuel T. Taylor, New York city.—This invention consists in the combination of a straight wand with sliding cross-pieces placed at right angles to the wand, in sockets at the ends of the same, and with a cord which connects those extremities of the cross-pieces that are on the same side of the wand, by which arrangement the cord may be set at any desired angle with the wand, on moving the cross-pieces to the requisite extent.

**HAY RAKER AND LOADER.**—Gilbert G. Park, Xenia, Nebraska.—This invention has for its object to provide an apparatus for raking and loading hay in such manner that the hay will not be disturbed while on the said apparatus by wind or other obstacles.

**GIN FOR LINTING COTTON.**—George W. Payne, Memphis, Tenn.—This invention relates to a new arrangement of machinery for removing the short lint from cotton seed that has already been ginned, and also for ginning cotton seed as it comes from the field.

**COUPLING FOR HEATING CARS BY STEAM.**—Samuel A. Appold, Baltimore, Md.—This invention has for its object to connect the steam heating system of pipes of one car with the steam heating system of pipes of another car, by a universally-jointed and expandible coupling placed beneath the bumpers, and so constructed that it may accommodate itself to the curves and irregularities of railways, and to the inequalities in speed which produce variations in the intervals between the cars of a moving train.

**BOAT-DETACHING TACKLE BLOCK.**—N. M. Ray, Surrey, Maine.—This invention relates to a new and useful improvement in the mode of detaching boats from vessels, and consists in a tackle block provided with a pivot hook and tripping device, by means of which the ends of a boat may be simultaneously detached from the davits by people on board the vessel.

**SHOW CASE.**—J. A. Holmes, Shopiere, Wis.—This invention relates to improvements in show cases, and consists in the application to them, whether made round, octagonal, or of other form, and revolving or not, of reflecting mirrors arranged in angles of ninety degrees or less for repeating the reflections of the articles to be exhibited which are placed between the reflecting mirrors.

**ADJUSTABLE RAILROAD CAR SEATS.**—J. I. Pease, Stockbridge, Mass.—This invention has for its object to furnish an improved seat for railroad cars which shall be so constructed that its back and head and foot rests may be swung or inclined into such a position that the passenger may recline or sleep comfortably upon it.

**HARNESS MOTION FOR LOOMS.**—A. R. Field, Central Falls, R. I.—This invention relates to improvements in harness motion for looms, and consists in a novel arrangement of differential gears for turning two sets of tappet shafts on their own axes while being carried around the shafts of drums on which they are mounted, between which the looms are mounted.

**HAY AND COTTON PRESS.**—Grey Utley, Charlotte, N. C.—This invention has for its object to improve the construction of the improved hay and cotton press patented by the same inventor May 12, 1865, and numbered 77,852, so as to make it more convenient and satisfactory in use, and more effective in operation.

**COMBINED HARROW AND ROLLER.**—J. M. Blankenbaker, Powers' Station, Ind.—This invention has for its object to furnish an improved harrow which shall be so constructed that the ground may be harrowed and rolled or harrowed, rolled, and cultivated, as may be desired, and which shall, at the same time, be simple in construction, and easily adjusted and operated.

**REED ORGAN PIPES.**—C. W. Small, Worcester, Mass.—This invention relates to improvements in the construction and arrangement of the pipes used in melodeons, organs, and the like instruments for the purpose of softening the sound and increasing the volume, and it consists of a pipe made of wood or other suitable material, having the reed placed at one side, near one end, and terminating at the other end in a hollow spherical enlargement, with a mouth in one side to emit the sound.

**TRACTION ENGINE.**—M. P. Hall, Hinsdale, N. Y.—This invention has for its object to furnish a simple and convenient engine to take the place of animal power for various farm purposes, for towing canal boats, and other uses, where the continuous, untiring exertion of power is required, and which will apply the power in the most natural and direct manner.

**CHUCKS FOR CUTTING SCREWS ON GAS PIPES OR TUBES.**—W. T. Cole, New York city.—This invention relates to a new and useful improvement in chucks for holding gas pipe and other tubing while screw threads are being cut thereon, and for other purposes, the mechanism being such that the pipe or article is released as soon as the thread is cut without stopping the machine or lathe, and also such that the driving power is used for fastening the pipe.

**Inventions Patented in England by Americans.**

[Compiled from the "Journal of the Commissioners of Patents."]

