RECENTLY PATENTED INVENTIONS.

Pertaining to Apparel.

SHIELD.—MAUD E. PATTERSON, Baltimore, Md. This shield is for attachment to a corset to prevent the upper ends of the busks from exerting an undesirable pressure against the wearer's body. It is readily fastened in place on the corset and disconnected from one side thereof whenever it is desired to open or close the corset. By use of the shield all undue chafing by the upper end of the corset busks on the body is entirely removed.

GARMENT-FASTENER.—J. H. WHITE, Electra, Cal. The fastener is intended for use in joining the parts of garments and other fabrics. It is particularly useful as a skirt-fastener. The inventor's object is to provide a fastener the parts of which may be engaged with each other by a very slight movement and which when engaged will hold securely.

STICK-PIN RETAINER.—R. CORN, New York, N. Y. One of the purposes of this improvement is to provide a device especially adapted for use in connection with stick-pins, being removably applied to a pin after it has been passed through the scarf or tie or similar article to prevent withdrawal of the pin without the wearer's knowledge, the device being concealed when worn.

SLIPPER-SOLE.—I. GREENBERG, New York, N. Y. It is the principal aim of the invention to provide means whereby the upper and sole can be secured together without passing any threads through the sole or exposing them in any way to hard usage and also avoid the use of any material in conjunction with the sole that would interfere with its pliability.

Electrical Devices.

INTERRUPTED CONTACT FOR THIRD-RAIL SYSTEMS.—A. S. KATZMAN and H. A. VIZETHANN, New York, N. Y. This invention relates to contact mechanism and more particularly to contact mechanism suitable for use upon third-rail trolley systems and in all relations where it is desirable to have a conductor which is normally dead, but which is energized momentarily upon the approach of a member of rolling-stock properly equipped for utilizing the current.

ELECTRIC SWITCH.—G. W. LIDEN, New York, N. Y. The improvement refers particularly to "knife-blade" switches, and has for its object to provide a readily-applied latch which will automatically lock the switch as it is closed and automatically unlock it as it is opened. A strong connection is made between the fuses and their binding-posts, necessitating the use of but a single screw.

Of Interest to Farmers.

LAWN-MOWER.—J. A. SWENSON, New York, N. Y. The mower while capable of use for the ordinary operation of mowing lawns is especially designed for use in clipping around the edges and in places inaccessible by ordinary lawn-mowers. The invention locates the cutting-knives in such a position that they will cut to the surfaces of fences, trees, and other obstructions and provides means whereby the cutting-knives can be readily manipulated by hand.

BALING-PRESS.—W. D. IVY, Memphis, Tenn. This baling-press is such as is used for baling hay. The object of the invention is to produce a press of this class which may be operated by a rotating member, so that the plunger of the press will make two advancing movements for one revolution of the rotating member. Means provide for facilitating the forming of the bale.

REELING DEVICE.—C. A. HADLAND, Bennington, Minn. One purpose of the invention is to provide an improvement upon the reeling device for which Letters Patent were formerly granted to Mr. Hadland, the improvement adapting the attachment for use on all kinds of ground, since an especial chain-drive is adapted thereto, whereas in the construction set forth in the said patent a friction-drive is employed, and in very tenacious soil such a drive is not reliable.

HAY-RAKE.—J. W. HURD, Dona, Va. The purpose of the inventor is to provide a folding horse hay-rake whereby it can be made long or short, as desired, and be equally effective, under either adjustment. It provides a construction of rake wherein the various parts are not disconnected when effecting the adjustment, thereby preventing the loss of the adjustable parts.

POTATO DIGGER AND ASSORTER.—J. P. HERBERT, H. S. PRICE, and E. J. PRICE, New Brunswick, N. J. The principal objects of the invention are to provide a vehicle which is adapted to be drawn by horses or any kind of motive power with means for taking up potatoes or other roots on the wheels of the vehicle, delivering them to a series of assorting-screens on the body of the vehicle, and finally discharging them in a series of receptacles arranged at a convenient place for receiving different sized potatoes.

