

Notes & Queries.

[We present herewith a series of inquiries embracing a variety of topics of greater or less general interest. The questions are simple, it is true, but we prefer to elicit practical answers from our readers.]

- 1.—**SUPERHEATING STEAM.**—Can any of your readers inform me whether steam can be superheated to a red or higher heat, and how?—R. H. E.
- 2.—**REMOVING NITRIC ACID STAINS.**—Can some of your readers inform me if the yellow stains in cloth, caused by nitric acid, can be removed, and if so by what means?—S. H. F.
- 3.—**DEPOSITING TIN BY ELECTRICITY.**—Can thin sheet brass be galvanized on one side with tin? Can it be done without getting tin on both sides? Is there any preparation of tin that can be applied with a brush?—K. E. F.
- 4.—**ACIDULATION OF ALE.**—What is the cause, or what will prevent, ale in the process of brewing from running into the acetic acid state? In cleansing, should it be allowed to work until it is perfectly still, and then be bunged down?—W. H. C.
- 5.—**ELECTRODEPOSITION OF IRON.**—Can iron be deposited on brass or copper by the aid of a galvanic battery? Can any one give me a receipt to make a solution?—T. N. S.
- 6.—**MEASURING THE FLOW OF STEAM.**—How can I best ascertain the quantity of steam, in terms of horse power, passing through a given sized pipe, in a given time, the pressure in boiler averaging say 70 pounds per square inch? Do you know of a meter or other appliance which might be connected with the steam pipe which would indicate the amount of steam used in a given time?—J. W. G.
- 7.—**WIRE ROPE FOR BALING PRESS.**—I wish to know whether a wire rope would be suitable to use as a balance rope on a baling press, and what sized wire rope would be necessary where it has to hang on a foot roller and sustain 2,000 pounds attached to each end, each 2,600 pounds alternately passing up and down, and drawing the wire rope over the rollers? Would it weaken the rope to bend it over said roller?—A. J. B.
- 8.—**PROPORTIONS OF ENGINE.**—An engine, the cylinder of which is of eleven inches bore and three feet stroke, runs at forty revolutions per minute with fifty pounds pressure of steam, as shown by gage. Can I do the same work with an engine of seven inches bore and fourteen inches stroke, running at one hundred and fifty revolutions per minute, carrying eighty pounds of steam, or what part of the work per minute can I do?
- 9.—**FANNING AND FLY BRUSHING MACHINE.**—In our warm climate we need fanning and fly brushing machines, and the main trouble has always been the difficulty in securing some safe, light and steady power to run said machines. I think this difficulty can be overcome by constructing a wind mill which, night and day (whenever the wind is favorable) will force water up into an elevated tank. Said tank can be placed upon the roof of the house. This tank will supply water, by means of a pipe, to a turbine wheel placed over the well from which the water is first drawn, and will furnish, I think, ample and steady power for the purposes named, and will besides run the family sewing machine and supply the house throughout with all the water needed. Will some one get up the required machinery or else give us an idea of the sizes of the windmill, tank, turbine wheel, fans, etc?—S.
- 10.—**CUTTING STEEL.**—I wish to know the proper diameter and number of revolutions of a smooth-faced soft steel cutter, such as is used in cutting the screw point on augers.—A. V.
- 11.—**WOODEN TANK FOR WATER.**—Will some one inform me what is the most durable wood to use for a reservoir, to be placed on top of a house to hold water for domestic purposes? Of white poplar or pine, which would be preferable?—R. S. S. H.

Answers to Correspondents.

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 100 a line, under the head of "Business and Personal."

ALL references to back numbers must be by volume and page.

