

RECENTLY PATENTED INVENTIONS.

Engineering.

EXPANSION STEAM TRAP.—Hubert F. Smurthwaite, Catesville, Pa. This is a trap arranged for convenient adjustment to be set for automatic action at any desired pressure, the trap being readily cleaned of sediment whenever desired. Secured at one end in a suitable frame is an expansion tube connected with the steam supply, a discharge valve on the other free end of the tube having its stem fitted to slide in a stuffing box attached to the valve body, the latter sliding in the frame, and on the frame is fulcrumed a lever holding on its free end a bolt engaged by a spring to give the desired tension to the bolt, lever and valve. If set to two hundred pounds pressure, the trap will work as well as at five pounds pressure, and it may also be readily used as a relief valve for steam engine cylinders.

SEPARATOR.—Alphonse F. Gaiennie, Lafourche, La. This invention is for an improvement in separators employed in connection with vacuum pans, to separate and collect the vapors and minute particles of liquid carried, being also adapted to separate oil and grease from exhaust steam. The separator has semicircular baffle plates extending transversely across the drum, and having angular bends at their free edges forming passages, whereby the vapors are caused to follow a sinuous path, each plate serving to partly dry the vapors. If desired, the passage through which the vapors flow may be made narrower at the inlet and gradually widened toward the discharge end.

Railway Appliances.

CAR FENDER.—Rudolph C. Hoyer, Memphis, Tenn. This is an improvement on a formerly patented invention of the same inventor, simplifying its construction, and providing means whereby an under or receiving fender has a rearward movement upon striking an obstacle, and immediately sets in operation a rocking or upper member, the latter being held stationary beneath the car when its services are not required. The upper member, or raking fender, when an object is struck by the receiving fender, moves forward and downwardly until its cushioned edge strikes the ground, when it has a rearward and upward movement, carrying upon the receiving fender any object met with in the path of the car.

Electrical.

TELEPHONE SWITCH.—Christian N. Sandbeck, Harmony, Minn. This invention provides means by which two telephones in a series may be placed in connection without preventing other telephones in the series or on the line from being put in communication, while conversation between two telephones cannot be heard through other telephones in the same circuit. In a suitable casing is a pivoted lever adapted to close electric connections, contact springs extending transversely in the box and adapted for engagement with contact fingers, while spring plates in the casing are adapted for engagement with other contact springs, and to force the respective fingers into contact with their contact springs. The inner ends of push pins have loose engagement with their respective plates.

Mining, Etc.

MINER'S SAFETY LAMP.—Thomas H. Williams, Mount Carmel, Pa. This is a lamp designed to be very sensitive to mine gases, and is arranged to prevent relighting by the miner, who must go to an authorized person having the proper key to have the lamp lighted. An inverted cup with an aperture in its bottom has at its lower end a flange screwing into the lamp body, while a flanged sleeve engages the bottom of the cup, the sleeve extending through the aperture and forming a passage for the wick tube, a locking device on the cup engaging the sleeve.

DRY ORE CONCENTRATOR AND SEPARATOR.—Robert E. and Eugene Waugh and Charles S. Older, Colorado Springs, Col. According to this improvement a box frame having an air chamber is supported in a main chamber, and over the air chamber is operated an apron adapted to permit the passage of air through it, air pressure being produced in the chamber and the box being given a circular movement, whereby the material, as it is agitated by mechanical movement, will be lightened and opened up by the air pressure. The material to be treated is first dried in a kiln, then fed successively to a rock breaker, to Cornish rolls, and a disintegrator, whereby it is pulverized, comminuted and triturated to the desired degree of fineness, and the separation of the particles of value is effected through the action of the air through the meshes of the moving apron and the gyratory movement of the suspended box.

Mechanical.

SELF-OILING JOURNAL BEARING.—David L. Altman, Eau Claire, Wis. This bearing comprises an elongated box in which is a central vertical oil well communicating with the box by a horizontal channel, and the upper portion of the well communicating with outwardly extending passages and filtering chambers. The box also has a bore communicating with the filtering chambers and two dust chambers, and fixed to the shaft revolvably mounted in the bore is a feed wheel revolving in the oil well. The lubricant may be used continuously for considerable time without refilling the well, and it is wholly immaterial in which direction the shaft is run.

NUT LOCK.—Emile Fluehr, Sprague, Washington. According to this improvement, the nut is made with a groove across its thread and a shallow recess in its outer surface extending from the thread to one corner, a key or locking bar adapted to be removably fitted in the groove having a triangular cross section in its body and two angularly extending spring limbs at its outer end. In the recess at the corner of the nut is a detent hook, and when the key is inserted and one of its spring limbs brought into engagement with the hook, the edge of the body of the key is made to bear with force upon the threads of the bolt.

VALVE.—Sidney W. Sampson, Hudson, Mass. This valve is made with an operating mechanism for raising it from or lowering it to its seat gradually, permitting it to be also readily adjusted or quickly reversed in position. The valve has a stem screwing in a nut with which is connected a pivoted lever arranged to move both the nut and the valve stem, the lever being located and operated either above or below the valve.