**PROVISIONAL PROTECTION FOR SIX MONTHS.**

- 2,092.—PRODUCTION OF IRON AND STEEL.—J. E. Sherman, Bucksport, Me. July 25, 1870.
- 2,094.—WASHING MACHINE.—H. Reeves, Newark, N. J. July 25, 1870.
- 2,100.—VEGETABLE PARCHMENT OR PARCHMENT PAPER.—C. Campbell, Buffalo, N. Y. July 26, 1870.
- 2,102.—MANUFACTURE OF RAILWAY WHEELS ALSO IN THE MOLDS AND THE CONVERTING FURNACES TO BE USED IN THE MANUFACTURE OF RAILWAY WHEELS.—J. S. Tarr, Fairhaven, N. Y. July 26, 1870.
- 2,112.—HEATING WATER FOR STEAM BOILERS.—C. E. Hutson, Commerce, Mo. July 27, 1870.
- 2,115.—INKING APPARATUS FOR PRINTING PRESSES.—I. L. G. Rice, Cambridge, Mass. July 28, 1870.
- 2,124.—DEVICE FOR GUIDING COVERED WIRE TO BE SECURED UPON A FABRIC OR SUBSTANCE IN A SEWING MACHINE.—W. T. Cook, New York city. July 29, 1870.
- 2,153.—LUBRICATING PACKING FOR RAILWAY CARRIAGE JOURNALS.—W. H. Jewell, New York city. Aug. 2, 1870.
- 2,159.—PRESERVING WOOD FROM DECAY.—A. B. Tripler, New Orleans, La. August 2, 1870.

