

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

CAR COUPLING.—Albert E. Jones and Thomas F. Fagan, Duquesne, Pa. This invention relates to arrow head and jaw couplers, of simple construction and with few parts, designed to be safe and easily operated. The coupling jaws are centrally pivoted in a box-like receptacle, their heads beveled at their forward ends and springs bearing on the outer faces of the heads, while a spring bears on the inner faces of the rear portions of the jaws, links being connected with the rear ends of the jaws and a lever connected with the links. The arrangement is such that the lever will rest either to one side of the car or vertically, and to uncouple the lever is simply reversed, drawing the rear ends of the jaws together, separating the jaw heads and releasing the arrow head.

CAB WINDOW DUST GUARD.—Frank C. Bond, Port Jervis, N. Y. A protecting window for locomotive cabs, one which will not become frosted or clouded from the heat in the cab when it is cold outside, and will protect the engineer and fireman from cinders and the weather when looking forward, is provided for by this patent. The invention consists in arranging forward and rear windows with an arm rest at the side of the latter, the guard window being outside of and independent of these windows and hinged at one edge to the cab side; it opens at a right angle, and when open bears against the arm rest, while securing devices are provided by which it may be held in open and closed positions.

Mechanical Appliances.

SAWMILL DOG.—William H. Mitchell, Smith's Cross Roads, Ky. A sleeve sliding on a post has a projecting bracket holding an adjustable lower dog, while there is an adjusting bar sliding in the sleeve bracket and a socket on the bar to retain an upper dog, an adjusting lever being pivoted on the bracket and connected by a link with the adjusting bar. The device is designed to efficiently engage the upper and lower surfaces of round or quartered logs, and permits of the log or quarter being moved downward over the point of the head block and retained in its proper relation to the saw, while it may also be used as an overdog.

PRINTING PRESS FEED.—Mark Jacobs, New York City. This is a feed attachment for use in connection with the printing of tapes or ribbons, the spacing of the printed matter on the ribbon being automatically performed. It is secured to the platen, and consists of a shaft having a friction wheel and a drum, a spring-pressed shaft above the drum and adjustable friction wheels on the shaft, while a stationary segment with a friction surface engages the driving friction wheel and a pawl or detent limits the movement of the drum to one direction. When the device has been once set, the printing may be carried on continuously and the spacing between each impression will be evenly accomplished.

TROWEL HANDLE.—Richard J. Cooper, Duluth, Minn. This handle has a longitudinal recess in one end of which a measuring rule is hinged, adapted to fold into the recess, its back being of the shape of the rest of the handle. The device is designed to be a great convenience to and facilitate the work of the bricklayer, especially where projecting courses or panel work occur, enabling him to take the necessary measures with his towel as he holds it in his hand in the usual way.

YARN WINDER.—John D. Whyte, Manchester, England. This is a machine for winding yarn into cop form on bare spindles, without pirus, spools, tubes or cups. The invention consists of a cop-building device comprising a thread guide to which a swinging motion is given by a revolving cam wheel, a nut traveling on a revolving screw rod carrying the cam wheel and thread guide pivot.

Agricultural.

CORN CRIB.—John Z. Benson, Lawn Hill, Iowa. This invention relates to doors for cribs and granaries, and is also adapted for use on vehicles. In the sides of the door frame are inclined grooves open from end to end, in which the grain cannot lodge, slides having shoulders to limit this inward movement fitting in the grooves. By this invention the door may be adjusted to afford such degree of ventilation as may be required, and the grain may be easily removed in small quantities if desired.

Miscellaneous.

GAME BOARD.—William G. Bullen, Milwaukee, Wis. This invention provides for a game to be played in imitation of a naval battle, the board having raised partitions at each end to represent fortified harbors in which the ships of each side are located, while centrally on the board are batteries and holes with gauze pockets marked "sunk." The ships are formed of rings of different colors to represent two contestants, there being also other distinctions for ordinary ships and flag ships. The ships or rings are moved about the board by blowing upon them through tapering tubes, the object of each player being to propel his ships so that they will pass the holes and batteries and enter the fortified harbor of his opponent. The ships of an opponent are sunk by propelling them into the gauze pockets, the game being counted by allowing a certain number of points for the different degrees of success.