WEED-CUTTER.—R. W. STEELE, Twin Falls, Idaho. The cutter is drawn with the knives lowered into the ground from one to four inches. The weeds are cut off beneath the surface, and the fingers loosen them from the soil and leave them so that the attachment behind the finger-bar may easily pile them into windrows on either side of the cutter. Means are used to set the knives to cut at any depth, and to level the frame to a horizontal plane regardless of the position of the tongue. Thus, one knife acts as a landslide for the other and prevents all side drafts.

STALK-CUTTER.—T. M. YARBROUGH and R. C. BRADLEY, Bossier Parish, La. The invention is in the nature of a machine to be drawn across the field by a double team for the purpose of cutting into small pieces the standing stalks of cotton, corn, etc., after the crop has been harvested. It requires no more power than the ordinary plow. It tops and cuts millet, sorghum, okra, and other products. Mechanical power can be used.

PLOW.—E. R. LOVELL, Brookhaven, Miss. The invention refers particularly to attachment and support of colters. By adjustment the plow runs shallow or deeper. The rear end of the draft-bar is bent upward and the upwardly-extended shank of the colter is detachably and adjustably secured to it by means of a U-shape screw-bolt, the same embracing the colter-shank and the rear-end mentioned. The colter also requires to be supported to a point below the beam, and for this purpose a brace is employed. It also supports the colter's rear arm and serving as a grass rod or fender. The colter is adjusted higher or lower by means of the screw-bolt.

Of General Interest.

CIRCULAR-DISTRIBUTER.—R. G. FRASER, Philadelphia, Pa. The device holds circulars and the like in such a position that they can be readily withdrawn by the public; and the principal objects of the invention are to provide means whereby only one can be withdrawn at a time and means for always holding a circular or similar article in a position where it can be readily abstracted from the holder.

DROP-REGULATING BOTTLE.—A. WILKIN, New York, N. Y. The invention pertains to improvements in bottles, and more particularly to means whereby the contents may be removed therefrom in drops of uniform size. The object is to provide a means of the character above referred to and in which the inclination of the bottle does not affect in any way the size of the drops.

TUNING DEVICE.—C. S. WEBER, New York, N. Y. The device is for pianos and similar stringed instruments wherein a metal plate is used to resist the strain of a number of metallic strings. The object of the inventor is to do away with the wooden tuning-block or wrest-plank used to-day almost exclusively, either shielded by the iron plate or exposed, to keep the tuning-pins of a piano from slipping.

DISPLAY-RACK.—J. E. TAYLOR, Jackson, Miss. In this case the improvement refers to display-racks, and the object of the invention is the production of a device of this class which is adapted to support a plurality of mattresses and which will enable the same to be drawn out into a convenient position for inspection.

WATCH-GUARD.—A. SCHNEIDER, New York, N. Y. The object in this instance is to provide means adapted to prevent a watch from falling out of the pocket or being removed therefrom without one's knowledge. The clamping-arms have the resiliency to permit the arms to be snapped onto the bow of a watch and the interior surface of said arms is curved to correspond with the outward curvature of the watch-bow, so as to prevent lateral displacement of the arms on the bow.

STEP-LADDER BRACE.—E. ROWE, Indiana, Pa. The intention in this case is to produce a brace which is adapted to brace the legs of the ladder so as to hold the same in upright position. The resiliency of the brace, together with its construction, brings about a desirable "give" or play, which has a tendency to prevent the ladder from "walking" or moving laterally when the weight upon it shifts.

PROCESS OF FORMING BUILDING MATERIAL.—J. OLTMANNS, Rintheim, Baden, Germany. The process is one of manufacturing slabs or blocks of material for use in the construction of walls, partitions, ceilings, floors, and the like, the object being to provide a light material but possessing great firmness and strength, that will be practically a non-conductor of heat and cold, that will not be influenced by changes in temperature, fire and sound proof, and that on account of cheapness of raw material may be produced at low cost.

URINAL.—A. JOHNSON, Lincoln, Neb. In the present patent the purpose of the invention is the provision of an automatic flushing device for urinals, one which will be economic in the use of water and which will insure at all times sanitary conditions. A simple and economically constructed mechanism accomplishes the above-named results.

VETERINARY'S OPERATING-TABLE.—W. HOUSAM, O'Fallon, Ill. In this invention the improvement relates to operating-tables, and especially to such as are used by veterinary surgeons. The object of the inventor is to produce a table of this kind which may be readily operated so as to enable the animal to be securely held and brought into a convenient position for the operation.

