

# Notes & Queries

[We herewith present 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.—Will some one please inform me how small birds are stuffed, and what is used?—A. A. O.
- 2.—Why do steam boiler plates crystallize over the fire, while feeding the furnace in front has a tendency to harden the iron?—B. F. M., of Ohio.
- 3.—How can I remove stains of blood or oil from the feathers of stuffed birds?—W. R. F.
- 4.—What properties are essential or indispensable in a soil or clay for making good brick?—H. C.
- 5.—Will some one give me directions to make a telescope for my rifle? The distance between the center of dovetail on front end and the rear peep sight is 29 3/4 inches.—C. E. R.
- 6.—If a tube of 36 inches high from its base, and an inch in diameter and graduated in a hundred parts, stands at zero in still water, how high will the water rise in the tube if placed in a stream of water running at the rate of 12 miles an hour?—S.
- 7.—What articles are used and what is the proportion of each, in the composition of the white powder used for stamping with perforated patterns for braiding and embroidery? What is the paper or parchment used for making perforated patterns? What kind of machine is used for perforating?—J. M.
- 8.—I recently made a Leyden jar, by coating a two quart candy jar in the usual manner. I could not charge it; and when I insulated it and charged it through the knob, electric sparks could be drawn from the outer coating. I tried another jar of the same kind, with a similar result. Is it possible that the electricity could pass through the glass, and is some glass permeable by electricity? I have other jars which work well.—N. E. F.
- 9.—Upon what part of the face of a 4 feet mill stone, weighing 1,500 lbs. and running at a velocity of 180 revolutions per minute, will the least amount of power grind a given amount of grain in an hour, and what is the proportioned amount of resistance to the power at 12 inches, 18 inches, and 24 inches respectively from the center?—G. B. R.
- 10.—Will some one tell me if there is anything which will remove fly specks and other soils from gilt picture frames without also removing the gold? Is there any way of cleaning the light bronze gas fixtures without injuring the bronze? Can white window shades be done up with the same gloss and stiffness as when new?—F. E. V. E.



**SPECIAL NOTE.**—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$1.50 a line, under the head of "Business and Personal."

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

C. T. W., of N. Y., will find good recipes for preventing rust on and browning gun barrels on pages 154 and 266 of our volume XXVI.

J. R. S., of Mass., will find elaborate directions, with an illustration, for constructing cone pulleys, on page 100 of our volume XXV.

A Subscriber will find directions for building an ice house on page 130 of our volume XXV.

Will you or any one inform me if there is any method by which magnetism can be permanently retained in a piece of steel; or, in other words, is there any such thing as permanent magnetism; and at the same time mention, if it can be done, where I could get steel so magnetized?—J. P. Answer: Any magnetized piece of steel will retain its magnetism permanently. Any philosophical instrument maker will do the work for you. You can do the work yourself by rubbing the piece of steel with one of the poles of a common horseshoe magnet.

F. O. B., of Ill., says: I would like to enquire whether air compressed into a vessel and allowed to cool to the temperature of the surrounding air loses any of its pressure in cooling. Also, if allowed to escape when cooled, into another vessel, it will lower in temperature to correspond to a reduction in temperature. Answer: Yes. Compressed warm air is reduced in pressure by cooling. Within certain limits of temperature and pressure, air expands 1.491 of its volume for every degree of Fahr., of increased temperature and contracts accordingly by cooling. Contraction of volume of course reduces the pressure. Air under compression, when allowed to escape, is by its expansion reduced in temperature.

W. P. H. sends a diagram of a method of spacing a horizontal line into equal divisions, thinking that it is a new and quick method. By reference to Euclid, he will find that the method is not new.

J. H. S.—The mineral you send is calcite or carbonate of lime, and similar to coarse granular marble.

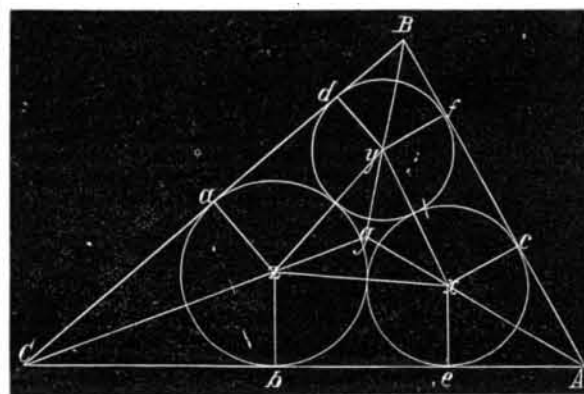
F. D. H. asks: How can I prepare bladders to be used as gas bags, rendering them soft and pliable? Answer: Try a little glycerin.

