

## NOTES ON FOREIGN INVENTIONS AND DISCOVERIES.

*Substitute for Brick and Stone for Buildings*.—A patent has been taken out by L. Standfast, of London, for a composition of burnt clay, iron dust, brick dust, gravel, lime and sand mixed with hemp and hair, so as to form a cement to be laid up in a suitable frame to constitute the walls of houses, thus forming united solid walls when dry, instead of walls made with many small blocks. This application of gravel cement for building is similar to that which has been practiced in many places in America, in building houses with walls composed of gravel and mortar.

*Steam Boilers*.—R. Rixby and P. W. Lowe, have obtained a patent in England for constructing cylindrical boilers, which have two flues, in such a manner that the two fire grates are placed in the flues and connected by a passage through which the products of combustion pass from one fire to the other alternately. The object of this arrangement of grates is to prevent smoke by consuming it. Fresh coals are fed alternately into the two furnaces, the fires of one being kept at a bright white heat, when the other is supplied with bituminous fuel. The smoke which arises from the newly-fed furnace is conducted through the second fire, where it receives a supply of air by orifices in the grate door, and the smoke then takes fire and is consumed.

*Pillars for Coal Mines*.—The pillars heretofore generally used in coal mines, for supporting the roofs, have been composed of wood. These decay and are the cause of frequent accidents to miners by permitting portions of the roof to fall. Where fires take place in mines by explosions of gas, timber pillars being very combustible, are generally burned up, thus also causing the roof to fall, the debris of which must be cleared away before mining operations can again be commenced. A patent has just been taken out in England, by W. O. Johnston, for the use of cast-iron pillars formed in sections, for supporting the roofs of mines, as a substitute for those heretofore made of wood. These will not decay and they are incombustible.

*Manufacture of Alum*.—The sulphate of alumina (alum) of the arts is manufactured from alum shales, or clay, by treating them with sulphuric acid in a cold state. A patent has been obtained by A. A. Croll, of London, for making alum by the following process, which is held to be superior to the old methods of operation. Aluminous shale is first roasted and then reduced to powder; it is then subjected to a dry heat of 300° Fah., in a suitable apartment, and while thus heated the sulphuric acid, of about 1.7 in strength and heated to 300° Fah. also, is admitted and caused to flow over the powdered shale. About equal weights of powdered shale and sulphuric acid are used. When the action of the sulphuric acid ceases, the product is sulphate of alumina in the form of a cake, which is well adapted, in solution, for mixing with pulp in the manufacture of paper. Sulphate of alumina is thus made more rapidly than by the old modes, and a greater quantity is obtained from the same amount of shale.

*Coppering Iron Ships*.—A great drawback to the admitted superiority of iron ships over those constructed of wood, is the liability of their bottoms to become foul and thus obstruct their course through the water. C. W. Lancaster proposes a system, and has obtained a patent for it, to coat the iron with a thick stratum of asphalt, and while it is yet soft, to place thin copper sheathing on the outside, and thus cement it to the vessel. Small screw studs are also inserted in the iron plates and made to project outwardly, and corresponding holes in the copper sheets pass over the studs, thus uniting the sheathing very firmly to the iron plates, while the asphalt coating separates the copper and iron, thus obviating all galvanic action between them.

*Guano Polishing Powder*.—A patent has been solicited by W. Clark, of London, for a new polishing material for steel and other metals, composed of the extract of guano 100 parts, fine tripoli 25 parts, common sea salt 10 parts, and wheat flour 12 parts. These substances are mixed together, dried and used for the polishing metals and glass. Diluted alcohol is the vehicle used in applying the powder to the surfaces of the articles to be polished.

*Fire Bridges of Boilers*.—Instead of using a fire

bridge of brick in boilers in the usual way, H. Harlow uses a fire bridge composed of a stack of small thin tubes connected with the water space in the boiler.

## RECENT AMERICAN INVENTIONS.

*Table and Camp Chest Combined*.—The object of this invention is to combine a table and camp chest in such a manner that the table, when not in use, may be folded up and inclosed within the lid of the chest without at all interfering with articles that may be placed within the body of the chest, and also be taken out from the lid, unfolded and adjusted for use, without removing or interfering in the least with other articles in the chest. Invented by H. W. Ball, of New York city.

*Machines for Cutting Welts for Boots and Shoes*.—The object of this invention, patented by S. D. Tripp, of Stoneham, Mass., is to obtain a machine for cutting welts for boots and shoes, which will automatically adjust its cutters so that the leather strips which are of rectangular or approximate form will be cut precisely through the center and in an oblique direction, the cutter being so moved or operated as to conform to the different thicknesses of each individual strip, so that the two pieces which are formed of each strip will correspond precisely in their thickness, whatever the thickness of the strip may be. The invention consists in using, in combination with a pair of rollers, a cutter, constructed in a novel manner and connected with the axis or shaft of one of the feed rollers, which is a yielding one, in such a way as to be moved or adjusted relatively with the leather strip to be cut, and effect the desired end.

