

are adapted to engage with shoulders in the wheel. The device is wholly hidden from view and protected from dirt and dust, and the brake may be applied by the pressure of the rider's feet on the foot pedals.

BICYCLE CANOPY.—Adolph Mass, Carbondale, Pa. This invention provides a light and simple canopy, which adds but a trifle to the weight of the machine and which may be folded up when not required and compactly strapped to the frame. The upright is adjustable in a standard attached to the frame, and has a swivel connection with the forward portion of the canopy, the latter being adjustable vertically or laterally, and so shaped and supported that it will automatically shift its position to face the wind edge on, returning to normal position as the wind dies out.

SAIL ATTACHMENT FOR BICYCLES.—Thomas Lotherington, Ardmore, Indian Territory. According to this invention a spring roller mounted in a slotted casing carries a sail which is secured to a gaff hinged to the casing, and adapted to close the slot when the sail is wound on the roller. The sail casings are readily attachable to the frame of the machine, without injuring its appearance, and the sails may be readily spread to take advantage of the wind to assist propulsion, or automatically withdrawn and furled in the casings.

TYPEWRITER AND ADDING MACHINE.—Jacob C. Wolfe, New York City. This invention is for an attachment applicable to any typewriter, to be acted upon by the numeral keys of the machine, the device carrying an adding mechanism whereby, as the figures in a column or line are printed by the machine, the sum total appears upon the adding mechanism, having been added simultaneously with the printing of the figures. The attachment, when not in use, may remain as a fixture on the machine and not interfere with its ordinary working, being conveniently brought into action when required.

RULER AND TIME COMPUTER.—Moses Isaacs, New York City. This is a device more especially designed for banks and brokers offices, to show the due dates of time paper, while also adapted for use as a ruler. Extending in longitudinal grooves around the ruler is a tape on which are printed the months and days, and the surface of the ruler is provided with a setting mark and marks indicating different times for which due papers may be drawn. The date band is wholly exposed on the sides of the ruler, and is easily moved along in its groove.

ELEVATOR PLATFORM.—Alphonzo E. Pelham, New York City. This inventor has devised a platform of simple and durable construction, more especially designed for elevators carrying hods and a wheelbarrow, as well as other articles and passengers. It has a top, with clutches adapted to grip the guide posts on the breaking of the cable, friction rollers bearing on the guide posts, while the platform castings have integral slides engaging the guide posts and bearings for the shafts of the clutches and the friction rollers, the castings also forming a support for the top or cover.

MIXING AND HEATING APPARATUS.—Augustus S. Cooper, Santa Barbara, Cal. This apparatus has a rotary drum formed of two intercommunicating and connected cones, the drum being mounted on an inclined axis and there being a spiral blade in the longer cone. When the drum is turned in one direction the blade forces the material toward one end of the drum, and when turned in the opposite direction the material is forced toward the other end. The drum is suspended in a furnace on hollow trunnions, one trunnion considerably higher than the other, the material being fed in through the upper trunnion and discharged through the lower one. The material is thoroughly agitated during the whole progress of the operation.

GAS REGULATOR FOR WELSBACH BURNERS.—Oren R. Cline, El Dorado, Kansas. To insure an even gas pressure, so that the variations in the flow may not injuriously affect the fragile mantle, this inventor has devised an automatic regulating valve in combination with the burner tube and the encompassing air chamber. The valve is placed in the burner between the initial pressure and the air chamber, and consists of a liquid seal chamber with central opening, an inverted cap with perforated top, while a valve stem attached to the cap descends through the seal and is attached at its lower end to the valve. If a portion of the lights be turned on or off, no change is effected in the feed of gas, a uniform light being always assured.

FIREPLACE.—Franklin E. Humphreys, Mason City, Iowa. According to this improvement, hot air flues extend up by the smoke flue to heat the upper rooms of the house, and the fresh air is supplied by a flue descending alongside the chimney, there being hot air spaces in close proximity to the grate, while the combustion is promoted by what is termed an oxygen burner, which consists principally of an adjustable perforated tube, connected with the grate and the air inlet, and by means of which the flow and distribution of the air may be most effectively regulated.