- SPECIMENS.**—We are indebted to Mr. J. L. Rhodeback, of Norway, O., for specimens of petrified honeycombs, a rare and beautiful petrification upon which we shall remark hereafter. Also for specimens of agate spear heads of aboriginal construction.
- POUNDING OF PISTON.**—To S. R., of Pa.—This question has been fully discussed in the current volume of the SCIENTIFIC AMERICAN. See pages 138, 155, 170, 217.
- PROPORTIONS OF SAFETY VALVE.**—To C. H. C., of N. Y.—We have frequently answered your question. You will find full particulars on page 106 of Vol. XXV. of the SCIENTIFIC AMERICAN.
- E. K., of N. Y.**—The mineral you send is anthracite coal. Thin seams of this coal occur in many places throughout the State of New York, but there are no workable beds.
- N. B. D., of Ill.**—The mineral you send is iron pyrites or "fool's gold," of no great value. It is used in the manufacture of copers and for the sulphur it contains.
- C. R., of Va.**—In the mineral you send there is a small percentage of iron, not enough to make it an ore of any value.
- B. F. R., of Ala.**—The mineral you send is not graphite, but a highly carbonaceous slate, which would make but a poor substitute for "black lead."
- J. W. B., writing from Fayette, Miss.** says: I send you here-with a large bug found on the bank of a creek in this vicinity. As no one here knows what it is, I take the liberty of sending it to you to find out the name of the "critter." Answer: We are much obliged for the specimen. It is one of the largest beetles occurring in the United States, the *Dynastes tityrus* of Linnaeus. It is kindred to the sacred *Scarabaeus* of the Egyptians.
- J. H. D., of Ohio,** sends a mineral specimen which he states was taken from a wooden water conductor ten rods long, which drains a well on a descending grade. The water is used for watering stock. The red sediment collects in large quantities in the pipe and also in the trough. The water has the property of turning all vegetable matter, falling into it, black in a very short time. Answer: The mineral you send is hydrous oxide of iron, mixed with earthy matter, and contains no poison. The tannin in the vegetable matter unites with the iron, forming a black precipitate, resembling ink.
- EYE STONE.**—E. P. B. says: A difference of opinion having arisen between myself and a friend in regard to the nature of an eye stone, whether it is animate or not, we beg of you to enlighten us on the subject. Answer: The best form of eye stone is said to come from Venezuela, where it is found on the seashore. It is flat on one side, oval on the other. When introduced under the eyelid, the motion of the eye causes it to move about, and any particles of foreign matter in the eye adhere to the stone. The eye stone is as inert as any other pebble.

NEUTRAL NITRATE BATH IN PHOTOGRAPHY.—In photography, the most difficult thing is to preserve the nitrate bath completely neutral, as, at every dip of a plate, free nitric acid is liberated. If we allow a small piece of carbonate of lime or common marble to remain in the bath, will it not neutralize the acid without incurring the risk of making the bath alkaline? Iceland spar is said to be the purest form of carbonate of lime; where can it be procured? Answer: Photographers do not want the bath completely neutral; a slight acidity is the best preventive against fogging. A neutral bath requires a shorter exposure. We prefer to add a little carbonate of soda when our bath becomes too acid; but it is better to filter, boil down, and make a new bath. The use of lime, as you propose, would be an injury to the bath.

SIPHON.—To J. M. J.—It is not possible to raise water from a well by means of a siphon, unless the siphon discharges at a point lower in level than the water of the well. To draw water from a depth by means of a siphon would be making the water run up hill, which is proverbially impossible. The size of the pipe does not affect the efficiency of the siphon.

GREASING COGS OF REAPERS, ETC.—I would say, in answer to query 14, May 4, that I consider it best to oil cogs when there is no sand or grit to get into them. The grease lessens the wear; but if the sand gets to it, it will stick to the cogs and make the wear more rapid.—H. C. B., of O.

EXPANSION OF MERCURY BY HEAT.—Query 10, page 249.—If a given volume of mercury at 32° be taken as 1, when heated to 212° it will equal 1.02; that is, raising its temperature 180° increases its bulk .02 of itself. But the increase in the bulk is not uniform, for the ratio of expansion for liquids and solids increases with the temperature. Of the metals, zinc expands most. If the length of a bar of zinc be taken as 1 when the temperature is 32°, when heated to 212° it will equal 1.002942—an expansion of .002942 of its length for 180°. Lead is next, and shows .0028426.—X. P. M., of O.

GREASING COGS.—Query 4, page 297.—Having had some experience in this with a reaper, I would advise C. A. A. to put his grease where it will do some good and no harm. For, if he puts it on the gearing of a reaper or mower, he will soon find that it catches and holds every grain of sand that drops on the wheels (and a good many will fall there in a day), and thus help to wear away the cogs faster than is necessary. I found this when I tried it, so I quit greasing and cleaned off the cogs, and the wheels were soon bright and smooth, and ran as light as ever and with much less wear.—X. P. M., of O.

BLACKBOARD.—Query 17, page 297.—I have known silicate slating (a liquid) to be used with much success.—G. L. F., of N. Y.

WILD BEES.—Query 5, page 297.—C. J. M. should go to where the bees abound, put a little honey on a log, and when a bee alights and its "vell loaded, take him by the middle of the back and attach a light piece of cotton to his legs. Then letting him go, he will take a straight line for home. Marking the direction with a compass, it can easily be traced by means of the cotton.—G. L. F., of N. Y.