COMPOUND FOR CLEANING AND POLISHING METALS, PORCELAIN, GLASS, ETC.—C. J. BARRENPOHL, New York, N. Y. This is an improved compound for cleaning and polishing metals, porcelain, glass, etc., without injury to the same, and giving them a cleaner appearance and a higher luster than has been hitherto obtained in compositions for this purpose, and it accomplishes this with little muscular exertion of the user.

COMPOUND FOR CLEANING AND POLISHING WOOD SURFACES.—C. J. BARRENPOHL, New York, N. Y. Primarily the objects of the invention are, to produce a compound that will not only effectually remove finger-marks and other collected dirt without affecting the wood, but will simultaneously with its application give the surface a high retaining polish and in addition close up the small openings in the grain of the wood, thus performing the function of a "wood-filler."

BUCKLE.—L. SANDERS, New York, N. Y. One purpose of this invention, which relates to buckles having frictional locking-tongues, is to so construct such a type that the tongue will automatically adapt itself to straps of different thicknesses, rendering the buckle particularly adaptable as a belt-buckle. It is conveniently and expeditiously operated.

CLOTHES-PIN.—S. PASQUALIN, New York, N. Y. The invention is an improvement in clothes-pins, relating to those more particularly in which spring clamping-fingers are employed. One object of the inventor, among others, is to simplify and reduce the cost of this form of pin, especially avoiding the use of pivot-pins and rendering it more effective in operation than those hitherto devised.

PIPE-CLAMP.—L. KRUEGER, E. J. KINKLER, and O. H. CARMICHAEL, Beeville, Texas. This pipe-clamp is an improvement for lowering and raising tubes, especially well-casings, shafts, and the like. It is of simplified construction and will when in operation automatically grip and lightly clamp the pipe or shaft and can be readily removed therefrom when desired.

SOAP-HOLDER.—J. EVANS, JR., and G. A. STEINER, Salt Lake City, Utah. Generally stated, the invention consists of a chambered head on which a spring-pressed piston is slidably mounted, the latter being adapted to engage with and lock a pin which is passed through the soap and thereafter inserted in the head in alinement with the movement of the piston. The locked bar of soap may be suspended in public and private toilet rooms, and the soap can be neither wasted nor carried away.

WHISTLE-ORGAN.—J. O. EARLEY, JR., Richmond, Va. When the pedals are actuated, air is pumped by bellows by way of tubes into a reservoir, from which air can pass by a tube into the main wind-chest. On pulling one, two, or more stops, air passes from the above chest into another chest, and on playing the keys corresponding caps are moved from the entrance ends of corresponding whistles, the latter sounding to produce sounds corresponding to the keys pressed. Releasing the keys, they return to position, and the caps move back over the entrance end of whistles to cut off the latter's air. By manipulating the keys according to the music, the piece is performed the same way as if organ-pipes or piano-strings were sounded in the usual way.

DEVICE FOR RENDERING BOTTLES NON-REFILLABLE.—V. CLARK, Dryad, Wash. Mr. Clark's improvement relates to that class of bottles designed to prevent the clandestine and fraudulent refilling of bottles, and has for its object to furnish a cheap and effective means of preventing such refilling without detection. The guard prevents refilling without breaking the bottle or parts of the guard, as they are all made of glass.

GRAVE-FILLER.—W. S. PENDLETON, Shawnee, Oklahoma Ter. The invention resides in a form of hopper intended to hold all the removed earth of one grave and a peculiar supporting-truck, the latter employing transversely-arranged axles at its ends having supporting wheels suitably arranged on their ends, whereby to facilitate movement of the device as required during the grave digging and filling operation.

BOAT-PLUG.—G. W. RENTON, Brooklyn, N. Y. The object of the present invention is to provide a construction whereby to overcome difficulties resulting from clogging of parts by the painting of the boat and also means for preventing the cap from becoming detached from the fixed or body portion of the plug, together with the construction of the cap, whereby it will close the opening when the cap is screwed down. It is an improvement in plugs—such, for instance, as that shown in the former patent granted to Mr. Renton.

