

## RECENTLY PATENTED INVENTIONS.

## Pertaining to Apparel.

**HAT-STUD.**—H. W. SPEIGHT, New York, N. Y. The invention has for its object to provide means simple in construction, effective in operation, and comfortable in use, adapted to space the sweat band of a hat from the forehead of the user, and thereby ventilate the interior of the hat. The body of the stud is of a yielding nature and readily conforms to the shape of the forehead.

## Electrical Devices.

**TELEGRAPH OR ELECTRIC WIRE POLE.**—S. H. SUMMERSCALES, Winnipeg, Manitoba, Canada. The pole is such as used for supporting electric conductors, and is intended to be especially useful in supporting wires of all kinds, such as electric light, telegraph, or long-distance transmission wires. The object is to produce a durable pole provided with means for attaching the arms or cross trees to the body of the pole.

## Of Interest to Farmers.

**SUGAR-CANE AND CORN HARVESTER.**—E. B. STAFFORD, New Orleans, La. This improved machine is adapted to cut and top sugar cane, corn, or similar crops and to deposit the same in bundles, piles, or stacks, or to deliver it into carts or other receptacles. The cane or corn stalks are severed near the root and also topped practically simultaneously.

**EGG-TESTER.**—C. M. REED, Mountain View, Oklahoma Ter. This is an apparatus for use in testing eggs and handling them during the testing operation so that the latter may be effected with great rapidity. When all have been inspected, the cover is opened and swung back, and unsound eggs indicated by the marks are removed by a wire forceps, or other means. The sound eggs may be quickly removed from the tester and transferred to an empty filler and the lifter is left free for renewing the operation.

**EGG-LIFTER.**—C. M. REED, Mountain View, Oklahoma Ter. The device is adapted for use for depositing eggs in, and for lifting and removing them from, some receptacle. Also adapted for use for holding or supporting eggs while their transparency is being tested to determine their soundness. The lifter removes from the case a large number simultaneously, and deposits them in the case again or in any other receptacle.

**EGG-CASE.**—C. M. REED, Mountain View, Oklahoma Ter. The improvement is in portable cases or boxes for holding and storing eggs and particularly adapted for the use of farmers and storekeepers. The several egg holders are easily accessible so that they may be successively removed in less time than required in a case made in the usual manner.

**SELF-DUMPING HAY-RAKE.**—A. H. HOGAN, Geddes, S. D. The invention has reference to improvements in self-dumping hay rakes, and is designed to automatically dump the rake as soon as loaded, without interference on the part of the operator; also to automatically dump the hay each time at the same point on the field, thus establishing continuous rows of hay, commonly known as windrows.

## Of General Interest.

**DEVICE FOR APPLYING MEDICAMENTS.**—S. A. WINSOR, Chicago, Ill. The object of the inventor is to provide a device to be used for applying salves or ointments, and with which the medicament may be thoroughly and evenly distributed upon and rubbed into the cuticle, while at the same time the affected surface is beneficially acted upon by the friction of the operation, of advantage, for instance, in the cure of dandruff or kindred diseases.

**CANDELABRUM.**—O. H. VAN GUELPEN, New York, N. Y. The purpose of the improvement is to provide a construction of candelabra, wherein the arms can be quickly and conveniently placed in position and securely locked in a simple manner, and wherein the arms adapted to the standard of the device can be made to extend therefrom at different angles and yet be rigidly held in position, and wherein the standard may be lengthened or shortened at will.

**APPARATUS FOR DISPLAYING ILLUMINATED MULTICOLORED SIGNS OR ADVERTISEMENTS.**—H. W. CHINNEY, 118 Millais road, Leytonstone, Essex, England. A stencil in this instance bearing the inscription or design to be exhibited is interposed in the path of a beam of light (natural or artificial) which is transmitted through a multicolored translucent medium and projected by reflection. The word stencil means a screen whereof some portions are translucent, others opaque, the boundaries between being of such configuration as to present an outline or outlines, constituting an inscription or design visible by light projected through translucent portions from the back of the screen.

**AQUATIC STAGE.**—E. WAKEFIELD, New York, N. Y. The principal object in this invention is to provide a stage that can be quickly erected on the stage of any theater without disfiguring it or making it impossible to use the stage in the ordinary way at a few minutes' notice. It is therefore possible to have an aquatic scene in one act of a play while

the remainder of the scenes may be on the permanent stage with the usual scenery, etc.

