RECENTLY PATENTED INVENTIONS.

Electrical Devices.

ELECTRIC SWITCH.—W. K. DODGE, Manhattan, Kan. The invention is in the nature of a switch so constructed and arranged that two or more lights or sets of lights or any combination of the same may be thrown into circuit and the circuits which are "on" are plainly indicated from the exterior of the case. It consists in the novel construction and arrangement of the switch and in the combination with the same of an indicator which plainly shows what circuits are turned on even in the dark.

Engineering Improvements.

STEAM-BOILER.—N. L. WARREN, Macon, Ga. An object in this case is to provide a boiler of large heating capacity, but requiring comparatively little floor-space and so arranged that it may be readily inspected and cleaned both within and without. Space between the tubes will permit a person to inspect flues and other parts of the interior, and the boiler is provided with a manhole, normally closed by a cover.

TRACK-SANDER FOR LOCOMOTIVES.—G. M. SCHWEND, Birmingham, Ala. The intention in this improvement is to utilize water as a medium for effecting the discharge of sand from the reservoir or sand-box usually arranged upon the boiler of the locomotive, the same being delivered upon the rails in front of or behind the driving-wheels for understood purposes. The apparatus is specially adapted for using sand in any condition—that is, wet or dry sand—as it may be had from banks thereof at any point along the track.

LOCOMOTIVE-VALVE.—H. G. CORYELL and J. E. STEPHENS, Marietta, Ga. The present invention has for its object the provision of a valve designed to be operated from the outer side of the locomotive and by means of which the steam may be quickly cut off from either one of the steam-chests should accident or breakage occur in one of the chests, thus permitting the locomotive to be at once worked from the opposite or intact steam-chest.

Miscellaneous.

PIPE.—E. SEMPLE, Seattle, Wash. The improvement is particularly in pipes for use in carrying sand, gravel, and other material from dredges, hydraulics, or other excavating devices, the pipe being particularly designed for use as a dredger delivery-pipe. Pipes used for carrying the above named material are rapidly worn out by the grinding of the same as it passes through. The wooden lining of blocks on end, with the hoops to hold the blocks in place, is designed for the lining of any pipe, the object being to increase the life of pipes where the wear is great enough to wear them out in a few months.

COLLAR OR CUFF HOLDER.—E. L. PITTS, Jerome, Arizona Ter. This device holds cuffs and holds collars in place when in use. In use the device may be buttoned by a divided button to the neckband, or to the wristband, and a socketed head be forced through the buttonhole of the collar or cuff, as the case may be, and a hinged section be then adjusted over the collar or cuff and a spring-catch be forced into the socketed head to secure the collar or cuff as desired.

VALVE.—N. OBOLENSKU, Hermitage, N. Y. The object of this case is to provide a valve, arranged to allow of regulating the speed of the water or other fluid passing through the valve to prevent leakage and to give convenient access to the parts for repairs and for quick replacement of worn-out parts and for other purposes. The invention refers to check-valves, such as shown and described in Letters Patent formerly granted to this inventor.

DRAWERS-SUPPORTER.—H. W. POST, New York, N. Y. The purpose in this instance is to provide a form of supporter adapted for attachment at the inner portion of the waistband of the trousers, the supporter constructed, preferably, of one piece of wire of suitable gage or a strip of metal of any cross-sectional shape, the supporter comprising two loops rigidly held apart and means whereby the device may be secured to the inner face of the waistband or between the layers forming the same projecting upward at the inner face of the trousers-waistband.

FIRE-EXTINGUISHER.—F. YOST, Weehawken Heights, N. J. Mr. Yost's invention pertains particularly to improvements in portable hand-operated extinguishers of the class designed to contain an extinguishing chemical solution, an object being to provide clamping devices of novel form and operation for tightly holding the pump mechanism in place; and another object is to provide a piston-rod with a large air capacity, the confined air acting as a piston.

DEVICE FOR STRETCHING AND PRESSING TROUSERS.—F. STEVENS, Syracuse, N. Y. The aim in view in this case is the provision of a durable article adapted for the purpose of stretching trousers to take out the "bagging" in the knees thereof or for pressing the trousers, to the end that the wrinkles and bagging may be removed and made to present a neat appearance.

HOISTING AND CARRYING DEVICE.—M. C. WOOD, Rockhill, S. C. The particular application of this invention is to a hoisting device for lifting the cylinders of cotton-seed linters from their bearings and conveying the cylinders to a desired point. The principal object is to provide a device for hoisting the dulled cylinder from its bearings and removing the same to a suitable point, after which a sharpened cylinder may be conveyed by the hoisting mechanism to the linter and substituted for the previous cylinder.

TILE.—S. B. FLINT, New York, N. Y. The tiles are of such construction that they may be assembled by hooking together, to the end that each tile assists in holding a series of other tiles in place, and in a manner to prevent separation, notwithstanding that they are subjected to strain in any direction. The tile has considerable strength owing to the disposition of the recesses and the construction of the hooking projections. Their corresponding shape and size enable them to be assembled easily and quickly for covering a surface of any size.