DIRT-CARRIER.—J. H. MORAGNE, Honolulu, Territory of Hawaii. In operation the rings of the bails are placed upon angular portions of the hanger, the trigger is elevated and engaged by the eye of the rocking lever, after which the bucket is filled and elevated to the track. At the unloading place means provide for dropping the bucket until the rope secured to the bottom thereof becomes taut, when its vertical axis is reversed and the load drops. Either a curved or straight rim wheel can be used with the track, the curved when lifting the bucket from the excavation or using a cable in connection with the track. A guard prevents derailment of the hanger-wheel.

SPRING DEVICE FOR PRODUCING DIFFERENTIAL MOVEMENTS.—W. V. GILBERT, 30 Lonsdale road, Wanstead, N. E., London, England. The device is an embodiment of variations of a basic invention for which Mr. Gilbert formerly filed an application for a United States patent. By the construction of the device, the inventor is able to obtain differential movements of two wings or of either wing relative to the other, or of either end or outer corner of each wing relative to the other end of the same, also of the triangular back components to each other. The device in practice can be used in various positions.

BUTTER WEIGHING AND COMPUTING DEVICE.—D. F. CURTIN, St. Louis, Mo. The object of this invention is to produce a device which shall be simple and convenient and one by means of which a roll, cube or pat of butter may be cut of a predetermined size and weight and in which the price of the butter, etc., is immediately computed.

Hardware.

SQUARE.—L. V. SHEPHERD, Los Angeles, Cal. The object of the invention is to provide a square for the use of carpenters, machinists, and other mechanics, and arranged for convenient detachment of the members to permit the mechanic to readily carry the square in the tool-chest, and to allow of quick and accurate assembling of the members whenever it is desired to use the square for its legitimate purpose.

POCKET-KNIFE.—S. SAUNDERSON, Northwood, N. D. The object in this instance is to provide a knife having a blade capable of being concealed and locked in the handle and adapted to be extended for use and held locked in the extended position without the use of springs and to prevent accidental closing while using the knife for its intended purpose.

GAGE.—C. A. GOOD, Jonesboro, Ark. Primarily the invention is to be used for marking beveled siding or weather-boarding, so that a perfect fit can be made at the joints, where the boarding joins the corner boards, window-frames, etc. The object is to overcome numerous difficulties in making neat joints and to correctly indicate the line on which the siding is to be cut, enabling a perfect joint to be obtained.

SWIVEL.—R. H. BEEBE, Kalama, Wash. The members of the device may be quickly assembled and taken apart, and in operation the attaching members are held secured in position, yet adapted to rotate independently of each other. The bearings for the flanges of the eye or hook are protected from dirt and other foreign matter, thereby enabling operation without unnecessary friction and adding to the wearing qualities of the device and enabling the swivel to last much longer in use than those of ordinary construction.

Heating and Lighting.

SAD-IRON HEATER.—H. W. RUSSELL, Manchester, N. H. The direction of this invention is in heaters designed to heat sad-irons. The object is to provide a gas-heater which is adapted to be used with the least possible expenditure of gas, to render the use thereof absolutely safe, and to enable the heater to be used without generating the offensive odor common to devices heretofore used.

Machines and Mechanical Devices.

PIANO-ACTION.—J. AMMON, New York, N. Y. The object of the inventor is to provide a piano-action, arranged to simplify the action by dispensing with the bridle and bridle-wires, and at the same time insuring a proper return movement of the hammers without danger to the coacting parts, and to cause a quick response of the hammers according to the touch on the keys.

ORE-CONCENTRATOR.—A. C. CAMPBELL, Asheville, N. C. In the present patent the invention has reference particularly to pneumatic ore-concentrators, an object being the provision of simple construction and by means of which the work may be rapidly carried on and a thorough separation secured.

CHUCK.—J. HODSON, Portland, Ore. The chuck is particularly intended for use in manipulating stay-bolts of boilers, the object being to permit these devices to be placed on or removed from the boiler without necessitating squaring the end of the stay-bolt and to enable the bolt to be screwed up so far as to render it unnecessary, in some instances at least, to cut off the projecting end of the bolt.

PUMP.—C. A. NEYLAND, Lewiston, Idaho. The purpose of the invention is to provide a construction of pump especially adapted for irrigating purposes which will be automatic, and continuous in its action, the pump being particularly designed to operate by the current of a body of water, and also to so construct the device that two pumps are coupled together to form one complete pump, each individual pump having two plungers which operate simultaneously, but in opposite directions.