WILD TEA.—In your paper of February 24, you advise a correspondent that Jersey tea (*Ceanothus Americanus*) is commonly known as wild tea, and was used during the Revolution of 1776 as a substitute for tea. I write to inform you that another plant called Labrador tea (*Tea latifolium*) was also used in New England and Nova Scotia as a substitute for tea by our forefathers. See Bigelow's "Plants of Boston and its Vicinity," page 183.—W. B. S., of Mass.

PAINTING THE INSIDE OF AN IRON WATER TANK.—Query 5, page 313.—I would recommend the coating of the inside of an iron tank with beeswax hardened by adding about one fourth part of rosin. Clean the tank and coat it well with the wax preparation, as hot as possible without burning your brush. A long experience convinces me that the above is the best possible coating for an iron water tank.—H. W. M., of Mass.

WILD BEES.—Query 5, May 4.—Take the bottom of an old sugar hogshead and keep it saturated with water; or place on it waste honeycomb. "Stink bait," however, will draw them much further from home. I have known bees to go two miles to this last; some people say they will go three or four.—H. W. S.

MAGNETIZATION.—Query 9, page 297.—A circular piece of steel can be magnetized as well as any other form. In this case the poles must be on opposite sides of the circle, and at right angles to those points, there will be points that will manifest little or no magnetism. The steel must be tempered, else the force is lost as soon as the magnet is removed. The best way is to apply the steel to a powerful electromagnet; this might prove the only effective way for a piece as large as the one mentioned. But if this cannot be done, take two pieces of loadstone with their opposite poles towards each other. Place them upon the center of the piece of steel, and slowly draw them to the edge. Remove them, replace them at the center, and again draw them to the edge. Continue the process until the steel becomes magnetized. This method will not give as good results as the electromagnet.—L. R. F. G., of Mass.

BRITTLE SPIRAL SPRING.—Query 12, page 297.—The spiral spring of a pegging machine breaks after it has been run for some time because the continual jarring causes the particles to assume the crystalline form. Not only does iron crystallize in casting, but a continued jar will cause cold iron and steel to crystallize. I cannot say that the steel becomes harder by use, but it is more brittle. If W. A. S. will take a magnifying glass and look at his broken spring, he will plainly see the crystals. The remedy is to reheat and temper the spring occasionally.—L. R. F. G., of Mass.

Recent American and Foreign Patents.

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

SOAP HOLDER.—Jacob A. Camp, of Sandusky, Ohio.—The invention consists in a perforated and handled soap cup by which all necessity for taking soap in the hands is removed, while a better lather, cleaner soap, and economy in use are all attained. All those who have used, and those who have omitted heretofore to use, soap will find it to their interest and convenience to have one of these soap holders.

CHURN AND BUTTER WORKER.—Wm. McKeever, of Staunton, Va.—The invention consists in a stop chamber, with stationary breaker thereunder, which is combined with a movable breaker, so that the milk or cream only moves backward and forward in a small arc. This compels the production of butter in three or four minutes. Its shaft is also provided with paddles which beat and work the butter, so that there is no need whatever to touch it with the hand. This invention doubtless possesses more real utility and novelty, and is a greater improvement in churns than has been made in the present century.

WHEAT SCOURING MACHINE.—George S. Newman, of Liberty Mills, Va.—The invention consists in a grain scourer which discharges the grain from the hopper around the shaft and upon a top cup, whence the centrifugal power forces the grain outward, over its concave sides, and rubs the pellicle with great friction. This detaches all or a large portion of the dirt. The grain is then conveyed down to the shaft and into one cup after another until the operation is completed.

MOLE TRAP.—Clark Polley, of McMinville, Tenn.—The invention consists mainly in applying a spiral spring to a mole trap, so as not only to impel the slide, but to hold together all the parts, and thus render them easily detachable. This greatly simplifies, cheapens, and makes more useful the whole trap.

OINTMENT.—Wm. C. Jones, of Henry County, Ala.—This ointment is a compound formed of beeswax, butter, honey, rosin, mutton suet, sugar, and verdigris, mixed in certain proportions and by certain successive manipulations. It is intended for cutaneous diseases, such as ulcer, tetter, scaldhead and sores of all kinds.

CULTIVATOR PLOW.—Cealy Billups, of Norfolk, Va.—The invention consists in providing a cultivator plow with wings, ratcheted on their shanks, and made fast, or adjusted by corresponding ratchets, on sides of shoe, and by having their front ends entered into the sockets of the shoe.