TWINE-HOLDER.—R. A. STEEB, Roselle, N. J. The object of the invention is to provide a twine-holder, more especially designed for household use in conveniently storing odd pieces of twine, cord, string, thread, and the like, such as are received from stores, etc., arranged to permit of winding up in a spool and tied together to allow ready use of the continuous twine thus formed for tying packages, bundles, boxes, etc. The holder may also be used for holding a ball of twine, etc., if not too large for the device, one end of the spool being removable permitting the ball to be placed on the spool.

FLY-CATCHER.—J. ZIERL, Hechingen, Germany. In this patent the invention is embodied in a body or bar provided at the top with a receiver or holder for the tacky substance and at the lower end with a reservoir for the flies, also with detachable end portions which are adapted to receive the tacky substance and to be interchanged when the lower one becomes full.

MUSICAL INSTRUMENT.—E. S. STEVENSON, Eldorado, Kan. The purpose in this case is to provide an instrument having the general characteristics of a guitar—that is, as to its strings and notes, with an auxiliary set of strings and frets with stops by means of which a large number of notes and variations of scales may be quickly made with a small number of the auxiliary strings.

MEANS FOR ATTACHING STIRRUP-LEATHERS TO RIDING-SADDLES.—J. MARTIN, Chalet Elizabeth, Avenue des Casernes, Grasse, France. The aim of the present invention is to construct a support for stirrup-leathers in which when the rider falls from his horse and his foot remains in the stirrup the stirrup-leather becomes detached from the saddle by the weight of the rider. When in the saddle the rider may bear upon the stirrups without fear.

HORSE-COLLAR. J. V. STONE, Moorhead, Minn. This invention has reference to improvements in horse-collars, and the object is to construct a collar having a stuffed body and pneumatic pad which will serve to protect the horse's shoulder. Should the bag collapse, the driver need not unhitch, since the stuffing forms a body of the usual shape, and a horse could pull as well with both bags collapsed as with an ordinary hard collar.

DESIGN FOR A COVER-DISH.—R. L. JOHNSON, Hanley, Stafford, England. The plan of the cover-dish shows a symmetrical oval shape. The outline of the side presentation is beautifully curved from the handle of the cover down to the flanged base. The handles at the ends are very gracefully fashioned. The ornamental decorations are richly spread around and near the edge of the cover, the upper part of the body, and the base.

AUTOMATIC OR SELF-ACTING GATE.—J. DELAUNAY and R. VASQUEZ, Buenos Ayres, Argentina. The gate may be opened from either side by pulling a cord and in every case the gate opens away from the passer. The opening is effected by moving to one side or the other the upper end of the rod or axle on which the gate is hinged, whereupon the gate under action of gravity swings open in the direction in which its axis has been inclined.

RECEIVER FOR MAIL, ETC.—N. D. CLEARWATER, Binghamton, N. Y. The device consists of a box hinged to the jam of an outer door of a residence. The box is open only at one side through which packages may be placed in or removed from the box. When a package is placed in the box, the box may be swung on its hinges until the open side lies against the door of the house. In this position it is held by a spring latch which can be released only through the open side of the box. The contents of the box are thus rendered secure against theft, for they cannot be removed except by opening the door of the house.

CLOTHES-DRIER.—F. S. MACDOUGALL, of Seattle, Washington. This clothes drier comprises a number of clothes-suspension arms pivoted to a rotatable carrier which is mounted on a leaf hinged to a back-board. When in use the leaf is swung to a horizontal position at right angles to the back-board and is held by a latch. Means are provided for holding the rotatable carrier in any desired position.

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

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Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery and tools. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.

Inquiry No. 5193.—For makers of ice-harvesting machines, for cutting and for filling houses.

WANTED.—An up-to-date superintendent for our plant employing 250 men; foundry, machine shop and wood shop. Also foreman for machine shop, and foreman for wood shop. DeLoach Mill Manufacturing Company, Atlanta, Ga.

Inquiry No. 5194.—For makers of lathe machinery for making all kinds of turnings, such as druggists' cases, etc.

Wanted—Revolutionary Documents, Autograph Letters, Journals, Prints, Washington Portraits, Early American Illustrated Magazines, Early Patents signed by Presidents of the United States. Valentine's Manuals of the early 40's. Correspondence solicited. Address C. A. M., Box 773, New York.

Inquiry No. 5195.—For makers of ice-making machinery, such as plants of from four to ten ton capacity.

Inquiry No. 5196.—For manufacturers of molding machines for molding wax cakes.

Inquiry No. 5197.—For manufacturers of light roller bearings, suitable for grindstone shafts and pedal shafts.

Inquiry No. 5198.—For machinery for erecting a plant for manufacturing telescope mailing tubes.

Inquiry No. 5199.—For makers of pulley blocks for clotheslines, also for makers of clothes dryers, such as used in kitchen.

Inquiry No. 5200.—For the address of the manufacturer of the Magic Flute.

Inquiry No. 5201.—For the manufacturer of a small check punch having stamped thereon the following: "Grabler's Patent, Jan. 7, 1902, U. S. A."

Inquiry No. 5202.—For makers of the quarters of a hollow sphere, to be made in sheet metal in sizes 8, 12, 16, 20 and 24 inches diameter of sphere.