**PROCESS OF TREATMENT OF CLAY CHALK.**—J. N. SHYMANSKI, Louisville, Ky. Chalk is usually placed on the market for tailors' use in the form of thin, rectangular pieces tapering in cross section at both sides, providing opposite sharpened edges. This chalk has many weaknesses and the inventor has discovered a treatment of clay chalk which does not impair its marking qualities, removes largely its soft, fragile character, and renders it capable of much longer use than the commercial article.

**SPRAY DEVICE.**—W. A. SPEAKMAN, Wilmington, Del. The essential objects of the invention are to provide a device which may be accurately regulated as to the amount of water or liquid passing from the same, and so arranged that all parts are subject to ready access to permit inspection, adjustment and repair, without removing it from its permanent setting.

**TOE-WEIGHT FOR HORSES.**—M. MCNALEY and E. W. BRETZ, St. Louis, Mo. In the present patent the invention has for its purpose the provision of a toe weight having novel, simple parts that are adapted for quick assemblage into complete form, and that is readily secured in place on the toe in a reliable manner, without injury to the foot of the animal.

**CAMERA.**—E. L. HALL, New York, N. Y. One purpose of the invention is to provide a construction wherein the focusing mirror is rigidly secured to a tension-controlled shaft, the latter mounted to turn in the frame against which the mirror has bearing when in focusing position, and to provide a second frame loosely mounted upon the shaft, adapted to carry the ground glass and focusing hood, the bearings for the latter or hood frame rendering the frames, mirror and shaft light tight at all points under all positions of hood frame and mirror.

**DOUBLE-ENDED OR S-HOOK.**—E. J. HILL, 11 Victoria street, Westminster, London, England. This S hook comprises a hook proper and a mousing link which is independent of and wholly separable from the hook and can therefore be disconnected from either or from both ends of the hook at will, yet without being necessarily detached from the hook as a whole, so that both loops (instead of one as usual) may be opened to permit engagement with or disengagement from closed eyes, without the risk of the link being accidentally lost.

**HYPODERMIC-NEEDLE CLEANER.**—G. T. BARR, San Antonio, Texas. Hypodermic needles are of different sizes and diameters, and to properly clean them a drill should be introduced of a cross section substantially equal to that of the opening of the needle. With this cleaner, the drills suitable to different size needles may be quickly introduced into the handle by pushing them into the recess, and disengaged by lifting upon the thumb-piece to release the catch.

**TOE-CLIP.**—F. J. McMONIES and W. H. McMONIES, Portland, Ore. In this instance the invention has reference to toe-clips of the general type described in the Messrs. McMonies patent formerly granted to them, their present improvement consisting in certain details of construction whereby the means for attaching the toe clip to the pedal are greatly simplified.

**BOILER-FLUE FASTENING.**—W. H. BOT, Jr., Ghent, Minn. In the present patent the invention pertains to improvements in means for securing flues in flue sheets of boilers, the object being the provision of a simple device by means of which a flue may be tightly clamped to the flue sheet, obviating the usual practice of expanding the flue.

**FILING-CABINET.**—W. A. GIBONEY, Beattie, Kan. The invention pertains to certain improvements in filing cabinets particularly designed for the filing of sheet music, newspapers, pamphlets, books, magazines, documents and the like, and the object is to provide means whereby any desired sheet or folder may be instantly identified and removed from the cabinet.

**HOLLOW STONE STRUCTURE.**—A. ANGELORO, New York, N. Y. A purpose of the invention is to construct a rustic stone structure in the form of a vase, urn, or other hollow vessel, which vessel will have a facing of what is generally known as natural or cobble stones, and to provide a means whereby the stones will be durably held in place no matter what design or pattern may be employed in the construction of the article.

**BATH-CABINET.**—C. W. GROOVER, Valdosta, Ga. The invention refers to cabinets for steam or medicated vapor baths and is especially useful as an attachment for and in connection with bath-tubs of the usual kind. The aim is to provide a cabinet or cover by means of which the ordinary bath-tub can be converted into a steam or vapor bath, which is capable of being removed and packed small when not in use, and which the bather can manipulate without assistance.