WASHING MACHINE.—John W. Hunt, of Liberty, Mo.—The box of the machine, the bottom of which is made inclined, contains a rack, the sidebars of which are set in inclined grooves in the sides of the box toward its forward or deeper end. The round rods of the rack are arranged at a little distance apart, so that the water forced forward by the plunger or beater and the water squeezed out of the clothes may pass through freely into a space between the rack and the forward end of the box. This space is covered by a platform or apron, which is slightly inclined to the rearward, and is attached to the sides and end of the box a little below their upper edges. The apron keeps the water from dashing out of the end of the tub. The plunger is inclined to correspond with the inclination of the rack, so that the clothes may be pressed squarely between the plunger and the rack. To the rear side of the plunger is rigidly attached the end of an arm, to the rear end of which is pivoted the lower end of a lever which is attached to the center of a cross bar, the ends of which are pivoted to the sides of the box. The lever is curved so that the power may be conveniently applied to it.

MACHINE FOR MAKING COP TUBES.—Robert Douglas, of Lowell, Mass., assignor to himself and James Douglass, of same place.—The liability of the paper tube formed in the usual way to collapse as it is passed from the mandrel, in consequence of a partial vacuum formed therein for want of air to resist the external atmospheric pressure, is remedied in this invention by providing a hollow mandrel, having an opening therein for the admission of air to the tube as it passes from the mandrel. From this mandrel the tube is received between a gripping pawl and a fixed gripping jaw on a bar, carried by an endless belt, to be drawn from the mandrel, cut into suitable lengths for drying, and carried to the apparatus for conveying to the dryer. There are preferably three of these grippers on the belt; also as many cutting shears just in advance of each gripper, between the jaws or blades of which the tubes are drawn by the grippers in advance of them, and these shears are automatically closed upon the tube and cut it off immediately after the grippers behind have taken hold of the said tube. At the same time that the tube is cut, the grippers in advance of the shears are opened and the piece of tube cut off falls upon a chute, by which it is conducted to endless carriers to be conducted into the heating chamber.

CIDER MILL.—William Aiken and William W. Drummond, of Louisville, Ky.—The bottom of the hopper is formed of two inclines, the lower one of which inclines more steeply, and between the inner edges of which is formed the space through which the apples pass down to the grinding cylinder, the journals of which revolve in bearings attached to the frame, and to which are attached teeth to break up the apples against the crusher plate. The crusher plate is pivoted at its upper edge to the sides of the hopper, in front of the opening between the inclined parts of the bottom of said hopper, so that it may be swung forward to crush the apples against the toothed cylinder to enable them to pass down between the said toothed cylinder and the toothed concave attached to the frame, where the crushing, grinding, or mashing process is completed. To the main shaft is attached an eccentric wheel which bears against a projection formed upon the rear side of the lower part of the crusher plate, so that at each revolution of the eccentric wheel the lower part of the said plate may be forced forward to crush the apples against the toothed cylinder.

WAGON TIRE TIGHTENER.—John Kafader, of Jacksonville, Oregon.—This invention has for its object to furnish a device for tightening and securing tires upon the felloes of wheels, both when first applied and when they may have become loose from use. The adjacent ends of the felloes upon the opposite sides of the wheel are cut away, or made a little short, so as to leave narrow spaces between said ends. Within the space and resting against the ends of the felloes are placed two plates. The sides of the plates that rest against the ends of the felloes are made flat to bear squarely against said ends. The other or inner sides of the plates incline in both directions from the center. In holes in the plates, at their angles, are placed small rollers, said holes being so formed that the sides of the rollers may project sufficiently to receive the wear. Between the plates is placed a wedge shaped block, with its smaller end toward the hub of the wheel. Through the center of the wedge block is formed a screw hole to receive a screw which passes in from the inner side of the rim through the casing, against which a collar formed upon the said screw rests, so that by turning the screw forward the wedge block will be drawn between the plates, expanding the rim of the wheel, and thus tightening and securing the tire. The tubular casing is made of the same form and size as the felloes, and is let in to the ends of said felloes, so that the outer surface of the case may be flush with the outer surface of the felloes. With this construction, should the tire become loose from use or other cause, a turn or two of the screws will expand the rim of the wheel and tighten the tire securely.

