

course silk cloth, such as commonly used in the place where the wire is placed in this case, so as to provide a space between it and the wire, and designed for the reception of the coarse bran or feed which will thus be separated from the hulls of buckwheat when grinding this grain, and be delivered into a receptacle over which the hulls are chuted and discharged to another receptacle, the object of which is to provide a bolt by which feed may be obtained separate from the hulls, which are injurious to animals, and which will, at the same time, be suitable for bolting the meal of other grain.

PACKING THE PLUNGERS OF STEAM PUMPING ENGINES.—John Clark, Harrisburgh, Pa.—This invention is intended to be an improvement upon the well-known Worthington & Baker steam pumping engine, and consists in the application of an adjustable packing, constructed so as to compensate for wear, to the central transverse partition of the barrel of such an engine, through which the plunger passes.

METALLIC ABUTMENT FOR BRIDGES.—A. Wheelock, Fert Wayne, Ind.—This invention relates to a new metallic abutment for bridges, constructed in a novel and improved manner.

NUT LOCK.—Maurice Langhorne, Washington, D. C.—This invention has for its object to prevent the turning back spontaneously of a nut after it has once been screwed on its bolt or axle as tightly as may be necessary in order to clamp the material through which the bolt or axle passes.

STEAM PUMPING ENGINE.—William H. Roberts, Mauch Chunk, Pa.—This invention has for its object to make the stroke of the piston of a steam pump uniform as to speed throughout.

KINDLING WOOD ELEVATOR.—James E. Kelsey, Brooklyn, N. Y.—This invention has for its object to furnish an improved elevator, designed especially for elevating kindling wood in the factory where it is prepared for market.

ADJUSTABLE PLOW BACK BAND HOOK.—John Seaman, New York city.—This invention has for its object to furnish an improved plow back band hook, which shall be so constructed that the length of the back band may be easily adjusted according to the size of the animal upon which it is to be used or to regulate the pitch of the plow, and which shall, at the same time, be so constructed that it will not become accidentally unhooked or catch upon the trace of the other horse.

RUBBER MOLDING.—William Miller, Boston, Mass.—This invention has for its object to furnish an improved rubber molding, which shall be so formed as to adapt it for use around windows, doors, etc., as weather-strips, to prevent the wet and cold from finding their way in around said doors and windows.

MEDICAL COMPOUND.—George V. Sheffield and John A. Sheffield, North-bright Center, Mass.—This invention has for its object to furnish an improved medical compound, simple in its composition and preparation, and effective as a blood purifier, and a sure remedy for many diseases, such as scrofula, salt rheum, dyspepsia, liver complaint, worms, jaundice, etc.

SHINGLE MACHINE.—Wm. H. H. Palmer, Rockville, R. I.—This invention relates to certain improvements in that class of shingle machines in which the blocks to be cut are held in a rotating frame, and exposed to the action of horizontal circular saws. The invention consists in various details of construction, whereby the blocks are brought into the proper alternate inclined positions, and caused to be firmly clamped while being sawed.

SKEIN WARPING MACHINE.—Samuel Campbell, Palmer, Mass., and Duncan McFarlane, Troy, N. Y.—This invention relates to a new machine which can be used to lay the yarn in skeins or in separate threads around the section-beam. The invention consists chiefly in the application of a traversing bugle or guide, which collects all the threads into a single skein, to apply the same to the section-beam. This bugle, however, and its appurtenances are removable, and when they are taken off, the machine may be used to apply the yarn in separate threads, as on the ordinary warping machine.

WHIFFLETREES AND TRACES.—J. V. Norton, Plainville, N. Y.—The object of this invention is to provide a convenient construction of harness, whereby to connect the ropes of hoisting apparatus, such as derricks, horse hay-forks, etc., with the draft animals.

HARVESTER.—J. B. McCormick, Dayton, Ohio.—This invention has for its object to improve the construction of the kind of reapers which are so constructed that the grain may be bound before being dropped from the machine, so as to make them simpler in construction, and more effective and satisfactory in operation than when constructed in the usual manner.

SAW SET.—H. A. Harris, Center, Texas.—This invention relates to a new implement which can be used for setting the teeth of all kinds of saws, by hand, and without requiring any intricate machinery.

SPRINGS FOR CARS, ETC.—C. M. Banks, Roxborough, Philadelphia, Pa.—This invention will soon be illustrated in the SCIENTIFIC AMERICAN.