**WALL STRUCTURE.**—W. P. FRANCIS, Pensacola, Fla. This invention relates to improvements in wall structure for buildings or the like of a composite character, that is, having inner and outer facing walls of brick, tiling, or other manufactured hard material, and a filling of concrete, the main object being to provide a simple means for clamping the

facing or inner and outer walls from bulging out while tamping the concrete fillings, thus providing a perfectly smooth wall.

**HIGH EXPLOSIVE.**—W. S. WINCHESTER, Chanute, Kan. The invention consists of a new composition of matter in liquid form to be used as a high explosive which shall be stronger than nitro-glycerin, much safer to handle, and practically non-freezing. This new high explosive is to be used as such alone, or as an ingredient in the manufacture of other explosives.

**CASEMENT-WINDOW.**—I. WRÓBLEWSKI, Warsaw, Russia. The invention relates to improvements in casement windows or windows having swinging connection with the casings, and in which when closed there are practically air and dust proof joints between the sash and casing, the main object of the invention being to provide a means for slightly raising the sash, permitting it to swing.

**ORE-CONCENTRATOR.**—J. C. TATMAN, Denver, Col. In this patent the invention refers to concentrators using a rifled moving endless apron, and its object is to provide a new and improved concentrator arranged to insure a quick and thorough separation of the valuable metallic particles from the tailings in a very simple and economical manner.

**SUPPORTING-PLATE.**—S. H. SUMMERSCALES, Winnipeg, Manitoba, Canada. The invention pertains to a structural plate or supporting plate to be used in various constructions as an auxiliary support. The object is to provide a plate of this kind having a form especially adapting it to its purposes so that it may be readily secured to the object which it supports and also to the members upon which it rests.

**HOLDER.**—F. L. LYMAN, St. Louis, Mo. This device is for use in holding a book in an open position, and the inventor's object is to provide a holder, more especially designed for use on the shelf of a piano, organ, or a similar musical instrument, and arranged to hold a music book open at any page and without danger of marring the instrument or tearing or injuring the book cover or the leaves.

**INHALER.**—J. W. HORNER, Columbus, Ind. This inhaler is for use in the administration of nitrous oxide gas or other gases. The inhaler is provided with valves so arranged that during exhalation the supply of gas is automatically cut off and during inhalation automatically opened or re-established, thus avoiding waste of gas and making a considerable saving to a busy operator.

**BILLING DEVICE.**—W. R. BOHMERT, Larchmont, N. Y. In this instance the invention refers to certain improvements in billing devices, and more particularly to means for holding a bill and the sales sheet or loose leaf of a sales book while the bill is being made out, and at the same time, copied upon the sales sheet or leaf of the sales book by means of suitable transfer paper.

**REINFORCED CONCRETE STRUCTURE.**—S. H. LEA, Pierre, S. D. This invention relates to improvements particularly adaptable for use as bridge piers, caissons, or the like, and comprises a strong skeleton frame of steel having its inner and outer faces covered with expanded metal or wire mesh and the annular space filled with concrete. When this structure hardens, it becomes a strong shell of the exact shape required and can be transported and sunk in place without the use of cofferdams or sheet piling.

**FIREPROOF CHRISTMAS TREE.**—F. L. MCGAHAN, Los Angeles, Cal. While the construction may be employed as a Christmas tree, it may be used as an advertising device or a display rack, and when made upon a small scale may be employed as a toy. The tree may be mounted in various ways, and may be lighted by gas, electricity, or candles.

**COUPLING FOR UMBRELLA-HANDLES.**—C. MARX, New York, N. Y. The purpose of this inventor is to provide a simple means for coupling the members of umbrella and parasol handles, constructed of more than one piece of material, the coupling being so made that the handle in its entirety will not turn thereon; and a further purpose is to provide a coupling that can be applied directly to the stick or rod and be secured thereto.

## Hardware.

**HAMMER.**—H. C. LYON, Howard Lake, Minn. This tool is adapted to be used for driving nails in shingles and lathing, and especially for overhead work. The hammer is provided with means to contain a quantity of nails, and to deliver them singly at the ball of the tool and hold them in such position in line with the hammer head that they may be partially driven into an object without being handled.