WAGON BRAKE.—Henry J. Hadden, Jr., of Catskill, N. Y.—This invention relates to that class of wagon brakes which are applied whenever the horses are held back. To the rear part of the under side of the wagon tongue is rigidly attached a downwardly projecting arm about twelve inches in length. To the lower end of the arm are pivoted the forward ends of two rods, which incline from each other and pass back beneath the forward axle with their rear ends attached to the brake bar. The brake bar is supported by and moves forward and back in keepers attached to the sway bar and hounds, and which is kept from longitudinal movement by guide pins attached to it, which strike against keepers. To the ends of the brake bar are pivoted or otherwise attached brake shoes, which bear against the rims of the forward wheels and thus check the advance of the wagon.

CATTLE POKE.—Orville Sweet and Clarence H. Sweet, of South Glen's Falls, N. Y.—This consists of a block of wood, which may vary in size and weight with the size and strength of the animal that is to wear it. To the forward side of the block, toward its ends, are attached two pins or prongs which project forward and incline slightly upward, and which are designed to keep the animal wearing the poke from using its horns. To the middle and upper part of the block is attached a longer pin, which projects upward and forward, and which is designed to prevent the animal wearing the poke from getting its head through or under the fence and throwing it down. Sharp pointed spikes or pins are attached to the middle part of the block, with their points projecting at the rear side of said blocks in such positions as to come in contact with the head of the animal wearing the poke, should the poke be jolted or should any pressure be applied to it. To the rear side of the block is attached a spring which rests against the animal's head, and which should have sufficient strength to hold the spikes away from the animal's head when grazing or walking, but which will yield and allow them to prick the animal should it attempt to run, jump, or push. The ends of a wire are passed through the block and coiled to form rings to receive the animal's horns; and they are then hooked to each other. The fastening thus constructed cannot injure the animal, and cannot shrink when it becomes wet, while at the same time it holds the poke securely in place.

TREE AND PLANT PROTECTOR.—William F. Eaton, of Cape Elizabeth, Me.—This consists of a standard or stake, the lower end of which is sharpened so that it may be readily thrust into the soil. The length and size of the standard is proportioned in size and length to the size of the plant to be supported. The upper end has two longitudinal slots formed in it, dividing it into three prongs. The ends of the side prongs are cut off, leaving the central prong the longest. There is a metallic strap, the middle part of which is bent into circular form. The arms of the strap are parallel with each other to pass through the slots of the standard, and their ends are bent outward at right angles to rest against the rear side of the standard. In using the support, the strap is passed around the plant, shrub, or tree. The parallel arms of the strap are then slipped down into the slots of the standard, the upwardly projecting central prong guiding them readily into place. The edges of the middle or ring part of the strap are turned or flared outward, so that they cannot chafe or rub the plant or tree.

BLINDER FOR HORSES.—Rudolph Lehmick, of Stillwater, Minn.—This invention has for its object to furnish an improved horse blinder or blinker, which shall be so constructed that it may be readily and conveniently drawn forward and down over the horse's eyes when necessary to bring him under control; and consists of a plate sliding against coiled springs contained in the frame in which it runs, and pulled forward, when required, by blinder reins attached to eyes on its forward end.

PITMAN CONNECTION FOR HARVESTERS.—Willard Loucks, of Lowville, N. Y.—The lower part of the pitman is split and bifurcated, and carries at the ends inwardly projecting pins of conical form and with rounded points. A sleeve embraces the pitman, and is provided with a set screw, whereby it can be fastened at a suitable distance from the lower end. The cutter bar has an eye formed at its end, and a box, of cylindrical form fitted therein, said box having conical recesses at the ends for the reception of the aforesaid pins. The split ends of the pitman are spread apart in order to admit the pins into the box, and are then held contracted by means of the sleeve. If, by wear, the recesses in the box should become enlarged, it is only necessary to move the sleeve further down, and thereby further contract the pins. When the box is entirely worn, it is readily replaced by another.

COTTON PRESS.—Gus. Falkner, of Warrenton, N. C.—This invention consists of a combination of notches, bars, and operating levers, and holding pawls therefor, with the follower of a press working from the bottom upward, all so arranged that the pressing of the bale may be readily effected by hand power applied to said levers. It also consists of a novel arrangement of the top cover and apparatus for lowering the follower.

WASH BOILER.—Nicholas L. Rigby, of Chetopah, Kansas.—This invention has for its object to furnish an improved wash boiler in which the washing shall be done by water forced from the lower part of the boiler upon the upper parts of the clothes by water and steam pressure; and it consists in adding, to the ordinary one, another boiler with an inclined slotted bottom, fitting loosely within it. This slot is covered by a bridge which supports a rack on which the clothes are placed. The steam pressure forces the water between the boiler bottoms up through channels formed at the ends of the inner boiler, and discharges it on the clothes, after passing through which, it returns through the slot.