FEED CUTTER AND THRASHER.—Norman McLeod, Clio, S. C.—This invention relates to new and important improvements in the machine for which a patent was granted to the same inventor, November 10, 1863, No. 83,984, which said machine is designed for use either for straw or feed cutting, or for thrashing grain, and comprises certain improved arrangements of a feeding trough, feeding rollers, and revolving cutters, working across the end of the feeding trough, and in a large case for controlling the cut straw and delivering it through a spout.

NEEDLES.—Robert J. Roberts, 416 Broadway, New York city.—This invention relates to improvements in sewing needles, and consists in providing the said needles, which are commonly made of steel, which is very liable to damage by corrosion, with coatings of non-corrosive metal, such as gold, silver, copper, or tin; the said metals being applied to the needles after they have been otherwise finished, by the common and well-known methods of gilding, plating, or tinning.

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.

W. M.—The Hudson River railroad is 144 miles long. There is a flagman for each mile, charged with the duty of examining the track after the passage of every train. It is one of the safest roads in the country. The resistance in moving a ton weight upon a level railroad is one four-hundredth of that load, or, say, 5 pounds. This is realized at slow speeds, and if the construction of track and wheels were mechanically accurate, the above resistance would be constant at all speeds. But so defective is the average construction that, at high speeds, the resistance is found to be 30 pounds and over. The reason why the Erie railway trains are so irregular, is because of the wretched condition of the track. The trains lose from two to five hours on the schedule time in passing over the whole length of the road.

R. C. P. B., of Pa.—No exact ratio between the diameter of a circle and its circumference has ever been discovered. The ratio of 7 to 22, is, however, near enough for many purposes.

A. S., of Iowa.—Annealing depends, like hardening, on molecular changes not yet fully understood. The why of many things cannot yet be answered.

S. W., of Ind.—Bricks do not increase in weight by the process of burning.

H. W., of N. Y.—A good rule in setting boilers in regard to the distance of the bridge walls, is to have the extremities of each 3 inches from the boiler. Then let the bridge walls retreat from the boiler uniformly, so that their distances from the boiler measured halfway between the extremity and the middle of the wall, multiplied into the entire length of the curve, shall give an area of 36 square inches for each square foot of grate surface for the first bridge wall, 24 square inches for the second bridge wall, and 20 square inches for the third. This when three bridge walls are used. In all cases the last bridge wall should be at the same distance from the boiler, so that if one is omitted it is the one giving the greatest area; if two, the ones giving the two greatest areas.

E. B., of Mass.—The Portland cement concrete made in the same proportions as the concrete for building, will make a good cellar bottom. There will be no danger of fire from the registers of a hot-air furnace, unless they are closed so that no air passes through. In such cases they may sometimes communicate fire to the surrounding wood-work. The registers of a furnace should never be all closed at once when a fire is burning. An iron tube well sunk near the foundations of a heavy building, would, we think, if the water flow and demand were large, be apt to cause sinking of the foundations.

M. H. S., of N. Y.—The widths of belts to drive a given horse power depends on their velocity and the surface of contact of the belt with the smaller pulley. These data you do not give, therefore your question cannot be answered. We know no such wheel as a pitch-back water wheel. The power required to drive a saw depends upon many conditions not one of which you give. You might just as well ask "how large is a piece of chalk?" You ought to secure the services of a practical mill-wright if you wish to save money and time.

R. J. P. G., of N. H.—The nature of magnetism is not yet understood. Nobody knows why certain bodies are magnetic and others are not, or why bodies under certain circumstances become magnetic and again lose their magnetism. The most that is known is that magnetic phenomena uniformly occurs under certain circumstances. All beyond this remains yet a terra incognita.

J. S., of Pa.—The cement called "marine glue" will unite leather to gutta-percha and is impervious to damp. It is made by dissolving by the aid of heat, one part of india-rubber in naphtha, and when melted, adding two parts of shellac, and melting until mixed. Pour it while hot on metal plates to cool. When required for use melt and apply with a brush.

J. H. B., of Mass.—We recommend a wire of aluminum bronze as combining in the greatest degree the qualities of strength, ductility, and cheapness. We do not think it is made in this country, but if you understand wire-drawing, and have facilities, you can make it for yourself. The alloy is nine parts aluminum and ninety parts copper.