D. G. N., of Ark., will find the best method to run a 12 horse power engine to saw logs to be as follows: Belt direct from a six foot balance wheel to the saw pulley, which should be of 18 inches diameter; govern the steam by a butterfly valve by hand, shutting off steam just as the saw gets out the log; drill a 1/8 inch hole in the valve, which will just keep the engine moving, feed 1/2 to 1 inch at each revolution of the saw, and let it run as fast as the engine will carry it. I once sawed 5,000 feet per day, for 40 working days in succession, in this manner. But he must have a good foundation, as the engine will run 250 revolutions at times, with a 4 foot saw. We burned the saw dust as fast as made, but we had a 30 horse power boiler to an 8 inch cylinder engine, using steam at 80 lbs. We also did well with an 8 inch cylinder portable, with two boilers.—C. E. G. of Conn.

What is the reason that the old fashioned long stroke engines are all laid by, in places where they use stationary engines?—H. R. H. Answer: The reason why the high speed engines are preferred is because they develop more power from the same quantity of fuel, than the old fashioned engines. The theory is that the piston and rod, cross head and other reciprocating parts, if they have a high speed, act upon the principle of the fly wheel, absorbing the force of the steam at the commencement, and giving it at the end of the stroke. The practical effect is to do away with the unequal steam pressure experienced in ordinary engines, securing in lieu thereof a uniform rotative pressure on the crank. The strain on each dead center is avoided in the high speed engine, and a uniform smoothness of running is attained. In a competitive trial in England not long ago, of two engines with cylinders of the same size, using the same weight of steam per horse power per hour, the high speed engine developed 45 per cent more horse power than its low speeded competitor.

At what angle should a drill, to go the quickest speed through cast iron, be made? Will the same angle be the best for drilling wrought iron and steel?—C. E. G. Answer: For cast iron the cutting edge of the drill, should be on an angle of twenty to twenty-five degrees; for wrought iron the drill should be sharper. The cutting angle to be used is varied with the quality of the metal.

GEOMETRICAL PROBLEM.—To J. S. E., query 7, page 298.—



Let A, B, C, be any triangle, the sides of which being known, the angles may be found in the usual manner. From g, the center of gravity, draw lines bisecting the angles. Let x, y, z, be the centers of the circles. From x, y, and z, let fall upon the sides AB, BC, CA, the perpendiculars, xc, yf, zd, za, zb, xc. Join xy, yx, zx. Then,  
 AB equals Ac plus cf plus fb. (1.)  
 BC equals Bd plus da plus aC. (2.)  
 CA equals Cb plus be plus eA. (3.)

$$Ac = cx \tan \frac{A}{2}, cf = \frac{(yx)^2 - (cx - fy)^2}{2}, fb = yf \tan \frac{B}{2}.$$

Substituting these values in equation 1, we have an equation in which the side A B is given in terms of the perpendiculars cx, yf. In like manner from equations 2 and 3 will result equations giving the values of BC and CA in terms of dy, az and zb, xc. From these the value of Ax, By and Cz are easily obtained. J. S. E. can solve the problem thus indicated, taking care to use the table of natural tangents, etc., at his leisure.—H. F., of Ind.

M. S. of Va.—The mineral you send is asbestos. We believe the market is rather overstocked with the article at present.

What is the best way to rid a cistern of worms? The water is used for cooking purposes, and the worms are a source of great annoyance.—A READER. Answer: Tell us how your cistern is supplied and located, and what sort of worms you are troubled with.

Will you please inform me if there is an apparatus for producing light from electricity to take the place of gas?—G. E. B. Answer: Yes. The electric light is extensively used in England for lighthouses; but in this country it is not employed very much. The lecture rooms of some of the colleges have them. The electric light is expensive as compared with gas.

Has there ever been laid in this country a roadway pavement of the Scrimshaw or Abbott's concrete patent (or any other coal tar pavement) which has proved a success?—R. E. M. Answer: Yes. Such roads, properly made, are excellent. You will see examples of them in New York and Brooklyn. They are used quite extensively in the latter city.