CORN GRATER.—George C. Rickards, Jr., of Philadelphia, Pa. assignor to himself and William Allen, of same place.—The object of this invention is to furnish convenient means for reducing green corn to pulp or nearly to a pulp, and it consists in the construction and arrangement of the following parts: The stock is made of wood, in two parts, which are two inches, more or less, in width, and one inch, more or less, in thickness. These pieces are connected together end to end, by two serrated plates, one of which is coarser than the other, so that the corn may be grated coarse or fine, as may be desired. These plates are of about the thickness of saw plate steel, cut out on the upper edge to form semicircles, with the semicircles serrated, the circles being three inches, more or less, in diameter.

HOOF SHEARS.—Micajah C. Malone, of Palmyra, Ill.—The two handles of the shears are connected by a pivot pin. The one handle carries the cutter of the shears, while the other has a hook, over the face of which the blade moves to cut. From the blade projects outwardly a pointed lug, for marking on the outside of the hoof the line to which the same is to be cut. The hook carries an outwardly projecting arm, for clearing the seam and frog of the hoof. There is also an inwardly projecting lug, on the hook. It serves to steady the blade in cutting, and to hold the hook against the portion of the hoof to be cut.

ANDRONS.—John T. Dee and Isaac Murray, of Fredericktown, Miss.—The forward ends of the horizontal bars of these androns are bent downward to form the forward feet. The rear ends of the horizontal bars are attached to the vertical bars, the lower ends of which serve as feet for the androns. The upper ends of the vertical bars are connected by a horizontal bar, or rather formed in one piece with said bar. This construction enables the androns to be made with only four feet instead of six, as they must be when made separate.

ICE MACHINE.—William R. Johnston, of Sedalia, Mo., and William White-law, of Memphis, assignors to themselves and John Johnson, of Memphis, Tenn.—This machine (which would need the aid of drawings to describe in detail) is intended to effect the proper utilization of sulphide of carbon and kindred substances in ice making, by eliminating the vapor of the agent employed from the air by passing it through oil. Also, to regulate the evaporation of the bisulphide by a concentrated solution of chloride of sodium floating on it; and to eliminate the aqueous vapor in the current by passing it over chloride of calcium before it enters the freezing chamber.

LOCK NUT.—James A. Morrison, of Parker's Landing, Pa., assignor to himself and George H. Morrison, of same place.—The object of this invention is to provide simple and efficient means for preventing the nuts of screw bolts from working off when in use. It consists in the employment of a grooved bolt with a ribbed collar, which can be slid to any part of the bolt without being at liberty to turn; this collar has suitable springs attached, which fall into recesses in the nut to be locked, and hold it securely to the collar, so that it, also, cannot turn.

SOLDERING TOOL.—John A. Tillery, and Samuel A. Ewalt, Baltimore, Md.—The invention relates to that class of soldering tools which are usually rotated about the cap by twirling or carrying them around with the hand, and consists in combining therewith a simple mechanism for operating them more rapidly and conveniently. The invention, however, mainly and more particularly consists in an arc shaped soldering tool, adapted to all the various sized cans and caps used.

PATTERN FOR CUTTING GARMENTS.—Mrs. Sarah A. Millwee, Greenwood, S. C.—The invention consists in a pattern chart for front and back of human form, with scales of figures and perforations, arranged for fitting plain and full waists, loose squares, and basques of all sizes. It would seem to be an invention greatly calculated to economize the cost, to ladies, of their various garments, since, with one of these charts, they may both cut and readily fit as well as make them.

DOOR CHECK.—Simon Peters and Cyrus D. Eisaman, of Penn Station, Pa.—This consists of an oblong plate made of metal, wood, or any other suitable material, with holes through it, of slotted or other form, and recesses or rabbets on its under side, around or partly around the holes; a spring, of molded india rubber, with a flange or flanges on its under side, which are designed to fill the recess or recesses in the plate, while the body of the spring is designed to fill the hole and project above the plate, and a stop for the door, of rubber, made to fill one of the holes in the plate, and to project above it, with a flange to fill the recess around the hole. The plate, with the spring and the stop inserted from the under side, is screwed down to the floor near the wall in such a situation that, when the door is opened and swung back, the door will pass over the spring and be kept from striking the wall by the stop. By this arrangement it will be seen that the door will be securely kept in the desired open position and that all noise will be avoided.