*Improvement in Ships, &c.*—In war vessels built according to the plans and models in present use, clad with iron or steel armor plates and propelled by steam, unless they are of too small size to be safe and formidable sea-going vessels, it is impossible to obtain carrying capacity sufficient for the battery and for machinery powerful enough to obtain high speed, with coal enough for several days' service, without so great a draft of water as to render it impracticable for them to enter most bays, harbors, rivers and other inland waters. The principal object of the first part of this invention is to overcome this difficulty, and to this end this part of the invention consists in the construction of a vessel with two stern posts, having between them a double-inclined run and midship keel, and with two screw propellers working one through each stern post, by which construction the vessel is enabled to be made with a very flat floor, and great width of beam extending very far aft, and so has its buoyancy and carrying capacity increased without interfering with its propelling or steering qualities. The same construction is also applicable, with corresponding advantage, so far as lightness of draft and carrying capacity are considered, to vessels for other than war purposes. The second part of the invention consists in the construction of a vessel for the purpose of making it serve as a battering ram against other vessels or structures, with a pointed prow terminating near the water line, and having an inclination in every direction, viz., upward, downward and laterally toward the bow of the vessel, such prow not being simply put on the outside of the vessel, but being built with and forming a part of the vessel, and thereby having great strength and stability. This prow is to be covered with iron or steel armor plates, and heavily clad with steel at its point. Invented and patented by John B. Sardy, of New York city.

*Improved Water Meter*.—This improved meter, patented by John E. Van Winkle and Joshua Mason, of Paterson, New Jersey, consists of a sector-shaped box, divided into two chambers, and fitted to oscillate upon a stationary hollow shaft, which contains inlet and outlet passages, and constitute a valve for the induction and eduction of the water or other fluid to and from the chambers, that the said box may derive an oscillating motion from the overbalancing of one and the other chamber alternately, as they are alternately filled and discharged. The oscillating box is so combined with a registering apparatus as to have the number of its oscillations registered, and this regulation constitutes a registration of the quantity of fluid passing in and out of it. An important feature of the invention consists in an adjustable counterbalance, so applied to

the oscillating box as to serve as a means of adjusting the meter to measure correctly.

*Stop Motion for Power Looms*.—This stop motion is designed more particularly for looms in which two or more shuttles are employed, either with rising and falling, or, as they are called, drop shuttle boxes, or with rotating shuttle boxes. It is composed, in part, of feeling forks attached to the breast beam of the loom, and grids attached to the lay, in some degree like the fork and grid used in the ordinary filling stop motion of plain looms, but a fork and grid are used on each side of the loom instead of on one side only. One feature of the invention consists in a peculiar contraction of and mode of applying and operating the grids, whereby they are made to act only upon the thread of the shuttle that is in operation, and passing into one of the boxes, and not upon the threads of the shuttle or shuttles that are to rest in the boxes. Another feature consists in an improved mode of combining one of the feeling forks with the lever by which the belt shifter is thrown out of its notch to throw the loom out of gear when the filling has broken or given out. Another feature consists in the combination of the two feeling forks, arranged on opposite sides of the loom, to operate upon or in connection with the same lever, for throwing out the shipper. And the last feature consists in an improved positive stop mechanism, to stop the loom after it is thrown out of gear. Patented by William Graichen and Charles Hoffman, of Clinton, Massachusetts.

*Mode of Securing Chimneys to Lamps*.—The object of this invention is to obtain a means whereby glass chimneys may be attached to lamp tops in a secure manner, and without danger of the same being broken while in the act of securing the chimney to the lamp top, or by the expansion of the chimney by heat. It consists in the employment or use of an angular metal clamp, provided with a hinge or joint and inclined projections, in connection with loops or lips attached to the lamp top, the clamp being fitted on a flange at the lower end of the chimney, and the clamp secured to the lamp top by means of its inclined projections fitting under the loops or lips on the lamp top. Patented by Alfred Bliss, of New York city.

*Grain and Grass Harvester*.—This invention consists, first, in placing a wheel within the shoe at the inner end of the finger bar, for the purpose of facilitating the passage of said shoe over cut grass or grain which may lie in its path. It consists, second, in an improvement in the construction of the harvester, whereby a ready egress is allowed for moisture and any trash which might find its way beneath the sickle, the choking or clogging up of the latter being thereby prevented. It consists, third, in a novel arrangement of parts for elevating the finger bar and sickle, whereby said elevating device is not allowed to interfere in the least with the turning of the finger bar and sickle. It consists, fourth, in a novel and improved way of constructing the main frame of the machine, whereby the same may be very economically put together, and rendered very strong and substantial. Patented by John Powers and E. M. Smith, New York city.

*FRESH MAPLE MOLASSES*.—A correspondent of *Field Notes* gives the following:—Maple molasses well made and put up in cans right from the kettle, and hermetically sealed, as you would can and seal fruits, will keep as fresh as when first boiled from the sap, and this is decidedly the best plan for keeping, as when made in cakes, if exposed to the air, it will lose somewhat of the peculiarly delightful flavor for which it is so prized, and is often injured by insects. All this is obviated by canning while hot. To many families who do not make it on a large scale, this need be but little expense, as the cans that have been emptied through the winter can be used until autumn fruits demand them again. Put up your best in this way. Where large quantities are made for market, the buyers must select and can for themselves.

At the last meeting of the Illinois State Agricultural Society, at Springfield, Mr. J. H. Smith, of Quincy, exhibited one tun of sugar made by himself, from northern cane. He states that about seven-tenths of the sirup runs to sugar, and that he can make the sugar at five cents per pound, and molasses at twenty-five cents per gallon, and realize more profit from an acre of cane than he can from an acre of corn.