**CUTTING-TOOL HOLDER.**—F. A. HUMMEL, New York, N. Y. The instrument has been designed to operate upon a rod, shaft, tube, or the like, held by a chuck or a face-plate and dog, or in any desired manner, at the head center of a lathe so as to be rotated, and it is intended to be applied to the work and held by hand or other means in a stationary position centered by the lathe and fed up to the work by the tail center or other means so that upon rotation of the work the operation will be performed upon it by the stationary cutting tool.

**WRENCH.**—A. L. MOSS, Sandusky, Ohio. As no swinging movement of the handle is required in this improvement it is evident that the wrench can be used to great advantage for turning bolts, nuts, and the like located in places not readily accessible to an ordinary wrench. The tool may, however, be used as an ordinary wrench. Mr. Moss has invented another wrench such as shown and described in his application for former Letters Patent of the U. S. Its object is to provide a new and improved tool, more especially designed for turning nuts, screws, and other articles in places not easily accessible by ordinary wrenches.

**WRENCH.**—R. A. SMITH, Laurelville, Pa. The wrench comprises the combination of a toothed shank with a fixed and sliding jaw, and a frame constituting an attachment of the jaw comprising an interrupted screw journaled concentrically at its ends in the frame of the jaw, the lever secured to one of the screw journals and adapted to fit around the wrench shank, and a spring adapted to engage at its free end with the shoulder of the lever for locking it in closed position, both lever and spring lying flush with the slotted head.

## Heating and Lighting.

**STOVE.**—W. B. KIMMEL, Boise, Idaho. The stove is especially designed for military or camping uses. The object of the invention is to provide a stove strong, light, and durable, and which can be packed into a small compass by placing certain parts within other parts. The oven is adapted for cooking of food through chambers for the circulation of hot gases from the fire.

**STOVE, FURNACE, OR DRUM.**—J. H. HANSON, Aitkin, Minn. The hot gases are brought into close contact with the outer wall of the stove so as to give opportunity for the wall to absorb the heat from them. An arrangement of disks tends to choke the flow so as to give time for this heat absorption. There is no danger of an actual choking of the draft, as the area of annular spaces surrounding the disks through which the gases pass, is always equal to or more than equal to the area of the stove pipe.

## Household Utilities.

**PNEUMATIC MIRROR-BRACKET.**—G. W. DAYTON and S. P. HOTALING, King City, Cal. The invention refers to brackets for supporting mirrors, and has for its purpose peculiar and novel means specially intended for holding a mirror but adapted for other uses. It resides in a bracket employing pneumatic, or suction, devices, providing ready means for attachment of the bracket to any suitable perpendicular plane.

**IRONING-TABLE.**—A. E. FRENCH, Indianapolis, Ind. In the present patent the vertical frame is telescopic, and the prop which supports the ironing-board proper in horizontal and working position is also telescopic, so that the board may be adjusted vertically at different heights to accommodate ironers of different stature.

**FRUIT-JAR HOLDER.**—ANNIE F. HORNER, Enid, Oklahoma Ter. Of the several features of this invention the most important is the connection between the funnel and standard, which permits the former to be raised or lowered or swung laterally, and which causes the weight of the funnel to automatically lock the same in any position, adjusted. Extending outwardly from the funnel adjacent to its upper edge, is an eye embracing a standard but of sufficient size to move freely upon it when the axis of the ring is aligned with the axis of the standard.

**PNEUMATIC CLEANER.**—A. RICHTER, 76 Boulevard Michel Brézin, Garches, Seine et Oise, France. This apparatus allows of acting inside the carpets and the like, so that the cleaning will be very efficient. The pipes are inserted in clothes, pillows, eider-downs, or carpets by suitable rotation of a screw. Air escaping from the pipes spreads through and removes the dust, which latter is sucked in a chamber and carried off by a pipe.

**WINDOW-SCREEN.**—S. E. SNEDDEKER, White Plains, N. Y. There is provision in this invention for a screen in which the screen is supported upon a roll and in which the screen may be adjusted and secured in position as desired. The invention is particularly useful in connection with devices in which the screen, intended to prevent the entry of insects, dust, etc., through the window, is adjustable.

**CLOTHES-PIN.**—C. W. OTT, Pittsburg, Kan. The object of the inventor is the production of a clothes-pin which may be readily applied and disconnected, and which will operate to hold the clothes securely. A further intention is to give the pin a form which will enable the same to be readily gathered upon a holder.

