providing means of adjustment and means of regulating the air supply through the sleeve to the nozzle.

INLAYING METAL GOODS.—Henri F. L. Aument, London, England. This inventor has devised a mode of inlaying with tortoiseshell or celluloid, watch cases, jewelry, ornaments, etc., of gold and silver and other metals without the use of cement, producing a transparent, enamel-like effect. The pieces of material to be inlaid, when softened by heat, are squeezed into interlocking engagement with the grooved or beveled edges of through apertures in the metal, the pressure being maintained until the work is cold, when any superficial excess of the inlaid material is removed.

MANHOLE FOR SEWERS.—George Wright, Winnipeg, Canada. To ventilate the manholes of sewers and purify their obnoxious or deleterious gases, the manhole is, according to this invention, fitted internally with a cast iron cylinder provided with a ventilating cover, near which is held a mud pan, while a deodorizing basket is removably supported at the lower end of the cylinder. This basket is charged or recharged with deodorizing material, preferably broken charcoal, or lime, tar, etc., as often as may be desired, or when disease is raging in a town a grate may be substituted for the basket and ordinary charcoal burned thereon.

UMBRELLA.—William R. Tebow, Tiskilwa, Ill. This inventor has devised a strong and durable runner and improved the construction of the crownpiece, connecting the ribs and braces with the crownpiece and runner by ball joints, to cause the parts to work easily. The crownpiece and runner are small, and without projecting portions to injure the fingers or tear the cloth, and their construction is such that any brace or rib may be easily taken out and repaired. The umbrella joint combines strength, lightness and durability with handsome appearance and capacity for a large number of braces without making the joint large or the braces weak.

POCKET KNIFE.—John P. Nordlow, Worcester, Mass. In the knife devised by this inventor the blade is so held in the handle that the blade may be quickly and easily opened and rigidly held in open position, no matter how long the blade may be. The blade may be opened from its heel or tang, and it may also be locked in upright position, or at right angles to the handle, so that it will not move backward or forward.

POCKET KNIFE.—Carl C. Moritz and Stephen D. Greenwood, Salt Lake City, Utah. This knife costs but little more than an ordinary one, but it is so constructed that it may be easily separated into its parts, and the blades, partition plates, and springs readily removed and new parts substituted. The parts are so arranged that they may be firmly put together and the knife externally presents the usual appearance.

HAIR CURLER.—Thomas C. Moore, Great Falls, Montana. This implement has a tapered tubular body at whose larger end is a radial flange on which is loosely fitted a ring or collar to which is pivoted a clamp arm. When a lock of hair is wound close to the head or face, and, on the last turn, the clamp does not come into due position to enable it to hold the lock tightly curled, it may be adjusted or revolved to enable it to do so.

HOOK AND EYE.—Joseph F. Schoeppl, Pittsburg, Pa. This invention provides a connecting device formed of a body portion with hook members extended from one side, wings projecting from the ends and an extension from the body between the wings. It is inexpensive, being stamped out of resilient sheet metal, is readily attached to the garment without stitching, does not flap or bend outward from the fabric, and when once secured in the garment cannot be pulled out in ordinary use.

HEAD REST FOR BEDSTEADS.—George G. J. Millar, Groveport, Ohio. This is an improvement upon a formerly patented invention of the same inventor, providing for invalids a head rest which is readily adjustable to any desired position without throwing the body out of a straight line, and without much exertion of the attendant. The invention consists of a covered U-shape frame having a pivoted leg or brace, fastened in place by a cord, the covering material being permanently secured to one side of the frame, and laced to the other side, whereby it may be always drawn tight.

BEER DRAWING AND SAVING APPARATUS.—William R. Dales, New York City. This apparatus comprises a vacuum tank and a beer discharge pipe connected by a two-way faucet to which a hood is applied, with means for controlling the discharge and inlet pipes. The improvement enables the froth to be sucked from the top of a glass of beer as it is drawn, the froth being delivered into a separate receptacle from which, after it settles, it may be sold by measure.

HORSESHOE. — Erasmus Richardson, Esbon, Kansas. This is a compound or double shoe, one section being a light racing shoe permanently nailed on, over which fits a recessed heavier section, temporarily nailed in place, and to be used only when training. The two sections are wholly disconnected from each other when off, and when the outer one is removed for racing the horse will have a practically new, light, sharp-edged shoe.

CASKET HANDLE.—Lyman E. Woodard, Owosso, Mich. The wall of the casket, according to this invention, has a recessed and perforated ear, in which is a washer, the ear and washer being secured in place by a screw, and forming a base for attachable handles. The improvement, in use, affords strong, rich base piece for handles, either of the drop style or rigidly projected from the coffin.

DESIGN FOR A ROPE CLAMP FRAME.—Per O. Olsson, Marshall, Minn. The edge contour of this frame presents a series of alternate convexities and concavities, the plate being essentially a plane surface, disposed on which is a ridge-like figure.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

HAND BOOK OF PRACTICAL MECHANICS. For use in the shop and draughting room, containing tables, rules, formulas and solutions of practical problems by simple and quick methods. Logarithm, sine, cosine and tangent tables, areas and circumferences; decimal equivalents of an inch, a foot, and a pound, bevel and spur gears, worm and worm gears, United States standard bolts and nuts, tapping drills, lathe thread cutting, cams, etc. By Charles H. Saunders. Hartford: Student Publishing Company. 1895. Pp. 116. Price $1.