GRINDING MACHINE.—Frank Parsons, Montgomery, Miss. This is a machine especially adapted for evenly and uniformly grinding and sharpening the cutter heads of planing machines with economy of time and labor. The machine has an adjustable sliding carrier to hold the cutter head to be ground, means for actuating the carrier and an adjacent grind wheel adapted to engage the cutter head, the latter being placed at various angles to or parallel with the wheel according to the angle on which the cutting edges are to be ground.

MEANS FOR TRANSMITTING MOTION.—William C. Douthette, Pittsburg, Pa. This is an improvement especially adapted for application in connection with steam pumps, the invention providing means whereby the reciprocation of the piston rod causes the pulley or balance wheel to turn, including two pulleys or balance wheels, and devices between them and the piston rod by which to turn the pulleys or wheels in opposite directions. Certain improvements are provided in the intermediate devices between the rod and the pulleys or wheels, and the two balance wheels equalize the strain, balancing each other.

Agricultural.

HAY LOADER.—John T. Hare, Fresno, Cal. This inventor has devised a loading device to be attached to a wagon to take hay or straw from the ground and deposit it in a basket or on the body of the wagon, the elevator of the loader being driven from the wagon axle and the elevator not interfering with the animals drawing the vehicle. The elevator or conveyer is made to be folded up out of the way when not in use, and a net is provided for the body of the vehicle, for the reception of the grain or straw, so that when the load is to be discharged it may be lifted bodily by simply raising the net and dumping it wherever desired.

BALING PRESS.—Elias H. Butts, Oriental, N. C. This is an inexpensive press for baling hay by hand. The baling is effected in an upper box, and a lower box receives the material, a platen in the lower box having downward side extensions and a series of ladder-like connecting bars to form a follower, while detached hand levers fulcrumed on a fulcrum bar operate alternately on the ladderlike bars of the follower. The press may be easily constructed in any ordinary workshop, and it has a capacity of ten bales per hour.

FRUIT BOX.—Eben R. Morrill, Truckee, Cal. This is a box in which fruit may be conveniently packed and the cover and bottom secured in position without the employment of special fastenings, as nails, catches, etc. The sides rigidly connect the ends with each other, and the latter have on their inner faces undulating grooves, the straight tops and bottoms being adapted to be pushed in and drawn out of the grooves. The bottom of the box is placed some distance above the floor or ground, and is sufficiently springy to counteract jars in transportation, and prevent undue pressure upon and spoiling of the fruit.

Miscellaneous.

VELOCIPEDE.—August Miller, Lindsborg, Kansas. This inventor has devised a unicycle designed for traveling on land or water. The wheel has a ring hub within which is the operator's seat, and the exterior of the hub is toothed, while in a frame having rolling connection with the hub are journaled pedal shafts with gears. To adapt the unicycle for marine use a pontoon is connected with it, having a central channel to receive the traction wheel and a locking connection at each side, the pontoon being of dish-shaped structure and preferably of somewhat circular shape, and the traction wheel having paddle-like spokes.

BARREL FILLING MACHINE.—Johnston E. J. Goodlett, Memphis, Tenn. This invention relates to devices which have a valve attachment to cut off the flow of liquid when a receptacle is filled to the required limit. According to this improvement a valve is arranged in a chamber of the discharge tube, the valve having a transverse axis to one end of which is attached a coiled spring with adjustable tension, and the valve lever being adjustably connected with a slotted sector, and being also connected with a trip and float mechanism.

HOSE NOZZLE.—Charles Hirsch, Buffalo, N. Y. This is a nozzle designed to readily control and regulate the discharge of water, throwing either a plain stream or a spray, or cutting off the water entirely if desired. The nozzle has lateral openings and a closed outer end from which projects a spherical lug or ball, a tip or nipple screwing on the end of the nozzle, and regulating the flow of water. The device is simple and inexpensive, and readily adjustable for the required service.

CEILING PLATE.—John Seringeour, Jr., Pittston, Pa. This plate has a cylindrical body portion with an outwardly projecting flange at its lower end, a spring arm secured to the body tending to engage the flange. The plate is formed in two interlocking sections, and is adapted to hold itself in place and effectively protect the ceiling from a pipe passing through the plate.

DUST PAN.—Albert Koehler, Baker City, Oregon. This is a device designed to retain the dust made by the broom and prevent its rising and settling on the furniture. It is made in the form of a box having double walls of wire cloth to permit the passage of air currents formed by the movements of the broom, the walls being separated by a space designed to form a trap to receive and retain the dust.

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Notes & Queries

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Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.
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Scientific American Supplements referred to may be had at the office. Price 10 cents each.
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(7023) A. C. K. says: 1. Please give me formula for making the best leather cement, such as is used by shoemakers for putting patches on. Most cements for this purpose contain the objectionable smelling bisulphide of carbon and are dark colored. These are objections. Can you give me recipe for a cement free from this nasty smell and which is white and transparent and equally good? A. Try bicycle tire cement; apply to both surfaces in several coats, letting it dry thoroughly between applications and after. Then put patch in place. 2. Is there any work published which thoroughly treats on the metal zinc, as used for galvanizing purposes? A. See our SUPPLEMENT, Nos. 967, 176, 994, mailed for 10 cents each.

