pocket of a great coat. She is said to be a fine sea boat, and has made two or three trips, running from Cowes to Ostend, with great speed. The owner ntends to use this little steamer for coasting on the Belgian coast.

The largest span of any truss bridge in the United States is that of the great bridge across the Ohio river at Louisville, which is destined to connect the Kentucky and Indiana shores. The bridge itself will be, when finished (and the engineer in charge expects to turn over his contract for the building some time in November), one of the most splendid structures of the kind in this or any other country. This last span covers three hundred and seventy feet, and is a marvel of engineering skill.

The Philadelphia *Press* says that the miners' strike is spreading throughout the entire coal regions. At Hazleton, Luzerne county, it has assumed a serious aspect. The strikers are laborers employed by the miners to assist them in loading and removing the coal after it has been blasted. On the 23d Aug. they stopped the pumps in all the mines except those of Pardee and Co., and it is understood that work in this mine is also suspended. The sheriff was called upon, and he proceeded to the mines with a *posse comitatus* with the determination of protecting the engineers.

It is a well-known fact that, when it is desirable to cover metals, especially brass or copper, with a strongly-adhering coating of tin, this is usually effected by boiling the articles to be thus coated with an aqueous fluid, to which is added cream of tartar, crystallized protochloride of tin, and some lumps of pure metallic tin. Dr. Hillier states that, instead of this mixture, he uses, with very good success, a solution of 1 part of protochloride of tin in 10 parts of water, to which he next adds a solution of 2 parts of caustic soda in 20 parts of water; the mixture becomes turbid, but this does not affect the tinning operation, which is effected by heating the objects to be tinned in this fluid, care being taken, at the same time, to place in the liquid a piece of perforated block-tin plate, and to stir up the fluid during the tinning, with a rod of zinc.

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.

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; beside, 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 advertisemets at $1·00 a line, under the head of "Business and Personal."

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

S. T. D., of Me.—It will take less power to work a force pump having a feed pipe larger than a discharge pipe, where the capacity of the pump is sufficient to supply the full capacity of the discharge. The reasons are, that atmospheric pressure can only force water through a pipe of given size at a given velocity, no matter how fast your pump is worked. If the pump has not capacity to force out water through the discharge pipe beyond the limit of supply through a feed pipe of given size, the feed pipe need not be enlarged; but force pumps, as a rule, work under more than atmospheric pressure, and consequently will discharge water through a pipe faster than the same sized pipe would supply it under atmospheric pressure. The friction is also less in a large feed pipe. Under the circumstances you describe, where the feed water has to be raised 20 feet and forced through an orifice of 1¼ inches, we think the feed pipe ought to be at least 2 inches. The making the feed pipe of a pump too small is a common mistake. The feed water is raised only by atmospheric pressure, 15 pounds, while a much larger pressure is applied to the plunger of the pump. Under such circumstances the water will not be supplied to the pump with sufficient rapidity to meet the demand. If the water in your pump is forced out with great velocity, you may need to employ a still larger feed pipe to obtain satisfactory results.

J. P. D., of La.—The breaking of inferior qualities of glass in in the manner described is not confined to lamp chimneys, although from the many changes in temperature to which they are subjected, it is more frequent with them. The difficulty is in the quality of the glass, both its composition and the annealing, are frequently at fault. The breaking of these chimney-glasses is a great annoyance, and it is to be hoped that some inventor will give us yet a lamp that will not require a chimney. The only way to prevent in any measure this breakage, is to anneal the chimneys yourself before using them by heating them very hot and allowing them to cool slowly, but few have appliances to do this efficiently and without risk to the chimneys.

W. C. T., of Ga.—The crystals you send have no value. They are composed of quartz or silica, which is one of the most abundant and hardest of minerals, and is a constituent of many kinds of rocks. Silica does not melt under the blow pipe or dissolve in water. The dark colored mineral appears to be a form of limestone containing iron and other minerals, and is apparently of no value. It is, of course, impossible to state the exact constituents of a mineral specimen without making a careful chemical analysis.