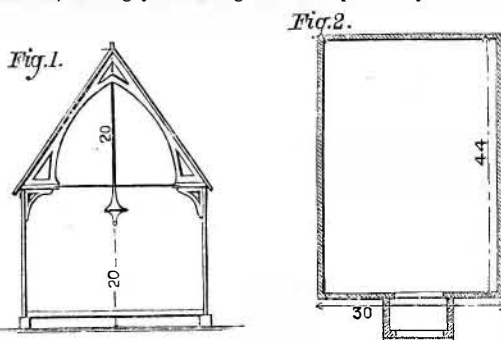
Can your correspondent E. H., or some one else, tell me how to make good cider? I especially want directions for treatment after the cider leaves the press, and for preserving it by bottling or other means.—J. W. B. Answer: By placing a little of Professor Horsford's neutral sulphite of lime in the barrel, you can at once arrest fermentation at any point you wish, and keep your cider sweet for any desired length of time.

Please give me the figures for finding the capacity of a boiler which is 15 feet long, 4 feet diameter, and contains 30 four inch flues, and also the number of gallons of its capacity. Also the name and composition of the enclosed specimen of rock (rather poor) which was sent to me from some part of Baltimore county, Maryland.—I. P. H. Answer: The contents of the boiler, space occupied by flues deducted, will be about 975 gallons. To compute the volume of a cylinder multiply the area of base by the length. To compute the area of a circle multiply half the circumference by half the diameter. The mineral you send is asbestos.

What is carboline gas? In what manner is it produced, and how is it used?—A. S. Answer: We do not know of any such gas.

C. C. A., of Cleveland, asks: What galvanic battery is the best for all general use? Answer: The kind used at the telegraph office in your city.

W. R. H., of Ill., says:—We are preparing to build a church house in our vicinity forty-four feet long. What should be its width and height to render it easy and agreeable both to the speaker and hearer? Answer: The width should be 30 feet and the height 20 feet to the eaves and 20 feet more to the ridge. Lath and plaster on the under side of the rafters, making your ceiling the same pitch as your roof with-



out any arch to the ceiling; then break it up by showing the principal trusses (three in number) extending across the roof. It is best to make these simply to consist of the two rafters and a short hammer beam at bottom on each side, and, in the absence of buttresses, connect these by a 1 1/2 inch iron tie rod. At the center of each tie rod, bring a rod down from the ridge to support the chandeliers, with an ornament at the intersection of the two.

How can I cheaply obscure the window glass, to make it appear like ground glass?—L. Answer: Use a ball of putty and dab the glass.

W. P. says:—I send you a specimen of mineral; will you please say what it is, and its value? Answer: The incrustation on the stone is iron pyrites, of no value unless found in large quantities.

Can I coat a small part of a tin roof, that is leaky, with anything to keep out the water for a few months, and if so, what?—L. Answer: Cover the cracks with rags dipped in melted asphaltum.

I want to make a marine aquarium. Can I compound a sea water that will do?—L. Answer: Probably not. But you can try. Ordinary sea water contains eight or nine different salts besides chloride of sodium. For quantities, consult any good chemistry.

Will you or some of your many readers inform me the origin and nature of the smoke of Indian summer? Also, is there a paper devoted exclusively to poetry; if so, where is it published?—W. S. H. In the fall of the year the burning of leaves, brush wood, and grasses loads the air, in some localities, with smoke, which in calm weather remains suspended in the atmosphere for some time. The ordinary blue haze, seen in the distance, is supposed to be due in part to the presence of minute particles of matter floating in the air, and in part to watery vapor suspended in the air.—We believe there is no paper published that is wholly devoted to poetry. But such a publication might be made a success, especially if it were wholly produced in verse. Such a paper would be in Journalism somewhat like the opera in theatrical representation.

G. P. says:—Will you please inform me what is the fastest running time (well authenticated) ever made on any railroad in this country or in Europe? Answer: One of the fastest railway train records in this country is that of the special relief train, carrying men and steamers, which ran from Worcester, Mass., to Boston, November 10, 1872, during the recent conflagration. Distance 44 miles; time of run 45 minutes, being at the rate of over 68 1/2 seconds per mile, or over 56 1/2 miles per hour. It is probable that portions of the distance were made at a considerable faster rate of speed than the above, and other portions at less speed. A velocity of sixty miles an hour is often obtained on first class railways on straight portions of the track.