(7023) J. S. W. asks for a formula for making a good quality of paste such as bookbinders use. A. 1. Water, 1 quart; alum, 3/4 ounce. Dissolve, and when cold, add flour to make it of the consistency of cream, then bring it to a boil, stirring it all the while. Preserve with a few drops of carbolic acid or oil of cloves. 2. (Hard.) To the above add a little powdered resin and a clove or two before boiling. This will keep for twelve months. When dry it may be softened with water.

(7024) P. B. writes: We have had an X ray outfit on exhibition here for the last month. We wish you would please tell us if in your opinion the rays will affect one's fingers and eyes, for one of our operator's eyes has become inflamed, and one of our young operator's fingers has become black and numb. Please tell us if this is caused by looking at the rays. A. We are inclined to believe that the troubles you mention are caused by the X rays; similar cases have been reported abroad, the hair being usually injured.

(7025) T. P. asks: 1. What is the best non-conductor of heat (wood excepted), which is either a solid like wood or can be made to cover a solid? A. Of ordinary stable substances, probably magnesia is as good as any. Silica, asbestos board and fiber are good. 2. What is best absorbent for liquid dropping a few drops at a time, say 10 or 15 in all? A. Any absorbent solid, such as dry clay. Quicklime will absorb water, combining with it chemically, but evolving heat, and slaking by the moisture of the air.

(7026) F. H. asks: 1. How many bi-chromate batteries will it take to light 10 one candle power lamps? Also 15 one candle power lamps? A. It depends on the resistance of the battery. Taking this at 24 ohm and voltage at 1.75, we have 13 cells for ten lamps and 20 cells for fifteen lamps approximately. 2. Is bi-chromate a good battery to use for the above purpose? A. It is about the best of the primary batteries. All are expensive and troublesome in operation. 3. Also give a simple rule for figuring out how many batteries it will take to light a certain amount of lamps. A. You will find the following a good general rule: Multiply together the current of the battery on short circuit by its voltage. Divide 16 by the product to get cells per candle power. In Sloane's "Arithmetic of Electricity," \$1 by mail, you will find several rules to cover different cases.

(7027) G. B. asks: I wish to know if there are any reliable statistics to be obtained, and where, as to the actual saving in the use of 16 candle

power electric lamps over gas. What I mean is, Does it pay to put in a plant to make your own light, say I should want 1,000 sixteen candle power lamps, and yet I am able to buy gas at \$1.50 per 1,000 feet? A. Allow ten sixteen candle power incandescent lamps to the horse power. Allow five feet of gas per hour to produce 16 to 20 candle power. This gives the basis for calculation. 1,000 gas burners would represent \$7.50 per hour. Generally, incandescent lamps are supposed to cost more than gas.

(7028) E. M. asks if fine thin tea lead, such as package tea comes in, will do for making a condenser for a 3 inch spark coil, and how much surface he will have to have. A. Yes; make the surface twice as great as that described for the coil in our SUPPLEMENT, No. 160.

NEW BOOKS AND PUBLICATIONS.

ROENTGEN RAYS AND PHENOMENA OF THE ANODE AND CATHODE. By Edward P. Thompson, M. E., E. E. Concluding chapter by Prof. William C. Anthony. New York: D. Van Nostrand Company. Pp. 190, 105 illustrations. Price \$1.50.

This carefully written book enters into the experimental development of X ray phenomena. It begins with the early researches of Faraday and follows the subject down to the present time, giving a résumé of the important experiments, and presenting the various theories. It presents a few typical applications of X rays in anatomy, surgery, diagnosis, etc., and is, in fact, a book of great interest to students of high vacua phenomena, especially such as relate to the discovery of Roentgen.

LOCOMOTIVE MECHANISM AND ENGINEERING. By H. C. Reagan, Jr. New York: John Wiley & Sons. Pp. 420. Price \$2.

This is a second edition, revised and enlarged, of a work by a practical locomotive engineer, who has endeavored to describe the manner in which the locomotive is handled while in service. To do this best, the engineer should have something more than an elementary knowledge of its construction, that he may, where breaks occur and repairs are made, be able to judge of the work necessary and how best to do it. There is a chapter on compound locomotives and an appendix on the modern electric locomotive.

A book of tables of dimensions, recently published by the Walworth Manufacturing Company, of Boston, exhibits a great amount of careful calculation as to the best proportions of different parts of various sizes of valves and fittings made by the company. The company manufacture, as specialties, the Walworth extra heavy and standard weight gate valves, and the Walworth extra heavy and standard weight fittings, and wrought iron pipe bends of all descriptions for high or low pressures. The use of these bends in place of sharp elbows or angles, wherever possible, is a matter not to be neglected by engineers or steam users.

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For which Letters Patent of the United States were Granted

November 3, 1896,

AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents.)

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