CANAL BOAT.—Hartley J. Hatch, of Chicago, Ill.—This invention relates to a new canal boat, which is made in two sections in such manner that its pointed bow can be detached and brought alongside of the pointed stern whenever a lock is to be entered, and which is provided with a hinged and swiveled paddle box. When the boat is to enter the lock, the bow section is detached and fastened alongside the pointed stern. The boat is thereby made shorter, and with broad ends, to fill the locklike ordinary canal boats. By this arrangement of detachable triangular section, the boat is enabled to proceed rapidly through the water without creating unnecessary disturbance of the same, and still to fit the locks like an ordinary boat, all without reducing its carrying capacity beyond the weight and space of the additional sides required by the detachment of the section. The paddle box or frame is hinged to an arm, which is swiveled to the pointed stern of the boat, and which carries a toothed disk gearing into a pinion on the steering shaft. By means of the shaft, the arm and the paddle box can be turned to either side. The shaft of the paddle wheel has its bearings in the frame, and is provided with cranks that are connected with the operating engine by suitable rods or devices, said engine being situated on a platform or projection of the frame, and connected by jointed pipes with the boiler, which is placed in the stern portion of the main boat.

FLY TRAP.—Perry A. Burgess, of Butler, Mo.—This invention relates to a new and useful improvement in devices for catching flies; and consists in a flanged disk of wood or other suitable material, with a central hole and an interior recess on the under side filled with some absorbent material, as soft leather, felt, or sponge. The disk is placed on a tumbler or similar vessel, the vessel being nearly filled with soap suds or other liquid. The absorbent is filled or smeared with molasses or other substance for attracting the flies. The flies enter through the central hole seek the bait, and drop into the liquid beneath.

CORN PLANTER.—Wm. H. Crosby, Parish, N. Y.—The invention consists in pivoting the two frames of a double planter, independently, to the axle and to a front beam, while they rest upon two castor wheels. They are then enabled to rise separately over obstacles and the planter to drop the seeds uniformly and at the proper intervals.

SAFETY VALVE.—Herbert S. Jewell and Ferdinand Steele, Brooklyn, N. Y.—This invention relates to improvements of the safety valve and alarm, for which letters patent were allowed to the same inventors on or about Jan. 6, 1872. It consists, first, in an adjustable plate, provided with a notched ring for graduating the steam inlet apertures; secondly, in a swinging weight applied to the sliding bolt of the valve; thirdly, in a weight sliding and adjustable on the stem of the valve by a set screw, and fourthly, in connecting a weighted lever, on which the valve rests, with a dial mechanism by an intermediate arbor.

GOLD FOR DENTAL PURPOSES.—Richard S. Williams, New York city.—The present invention relates to a new preparation of gold foil for dental purposes, by means of which the gold may be used for purposes for which it is not otherwise well adapted; and it consists in rolling the foil into cylinders, the length and diameter of which is governed by the size and number of sheets of the foil used, and then cutting the cylinders into pieces of proper size for use.

HARROW.—William J. Corhill, Blue Earth City, Minn.—The body or frame of the harrow is made in four parts, each of which is formed by rigidly connecting four, more or less, longitudinal bars by means of cross bars framed to them. The frames are arranged in pairs, the longitudinal bars of the frame of each pair being placed end to end and connected and hinged to each other by short bars, the ends of which are pivoted to the opposite sides of the adjacent ends of two or more of said longitudinal bars. Stop plates or bars are rigidly attached to the upperside of the inner ends of two or more of the longitudinal bars of one frame of each pair of frames, so as to overlap the upper side of the inner ends of the longitudinal bars of the other frame, so as to prevent the adjacent ends of the frames of each pair from sinking down below a certain fixed limit, while allowing their outer ends to drop down to conform to the surface of the ground.

REVERSIBLE FILTER.—John D. Parrot, Morristown, N. J., assignor to himself and Henry McCauley, of same place.—The object of this invention is to perfect a water filter for which letters patent, dated July 30, 1869, were granted the inventor, and to render it more useful than it has hitherto been; and for this purpose is attached to it a reversing apparatus, consisting of pipes and cocks, by means of which the flow of water may be reversed, and the filtering material and the chambers of the filter may be cleaned at any time.