MOLE TRAP.—George Ricardo, Hackensack, N. J. Combined with a main supporting frame is a vertically movable frame carrying the impaling rods, in connection with a trigger mechanism, while a spiral spring exterior to both frames is removably connected to them at its ends to exert a downward pull on the impaling frame when the trigger is released. The construction is very strong and simple, and the trap is readily placed in position and set so that the animal will have no chance to escape.

STEM-WINDING WATCH.—Raymond A. Lucas and Casper F. Phelps, Kohala, Hawaii. This is

an attachment by which the winding gear will be disengaged when the spring is wound. Attached to the winding wheel is a bevel wheel engaged by a pinion on a threaded spindle, an internally threaded pinion on the spindle engaging a wide-faced pinion journaled in a mortise in the front plate of the movement, while a bevel wheel secured to the spring barrel engages a pinion on one end of an arbor whose opposite end has a bevel wheel engaging the wide-faced pinion. With this improvement there is no strain from overwinding, whether the watch be wound when only partially or when fully run down.

ANNUNCIATOR.—William C. Dillman, Brooklyn, N. Y. Speaking tubes being usually arranged in a building to center at a common point, this invention provides an annunciator to be operated from the upper end of a tube to clearly indicate which tube is to be used. A swinging leaf is supported beneath the mouth of each tube, to normally close it, the leaf being connected with one pole of a battery, while a contact bar is arranged in its rear beneath which swings a bent arm secured to the leaf, there being pivoted to the lower end of the bent arm a contact block to strike the contact bar, and an electric bell being included in the circuit. The mechanism may be operated by simply blowing in the tube at its upper end, or electrical means may be employed for depressing each leaf.

VENDING MACHINE.—David E. Durie and Alexander Begg, Seattle, Washington. Two patents have been granted these inventors on machines adapted to deliver newspapers or other publications by mechanism operated by coins dropped in a slot of the machine, the papers to be delivered on the insertion of a single coin or a number of coins, as may be most conveniently used for papers sold at different prices. In one of the machines, the paper called for by setting the mechanism in operation by the deposit of coin is projected by one edge through an opening in the case, when the purchaser takes hold of the paper and pulls it out. In the other machine a door is opened and the paper is delivered upon a tray, the door closing until the next time the mechanism is operated. The main case is designed to rest on the ground or floor, and be suited for use in various public places.

STAMP OR LABEL AFFIXER.—William B. Shafer, Somerset, Pa. This is a neat and inexpensive device affording means of moistening an envelope or other surface, and with a receptacle for stamps or labels, which may be affixed by the manipulation of the device, those not used being kept back in a separate and cleanly condition. The body of the instrument has transverse grooves and flanges at its lower end, with a stamp box open at both ends, the stamps being supported by flanges, in connection with a moistening device, the lowermost stamp being affixed by pressing down the body. The device may be utilized to facilitate the sealing of large numbers of envelopes, which can be effected with it without using the fingers therefor.

HYDRANT.—Penton A. Hardwick, Colorado City, Col. A simple and durable form of hydrant is provided by this invention, which may be set to discharge the water in the discharge pipe above the water main to prevent freezing in cold weather, or may be set for use in summer to permit the water to remain in the discharge pipe after disconnecting the latter from the water main. In connection with the head connected with the water main is a waste port leading to a sink hole or sewer connection, a half turn of the main valve plug opening communication with this port, whereby water remaining in the vertical portion of the discharge pipe may flow out.