**COOKING-STOVE.**—F. OBERBECK, New Athens, and C. T. TAYLOR, Mount Sterling, Ill. In this cooking stove, fresh heated air is admitted to the oven, causing the evaporation to take place faster and thereby removing the moisture from the material being cooked and causing such material, particularly bread, to bake much quicker. The number of flues and dampers existing in the common form of cooking stoves is reduced, and the means for providing air circulation through the oven results in thorough, even and healthful cooking of food.

**SHELF-SUPPORT.**—J. McDowell, Sr., New York, N. Y. In this patent the invention pertains to improvements in shelf supports, and more particularly to means adapted to be readily secured to any bookcase or cabinet and provide a firm support for the shelf, the support being capable of adjustment to hold the shelf at any suitable elevation.

**THIMBLE.**—GRACE F. HOLDEN, New York, N. Y. The object of the improvement is to produce a thimble which is adapted to fold into a compact form so that it may be readily carried in a lady's purse or card-case. Further, to produce a construction which will enable the thimble to be readily opened out for use, by a simple movement of its parts.

#### Machines and Mechanical Devices.

**COIN-CONTROLLED VENDING-MACHINE.**—A. C. WAX, Perry Center, N. Y. The machine delivers towels, and is so constructed that while those delivered can be conveniently used for all legitimate purposes they can not be disconnected from the guide element forming a portion of the machine after leaving the body of the latter, but the towels after having served their purpose are automatically conducted to a locked receptacle to be removed therefrom for washing by authorized persons.

**BORING-MACHINE.**—E. J. WHEELER, Bryson City, N. C. This machine accurately centers both square and round timbers at each end and holds them against rotary movement while the boring is accomplished. It provides for boring both ends of a timber without the necessity of changing or shifting its ends in the machine, and permits centering and clamping means to move independently and transversely of the machine in order that the timber may be bored out of center when desired.

**SHIFTING MECHANISM FOR TYPE-WRITERS.**—J. B. VIDAL, Habana, Cuba. More particularly the invention relates to means for shifting the roller to bring different letters on the type levers into operative relation therewith. The object is to provide means whereby the shift key may be operated by the ball or palm of the hand, thus leaving all the fingers available for operating the type keys.

**CARRIAGE-ACTUATING MECHANISM FOR TYPE-WRITERS.**—J. B. VIDAL, Habana, Cuba. The improvement is more particularly in means employed for returning the carriage to its original position at the right-hand side of the machine after each line is written, and for rotating the roller to bring a fresh portion of the paper into operative engagement with the type. The carriage may be moved longitudinally and the roller simultaneously rotated without removing either hand from the keyboard.

**TYPE-WRITER CASE.**—J. B. VIDAL, Habana, Cuba. This improvement more particularly comprises a case designed to inclose all parts except the key board, and is so designed that the machine may be operated while inclosed within the case. It is so constructed as to deaden sound when the machine is operated, and to permit the operator to see the work as it is being done. It excludes all dust, thus it is unnecessary to inclose the machine when the latter is not in operation.

**MECHANICAL MOVEMENT.**—W. B. KIRBY, Wellington, Texas. The invention has reference to mechanical movements, the more particular object being to provide a movement for use upon mechanical motors to be employed, for instance, upon well pumps. The movement increases the power of the motor so that less energy than usual is required in operating the motor.

**WASHING-MACHINE.**—J. W. BEDINGFIELD, Florence, Ala. Steam is utilized to cleanse the clothes in this machine. The clothes are held within foraminous or woven wire receptacles within a boiler in which the water is contained, so that a circulation of steam is provided through the articles being washed. A pounder or agitator agitates or presses the clothes during the operation.

**COMPUTING DEVICE.**—F. P. GLASNER and J. J. GLASIER, Springfield, S. D. The invention relates to improvements in computing or adding and subtracting devices combined with a measuring ruler, the object being to provide a device that may be produced at a small price because of its simple construction, and that will be found very useful as an article of desk furniture.

**TREADLE ATTACHMENT FOR TOY SEWING-MACHINES.**—C. B. REPP, New York, N. Y. A purpose of this inventor is to provide an attachment for hand sewing machines, particularly adapted for use in connection with miniature or toy machines, whereby to obtain greater rapidity and steadiness of action than when such a machine is run by hand, and to render the labor of running very slight.