A. D. B. says:—The reservoir at the top of my house receives the water from Wenham Pond. My plumber declares that it would not be safe to apply a ball cock to the supply pipe, as he fears that the pipe would not stand the pressure. Does it not have to bear just as great a pressure with the arrangement the plumber has put in, namely, a cock in the lower story, which is opened by hand, and closed when a tell tale pipe shows that the reservoir is full? Answer: The pressure in water pipes varies with the height of the supply. If your house reservoir, supplied by cock, as stated, is 34 feet above the ground, the greatest pressure in your water pipes, at the surface of the ground, will not exceed 15 lbs. to the square inch. If Wenham Pond is 340 feet above your ground, then the pipe leading through your house up to the ball and cock at the reservoir would have to resist a pressure of nearly 150 lbs. to the square inch. So great a pressure in a dwelling house is not desirable, as the pipes, unless made of unusual strength, are likely to leak and do mischief. It is to avoid risk of leakage under high pressure, and consequent damage, that your plumber has put in the cock down stairs.

H. A. H. G., of S. C., says:—I enclose you a specimen of something, I don't know what; it is found tolerably plentiful a few miles from this place. You will do me a favor by answering what you think it is. Answer: The mineral is black tourmaline, of no use in the arts.

To F. A. S., query 17, page 314.—Get the regular transfer pictures, then cover the picture with a slight coating of varnish; let it stand 10 or 15 minutes, put your picture on the glass or wood, rubbing it gently so that the air is all pressed out, let it "set" a few minutes; then sponge it off nicely with water, taking care to let your paper get thoroughly wet, then raise the paper gently; when dry, varnish with finishing varnish.—A. A. O., of Iowa.

In answer to your correspondent from Tennessee, mentioned in your editorial on page 295, I will say that there are moments when a quantity of water is instantly converted into steam. If much steam escapes, the disturbance in the boiler mixes the water and steam, so that the water becomes instantly evaporated. This stirs up the mud in the boiler, as is frequently seen on trying the gage cocks. I believe this is the cause of many explosions.—F. B. C., of N. Y.

W. E. F., query 2, page 298, will find the following mixture to be the best lasting and cheapest wash paint for the preservation of shingles: Take two pecks of the best unslaked lime; slake it with boiling water, keeping it covered during the process. Strain the liquid through a fine sieve, and add to it one peck of salt dissolved in warm water, three pounds rice flour, boiled to a thin paste, stirred in boiling hot, one half pound powdered whiting, and one pound glue, well soaked and dissolved in a water bath. Add five gallons of hot water to the whole mixture and let it stand a few days; heat and apply it while hot.—F. S. B., of Me.

P., query 11, page 249, should use pulverized alum and salt-peter, in about equal parts, as a substitute for arsenic. By experience I find oakum superior to cotton or hemp in stuffing, as the tar it contains tends much to the preservation of the skin.—W. R. F., of Mass.

To J. W. S., query 13, page 314.—Silk is generally used, and is, I believe, the best material.—F. S. B., of Me.

J. F. S., query 29, page 314, can make litmus paper by taking 1 oz. litmus, 5 ozs. alcohol, 5 ozs. water. Put them in a ten ounce bottle, and shake them occasionally during five or six days, when a deep blue tincture will be obtained. Pour off the clear fluid into another bottle. To prepare the paper, pour a little in a plate, pass blotting paper through it in sheets, and hang it up to dry. This is for the acid test. For alkalies, take some litmus paper, pass it through weak vinegar, hang it up and let it dry. This is a very delicate test. Another test paper can be made by taking 1 oz. powdered turmeric wood, 5 oz. alcohol, 5 oz. water; prepared as the litmus paper.—W. M. F., of N. Y.

## Recent American and Foreign Patents.

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

**LEATHER CUTTING TOOL.**—John Sweezy, Elizabethville, Pa.—This invention has for its object to furnish an improved tool for cutting strips of leather for fly nets and for other uses, which will cut four, more or less, strips at a time, and will cut them equally true from a side of leather or other irregular piece as from straight pieces, and whether the leather be the thinnest morocco or leather three sixteenths of an inch thick; and it consists in the arrangement of the adjustable gage plate, and in the combination of a spring guard with the knife block and cup block formed on the respective handles of the instrument.