BARREL STAND.—James J. Van Kersen, Kalamazoo, Mich. This is an attachment for barrels containing crackers or similar goods, for supporting the barrel in an inverted position and delivering the goods a part at a time as may be desired, in such a way as to be conveniently handled by the salesman. It consists of a box having lids on opposite sides and an opening in its top to receive the end of a barrel, there being cross bars below the opening to support the barrel, a partition projecting from the bottom of the box, and a cover resting on the partition and against either of the cross bars, according as the crackers are to be discharged to one side or the other.

DUMPING WAGON.—Raymond A. Lucas and John T. Murray, Kohala, Hawaii. The driver can easily dump the contents of this wagon without leaving his seat, while the construction is strong and simple. A transverse shaft having gear wheels is mounted in the wagon bed, on which slides a body having racks engaging the gear wheels, a longitudinal shaft on the bed having one end geared to the transverse shaft, while a vertical crank shaft, extending to within convenient reach of the driver, is geared to the longitudinal shaft.

VAGINAL SYRINGE.—Loren E. Hendrickson, Paulding, Ohio. This invention provides an attachment applicable to old and new syringes, for dilating the walls of the vagina after the syringe has been inserted, to insure more thorough washing and cleansing.

HAIR CLIPPER.—Walter S. Bonham, St. Paul, Minn. This is a clipper with graded cutters located at opposite ends, and with a reversible handle, whereby a No. 1 and a No. 0 clipper are combined in a single implement; the handle may also be conveniently attached to or detached from the implement. The bottom plate has guard teeth or fingers of different thicknesses at opposite ends, over which are two independent cutters pressed by springs in opposite directions, one member of the handle being fixed and the other movable, the movable member having a finger to engage with either of the cutters and move it against the action of its spring.

LEVER CARPET FASTENER.—Benjamin Irvine, Beef Slough, Wis. This invention provides a simple form of lever carpet tack, designed to be pivoted in recesses in the floor near the wall, the tacks taking the place of the ordinary carpet tacks, and intended to be used in such a way as to facilitate the laying or taking up of a carpet almost entirely without the use of a hammer.

KEROSENE BURNER.—Alphonse M. P. Hervy, Aix-sur-Vienne, France. This burner is designed to insure complete combustion and permit of easily increasing or diminishing the flame without causing smell and smoke. It has an inner part, secured to the fount of the lamp, and an outer part held movably on the inner part to regulate the flame. The device has no wheels or similar mechanism to raise and lower the wick, which is closed to all exterior openings to avoid leakage of the fuel. The several parts can be conveniently removed for the purpose of cleaning, and the lamp can be refilled without removal of the parts.

NURSING BOTTLE HOLDER.—Peter Zimmerman, Jr., New York City. This is a device adapted to be held in position by means of a clamp attached to a support adjacent to where an infant is lying or sitting, and has a holder formed of loops of spring metal into which a bottle may be easily thrust and securely held, the loops adjusting themselves to different sizes of bottles. The device is readily adjustable to bring the bottle into convenient position, where it will be so held that it cannot be easily broken.

SAFETY VALVE.—Frederick W. Fisher, Walton, Liverpool, England. This valve is especially applicable to kitchen boilers which have a continuous circulation, and is also suitable for other boilers supplied by water under pressure. It has a case with an inlet on one side, above which is an escape port, and an outlet in the lower end, a main weight being held to slide in the case and a supplemental sliding weight arranged above the main weight, valves secured to the lower end of the main weight successively closing the inlet and opening the escape port. This valve may also be arranged to operate as a reducing valve.

INSECTICIDE.—Pietro Leonardi, Pietro Zen, and Giuseppe Sardi, Venice, Italy. This is an article which, while destructive to insects, is harmless to human beings or to textile fabrics. It is formed, after a manner described, of chrysanthemum flowers, liquid ammonia, and other ingredients, in certain proportions. The sprinkling of the liquid in places infested by insects effectually disperses and destroys them, while improving the air of the room in which it is used.

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SEPTEMBER NUMBER.—(No. 71.)