**CLOCK.**—A. S. PEREDO, Coatepec, Vera Cruz, Mexico. The striking attachment provided is particularly for alarm or striking clocks, and is independent of the customary alarm or striking mechanism. It provides a single stroke of a bell, gong or its equivalent at any desired interval, as for instance every five, ten, fifteen, twenty, thirty or sixty minutes, which auxiliary attachment may be silenced when desired and may be operated in conjunction with the ordinary alarm and striking mechanism of the clock without in any way interfering therewith.

**PACKING-MACHINE.**—R. HOYT, New York, N. Y. The invention refers to machines for

arranging packages in cases, its principal object being to provide an effective apparatus to automatically accomplish this end. When case after case is filled, it is only necessary to supply packages through a chute and place the cases with their guide-frames upon the support. When each has received its contents, the frame is withdrawn and the case is ready for closure.

**AIR-SHIP.**—L. HAINES, Colchester, Ill. This ship is intended to be of strong and light construction embodying a novel form of propelling means which when driven, act to overcome the force of gravity and simultaneously drive the ship forward. In one form the direction of travel is controlled by a rudder at the extreme rear end, and the relative vertical position of the stern is controlled by rudders arranged at each side thereof, means being provided for readily controlling the position of the rudders at a convenient part of the ship.

**FIBER-CLEANING MACHINE.**—J. F. FARIAS, Monterey, Mexico. This invention relates to improvements in machines for removing the outer covering and pulp of fibrous material such as sisal, palma, lechuguilla and analogous plants, the object being to provide a machine for this purpose, simple in construction and by means of which the work may be rapidly carried on.

**COIN-CONTROL FOR VENDING-MACHINES.**—S. C. GILBERT, Jackson, Ohio. The invention refers particularly to automatic machines of the vending class which are operated by the insertion of a coin of a certain denomination. The object is to produce a machine having means for controlling the coin, which will prevent the fraudulent operation of the machine by a spurious or counterfeit coin.

**SHOE-POLISHING MACHINE.**—P. CUMMING, Key West, Fla. The object among others of this invention is the production of a machine embodying a novel constructed brush holder in which the brushes may be readily and quickly changed to suit the different stages and kinds of shoe-shining required, also to provide a seat for the operator having suitable foot power means for driving the polishers.

**FLY-TRAP.**—W. J. D. BRANSCOM, Mobile, Ala. Devices are provided upon which flies alight, and such devices which thus constitute perches or roosts, are connected with spring actuated frames of box-like form, which are hinged together and adapted to inclose the roosts, and when released by manual operation of trip mechanism, the parts assume normal working relation. Outer sides of the frames are formed of woven wire which enables flies to be destroyed by flame or water when entrapped by closure of the frames.

**BINDING-MACHINE.**—C. F. McBEE, Athens, Ohio. In the present patent the invention is an improvement in machines for use in binding paper or other sheets, such, for instance, as way-bills, checks, and the like. It relates to that class of machines illustrated in a former patent granted to Mr. McBee. Movable side plates may be readily adjusted to any desired width of book and secured in such adjustment by tightening devices.

**GUN.**—I. A. TOMASINI, Guadalupe, Cal. The locking bolt may be released by either the rear trigger, or by a swinging lever upon the upper face of the lock frame, each acting independently of the other. When the bolt is drawn to the rear by the trigger, the slot in the upper face of the bolt permits passage of a crank arm, and when the lever is turned to rotate the pin, a curved depending arm turns upon its pivotal connection with the bolt without affecting the trigger. Manipulating the swinging plate upon the upper face of the lock frame causes the trigger to release the sears in sequence beginning with either barrel.

**FEEDING DEVICE.**—G. HALLIDAY, Superior, Wis. The invention relates to devices for feeding flour stock and other materials in a thin stream to a machine for further treatment of the material. The device is arranged to insure the formation of a thin and uniform stream of material throughout the width of the feed-box and without danger of blocking or choking up by the stock or foreign materials that may be in the stock.

**FLYING-MACHINE.**—W. H. COOK, Edmonds, Wash. In the present patent the invention has reference to flying machines, the object being to construct a flying machine having an aeroplane capable of raising and supporting a car or basket, without the agency of a gas bag or balloon. The means provided direct the course of the aeroplane so that it can make progress across the sky in a substantially horizontal direction.