PRESS.—E. R. DERRY, Leadville, Col. Primarily the object of this invention is the production of an effective press in which both the movable and stationary tools or dies may be readily changed to suit the character of the work required, also providing for automatically

locking the movable tool on grasping the hand-lever employed in reciprocating it.

VENEER-CUTTER.—E. Beck, New York, N. Y. This mechanism is designed for cutting veneers from a log. Machines in common use are used which revolve in one direction and are large in size, and reduce the number of veneers. If thinner saws are used they tend to cut into the grain to lead from the path of truth, thereby injuring the veneer and saw. The invention overcomes such difficulties and inconveniences and provides means enabling an increased number of veneers to be cut from a log.

MACHINE FOR PRODUCING ORNAMENTAL SURFACES OR FLEECED FABRICS.—C. H. French, Canton, Mass. The invention relates to cloth-finishing machines; and its object is to provide a machine for producing ornamental surfaces on fleeced fabrics—such, for instance, as shown and described in the application for Letters Patent of the United States, formerly filed by Mr. French, the machine being arranged to provide permanent ornamental surface in the form of alternating transverse stripes of coarse and fine texture.

FOLDER ATTACHMENT FOR HEMMERS.—E. F. Gibbons, Jersey City, N. J. The object of the present invention is the provision of an attachment for sewing-machines affording means for folding the material before presenting the same to the hemmer, the general purpose being to dispense with hand operators, who fold the goods in the same manner.

MOLDING APPARATUS.—L. Hansen, Oshkosh, Wis. In this instance the invention is an improvement in molding apparatus adapted for the manufacture of roofing-tiles and similar products from concrete or other plastic medium. The machine may be employed for making bricks, slabs, building-blocks, or other suitable objects of the above named materials.

Prime Movers and Their Accessories.

DRAFT-REGULATOR FOR STEAM-BOILERS.—A. J. Snow, Fromberg, Mont. This invention is an improvement in draft-regulators for steam-boilers, more especially boilers for locomotives or the like, and has for an object, among others, to provide automatic means to prevent the suction of cold air by the exhaust of the engine through the fire-box and boiler-flues when the fire-box door is for any purpose open.

STEAM-ACTUATED VALVE.—E. A. Menking, Pittsburg, Pa. The object of the invention is to provide a valve, more especially designed for steam-pumps and like machines and arranged to insure an easy and automatic shifting of the valve for controlling the admission and exhaust of steam to and from the cylinder. It relates to valves such as shown and described in Letters Patent of the United States formerly granted to Mr. Menking.

COMBINED AIR AND GAS ADMISSION VALVE FOR EXPLOSIVE-ENGINES.—H. Lentz, Berlin, Germany. The invention relates to valves of explosion or internal combustion engines supplied with a mixture of air and gas or hydrocarbon vapors; and the object is to provide a valve consisting of a single member combining in one part the air and gas admission valves.

Railways and Their Accessories.

CAR-WHEEL.—T. L. Hawkins, Pittsburg, Pa. The invention relates to railroad and mining cars having the wheel mounted to rotate loosely on the axles. The parts are readily assembled and by the use of the bearing balls engaging the recesses in the journal and the hub the car-wheel is held against longitudinal movement on the journal and without undue friction or binding of the parts. In case the journal and the bushing become worn to a considerable extent it is only necessary to replace the worn-out bushing by a new one, so that the axle as well as the car-wheel can be used. The improved renewable bushing, closed hub, self-oiling, and dust proof car-wheel are adapted to mine cars only.

Pertaining to Recreation.

DUST-PROTECTOR FOR POOL AND BILLIARD TABLES.—L. J. Dirand, Torrington, Conn. The purpose of this invention is to improve the protective cover for which Letters Patent were formerly granted to Mr. Dirand, which improvements tend to simplify the construction and render the attachment adjustable to different heights of table, enabling the cover to lie close to the upper marginal portion of the table, and, further, to so construct the attachment that when not in use it may be dropped to occupy a position out of the way of the players.