A. R., of N. J.—The question whether a given amount of heat will develop more steam in a given time from boiling water than from water before it boils, is yet undecided. Dr. Ure thinks that boiling favors the escape of steam. We have never seen, however, any experiments, or recorded results of experiments, which are conclusive on this point. Our own opinion is that should any such experiments be tried no difference would be found.

A. R., of Pa.—The notion that a boiler sustains more pressure at the top than the bottom is an absurd mistake. The reverse is true, as in addition to the pressure of the steam above the water, there is the hydraulic pressure of the water on the bottom. As, however, the hight of the water in a boiler is not generally great, there is not much difference. It is not a fact that all boilers burst at the top.

W. F. D., of N. H.—There would be no very material difference in the amount of friction in water flowing through two pipes of the same size and form, one made of cast-iron and the other of cement. A good cement pipe is as cheap as anything we know of equally efficient. Your other inquiry requires a mathematical calculation, for which you should apply to an hydraulic engineer inclosing five dollars.

J. O. L., of Ill.—We do not know enough of the device you describe to say whether it contains any points of novelty. The idea of propelling a wind wheel by upward currents through a chimney stack is not by any means new, but the method of doing it in this case may be. There is no doubt that a considerable power might be obtained in this way in a tall chimney, but it would be at the expense of the draft.

T. P., of La.—The species of silk worm you ask about, the natural food of which is the foliage of the oak, imported to the southern part of Austria and France from Japan, have not, to our knowledge, ever been brought to this country. Should any of our correspondents happen to know of a trial of this species in the United States, we should be happy to hear from him.

F. K. H., of Ohio.—To make the finest piano finish on walnut chestnut, or other open and coarse-grained woods, it is usual to use a coarse kind of varnish called scraping varnish. A heavy coat of this is laid on the raw wood, and then the surface is scraped with steel scrapers. It is then varnished with a better quality of varnish, rubbed down perfectly smooth with pumice stone, and finally flowed with the best kind of varnish.

E. P. A., of S. C.—The advantages of the hydrostatic press over all others known for certain kinds of work, are enormous power in small compass, with less friction and perfect control, both as to the extent of motion in the platen and the amount of power applied. Your device is not new in principle. A patent would not be granted for it.

C. W. C., of Pa.—The circumstances which compel the removal of your chimney stack so far away from the furnaces are unfortunate, as they will compel you to run your chimney up higher to get the proper draft. We should think thirty feet additional hight would not more than fully compensate for the difference in position.

W. H. C., of N. Y.—Simply exhausting a receiver by means of an air pump, can never give any pressure upon its exterior greater than it sustains at all times, both before and after exhaustion. It simply removes atmospheric pressure from the interior.

S. T. B., of Ga.—One of the minerals you send appears to be a soft conglomerate of quartz and feldspar, of no value. We find gold in the other specimen, and it appears to be gold-bearing quartz which may be valuable. You should have it analyzed.

J. W. C., of Mich.—You can not profitably extract the sugar from cream sirups which have soured.—The cost of binding the SCIENTIFIC AMERICAN in this city is $1·50 per volume.

"Pioneer Maggie."—A correspondent wishes to know the name of the builder of the above-named yacht. We do not know, but Henry Steers, of this city, builds first-class yachts.

W. S. P., of Mass.—The origin of yeast is obscure, like the origin of every other existence. Assuming the existence of a first cause, we maintain that it is not a subject for physical inquiry. Somewhere the mind must stop at a cause uncaused, a subject for faith not demonstration.

E. G. F., of Me.—The crank is to be regarded as a lever only, the fulcrum being the center of the axle, and the resistance being applied at the circumference of the axle, the point of application of the power being the center of the crank-wrist.

Inventions Patented in England by Americans.

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

PROVISIONAL PROTECTION FOR SIX MONTHS.

2,350.—NUMBERING REGISTER.—G. Sickels and J. H. Thorndike, Boston, Mass. August 6, 1869.