**FEED WATER HEATER.**—Nathaniel Jones, Buffalo, N. Y.—This invention relates to the class of feed water heaters consisting, in general terms, of a series of pans or troughs arranged with a series of heat radiators within a case, so that the water in flowing downward falls from the first series of troughs on to the radiators next below them, and from the radiators on to the troughs in the next series, thus alternating till the final receptacle is reached. The invention has for its object to furnish a heater in which the water pans and steam and water guides are arranged to secure the speediest utilization of a given amount of heat with the least complicated and expensive construction of the apparatus.

**FOLDING BEDSTEAD.**—H. Harrison Hill, Pontiac, Ill.—The invention relates to bedsteads that fold together by having the rails hinged to the head and foot and the slats pivoted to the rails; and it consists in vertical cleats on the inside ends of rails to strengthen rails and give sufficient thickness for one leaf of hinge.

**LAMP CHIMNEY PROTECTOR.**—Edward Stern and Sigmund Blau, New York city.—This invention consists in a lamp chimney protector, consisting of two bars pivoted together at one end and provided with hooks at the other, so as to be adapted to use in chimneys of varying size.

**ORE SEPARATOR.**—Johann Friedrich Utch, of Iserlohn, Germany.—This invention relates to a new self-acting jig machine, in which separate chambers, having separate discharge openings at varying heights, are arranged for the reception of the several kinds of ore, salts, or other material which are to be separated from one another by virtue of their varying specific gravity. By having the said chambers so united as to permit a free flow of the ore from one to another, the process of separation is greatly facilitated, and the separation carried on with greater certainty than in the jig machines now in use.

PEGGING JACK.—John G. Ziegler, Salt River, Mich.—This invention consists of a circular ring or table mounted on a standard by being pivoted to the top of it at one edge, and resting at the opposite edge on braces to which it is pivoted. Said braces are swiveled to the standard so as to swing around it horizontally and be adjusted vertically by controlling nuts screwing up and down on the standard, whereby the said ring or table, whereon the blocks to which the last is clamped are mounted, can be readily adjusted to any required angle to the horizontal plane. The invention also consists of the attachment of the last-supporting blocks to this ring or table by a long slotted plate, which is secured through the table, so that it can turn freely thereon, the said slotted plate being capable of shifting endwise along the bolt by which it is secured, which passes through the slot, so that the last can be oscillated horizontally on the table, and shifted transversely thereof to facilitate the adjustment of the work to any position.

IRON STRUCTURE.—Joseph D. Duclos, New York city.—This invention has for its object to simplify the construction of iron buildings by dispensing with the "backing up" or covering of the walls on the inner sides thereof. The invention consists in finishing the cast metal walls of such structures on both sides with panels, ornaments, or otherwise, and in thereby making the inner backing up, by means of plaster or other devices, entirely unnecessary. The cost of putting up iron buildings is thus greatly reduced.

DENTIST'S AND BARBER'S CHAIR.—Francis J. Coates, Cincinnati, Ohio.—This invention consists of certain arrangements of apparatus for supporting the seat and shifting it on a horizontal pivot laterally, also forward and back, and raising and lowering the seat. It also consists in the construction of such chairs with perforated covers to the seats and backs for ventilation. Thus constructed, the seat and back will be kept moderately cool instead of becoming and remaining unpleasantly heated when in use.

WASHING MACHINE.—William W. Grant, Bloomington, Ill.—This invention has for its object to furnish an improved washing machine. It consists of a rectangular suds box, made with a concave bottom and concave vibratory back, so arranged as to swing down to allow the water to flow back into the suds box when a wringer is being used. It contains a corrugated beater board, actuated by a standard and lever passing through notches in the cover.

BUGGY REACH.—John W. Reeder, West Manchester, Ohio.—This invention has for its object to furnish an improved reach for buggies and other vehicles, which shall be so constructed that one of the wheels may rise in passing over obstructions without twisting the reach, splitting the head-block, breaking the braces, or straining or otherwise injuring the reach or its connections.

BOOK HOLDER.—David Moritz, Carmanville, and Robert White, Mott Haven, N. Y.—This invention relates to a new strap or holder for books, being intended for children's use while carrying their books to and from school, and for similar purposes. The invention consists in the combination of a spring slide with a perforated guide and with the fastening string, all operating in such manner that the string drawn through slide and guide will be clasped and held secured by the action of the spring.

MODE OF PROPELLING CANAL BOATS.—Joseph Hough, of Buckingham, Pa.—This invention relates to a new apparatus for propelling ships and boats and for preventing, to the greatest practicable extent, the lateral disturbance of the water. The invention consists, first, in the use of a double propeller, composed of two wheels, that revolve in opposite directions but effect the same results by having their wings inclined in opposite directions. The invention consists, also, in the use, at the sides of the vessel, of laterally adjustable plates, which serve to absorb the lateral disturbance of water and thereby prevent all injury to the banks or shores of any water course in which the vessel may be used.