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5. Climbing roses over a doorway, illustrated.
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Notes & Queries

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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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(3367) L. M. T. says: Would you kindly inform a constant reader how to successfully kiln dry oak lumber and not have it warp? We use 12 feet even length best quality Wisconsin red oak. In piling we have six sticks even thickness 2 feet apart, foundations of piles perfectly level, but the lumber is not straight. With exhaust in day we have 130 degrees, live steam at night 160 to 180 degrees of heat. Sometimes in the middle of drying we allow the kiln to cool down entirely, for instance, stopping Saturday night, and not starting it again till Monday morning. Does that affect it? Is an even temperature necessary? What is the right temperature for drying red oak when hot air is not used? How is lumber dried with hot air? What degree of heat and what size of blower? How can I figure the pressure of force of any sized blower? A. Try turning steam into the drying room at the same time it is turned upon the coils. Keep the room moist in this way until the lumber gets heated to 130° or 150°. Then shut off steam from the room and continue the heat with very little ventilation. This will dry the lumber evenly and make it less liable to warp. It is better to have an even heat, and the drying should be finished within the week. It is better for drying oak to heat to 200° if possible. This you can do with live steam by closing drying room nearly tight during the last of the process. Ventilating blowers give about 2 ounces pressure per square inch. The pressure depends upon the speed. Address Buffalo Forge Company, Buffalo, N. Y., for their blower circular, which gives size, velocity, and pressure, and also in regard to forced hot air drying.

(3368) A. G. G. asks (1) for the sizes of wire and the amount necessary for the primary and secondary parts of an induction coil made three times larger than the drawings of the one described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 160, of January 25, 1879, and the number of feet of tin foil required for the same. Would double cotton-covered copper wire do in place of naked wire? A. Use wire of the same size given in the article referred to, and double the size of the condenser. Double covered copper wire will answer. 2. What is the voltage and amperage of the hand power dynamo described in SUPPLEMENT, No. 161, of February 1, 1879? A. The machine yields a current of 4 or 5 amperes with an E.M.F. of 12 volts. 3. What is meant by alternate polarity in the field magnets of alternating dynamos? A. It means that the north and south poles of the field magnet are arranged in alternation. 4. Is the alternating principle patented? A. No.

(3369) W. A. writes: I send a sample of solder I purchased from a street corner man. It will stick to tin without a soldering iron or acid simply by holding a candle under the tin till it becomes heated. Will you say what it is made from? A. The sample of solder is nothing but common soft solder made of equal parts of tin and lead. You should apply a flux of resin or of zinc chloride before touching the solder to the surface, and the surface must be clean. The zinc

chloride soldering fluid is made by dissolving the zinc in muriatic acid to saturation, and diluting the solution with an equal quantity of water.

(3370) S. E. W. asks if the current will decompose the ferrocyanide of potassium on the telegraph paper after it has dried. Have you any books on printing telegraph machines? A. Dry chemical paper is not affected by the current. You will have to add something to your ferrocyanide solution to keep the paper moist. Carbonate of ammonium is a suitable substance for this purpose. Prescott's "Electricity and Electric Telegraph" is a good work for your use. We can mail it to you for \$6.

(3371) J. C. T. says: In Avery's "Elements of Natural Philosophy," page 441, I read: 1. "When melted cast iron is poured into a mould, it expands in solidifying and presses into every part of the mould. The traces on the casting are, therefore, as clear cut as they were in the mould." Is that statement correct? A. The statement is not correct. Iron shrinks in solidifying. The sharp impression from the mould is made by the fluidity of the metal, and the pressure produced on the mould, surface by the weight of the iron and the static pressure produced by the height of the gate. Thus a gate that is 10 inches high from the bottom of the mould, and kept full while pouring, gives a pressure of 2½ pounds per square inch at the bottom. It is this and the fine finish of the pattern that brings out the sharp detail in the casting. 2. In using the solar microscope what can be done to prevent the concentrated sunlight from burning the object? A. For a solar microscope a water cell should be placed just before the condensing lens. Its thickness should be one-third the diameter of the condensing lens, made of two pieces of French plate glass set in a wooden frame with wax.