R. L. A., of N. C.—The old idea of caloric as a material substance pervading bodies and enveloping their atoms, has been long abandoned by scientific men. You will find more modern and philosophical views in the writings of Tynhall, Grove, Helmholtz, and many others upon heat. We respectfully decline your communication.

E. C. C., of N. Y.—Any well-tempered spring not overtaxed will retain its strength an indefinite length of time. No spring should have a load sufficient to permanently "set" it. Flat coiled springs are the most convenient for driving wheel work.

H. R. A., of Conn.—The spring and the weight are the only mechanical repositories of power which retain their power for indefinite periods, and when released expend it, if we except such as require chemical action to release their imprisoned energy.

C. D. S., of N. Y.—Tin and lead in equal parts makes a good soft solder. Easier of fusion is a solder made of equal parts of tin, lead, and bismuth. For soft soldering brass tinfoil may be used and makes a good joint. Care should be taken not to employ too great heat.

C. B., of N. Y.—An excellent cement to mend cut leather is as follows: 1 pound gutta-percha; 4 ounces india-rubber; 2 ounces pitch; 1 ounce shellac; 2 ounces of oil. Melt the ingredients together and use hot.

C. C., of N. Y.—The periods of artificial incubation of different kinds of eggs are the same as when incubation is performed by the parent bird.

B., of N. Y.—Ornamental iron bars with spiral or undulating lines, are made by rolling between a pair of rollers, the axis of one roller being set at an angle to the axis of the other.

S. C. S., of Mass.—We know of no process by which you can make the rusty heads of screws bright again without injury to other parts of the screws, except by repolishing.

W. S., of Iowa.—Your letter and diagram of circles observed about the moon are interesting, but possess hardly enough novelty to warrant publication.

E. C. A. of N. Y.—Black pins are made black by japanning. The japan is made by mixing drop ivory black with anime varnish. The pins are dipped in this and the coat is baked on in an oven.

G. C. H., of Mass.—We know of no cement which will unite leather while damp and hold it strongly.

B. H. H., of Ind.—Boilers do not always explode at the top. Neither, in our opinion, do they burst from the generation of gas other than steam, which is a gas to all intents and purposes. Boilers may doubtless be sometimes strained almost to bursting by unequal expansion, but in the majority of cases steam does the work of destruction on boilers weakened by neglect or inherently weak from faulty construction.

W. D. Beecher, of Mass.—You should introduce your blower about half way between the bottom of the ash pit and the grate of your boiler furnace. If the blast is properly introduced into the chimney, provided the volume of air is sufficient, it will add about one half to the draft, but it will be much more efficient applied under the grate.

M. M., of Va.—Mink and other skins are dressed in this country before being made up. We presume this is done more or less by all large fur dealers, but we are not acquainted with any furrier that makes it a specialty.

R. A., of N. C.—A steam engine may be made to assist a water wheel when water is low by belting on to a pulley on the first line of shafting, but the water wheel would hardly take the place of a fly-wheel.

J. S. D., of N. H.—We cannot adopt your suggestion to star each new advertisement. All advertisers must be treated alike, and we wish our readers to read the advertising columns each week from beginning to end.

H. M. & Co., of Ohio.—We do not think that arching over your boiler with brick so as to lead the flame and heated products of combustion over its entire surface, adds directly to the danger of explosion, but by concealing leaks and hiding from view the condition of the boiler, it does so indirectly. Besides, as a measure of economy, it is not good practice to so set a boiler. It is well to cover the top of a boiler with some non-radiating substance, easily removed when necessary, of which felt is undoubtedly the best though more expensive than some other substances that will answer quite well. Sand or coal ashes are used often, and there are some patented compositions in market which are quite cheap, and which are more or less effective.

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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.

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

To Rent—East River water front, stores and vacant lots suitable for manufacturing or mercantile purposes, together or separate Daniel W. Richards & Co., 92 Mangin st.

Machinists and all others who use nice tools, should send for Goodnow and Wightman's Illustrated Catalogue advertised on last page.

Adam Brown's Patent (No. 98,023), animal trap. Purchasers wanted for every State and Territory not yet sold. For particulars, address Adam Brown, Bridgeport, Polk county, Oregon.