PAINT MILL.—Robert J. McGrew, Evansville, Ind., assignor to himself and George W. Shanklin, of same place.—This invention consists in an arrangement of the furrows or grooves of stationary or movable conical grinders, calculated to be efficient in performing work and to be self-sharpening. Second, it consists in a construction and arrangement of both the grinders, so that they can be readily taken off when worn out and new ones applied without any unnecessary waste of parts not worn out. Third, it consists in an arrangement of the connecting devices by which the bridge or top frame is connected to the hopper to facilitate the removal of the rotating grinder. Fourth, it consists of an arrangement of devices for suspending and adjusting the rotary grinder. Fifth, it consists of an arrangement of grooves in the shell to answer the purpose of an ordinary scrape for the discharge of the ground paint.

BORING MACHINE.—William C. Freeman, Louisiana, Mo.—This invention consists of one or more gangs of boring tools arranged on a vertically adjustable support and provided with driving belts for the tools and apparatus for raising and lowering the tools while in operation, with automatic feeding gear, a hopper, guides, and holder for the stuff to be bored, all arranged so that the feeder pushes a board from the bottom of the hopper along the guides to the holder over the gangs of boring tools, which then come up and bore the board along one or both edges at the same time that the feeder goes back for another board, and then go down before the feeder comes forward again with the next board and ejects the first by the next, and so on. The hopper, guides, holder, and the tools are adjustable to boards of different sizes.

LEATHER BOARDING AND GRADING MACHINE.—Louis Townsend, Terre Haute, Ind.—This invention has for its object to furnish an improved machine for boarding and graining leather, doing its work quicker and better than it can be done by hand, and with substantially the effect of hand boarding upon the leather. By suitable construction the upper boarding and graining roller can be raised for the convenient insertion of the leather without disarranging the gearing. The frame is held down to hold the upper roller down upon the lower roller by a spring. Levers are provided, the outer ends of which are connected by a cross bar which serves as a foot lever or treadle for operating said levers. The inner ends of the levers are pivoted to the lower parts of the sliding bars or frame and also to the frame of the machine. A roller is attached, made somewhat smaller than the boarding and graining rollers, so as to enter the space between the forward sides, and hold the leather firmly against them. In using the machine the outer ends of the levers are pressed down, which raises the frame and upper roller and operates another lever to throw back the small roller and blade. The leather is then passed between the rollers and the blade, and as the levers are released the spring forces the frame and roller down, which operates the second levers to throw the blade and roller forward, the blade folding or doubling the leather, and the small roller holding it firmly against the graining rollers. If, now, the machine is started, certain rollers will draw the leather inward and other rollers will draw it outward, while the blade will keep it doubled or folded and pressed in between the graining rollers, the fold of the leather constantly changing its place, and the same effect being produced as is produced by hand boarding and graining, and doing it quicker and better.

SASH BALANCE.—Herman Gross, Hoboken, N. J.—The invention consists in a screw passing through a nut at the meeting rail and spring at one end, all arranged on the inside of window frame, and so adjusted that the tension of the spring tends to turn the screw in the direction to raise the sash with just sufficient power to balance or hold the sash wherever it may be, so that the latter can be moved up or down with but a slight application of force, the same as when balanced by a cord and weight or other balancing contrivance.

BUGGY, FARM AND LUMBER WAGON.—Chesley Jarnagin, Beans Station, Tenn.—The invention consists in a peculiar mode of arranging the seat so that it will be out of the way of any load that maybe carried, and so that the driver may never be inconvenienced by the load, and thereby incapacitated from a faithful attention to his business; also in a stone body of peculiar construction and adaptation; and also in a new mode of graduating the load upon a stone body.

HAY OR GRAIN RACK.—Chesley Jarnagin, Beans Station, Tenn.—The invention consists in a lower frame for hay racks, which projects forward and rests upon a platform of the running gear, in a shield or fender by which all forward movement of the load in going down hill, and all inconvenience from the same to the driver, is entirely prevented; and also in a folding curtain fastened to said shield and attached to an end pivoted to a bow, to shelter the driver from the effects of the direct rays of the sun.