(3372) W. J. A. writes: 1. In making a resistance box for the eight-light dynamo how many ohms resistance is required to displace a 50 volt 16 candle power lamp? A. You will need about 50 ohms resistance. 2. What size wire (German silver) and how much is necessary? A. Use No. 26; you will require a little over ¾ pounds. 3. How can I make an automatic resistance controller? A. We shall have to refer you for this information to some of the works on electric lighting apparatus. The description of an automatic rheostat would occupy too much of our space.

(3373) E. A. C. writes: I have two handsome plaster images which have become badly broken. Can you tell me through your query column if I can repair them, and how it can be done? A. Wet the edges to be joined with water, coat them with a thick mullage made of gum tragacanth, and place the edges together, allowing them to dry thoroughly. If any of the material of the image is lost, the deficiency may be supplied by applying a patch of plaster of Paris. The plaster should be mixed with water to form a thick batter and the edges to which the batter is applied should be wet.

(3374) H. R. asks for a sirup for making pop corn balls. A. Use simple sirup, which is made as follows: Take of white sugar 14 pounds (com.), water 1 gallon. Dissolve with the aid of a gentle heat, strain, and when cold add the whites of two eggs, previously rubbed with a portion of the sirup, and mix thoroughly by agitation. (The egg albumen is added to produce froth.)—From the "Scientific American Cyclopaedia of Receipts, Notes and Queries." In press.

(3375) A. J. T. asks for pastes for razors. A. a. Paste for razors.—(Pradier.) Best putty powder 1½ ounce, jeweler's rouge 1½ ounce, scales of iron ¾ ounce, levigated Turkey stone 4½ ounces, beef suet 2½ ounces. b. Put equal parts of dried sulphate of iron and salt in a closed vessel, and apply a gradually increased heat; pulverize, elutriate, mix with lard or tallow.—"Scientific American Cyclopaedia of Receipts, Notes and Queries." In press.

(3376) A. B. asks: 1. How can I test well water for injurious matter, animal or vegetable? A. Chemical and bacterial analysis is the best way of doing this, and even such analyses are not of absolutely certain interpretation. One simple method for a home test is to drop some sugar into the sample and leave it undisturbed. If it remains clear it is assumed to be of good quality, otherwise not. 2. What books can I get on that subject? A. We can supply you with Wanklyn's "Water Analysis," price \$2; "Examination of Water for Sanitary and Technical Purposes," by Leffmann & Beam, \$1.50 by mail post paid.

(3377) W. P. B. asks for a cochineal solution. A. Dissolve gramme of cochineal in 75 cubic centimeters of 20 per cent alcohol. Alkalies will cause it to redden, and acids will bleach it.—From the "Scientific American Cyclopaedia of Receipts, Notes and Queries." In press.

(3378) W. H. asks if there is any way of treating cotton or cloth to make them dry quickly, after being wet? A. We can only recommend treatment with paraffin, melting it into the pores with a hot iron. This will tend to shed water. It will for what reason prevent wetting, and so accelerate drying.

(3379) J. A. L. asks for the materials used for invisible writing which becomes distinct when heated. A. Numerous receipts are given for this. Simple lemon or onion juice answers very well. Dilute solution of cobaltic chloride or dilute sulphuric acid works well. The latter gives on heating an ineradicable mark.

(3380) T. McC. asks for a liquid gloss for harness. A. Glue 4 ounces, gum arabic 2 ounces, vinegar 1½ pints, black ink ½ pint, isinglass 2 ounces. Soften the glue by standing in 1 pint of the vinegar, dissolve the isinglass in the ink, dissolve the isinglass in a little warm water. Add the rest of the vinegar to the glue solution, then warm it until solution is obtained, add the gum and ink and next the isinglass. When all is warm and thoroughly mixed, remove from fire.