TOY.—W. V. Gilbert, 30 Lonsdale road, Wanstead, N. E., London, England. Mr. Gilbert makes use of a flexible or spring device, which forms the subject of his application for patent formerly filed by him. It is formed from a resilient plate bent into such shape that by compression and release from compression it alternately projects and retracts the eyes. Means provide for its appearing to spring or jump, and this being accompanied also by retraction or return to original position of certain movable parts the simulation to a living animal is rendered more complete.

AMUSEMENT DEVICE.—E. N. Chamberlain, Natchez, Miss. This sounding toy is adapted for attachment to the foot beneath the arch of the same in front of the heel, it being in practice made of normally greater vertical diameter than the height of the heel, so that when the foot is pressed down or rests upon the floor or other surface the bulb will be compressed and a sound emitted.

Pertaining to Vehicles.

AUTOMATIC WAGON-BRAKE. — E. F. Veatch, Palco, Kan. This brake may be easily applied to an ordinary wagon and may be used with or without the bed, being equally efficient in both cases. It is simple in construction and entirely automatic in action and is not liable to get out of order easily. Since considerable strain is brought to bear on no part, danger of breakage is reduced to a minimum.

VEHICLE-WHEEL.—P. E. Dawson, Hancock, Md. In the present patent the object of the invention is the production of a wheel which shall be distinguished by great resiliency, strength, and durability of its rim portion, the same being a punctureless elastic tire and air inflation being dispensed with.

Note.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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(10462) H. L. O'B. asks how to make citric acid from fruit. A. Citric acid is generally manufactured from lemon juice, which is imported in a concentrated state produced by evaporation by heat. It consists of citric acid 6 to 7 per cent, alcohol 5 to 6, and the remainder water, inorganic salts, etc. By some manufacturers it is allowed to partially ferment for the purpose of evaporating the clear liquor from the mucilage, or it may be clarified in the usual method by the use of albumen in the form of the white of an egg. Carbonate of lime in fine powder is gradually added, and stirred in so long as effervescence continues. Citrate of lime forms, and after being separated by drawing off the watery liquor, is well washed with warm water. It is then intimately mixed with strong sulphuric acid diluted with 6 parts of water. After some hours the citrate is decomposed, the sulphuric acid having taken up the lime and formed an insoluble sulphate, setting the citric acid free. This, separated by decanting and filtering, is evaporated in leaden pans till it attains the specific gravity 1.13. The evaporation is afterward continued by a water or steam bath till the liquor begins to be sirupy, or to be covered with a thin pellicle. It is then removed from the fire, and put aside to crystallize, the mother liquor after a few days being evaporated as above, and again set to crystallize, and so on as long as clear crystals are obtained. To obtain pure citric acid, all the crystals should be redissolved and recrystallized, it may be several times, and the solution digested with bone black. A gallon of lemon juice should make about 8 ounces of crystals. Limes and lemons constitute the source from which citric acid is generally made, yet it may be extracted from oranges, currants, gooseberries, raspberries, tamarinds, etc. The machinery and cost of manufacture will depend upon circumstances which any one about to go into the business can best judge.

(10463) C. L. G. asks how to make koumiss. A. 1. Fill a quart champagne bottle up to the neck with pure milk; add two tablespoonfuls of white sugar, after dissolving the same in a little water over a hot fire: add also a quarter of a two-cent cake of compressed yeast. Then tie the cork on the bottle securely, and shake the mixture well; place it in a room of the temperature of 50 deg. to 95 deg. Fahrenheit for six hours, and finally in the ice box overnight. Drink in such quantities as the stomach may require. Be sure that the milk is pure; that the bottle is sound; that the yeast is fresh; to open the mixture in the morning with great care, on account of its effervescent properties; not to drink it at all if there is any curdle or thickening part resembling cheese, as this indicates that the fermentation has been prolonged beyond the proper time. 2. To a quart of new milk add a sixth part of water, and to this mixture add, as a ferment, an eighth part of the sourest buttermilk that can be got. In future preparations, a similar quantity of old koumiss will better answer the purpose of a ferment. Cover the vessel with a cloth, and allow to stand in a place of moderate warmth for twenty-four hours, when a thick substance will be found collected at the top. Stir well until this substance is thoroughly mixed with the liquid portion beneath, and allow to stand for twenty-four hours more, when, having filled a bottle two-thirds full, and again thoroughly mixed by shaking, the preparation, now called koumiss, may be used at once, or the bottle tightly corked and kept in a cool place for future use. Always shake the bottle well before using.