MANUFACTURE OF BROMINE.—Herman Lerner, Mason City, and Elijah C. Harpole, Hartford City, W. Va.—The invention consists in making the bitter water pan with a close cover so as to form a boiler, and in connecting its steam space with the stills, whereby the vaporized bitter water may be utilized for the agitation of the liquid therein. It also consists in connecting this boiler with a primary reservoir, which is thereby kept at a proper temperature, and a large proportion of the salt precipitated. It also consists in connecting the furnace with a secondary reservoir, whereby the latter may be always maintained at the desired temperature, and thereby precipitate nearly all the residue of salt.

COTTON CULTIVATOR.—William Brooks, Lexington, Ga.—This invention relates to a cultivator for cotton and other crops, etc., and it consists in the combination, with an ordinary single shovel plow, of a pair of horizontal curved wings, which are attached loosely to the heel of the shovel standard by means of a single fulcrum bolt, to enable said wings to adjust themselves to the surface of the ground.

BLIND SLAT ADJUSTER.—Oliver L. Houghton, Holden, Mo.—This invention consists of a coiled spring connected to one of the slats for turning them up all the slats being connected together with a ratchet disk on the lower slat, and a catch pivoted on the lower cross piece of the blind to hold the slats open; or, instead of the disk and catch, it is proposed in some cases to have a hasp with a knob hinged to the lower slat, and a catch plate attached to the cross piece below, for pulling the slats down, and fastening them by a pin on the hasp.

EARTH AUGER.—Joseph Wilson, Cameron, Mo., assignor to himself and Lewis A. Bing, of same place.—This invention relates to augers for boring wells, and consists of two semicircular tapering pods, each with a cutting lip and opening, securely riveted or fastened to arms. Securely fastened, by brazing or otherwise, to the sides of the shank, are two pairs of cross plates. To the upper pair the ends of the arms are jointed, so that the parts of the pod may be separated when the auger is raised and the inclosed earth may be released. The pods are held together in close contact with each other, so that they form a round hollow cylinder sufficiently tapering to allow it to be revolved in the earth with but little friction. When the auger is full it is withdrawn, the pods are separated, and the earth discharged.

AWNING SLIDE.—John Boyle, New York city.—This invention has for its object to furnish an improved awning slide, retaining its position securely and not being liable to get out of order; and it consists in a grooved slide, sliding block, and the tubular socket to receive the rod.

DRAWER SUPPORT.—John Baggs, Easton, Md.—The invention relates to drawers generally, and consists in providing them with a support, susceptible of easy adjustment to take up wear, prevent sticking, and render the relative position of a drawer to the frame always readily maintainable. It consists, secondly, in beveling the front division piece between drawers, so that the drawer will not rub the veneering and cause it to peel off, but will cease to have a bearing on said division as soon as it is started outwardly, and will not contact with it until the drawer is entirely closed.

ADJUSTABLE CHIMNEY CAP.—Patrick H. Carlin, Brooklyn, assignor to himself and George H. McLaughlin, New York city.—This invention has for its object to produce a metallic chimney cap or covering for the tops of chimneys in place of the blue stone or other stone or brick caps heretofore used, and thereby to increase the strength and durability of chimneys, and reduce the possibility of their crumbling to pieces. The invention consists in the use of a metallic top having adjustable ledges to fit any thickness of walls, and adjustable cross pieces to fit any position of flues.

COOKING VESSEL OR BOILER.—William Y. Thomson, Oyster Bay, N. Y.—This invention has for its object to furnish an improved cover for kettles and other cooking vessels, which shall be so constructed that the liquid contents can be conveniently poured off without danger of spilling the solid contents of the vessel or scalding the hands of the operator. Upon the upper part of the opposite sides of the inner surface of the vessel, and directly opposite the lugs, are attached shoulders or flanges upon which the cover rests. To the inner side of the vessel are attached lugs or pins to keep the cover in place upon the shoulders. The cover is made in the form of two semicircular disks, hinged to each other at their straight edges. To the middle part of one of the semicircular disks is attached the handle by which the cover is handled. In the other semicircular part of the cover are formed a number of perforations, through which the water flows out when the kettle is inclined. The perforated part of the cover is covered with a flap, hinged to the said semicircular dish, so that it may be pushed out by the outflowing liquid. Suitable means are provided so that, by turning the cover one quarter around, it will be locked into place. In pouring off the liquid contents of the vessel, the said vessel is inclined by means of the handle, upon the lower ends of the arms of which are formed straight hooks which enter slots in the lugs formed upon the lower part of the said kettle. This construction enables the handle to be kept from dropping down upon the stove or range and being burned or heated.