Inquiry No. 5203.—For parties engaged in forming or bending spring wire.

Inquiry No. 5204.—For makers of small tanks made of copper and galvanized iron.

Inquiry No. 5205.—For manufacturers of chain hoists.

Inquiry No. 5206.—For manufacturers of boots.

Inquiry No. 5207.—For machinery for cutting wooden shoe pegs.

Inquiry No. 5208.—For makers of Tripoli stone, such as used in filters.

Inquiry No. 5209.—For parties to make small coils and strings of piano wire.

Inquiry No. 5210.—For makers of small steel chains the size of watch chains.

Inquiry No. 5211.—For small castings for boat engines and motors, of 2 to 5 h. p.

Inquiry No. 5212.—For makers of metal and cloth button machinery.

Inquiry No. 5213.—For makers of carrousels or riding galleries.

Inquiry No. 5214.—For an outfit of archery court.

Inquiry No. 5215.—For makers of small articles suitable for canvassing.

Inquiry No. 5216.—For manufacturers of card embossing and card beveling machines.

Inquiry No. 5217.—For manufacturers of pneumatic goods.

Inquiry No. 5218.—For makers of gas engine castings.

Inquiry No. 5219.—For makers of headless steel hat pins.

Inquiry No. 5220.—For makers of castings of every description.

Inquiry No. 5221.—For the maker of a machine for producing quartered figures on plain oak lumber.

Inquiry No. 5222.—For makers of gasoline or hot air engines of about ½ h. p.

Inquiry No. 5223.—For a small hand loom for weaving rag carpets and looms.

Inquiry No. 5224.—For a device for cleaning cisterns of the shape of a common wooden bucket reversed, with a long handle attached, for extracting dirt from cisterns without removing the water.

Inquiry No. 5225.—For manufacturers of exhaust fans for ventilating purposes.

Notes and Queries.

HINTS TO CORRESPONDENTS.

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

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

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

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Minerals sent for examination should be distinctly marked or labeled.

(9324) W. I. R. says: Can you give me through the inquiry column of the SCIENTIFIC AMERICAN, a reliable formula for determining the number of square feet needed for steam or hot water radiators? A. The amount of radiating surface for steam heating varies considerably with the variable exposure of rooms. For house heating with low-pressure steam, in rooms with much exposure and windows on two sides of the room, a good rule is one square foot of radiating surface for each eighty cubic feet of room space, and for bedrooms of small exposure, one square foot steam surface to 120 cubic feet is a good rule. For halls and reception rooms, 1 to 100 is the general rule. For hot-water heating about 15 per cent larger than above surface should be supplied.

(9325) V. R. W. asks: Kindly inform me through your Notes and Queries whether or not molten lead when dropped in small quantities from a receptacle, from a great height, will form into spherical shapes while passing through space. A. Small quantities of molten lead when dropped from such a height that it will solidify before reaching the earth will be found to be in the shape of spheres. It is in this way that shot is manufactured. All drops of liquids are in the form of spheres.

NEW BOOKS, ETC.

MACHINE DESIGN.

We have received from the American School of Correspondence, Chicago, a copy of their new instruction paper on Machine Design. This paper has been prepared by Mr. Charles L. Griffin, who was formerly Professor of Machine Design at Pennsylvania State College, and has since had ample opportunity to put theory into practice, as chief draftsman of a prominent manufacturing company at Syracuse, N. Y. The results of his experience are clearly shown in the instruction paper. Mr. Griffin approaches his subject methodically. In fact, "method" is the key word of the whole paper, and characterizes its whole teaching. The student is first clearly taught the meaning of machine design and its relation to the problems it has to solve, viewed from the point of theory, and then from the point of production. With the relative and mutual importance of these points clearly in mind, the method of design is next taken up. The student is shown the importance of a complete analysis of the problem—its conditions and forces—before undertaking its solution. Then he must attack the problem theoretically, sketching out his design on scientific lines. The theoretical design when completed must be modified to suit practical requirements. Not until these steps have been successively followed out can the delineation and specification be taken up. These steps are clearly illustrated by a practical example, and the student is instructed to pursue them in every problem attacked, until they become so familiar as to be intuitively applied. Delineation and specification are just as methodically taught, and the student is thoroughly grounded in these important principles before taking up questions of mechanical construction and movement. The importance of such a method of attacking a problem will appeal to every experienced designer. In these days "system" plays a very important part in the success of business enterprises, and particularly in manufacturing concerns. It is a simple task to teach a new draftsman the "system" of one's drafting room, but quite a different matter to teach him a good system of thinking, a correct method of dealing with all questions which confront him, a "mechanical sense" which may be depended upon to result in scientific designing. It is a difficult matter to induce the draftsman to break away from his habit of guessing at proportions and dimensions without knowing their exact purpose or meaning. The time for learning a proper system of mechanical thought should, undoubtedly, come at the beginning of the student's course, before any guessing habits have been formed. We are pleased to find that the American School of Correspondence appreciates the importance of system in thought, and has given it due emphasis at the outset of the student's course.