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- 106,531.—KNITTING MACHINE.—W. H. Abel, Newington Vt., assignor to himself and J. E. Crane, Lowell, Mass.
- 106,532.—COAL SIFTER.—Sanford Adams, Boston, Mass.
- 106,533.—SHEET METAL CAN.—Franz Albaum, Greenpoint N. Y.
- 106,534.—MACHINE FOR RULING SLATES.—Franklin Ames, North Bridgewater, Mass.
- 106,535.—HARVESTER.—V. S. Barber (assignor to Nixon & Co.), Alliance, Ohio.
- 106,536.—MACHINE FOR SAND-PAPERING MOLDINGS.—Joseph Barker (assignor to himself and Philip Myers), Chicago, Ill.
- 106,537.—MOTIVE POWER.—Charles Batcheller, Polk county Iowa.
- 106,538.—PRUNING SHEARS.—George Bergner, Washington Mo.
- 106,539.—COMBINED HARROW AND ROLLER.—J. M. Blankenbaker, Powers' Station, Ind.
- 106,540.—METHOD OF PUTTING FACE-DRESS ON MILLSTONES.—J. S. Braley, J. A. Schmitt, and P. L. Schmitt, Utica, Mo.
- 106,541.—SCYTHE.—H. C. Brown, Barkhamsted, Conn.
- 106,542.—COMBINATION OF SHAFTS AND POLE.—J. G. Burchfield and S. W. Brock, Niantic, Ill., assignors to S. W. Brock.
- 106,543.—LET-OFF MECHANISM FOR LOOMS.—M. C. Burleigh, Somersworth, N. H.
- 106,544.—PAINT BRUSH.—W. B. Burnett, New York city.
- 106,545.—FERRULE FOR PAINT BRUSHES.—W. B. Burnett, New York city.
- 106,546.—SEEDING MACHINE.—Alphonso Button, Dunkirk, N. Y.
- 106,547.—DEVICE FOR PROPELLING CANAL-BOATS.—J. B. Calnan, New Haven, Conn., assignor to himself and V. P. Parkhurst, Worcester, Mass.
- 106,548.—WHEEL PLOW.—H. C. Carr, Bordentown, N. J.
- 106,549.—HITCH HOOK.—G. W. Chandler (assignor to himself and Calvin Searle), Mason, N. H.
- 106,550.—TILE MACHINE.—Joseph Christen, New Orleans La.
- 106,551.—CHUCK FOR HOLDING PIPES AND TUBES WHILE BEING SCREW-THREADED.—W. T. Cole, New York city.
- 106,552.—DISH STAND.—W. F. Collier, Worcester, Mass.
- 106,553.—ROASTING FURNACES FOR ORES.—John Collom Empire City, Colorado Territory. Antedated August 15, 1870.
- 106,554.—HORSE HAY RAKE.—J. M. Colson, Morrill, Maine.
- 106,555.—AUTOMATIC BUGGY BRAKE.—L. T. Conant, New Lisbon, Ohio.
- 106,556.—PLOW.—W. G. Coombs, New Gloucester, Maine.
- 106,557.—BOTTLE STOPPER.—J. T. Cree, Worcester, Mass.
- 106,558.—VENTILATING WINDOW FOR RAILROAD CARS.—Samuel Darling, Providence, R. I.
- 106,559.—PLOW.—Robert Dickie and H. K. Johnston, Bunker Hill, Ill.
- 106,560.—WEIGHING SCALES.—G. W. Dickinson, Charleston, Ill.
- 106,561.—MACHINE FOR MANUFACTURING WATCH CASES.—T. B. Dill, Boston, Mass.
- 106,562.—GRASS-SEED SEPARATOR FOR MANGERS.—D. B. Dixon, Unionville, Mo.
- 106,563.—TUBING CLAMP.—W. H. Downing, Pioneer, Pa.
- 106,564.—EARTH CLOSET.—J. A. Drake (assignor to himself and M. E. B. Clark), New Orleans, La.
- 106,565.—EARTH CLOSET.—J. A. Drake (assignor to himself and M. E. B. Clark), New Orleans, La.
- 106,566.—EARTH CLOSET.—J. A. Drake (assignor to himself and M. E. B. Clark), New Orleans, La.
- 106,567.—SPINDLE BOLSTER.—W. F. Draper, Hopedale, Mass.
- 106,568.—HAND CORN PLANTER.—Hugh Dyer, Fort Scott, Kansas.
- 106,569.—MANUFACTURE OF INFLAMMABLE GASES FOR FUEL, etc.—William Elmer, New York city. Antedated August 12, 1870.
- 106,570.—TRUSS.—T. M. Fell, Glastonbury, Conn.
- 106,571.—HARNESS-OPERATING MECHANISM FOR LOOMS.—A. R. Field, Central Falls, R. I.
- 106,572.—COFFEE-POT.—William Funk and G. W. Port, Warrensburg, Mo.
- 106,573.—MEDICAL COMPOUND.—L. L. Gebhart, Providence Ind.
- 106,574.—VAPOR BURNER.—Ernest Gillert, St. Louis, Mo.
- 106,575.—CHURN DASHER.—W. H. H. Gorham and B. H. Williams, Greenwich, Ohio.
- 106,576.—WASHING MACHINE.—Allen Gregg (assignor to himself and Perry Gregg), Springborough, Ohio.
- 106,577.—TRACTION ENGINE.—M. P. Hall, Hinsdale, N. Y.
- 106,578.—HEAD BLOCK FOR SAW MILLS.—J. W. Handshy, Tanesville, Ohio.
- 106,579.—WHEEL CULTIVATOR.—E. D. Hatch, Oconomowoc Wis.
- 106,580.—GUARD FOR ROOFS.—S. R. Hathorn, Worcester Mass.
- 106,581.—ROTARY PUMP.—G. W. Heald and L. D. Sisco, Baldwinville, N. Y.
- 106,582.—INK OR WRITING FLUID.—Charles Hebel, Louisville, Ky.
- 106,583.—POTATO DIGGER.—Leonard Henderson, Manson, N. C.
- 106,584.—DRESSING AND TANNING SKINS.—H. A. Hibbard, Augusta, Mich. Antedated August 11, 1870.
- 106,585.—COATING METAL ARTICLES WITH INDIA-RUBBER.—Constantine Hingher, New Brunswick, N. J.
- 106,586.—SHOW CASE.—J. A. Holmes, Shopiere, Wis.
- 106,587.—ATOMIZING TUBE.—T. J. Holmes, Malden, Mass.
- 106,588.—LIQUID MEASURE AND FUNNEL.—Joseph Huff, Ironton, Mo.
- 106,589.—MACHINE FOR REPAIRING BOILER FLUES.—John Hughes, Bloomington, Ill.
- 106,590.—FURNITURE FASTENING.—L. A. Johnson, Canador N. Y.
- 106,591.—LAST.—Nathaniel Jones, Syracuse, N. Y.
- 106,592.—SCREW CUTTING MACHINE.—Edward Kaylor, Pittsburgh, Pa.
- 106,593.—EARTH CLOSET.—Christian Kieffer and J. R. D. Seeks, Wilmington, Del.
- 106,594.—GRAIN DRILL.—S. L. King and Wm. Ogden, Owego N. Y.
- 106,595.—STAY FOR CARRIAGE.—George G. Larkin, Portland, Me.
- 106,596.—PEN HOLDER.—Robert B. Lawrence, Wheeling, W. Va.
- 106,597.—SIEVE.—R. J. Mann, Dallas City, Ill.