(3381) C. W. N. writes: Please state whether, in your opinion, lightning rods on a building are a benefit or detriment, with reason why. A. Properly constructed lightning rods are undoubtedly a pro-

tection. Such a rod not only receives the discharge and conducts it to the ground, but it also tends to prevent a disruptive discharge by diffusing the earth's charge into the air.

(3382) F. W. writes: Can you tell me of some kind of metal that will melt at a very low degree of temperature, so that it can be placed in the circuit of a telegraph line to guard the instrument from any heavy discharge which may take place through the wire from lightning or from crossing electric light wires? A. Fusible metal is made of lead 31, tin 19, bismuth 50 parts. A wire of common soft solder will probably answer your purpose.

(3383) D. K. P. writes: It is not generally supposed, I believe, that oil and rubber will mix, but I understand it can be mixed. Will you inform me how it can be done. A. By heating together, virgin rubber and linseed and some other oils will mix more or less perfectly. Dippel's oil, obtained by distillation of bones, is one of the first solvents for rubber ever suggested. We recommend "Rubber Hand Stamps and the Manipulation of India Rubber," \$1 by mail.

(3384) W. G. S. asks: 1. How can I get copper oxide in a finely divided state, attached or made into a plate, for making a copper zinc storage battery, using alkaline solution electrolyte? A. You can procure black oxide of copper from any dealer in chemicals in this city. 2. How can this plate be thoroughly oxidized? A. The copper is oxidized before it is placed in the battery. 3. Would asbestos cloth do for the bag in which to place the copper plate? A. We think asbestos cloth will answer. 4. What fabric would be likely to stand the solution that would not be too porous? A. See answer above. 5. Can you give me a rule for winding a small motor, to get the best results, from two volts, and to take about one ampere when working? A. Wind you motor so as to give it a total resistance of 2 ohms. If it is a shunt machine, the field magnet should have about fourteen times the resistance of the armature. 6. With a given amount of pressure current and wire, would there be any gain in making an armature with teeth projecting between the windings? About what per cent, if any, could be gained by getting the armature close to the fields? A. This construction would give improved results. We cannot give the percentage of gain. 7. If weight is not a consideration in a small motor, what could be gained by using permanent magnets for the fields? If nothing could be gained, why, since it seems that there would be a gain with limited pressure, giving the armature all the current? A. The advantages of regulation would be lost by using permanent magnets. There is practically no economy in using permanent magnets.

(3385) G. P. writes: 1. In referring to George M. Hopkins motor in SCIENTIFIC AMERICAN SUPPLEMENT, No. 641, page 10240, April 14, 1888, what size of wire can I use on the field magnet, when the armature is of No. 22, and what kind of a battery must I use? A. This will depend upon the length of wire upon the armature, and upon when whether the motor is used as a shunt or as a series machine. Probably No. 26 would be about right for a shunt machine. Use 8 cells of large Bunsen battery or of plunging battery in series. 2. Can I make a bar commutator for the above motor, and what is the easiest way to make one? A. For the construction of a bar commutator consult SUPPLEMENT, No. 641. 3. Referring to Edison's dynamo and motor, of July 25, 1891, what is the use of the vulcanized fiber collars at each end of the field magnet winding? A. The fiber collars are for receiving the canvas cover.

(3386) W. McL. asks: 1. Why is a steamship funnel given a rake? Has it any effect on the draught? A. The rake of the funnel is for symmetry with the masts, and also helps the draught. 2. What is the difference between plain wool and dyed wool? Does woolen underwear that is dyed red possess medicinal properties? A. We do not know of any special medicinal value in redannel. 3. Will a piece of iron lodged in the corner of the eye work inward or remain stationary? A. Iron chips in the surface of the eyeball or skin are likely to remain there unless removed, becoming encysted. 4. If two safety valves are fitted on two separate pipes, one twice as large as the other, both valves same size and weight, and same pressure of steam in both pipes, which valve will blow off first, and give cause? A. The valves should all blow off at the same pressure, without regard to size of pipe.