COMBINED COOKING STOVE AND WATER HEATER.—Chester Comstock New Canaan, Conn.—The invention consists, first, in providing the inner sides of the fire box of a stove with auxiliary and adjustable sides, to lessen the fire room and the radiation of heat therefrom on the sides; second, in suspending over the oven, between cover and fire box, and out of range with the holes therein, a water vessel, which is connected with cold water vessel on top, and has certain hollow arms and pipes to give a greater heating surface; and, thirdly, in combining these two devices with a water chamber around the fire box.

FLEXIBLE SIDES FOR BELLOWS.—Alfred F. Jones, New York city.—This invention relates to a new construction of the flexible sides of bellows, air pumps, and similar apparatus which are to be contracted and expanded; and consists in the combination of a woven or porous fabric, for strength, with an outer rubber fabric which is impervious to air. The two fabrics are not intimately connected, except, perhaps, at the edges, and the impervious material will, therefore, not be strained, the other fabric taking all strain. Heretofore, such flexible sides were made of single fabrics, which, under strain, would open their pores and let air in, thereby defeating the object of the entire instrument. By the use of the double fabric absolute air tight sides can be obtained.

MACHINE FOR CUTTING CLOTH.—Andrew Heller, New York city.—This invention relates to a new machine for cutting the cloth used in the manufacture of clothing and other fabrics into certain definite shapes, and consists, principally, in the employment of a vertically reciprocating continuous cutting blade; in the combination therewith of marking troughs and apertures in the plate to which said blade is attached; and in the arrangement of a clamp for feeding the fabric to be cut to its place under the cutter.

PREPARING MOSS FOR ORNAMENTAL BASKETS.—Jonathan W. Shiveley, 697 Broadway, New York.—The inventor proposes to improve natural moss for various ornamental purposes, by coloring it with bronze or other metal or mineral dust, sprinkled on a coating of mucilage or other gummy matter previously applied, or by dipping in a bath of gummy matter and powder, and then drying it, and either stripping or dressing it to impart a glossy appearance or not. He sometimes steeps or boils the moss in hot water, and then dips it in linseed oil preparatory to coloring it, as above described, to keep it soft and pliable.

PADDLE WHEEL.—George H. Cushman, North Bridgewater, Mass.—This invention has special reference to side wheel steamers employed on canals. The principal object of the invention is to prevent the washing and wearing away of the banks of a canal by the action of the swell or waves created by the passing of the boat through the water. Another object is to so construct the floats of the wheel as to enable them to enter the water easily, and thereby produce little or no vibration of the boat. With the outer side of the wheel closed and with its inner side open, much of the water displaced and forced outward by the prow will be arrested and deflected and discharged toward the stern.

EXTENSION TABLE.—James Plenkharp, Columbus, Ohio.—This invention is a marked improvement in extension or dining tables, the same being formed mainly of two parts, connected by slides and furnished with legs in the usual way, and of a third part consisting of a circular plate or disk, designed to form the top of the table when not extended and the middle thereof when extended. The table is compact, strong, simple in construction, and attractive in appearance.

WATER WHEEL.—Samuel P. and Oliver H. Castle, Urbana, Ohio.—The invention consists, first, in constructing water wheels with a cylindrical hub to receive the radial buckets, and a conical frustrum to receive the aprons, so that while the outer edges of buckets and aprons are equally distant from the center of motion, the outlet is increased and the dead water discharged with greater facility. It consists, secondly, in constructing the chutes with a gradual inclination, at the top, toward the axis, whereby a greater uniformity in the percussion of different strata of water is obtained. And it consists, thirdly, in making a circular gate that turns on a pivot and admits of openings of different sizes in front of the chutes, while it takes up no space wanted for other purposes.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From April 26 to May 1, 1872, inclusive.

CONCENTRATING LIGHT, ETC.—E. S. Lenox (of New York city), London, Eng.

EXTRACTING PHOSPHATES.—G. T. Lewis, Philadelphia, Pa., N. A. Pratt, Charleston, S. C.

HORSE STOCKINGS.—W. Lewis, D. T. Way, Astoria, N. Y.

LOCK NUT, ETC.—G. Mallory, Mystic Bridge, Conn.

MANUFACTURE OF STEEL.—G. F. Wilson, Providence, R. I.

PILE CARPETS, ETC.—G. Crompton, Worcester, Mass.

PRINTING PRESS, ETC.—M. Gally, Rochester, N. Y.

REAPING MACHINE.—W. A. Wood, Hoosick Falls, N. Y.

ROOFING, ETC.—D. G. Conger, Chicago, Ill.

STEAM GENERATOR.—J. Goulding, Worcester, Mass.

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