CORN PLOW AND MARKER.—George W. Meixell, Hecktown, Pa.—This invention has for its object to furnish an improved machine for furrowing the ground for planting and cultivating. The two beams, to which the standards of the plows are attached, are connected and held in their proper relative positions by the cross bars, which are secured to the upper sides of the beams so that the plows may be conveniently adjusted wider apart or closer together, as circumstances may require. The rear end of the tongue, which is loosely bolted to the center of the central cross bar, passes through a keeper, which is so formed as to allow the said tongue to have a vertical but no lateral movement. This construction relieves the horses' necks from having to support any weight, and at the same time leaves the plows free to follow the surface of the ground. The depth at which the plows work in the ground is regulated by the gauge wheels, which may be readily adjusted. The handles may be inclined, to allow the plowman, while guiding the plows, to walk at the side of the row of plants being cultivated. By suitable construction, the marker may be turned from one side to the other as the machine passes back and forth across the field, working equally well at either side.

MACHINE FOR POLISHING MARBLE AND WOOD.—John C. Mateer, Kankakee, Ill.—This invention has for its object to furnish an improved machine for polishing marble and wood, and which may also be used for operating a bit or drill for boring purposes, doing its work well and thoroughly, and adjusting itself to the surface to be operated upon; and it consists in a vertical shaft, revolving in bearings attached to suitable supports. Upon the upper part of the shaft are placed a fast pulley and a loose pulley to receive the driving belt. A frame is arranged, to the rear ends of the top and bottom bars of which are attached bearings in which the shaft revolves, so that the said frame may be supported by the said shaft. This shaft, by means of a belt, imparts motion to a second shaft attached to the frame. From the second shaft extends another frame, at the end of which is a third shaft, to the lower extremity of which the rubber is fastened and so arranged as to adjust itself to the surface to be operated upon. The swinging frames can be conveniently raised and lowered to adjust them to the thickness of the material to be operated upon.

STEAM ROAD ROLLER.—Thomas Aveling, Rochester, England.—The object of this invention is to construct a light and efficient steam road roller with horizontal boiler. To this end, the construction of the roller is so modified as to avoid the necessity for the heavy framing heretofore employed. In carrying out the invention, the general arrangement of the ordinary traction engine is adopted, converting the driving wheels into rollers, and the space left by these rollers is covered by a pair of front rollers, which serve also as steering wheels. These rollers are made conical or "dished," in order that, on the ground line, they may be close together, while at and above their axle there is space for a vertical shaft standing up from their axle, and which serves as a front support for the boiler. This support is so connected to the shell of the horizontal boiler as to allow of its receiving a slight lateral (as well as an axial) motion, which lateral motion is required to permit of the rollers adjusting themselves to their work. The front rollers are mounted loosely on a dead axle to which is bolted the lower end of the vertical shaft or support. To the extremities of this axle a horizontal forked or saddle piece is attached to receive and act as a guide for the steering chain. The chain passes rearward to a chain wheel, by turning which the steering of the rollers will be effected, their axle being free to swivel and oscillate with the vertical support attached thereto. Mr. Aveling has done more towards developing improvements in this line of invention than any

other person. Aveling & Porter manufacture the machines in England, and Mr. W. C. Oastler, 43 Exchange Place, New York city, is the agent for this country.

BRIDGE.—George E. Harding, New York city.—The invention consists in a stiff upper chord of metal or wood, preferably arranged in the form of a double ribbed arch, braced and counterbraced in suitable panels, and rigidly connected at each end with a double lower catenary chord, also braced and counterbraced with vertical tension rods connecting the upper and lower chords.

[OFFICIAL.]

Index of Inventions

For which Letters Patent of the United States were granted.

FOR THE WEEK ENDING NOVEMBER 5, 1872, AND EACH

BEARING THAT DATE.

SCHEDULE OF PATENT FEES:

Table with 2 columns: Description of fee and Amount. Includes items like 'On each Caveat', 'On each Trade-Mark', 'On filing each application for a Patent', etc.

Large table listing various inventions and their corresponding patent numbers. Includes items like 'Animal matter, treating, M. J. Stein', 'Auger bit, R. A. Whitmore', 'Axle for vehicles, W. Pursell', etc.