HOLDERS FOR THE CHIMNEYS OF GAS BURNERS.—Elliott P. Gleason, New York city. August 6, 1869.

2,378.—MEANS FOR CARRYING OR STORING EGGS.—P. P. Josef, Buffalo, N. Y. August 9, 1869.

2,392.—ADDING APPARATUS.—C. Henry Webb, New York city. August 9, 1869.

2,392.—TREATMENT OF CONGLOMERATES OF CAST IRON, ETC.—T. S. Blair, Pittsburgh, Pa. August 10, 1869.

2,416.—MACHINERY FOR CHARGING GAS RETORTS.—N. O. J. Tinsdale, New Orleans, La. August 12, 1869.

2,425.—EXTRACTING COPPER FROM ITS ORES.—T. S. Hunt, Montreal, and J. Douglas, Jr., Quebec, Canada. August 13, 1869.

Recent American and Foreign Patents.

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

VALVE GEAR FOR STEAM ENGINES.—Charles L. Inslee, New York city, and Wm. H. Inslee, Newark, N. J.—This invention relates to new and useful improvements in valves, ports, and operating devices, whereby it is designed to provide a simple and cheap plan of construction, and a more efficient arrangement of the same for operation, than any now in use. The invention consists in an improved arrangement of steam chest passages and pipes, steam and exhaust balance valves, and operating devices.

TRANSPORTATION CASE FOR PACKING CANS.—Edwin Norton, Toledo, Ohio.—The object of this invention is to provide an improved packing case for the protection of tin shipping cans, such as are used for shipping oil and other substances, and are sent back and forth, both filled and empty, and are thus subjected to damage from careless handling and other causes. The invention consists in a packing case made of wood, or other suitable substance, permanently inclosing the can, and provided with a sectional lid, cover, or door, arranged to open a sufficient space only at the nozzle, to permit of readily filling or emptying the can, the said cover or door, being arranged at any position in the case, to coincide with the nozzle of the can.

IRON MANUFACTURING APPARATUS.—John Coyne, Allegheny City, Pa.—This apparatus consists of a circular carriage arranged to revolve on a circular table, in a horizontal plane, and provided with receiving and discharging molds, which move slowly past the tap of the furnace, and receive the molten metal flowing therefrom, and convey it to the place of discharging as it cools, and from which it is discharged by the dumping of the molds by the attendant.

SHAFT AND POLE HOLDER.—James S. Totten, Lebanon, Ohio.—This invention comprises the application of holding straps of any form or arrangement, when adapted for ready attachment, to the spring bars and shaft cross bars, by buttons connecting the one, and by buckling or looping around the other.

HOSE-PIPE NOZZLE.—Archibald Williscroft, Wilmington, Del.—This invention has for its object to furnish an improved nozzle for hose pipes, which shall be so constructed and arranged that it may be easily and quickly adjusted to throw a larger or smaller stream of water as may be desired.

MILL BURR.—George W. Wilson, Tolono, Ill.—This invention has for its object to enable the burrs of mills to be conveniently and easily balanced to a perfect standing, or running balance, by means of a device simple in construction and easily applied and adjusted.

PEAT MOLD.—Kingston Goddard, Richmond, N.Y.—This invention has for its object to furnish an improved mold for pressing wet peat into bricks or blocks for fuel, which shall be so constructed as to allow the water to escape while retaining the fine particles of the peat.

PLOW.—Edward Wiard, Louisville, Ky.—This invention has for its object to improve the construction of wrought iron, steel, and cast-iron plows, so as to make them simpler in construction and more efficient in use.

PLOW.—Edward Wiard, Louisville, Ky.—This invention has for its object to furnish an improved plow, which shall be so constructed and arranged that various kinds of plow plates may be used with it, according to the particular kind of plowing required to be done.

MANUFACTURE OF ILLUMINATING GAS.—Cleaveland F. Dunderdale, New York city.—This invention relates to a new and important improvement in manufacturing gas for illuminating purposes.