(3387) J. B. B. says: Suppose a jet of steam be discharged from a tube, one inch in diameter, what force would the steam exert, coming in contact with a body to be moved? How large and of what strength would such a tube have to be constructed, to exert a force equal to one horse power? A. Steam issuing from an orifice at 100 pounds pressure has a velocity of 898 feet per second, and at 50 pounds pressure a velocity of 878 feet per second. As a 1 inch orifice is 0.78 inch area, the pressure would be less than 0.78 of the boiler pressure against a body in contact with the end of the pipe, but would rapidly decrease as the body moved away. Any ordinary iron pipe is strong enough, but should be larger than 1 inch from the nozzle to the boiler to prevent friction. At 50 pounds boiler pressure the total power of the jet would be possibly 25 horse power, from which 15 horse power may be realized. With the same pressure a jet nozzle of ¼ inch diameter would realize 1 horse power.

(3388) W. S. writes: I have a polishing head which I wish to use for sharpening and polishing surgical instruments, etc. I want to use emery, crocus, tripoli, and Vienna lime. With what should each be mixed to use on leather and felt covered wheels? How is Vienna lime used for polishing steel? A. Use the materials named with water for preliminary polishing, brighten with crocus and Vienna lime mixed with alcohol on cotton buff. The "Practical Gold Worker," and the "Silversmith's Manual," are the best books, \$1.25 each mailed.

(3389) J. H. asks: What causes the hollow sound under foot while walking over the ground? There are several places in the immediate vicinity that are apparently as hollow as a drum for a space of ten feet square. A. A hollow sound is produced when the soil is made up of light material, such as dry leaves, es-

pecially the leaves of evergreen trees, or chips, shavings or sawdust. In some cases a horizontal seam in the rock near the surface will give the rock or the earth upon the rock a resonant character.

(3390) B. H. asks: 1. How can I make a condenser for a three horse power engine, the engine being in the cellar? I want to get rid of the steam, so as not to annoy my neighbors. I would like a very simple way to do it. A. For your condenser use a coil of iron pipe, say of 1 inch diameter and about 100 feet in length, arranged so that the air will circulate around it, and the water drip freely away. 2. I have a small lathe with one treadle, the balance wheel is 3 feet diameter, rim 3 inches wide by ¾ thick. I have attached the lathe to a grinding machine by belt; one man and a boy can run the machine at full speed for two minutes. Now what size steam engine will run this machine? A. You will need a nominally ¾ horse power engine, or a 2¼x3 inches cylinder. 3. Will one man and a boy develop ¾ horse power in the manner above? A. Yes. 4. I am making emery wheels by coating a wooden wheel with glue, then emery, and keep on until about ¼ inch thick; is this emery wheel more or less liable to burst than a solid emery wheel? A. If your wooden frame is made of proper strength, it should be strong enough for the purpose, but not to be trusted at as high velocity as the best solid emery wheel, unless for small wheels of solid wood. 5. These emery wheels, when made of fine emery, glaze, and will not cut or polish glass; how can I make them so they will not glaze? A. Glass is not cut on solid emery wheels, unless they are made to run in water. For this purpose waterproof wheels are used. Glass should be cut with a lead wheel, fed with emery and water. Wheels that do not glaze must be made with a cementing material that will allow the emery to crumble from the wheel easily. Very light pressure should be used on emery wheels for all work. 6. How can I make a first class glue for belts? A. You will need nothing better than the best glue on sale, which should be of a light brown color and very tough when the pieces are bent in the hand. Put a few drops of glycerine in a pot of glue for gluing belts.

TO INVENTORS.

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AND EACH BEARING THAT DATE.

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