#### Prime Movers and Their Accessories.

**INTERNAL-COMBUSTION ENGINE.**—E. CROWE, 25 Teresa terrace, Coatham, Redcar, Yorkshire, England. Mr. Crowe's invention has for its object the provision of an internal combustion engine wherein premature explosion is rendered impossible and wherein the maximum temperature and pressure being developed at the commencement of the working stroke, the highest possible average pressure and the maximum power are obtainable with a given capacity of cylinder.

**VACUUM-CONTROL VALVE.**—E. L. CRIDGE, Passaic, N. J. The improved apparatus is intended to operate to quickly break or destroy the vacuum, by the admission of atmospheric air, so that the motor which extracts air from

the condenser will be stopped more quickly than would be otherwise practicable, and also the danger of water being drawn into the cylinder of the engine will be avoided.

**ROTARY ENGINE.**—A. W. COTTELL, Arizona Territory. The cylinder rotates around a stationary shaft, and may be utilized as a pulley for transmitting power, the steam or other driving fluid being introduced through one end of the shaft and exhausted through the other. The cylinder or rotary casing carries pistons which pass swinging abutments set in a hub which also contains the inlet and exhaust ports controlled by the abutments. Automatic cut-off valves in the inlet ports are controlled by centrifugal governors. The cut-off valves are rotary valves, and give quick and effective action with small movement.

**MUFFLER.**—W. H. SMITH, Wichita, Kan. The object of the invention is to provide a new and improved muffler, more especially designed for use on gasoline and like explosive engines, and arranged to deaden the exhaust at the same time allowing comparatively free escape of the exhaust gases without producing undue back pressure.

#### Railways and Their Accessories.

**AUTOMATIC SAFETY-SWITCH.**—G. E. RYAN, New York, N. Y. The object in this case is to provide an arrangement which will prevent accidents from trains running into open switches. The invention contemplates the use of a track device which is disposed in the track near the switch and which is controlled by the position of the switch. The locomotive or some part of the train is provided with a trip device adapted to be struck by the train device so as to cut off the power.

**END-DUMP CAR.**—H. S. POTTER, Jersey City, N. J. The purpose of the inventor is to provide a railroad car adapted for construction usages, of large capacity, and which dispenses with trestle work, and wherein the body of the car will dump at the end of the bed or platform instead of at the sides, enabling the material carried by the body to be readily shoveled to either side of the track or deposited directly upon the road-bed, thus greatly facilitating the building up of the latter.

**LOG-UNLOADER.**—A. G. HARBROUGH and C. W. DETERING, Seattle, Wash. The intention of the inventor is to provide a new and improved log unloader, which is simple and durable in construction and arranged to form a permanent fixture of the log-carrying car, and to allow convenient and quick rolling or pushing of the log from the car without danger to the operator.

**STATION-INDICATOR.**—H. A. HILL, Delaware, Wis. The invention refers to improvements in station indicators for railway cars and street indicators for street railway cars, the object being to provide an indicator with the parts so arranged as to automatically and positively indicate the various places, thus not only adding to the general comfort of the traveling public but to relieve the attendants from calling out the stations.

**ROLLER-BEARING.**—E. J. EDWARDS, Los Angeles, Cal. The invention relates to improvements in roller bearings, and more particularly to means for spacing and guiding the rollers and carrying the end thrust. By supporting the rollers at both ends, they are always kept in alignment and in their proper place, and it is impossible for one end of any roller to get ahead of the other.

**AUTOMATIC LUBRICATING APPARATUS.**—T. YAHIRO, 80 Shiba-Kurumachō, Shiba-Ku, Tokyo, Japan. This invention is an improvement in automatic lubricating apparatus. In assembling the device, the oil leading means is first placed in position, after which the front and rear walls of the reservoir are riveted together, and the reservoir is placed in proper position on the wheel and secured thereto. A ring which also acts as dust protector is then placed in position, after which the journal of the axle is inserted in the journal box and the parts secured together.