The Pope Manufacturing Company, manufacturers of the Columbia bicycles, are now sending out their desk pad calendars for 1895, affording space for memoranda for each day of the year. This is the tenth annual issue of this style of calendar by the Pope Manufacturing Company, and their very extensive experience has afforded them a vast deal of bicycle literature, points illustrating which bristle upon every page.

The Overman Wheel Company, manufacturers of the Victor bicycles, have issued a neat desk calendar for 1895, consisting of a memorandum pad with blanks on which to jot down brief reminders of things to be remembered, etc., for every day in the year. It goes without the saying that it is embellished with numerous apothegms as to the excellences of the Victor wheel and the advantages of bicycle riding.

The Link Belt Manufacturing Company, of Chicago, send out a very ornamental calendar for 1895, in which a leaf of a small pad is given to each week, the pad being attached to the face of a card in colors. This company furnish shafting, pulleys, gearing, etc., and labor-saving machinery for handling any material in bulk or package.

SCIENTIFIC AMERICAN BUILDING EDITION.

DECEMBER, 1894.—(No. 110.)

TABLE OF CONTENTS.

The Scientific American Architects and Builders Edition is issued monthly. $2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

The Fullness, Richness, Cheapness, and Convenience of this work have won for it the LARGEST CIRCULATION of any Architectural Publication in the world. Sold by all newsdealers. MUNN & CO., PUBLISHERS, 361 Broadway, New York.

Business and Personal.

The charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue

"U. S." metal polish. Indianapolis. Samples free.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

Wood pulp machinery. Trevor Mfg. Co., Lockport, N. Y.

Enameled signs, letters. A. V. Taylor & Co., Cin., O.

Save 100 per cent every 60 days. How? Use our loose pulley oiler. Kridler Mfg. Co., Grand Rapids, Mich.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Laight and Canal Sts., New York.

Centrifugal Pumps for paper and pulp mills. Irrigating and sand pumping plants. Irvin Van Wie, Syracuse, N. Y.

Handbook of Practical Mechanics. Price, cloth $1, leather $1.25. Chas. H. Saunders, P. O. box 963, Hartford, Conn.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, $4; Munn & Co., publishers, 361 Broadway, N. Y.

Woven wire brushes.—The Belknap Motor Co., of Portland, Me. are the patentees and manufacturers of the best woven wire commutator brush on the market.

Competent persons who desire agencies for a new popular book, of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office, 361 Broadway, New York.

The Imperial Power Building, of Pittsburg, Pa., will be completed March 1. It is a new, eight story factory building, fitted up as a model plant, with the finest machinery, electric dynamos and motors obtainable, making it desirable for manufacturers. The proprietor proposes to rent space as may be required by a manufacturer. Each floor contains 7,500 square feet, capable of subdivision, with exterior windows all around and power and appliances to meet any wants and give conveniences not obtainable elsewhere. Located in the heart of the city, within thirty feet of the Pennsylvania R. R. freight depot. Manufacturers desiring to lessen expenses and be surrounded by every convenience should address J. J. Vendergrift, Pittsburg, Pa.

☞ Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

Notes & 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.

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.

(6331) S. M. B. asks: What is the proper size of steam ports and exhaust ports and bridges between ports of cylinder 2½ inches by 3 inches stroke, ¾ inch travel of valve, also the power of engine at 300 revolutions per minute with 70 pounds steam pressure? Would an oscillating engine develop the same power, of same dimensions? What size boat would above engine run? Give height of frame and length of pitman rod for upright engine of above dimension, proper size of link and length of eccentric rods and size of belt and flywheel; also would small boiler, 22 inches high, 12 inches diameter, fire box 10 inches high, 10 inches diameter, flues 12 inches long, 2 inches diameter, upright, generate enough steam to run above engine? If not, what size should I have? A. Steam ports and bridges may be ¾ inch wide, exhaust port ¾ inch, all 1 inch long. The engine should develop an indicated ⅓ horse power at ⅜ inch cut-off. An oscillating engine of the same size should develop the same power, but its structural defect does not recommend it. The power is suitable for a 14 feet sharp built boat of the row boat type. Connecting rod should be 8 inches long, center to center. Other details can only be made from a detail drawing. A 1¼ inch belt and 16 inch flywheel. The vertical boiler should be 25 inches high, 15 inches diameter, with twenty 1¼ inch tubes for the above engine and speed.

(6332) B. F. E. asks: What are the metals and fluids used in the chloride of silver battery? A. The central negative electrode is silver; the depolarizer which surrounds it is silver chloride; the positive electrode is zinc; the excitant is a solution of ammonium chloride or salammoniac. You can refill them yourself, if you wish to. Sometimes caustic potash is used as the exciting substance.

(6333) Denver House asks: Given a perfect wheel made to revolve free on a perfect axle, will it return from its forward motion upon stopping? A. On a horizontal axis the wheel will have a tendency to slightly turn back from the instant of stopping, to come to an equilibrium. The small difference in the size of the journal and its bearing allows the journal to roll up the curve of the bearing box, when on coming to rest it returns to a center bearing by gravity, which gives the wheel a backward motion. This should not take place in a vertical axle.

(6334) V. B. C. asks: 1. Is there any reason why steam or water could not be used internally in a gasoline engine to cool the cylinder? A. No reasons beyond those based on practical points can be given. It seems neater and simpler to cool externally. 2. A pint of gasoline will make how much volume of vapor at atmospheric pressure? A. Two and one-half to three cubic feet, depending on the composition of the gasoline.

TO INVENTORS.

An experience of nearly fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

December 18, 1894,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]