(10464) P. D. asks how to make imitation leather. A. A mixture recommended consists of 16 parts gelatine and 5 parts glycerine. A coloring matter is then added as may be required—caoutchouc to give elasticity, and boiled linseed oil to render the whole sufficiently flexible. This composition is spread upon linen while hot, printed with any pattern desired. The surface is then treated with a solution of alum, sulphate of iron, copper, or zinc. These saline solutions may likewise be mixed with the composition before it is spread on the linen. The surface is lastly varnished, and may be bronzed or gilt. Another composition is obtained by boiling linseed oil with quicklime and borax, which forms a liquid that, on cooling, becomes a thick paste. It is then mixed with rasped cork and more quicklime.

(10465) B. M. L. asks how to make kindlings. A. 1. Save the corn cobs for kindlings, especially if wood is not going to be plentiful next winter. To prepare them, melt together 60 parts resin and 40 parts tar. Dip in the cobs and dry on sheet metal heated to about the temperature of boiling water. 2. Dip the wood in melted resin. The following composition is sometimes used: 60 parts melted resin and 40 parts tar, in which the wood is dipped for a moment. Or, take 1 quart of tar and 3 pounds of resin, melt them, then cool; mix as much sawdust with a little charcoal added as can be worked in. Spread out on a board and when cold break up into lumps the size of a hickory nut, and you will have enough kindling to last a good while.

(10466) R. N. P. asks how to smooth parchment. A. To smooth parchment which has become wrinkled, place the parchment face down upon clean blotting paper. Beat up to a clear froth, with a few drops of clove oil, the whites of several fresh eggs, and with the fingers spread this over the back of the sheet and rub it in until the parchment becomes smooth and yielding. Then spread it out as smooth as possible, cover with oil silk and press for a day. Then remove the silk and cover with a linen cloth and press with a warm iron.

(10467) M. J. L. asks how to ascertain the area and square inches and pounds upon the seat of an inch and one-half safety valve, that blows at 80 pounds, and how the decimal 0.7854 is got, and what kind of measurement for getting same. A. The area of the safety valve is the square of the diameter multiplied by 0.7854, which is the proportion of the area of a square to a circle of the same diameter. The area multiplied by 80 pounds is the total pressure. See Le Van's book on the safety valve, $2 by mail, which gives full details and computations for pressure, weight and its place on the beam.

(10468) W. N. P. asks: What metals will expand and contract the most with heat, and at what temperature and to what extent? A. Of the commercial metals, lead, magnesium, and zinc expand most for a given change of temperature. Lead and zinc expand 29 millionths for a change of 1.8 degrees Fahr., while magnesium expands 27 millionths. This is at about 100 degrees temperature. Of course the contraction upon cooling is the same as the expansion on heating.

(10469) L. B. asks how red printing ink may be removed from paper. A. Soak pieces of blotting paper in benzine, turpentine, or ether and apply successively, using each time a fresh clean piece of the blotting paper; this is preferable to rubbing with these solvents, as rubbing tends to spread the ink and also to loosen the fibers of the paper.

(10470) J. J. K. writes: Some plates for flat feet are made of spring steel covered with leather. The sweat of the feet soon rusts the plate. I have used paint and shellac, but they do not do much good. Please let me know what I can do to prevent rusting. A. Try a good copal coach varnish. If it can be done, an enamel baked on the plates will give the best satisfaction.

(10471) L. A. H. writes: I have some fine copper gas fixtures which have been finished with a bright thin coating called antique finish. This coating or polish has been destroyed to some extent by flies and other agencies. I would like to know of a process for restoring this polish to its original condition. A. Thoroughly clean the fixtures with benzine if necessary, and polish with any one of the usual polishes in the market. Then lacquer with the best quality of lacquer to be had, applying it in a thin coat with a soft brush.