#### Pertaining to Vehicles.

**SPEED-RECORDER.**—G. LENNOX, Hasbrouck Heights, N. J., and R. S. STOTT, New York, N. Y. The invention relates to speed recorders and counters, such as carried by vehicles for recording the speed thereof or the distance traveled. While the invention may be used as an attachment for any moving vehicle, it is especially useful to the users of automobiles.

**TRACE-HOLDER.**—T. THOMPSON, New London, Wis. This device is applied to the end of the swingletree for securing the trace and for clamping the free end of the trace, so that said end will not hang over the thill in contact with the wheel of the vehicle. The holder is bent out of a single piece of wire and pivoted on one side of the swingletree so as to swing into and out of operative position. The outer end passes through a hole in the tree outside of the trace and at the inner end a loop is formed on the holder for retaining the extreme end of the trace.

**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.



#### 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. Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same. Special Written Information on matters of personal rather than general interest cannot be expected without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(10596) C. H. C. says: I am desirous of constructing a large spark coil. Will you please inform me as to where I could secure the most reliable authority on the building of induction coils, such as relates to the proper dimension of core and size of wire to obtain the best results? A. SCIENTIFIC AMERICAN SUPPLEMENT 1402, price 10 cents, gives full information for coils up to 12-inch spark. For an excellent work on induction coils we recommend and can supply "Induction Coils. How to Make, Use, and Repair Them," by Norrie, price \$1 by mail.

(10597) V. L. B. says: Please answer the following questions in your columns of Notes and Queries: Has charcoal been reduced to the liquid state, and if so, is it of any scientific use in that form? A. We have no knowledge of charcoal being liquefied. The utility of such a process would depend on the chemical and physical properties of the product. We are inclined to think that use could be found for it. 2. Will ice melt in a vacuum, or simply vaporize? A. A substance cannot be melted if the pressure upon it is less than its vapor pressure at its melting point. The pressure of aqueous vapor at the freezing point of water is 4.6 mm. Hence in a vacuum of less than 4.6 mm. of mercury ice cannot be melted.

(10598) C. N. M. says: I wish to learn how much horse power a wheel will produce in a stream running 4 miles per hour, 4 feet deep, 24 feet wide. What is the best system for a wheel, etc.? A. A stream running 4 miles per hour, 4 feet deep, and 24 feet wide, would develop, if it were possible to utilize all of the energy in the water, 0.6 horse power. With a paddle-wheel covering the full cross-section of the stream, it would be impossible to utilize more than one-third of the above amount, or 0.2 horse power. The scheme, therefore, as you suggest it, seems hardly feasible. If, however, it were possible to obtain a fall of even a few feet, there is sufficient water here to give a valuable water power. With a fall of 10 feet, very nearly 10 horse power could be developed.

(10599) G. R. B. says: Will you kindly oblige me by answering the following question in your Notes and Queries of the SCIENTIFIC AMERICAN? What is the specific heat at about 250 deg. F. of syrup of such a consistency, that is, containing such an amount of water that when cooled to about 100 deg. F. it will become a thick pasty mass which will just be able to flow? I have consulted various works as have been at my disposal, and am unable to find any reference to the specific heat of sugar or syrup at any stage of its manufacture. A. We would say that we do not know of any exact data giving the specific heat of sugar syrup at different temperatures and different densities. We doubt if such data exist. This specific heat probably does not differ very greatly from that of water. It is a simple matter, however, for you to determine this for yourself by mixing a known weight of syrup at a known temperature with a known weight of water at a lower temperature, stirring the mixture and carefully noting the temperature of the same. It will be necessary for you to allow for the heat given to the vessel containing the water. It would be well for you to use a thin copper vessel for this purpose, because then the heat which it would absorb could be accurately calculated. The formula to use is as follows: (Weight of cool water × weight of copper vessel × .0933) × increase in temperature = specific heat of syrup × weight of syrup × decrease in temperature in syrup. This is a very simple experiment, and if carefully performed, with an accurate thermometer, will give you just what you want.

(10600) W. M. R. says: Can you give me the name of a substance, not a metal, that is cool, elastic, and tough? Something better than rubber or cork, if you know of such a substance. Will you kindly give me the pull in pounds necessary to straighten a hook made of steel 1/2 inch broad, 1-16 inch thick and bent to form a loop 5-16 inch in diameter, pull to be exerted by a ring working in the loop? A. It is difficult to answer your question in regard to a substance not a metal, which is