PUDDLING FURNACE.—J. B. Robinson, Duncansville, Pa.—This invention relates to new and important improvements in puddling or boiling furnaces, whereby they are rendered much more durable and more easily managed than such furnaces has hitherto been.

WHEEL HUB.—A. S. Woodward, Pepperell, Mass.—This invention relates to a new and useful improvement in metallic hubs for carriage, wagon, and other wheels, and consists in forming a hollow or shell hub cast in a single piece.

BAG HOLDER.—J. N. Collins, Menasha, Wis.—This invention relates to a new and useful improvement in the method of holding bags for filling with grain or other articles.

DIRECT IRON-PRODUCING FURNACE.—William Griffith, Jr., Pottsville, Pa.—This invention relates to a new furnace for reducing and producing iron directly from the ore by a continuous operation, and has for its object to reduce the expense of, and to economize time during the operation. The invention consists chiefly in arranging a deoxidizing chamber above the welding or puddling furnace, said chamber being heated by the gases that escape from the fire in the said furnace.

PIN CATCH FOR BREASTPINS AND SIMILAR ARTICLES.—Samuel Ayres, Danville, Ky.—This invention has for its object to so construct breastpins and other similar articles, such as badges, etc., that they can be secured to garments by means of an ordinary pin, in a secure manner, and with great convenience.

REVOLVING SPRING GUN.—Charles Bunge, Geneva, N.Y.—This invention relates to a new spring air-gun, which is so constructed that it can be readily set to automatically place a charge into the barrel, or at least in line with the same; it being provided with a reservoir which contains a suitable large number of charges. The invention consists chiefly in the combination of a perforated revolving feed plate with a stationary supply or reservoir chamber, from which, as the feed plate is turned, the balls constituting the charges, are transferred into the apertures of the feed plate.

SPINNING FRAME.—Wm. H. Brothers, Winooski, Vt.—This invention relates to a new spinning jack, which is so arranged that the mule or carriage will receive its motion by automatic machinery, without requiring any personal attention of the operator or attendant. The object of the invention is to do away with the necessity of working the shipper bar for reversing the motion of the mule, and to provide automatic means for changing the motion. The invention consists in the construction of devices for changing and reversing the motion of the mule for imparting to the thread the necessary drawing and twisting motion, and the requisite tension while twisting, and for operating the whole mechanism.

PRINTING TELEGRAPH MACHINE.—Charles T. Moore, White Sulphur Springs, West Va.—This invention consists of a set of sending apparatus, a set of receiving operating apparatus, and a set of apparatus for "calling" the office or station to which the message is to be sent, all conveniently arranged upon a stand, and adapted to work in conjunction with similar machines at all the stations, and capable of communicating with all the stations simultaneously, or with only one, as required.

PLANTING AND CULTIVATING MACHINE.—Nicholas Whitehall, Newtown, Ind.—The object of this invention is to provide a machine capable of planting and cultivating corn or other grain planted in a similar way, which may be readily adjusted to the condition of a planter or cultivator.

NAIL MACHINE.—F. Davison, Richmond, Va.—The object of the present invention is to provide an improved feeding apparatus, whereby the plates will be self-actingly fed in succession from a feed box containing a number of plates; also, an improved arrangement of vibrating feeding apparatus whereby the plates are so presented as to ensure the disposing of a sufficient amount of metal at the wide ends of the blanks and delivery of them to the griping dies to form the heads which are alternately on opposite sides of the griping dies; also an improved arrangement of carrier guides for conveying the blanks from the cutters to the griping dies.

PRESSES FOR COTTON AND OTHER SUBSTANCES.—John Simpson, Chester, S. C.—This invention consists in an arrangement of two followers to be moved toward each other by pinions working into toothed racks upon each end of the followers.

TACHYPODOSCAPH.—Jules Marie de la Rue, Nogent sur Marne, France.—This invention is composed, according to the use for which it is intended, of two, three, or more boats or floats, which are connected together by cross bars, and so held apart as to allow the driving paddle wheels to be fitted between them.