(10472) G. L. Writes: Can acetylene gas and oxygen be burned together in a calcium jet for lime light, the same as hydrogen and oxygen lime light? And if not, why not? And if so, is it any more dangerous or explosive? A. Acetylene and oxygen can be used for the lime light. Hydrogen is now rarely used; ordinary illuminating gas is used, being sufficiently efficient and much cheaper. There is no more danger when using acetylene, provided the apparatus is in proper order, than with either illuminating gas or hydrogen.

(10473) G. C. asks for a formula for the making of a powder which extinguishes fire. A. Bicarbonate of soda mixed with 5 per cent to 10 per cent of mineral matter to prevent caking by absorption of moisture from the air, is useful. A mixture of dry bicarbonate of soda and dry sal ammoniac, if kept in a dry place, is still more effective. In confined spaces, as closed rooms, a different type of extinguisher is effective. It is based on the principle of fighting fire with fire. The following formula is good: Niter 60 parts, sulphur 36 parts, and charcoal 4 parts.

(10474) F. V. N. wishes a formula for producing a rich, red color on copper, for umbrella mountings. A. A gradually increasing temperature in a hot-air bath will give a series of colors as follows: Light-burnish orange, red-burnish orange, rose red, violet, steely white, light yellow, dark yellow. Both duration of heating and temperature affect the color obtained. As soon as the desired tint is produced, cool rapidly in air or by plunging into cold water. Colored varnishes are also used, but their effect is not permanent. There are various chemical ways of producing red browns, but none for a "rich red."

(10475) W. H. T. asks: How is gas made from water? Is there a book that would enable a foundry foreman to learn how to make an analysis of the iron in his castings? A. Briefly described, water gas is produced by blowing steam through a layer of brightly glowing coal; the water is decomposed, and the coal is consumed; the gases coming off are a mixture of hydrogen, carbon monoxide, and hydrocarbons, with small amount of carbonic dioxide, and variable amount of nitrogen. When the coal cools off too far to further decompose the water vapor, this is shut off, and air is blown through until the coal again burns brightly and is ready for more steam. While the air is blown in, the gases are allowed to escape up the chimney, as they have no value as illuminant, and in fact would not burn at all. The water gas as it comes from the producer has very little illuminating power. This is imparted to it by enriching with benzine.—There is no book which would explain to anyone not a chemist how to determine the amount of iron in brass or other castings. Such work must be done by a chemist. All books on analytical chemistry of the metals describe methods for this, but would be unintelligible to any person except a regular chemist.

(10476) R. G. P. asks: Are there any chime music boxes with a set of bells on them? How does the word chime get its name? A. The word chime comes from a Latin word, meaning bell, and also cymbal. Music boxes are made with sets of bells in them.

(10477) E. G. P. asks: How can a scratch be removed from the top of an oak table (highly polished)? A. If the scratch is only a slight, superficial one, it can usually be removed by rubbing with a rag soaked with crude oil. If a deep scratch, it will be best to rub down the whole top of the table with powdered pumice and crude oil, and then revarnish.

(10478) G. P. O. wishes a process for galvanizing such as is done on the base boards for stoves. A. The article to be galvanized is first thoroughly cleaned by dipping in weak muriatic or sulphuric acid, and is then thoroughly dried. After this it is plunged in a bath of molten zinc, wherein it becomes coated with a layer of zinc, being what is known as galvanized. The surface of the molten zinc must be kept clean by sprinkling with powdered sal ammoniac and skimming off the dross from time to time.

(10479) G. G. G. asks: How can I gild or mottle edges of books, to resemble as nearly as possible those gilded by publishers? A. To gild the edges of books, they are first trimmed smooth, then sized with egg albumen (white of egg) and gold leaf then applied. When dry it is burnished with agate burnisher. For mottling, a very thin solution of gum arabic is prepared in a tray, and the different colors are then shaken in or combed in. A half dozen or so of the books are held securely and evenly together, and the top, bottom and front edges are successively dipped in lightly, and the excess of color is each time blown off. Successful mottling is quite expert work.

(10480) W. J. D. asks: 1. Is there any method by which soft coal can be made into brick or lump form by mixing with other substances or by itself? A. The powdered or crushed soft coal can be pressed into bricks and then be partially coked to give strength. If the coal alone will not adhere sufficiently well on pressure, it can be mixed with pitch, and then partially coked. 2. Can the ordinary 150 deg. test kerosene oil be clarified to prevent