A half interest in the new and very valuable patent, Shackleton's System of Utilizing Exhaust Steam, for sale on reasonable terms. We give a few testimonials where it has been in use for some months. Moore & Sealy Brothers; Yates, Wharton & Co.; P. W. Vail & Co.; M. Gould & Son, Newark, N. J. Perth Amboy Fibre Co., 40 Broadway, N. Y. Tweedy & Co., and Randle & White, Danbury, Conn. Crane, Tubbs & Co.; A. T. Lum, and J. Y. Brokaw, Elizabeth, N. J., etc., etc. The above save from 35 to 50 per cent. For particulars apply to A. Carr, 45 Cortlandt st., N. Y., or address P. O. Box 19, Elizabeth, N. J.

Portable Pumping or Hoisting Machinery to Hire for Coffers, Dams, Wells, Sewers, etc. Wm. D. Andrews & Bro., 414 Water st., N. Y.

Best Decarbonized Cast Steel for armory uses, shafting, spindles, stay bolts, axles, set screws, keys, agricultural works, etc., 10 to 11c.; or in sheets, tough as copper, 9 to 12c., ordinary gages. Offices: 42 Cliff st., N. Y.; 14 N. 5th st., Phila. Philip S. Justice.

Wanted—A steam dispatch boat, carrying three persons only, to run in smooth water. Builders address "Gazette," Lexington, Va.

The most perfect Door and Gate Spring ever invented. County and State Rights, or the whole interest for sale. Address the Inventor E. D. Norton, Cuba, N. Y.

Benj. W. Thompson, of Williamsport, Pa., desires the address of Prof. L. I. Marcy, inventor of Sciopticon.

Wanted to manufacture light but useful articles of sheet or cast metal by contract or on royalty. A. F. Champlin, Toy Manufacturer, Westerly, R. I.

Wanted—A Thorough, Practical Machinist, one who has worked in an Oil Mill and who understands the machinery connected with the same. None other need apply. Address J. J. Powers, glass box 233 Vicksburg, Miss.

Crutch.—Chas. Wheeler, Mt. Gilead, Ohio, wishes to obtain the most approved crutch.

Two 60-Horse Locomotive Boilers, used 5 mos., \$1,300 each. The machinery of two 500-ton iron propellers, in good order, for sale by Wm. D. Andrews & Bro., 414 Water st., New York.

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

Anti-friction Horse-powers, for from one to eight horses. This power, as now made, is the easiest of draft for the amount of work done and we recommend it to all who want a strong machine. Prices reduced. Send for a circular to R. H. Allen & Co., Postoffice Box 376, New York.

American Boiler Powder—A safe, sure, and cheap remedy for scale. Send for circular to Am. B. P. Co., P. O., Box 315, Pittsburgh, Pa.

Steam Crane Cars, or Derrick Cars, wanted by Baltimore Bridge Co., 49 Lexington st., Baltimore, Md.

For fire brick, fire clay, furnace tile, glass pots, stove linings, sewer pipe, drain tile, garden vases, pedestals, hydraulic cement, plaster of Paris, etc. Address D. R. Ecker, No. 18 Smithfield st., Pittsburgh, Pa.

See advertisement of Thomas' Lathes in another column.

For Hub-mortising Machines, address Exeter Machine Works, Exeter, N. H.

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

G. W. Lord's Boiler Powder, 107 W. Girard ave. Phila., Pa., for the removal of scale in steam boilers is reliable. We sell on condition.

For best quality Gray Iron Small Castings, plain and fancy. Apply to the Whitneyville Foundry, near New Haven, Conn.

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

Foot Lathes—E. P. Ryder's improved—220 Center st., N. Y.

For tinmans' tools, presses, etc., apply to Mays & Bliss, Brooklyn, N. Y.

Mill-stone dressing diamond machine, simple, effective, durable. Also, Glazier's diamonds. John Dickinson, 64 Nassau st., New York.

Glyn'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.

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

Machinists, boiler makers, tinners, and workers of sheet metals read advertisement of the Parker Power Presses.

Diamond carbon, formed into wedge or other shapes for pointing and edging tools or cutters for drilling and working stone, etc. Send stamp for circular. John Dickinson, 64 Nassau st., 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.

Inventions Patented in England by Americans.

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

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159.—LOOM FOR WEAVING.—Isaac E. Newton, Waterbury, Conn. January 19, 1870.

182.—NEEDLES AND NEEDLE ARMS FOR SEWING MACHINES.—Mary P. Carpenter, San Francisco, Cal. January 20, 1870.

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