STOVEPIPE COUPLING.—Thomas Holland, Spokane, Washington. To positively lock together the ends of stovepipe sections, and also for conveniently locking the upper section to the flue, the adjacent ends of the sections, according to this invention, are apertured and connected together by a simple form of coupling plate or bar, the coupling plate being attached by pins entering the registering apertures and a screw. The uppermost or outer pipe section is locked in place by a pin entering a recess in the flue.

VAPOR BATH AND INHALING APPARATUS.—Charles W. Draper, Herington, Kansas. This invention provides means for giving vapor baths in which the patient is placed within a cabinet for vapor treatment, the head of the patient being exterior to the cabinet, to be treated by any desired nozzle, while the body is subjected to hot air or vapor treatment. The generator is placed at the side of the cabinet, and controlled by the doctor.

VENETIAN BLIND.—Charles L. Miller, New York City. According to this improvement a drum is adapted to wind or unwind a cord, the drum carrying a pinion in mesh with internal gear teeth on a revoluble

eccentric, also formed with external gear teeth rolling off on a fixed internal gear wheel. The device is very simple and easily operated to raise or lower or turn the slats to any desired angle.

CHILD'S CARRIAGE.—Arabella J. M. Hurdle, Southampton, England. The especial object of this invention is to enable the handles of the carriage to be readily adjusted to any required angle to suit the height of the person propelling it, the body of the carriage being kept approximately horizontal. The joint is made by a shoe having cheek pieces with angular openings in which fit the angular ends of an apertured cylinder, there being also a second shoe through the cheek pieces of which and the cylinder a bolt passes, while a strap secured to the second shoe passes around the cylinder and a pivoted lever engages the free end of the strap.

GUITAR, ETC.—Czar Prince, New York City. This invention provides, for guitars and similar instruments, an improved capo tasto attachment for raising the pitch of all the strings. The capo tasto is composed of a support in which rocks a bridge carrier having seats for the spring, the spring engaging the seats to hold the carrier in either of its two positions. With this improvement the key of the instrument can be easily changed.

MITTEN OR LIKE FABRIC.—Isaac W. Lamb, Perry, Mich. In producing knitted fabrics in ribbed work, this invention provides means whereby the blanks may be cheaply and readily made and united to form the hand and receive the thumb. The invention consists principally in extending the selvedge yarns of one ribbed fabric between the front and back loops of the selvedge of the other fabric to form the two fabrics into one piece.

WINDOW CLEANING DEVICE.—John F. Girtler, Brooklyn, N. Y. To guard against one falling out of a window while cleaning it, this inventor has devised a safety device comprising a belt with which shoulder straps are permanently connected at one end and removably connected at their other ends, cords having hooked members on their forked ends and some of the hooks connecting with the shoulder straps, while keepers to be fixed to the window casing are engaged by the hooks. The device is simple and inexpensive, readily attached to the person, and may be conveniently connected with the keepers on the window casing.

SOUNDING BOARD.—James C. Livingston, Little Falls, N. Y. This is an improvement designed to insure a fine quality of tone in pianos and other instruments, both in the treble and bass, by a novel arrangement of hard and soft grained wood in the board, at the same time making it possible to utilize short pieces of valuable hard grain board lumber heretofore wasted. The improvement consists principally in making the board in its treble portion of hard grained strips of wood, while its base is made of soft and wider grained strips, whereby both the upper and lower notes are brought out more distinctly and purer.

COOKING STOVE.—James H. Fizer, Lexington, Ky. In this stove there is an inclined back plate for the fire chamber at a little distance in advance of the vertical front wall of the oven, the top of the back plate leaning against the upper edge of the oven wall, a damper controlling an opening in the lower part of the upright partition, and a damper controlling an opening at the front of a horizontal flue below the oven. The hot air chamber thus provided between the oven and fire pot, with the arrangement of the draughts, is designed to insure an even heating of the oven with but small consumption of fuel.

PIPE CLEANING APPARATUS.—Jacob Fierz, New York City. To clean viscid and rosy deposits from pipes used to dispense beer and other malt liquors, this inventor provides a cask in which is held a chemical or cleansing liquid, and with which connections are so made to the several pipes that, by opening the proper valve, air under pressure will force the cleansing liquid through the pipes, after which, by opening other valves, clean water will be likewise passed under pressure through the pipes, removing all traces of the chemical wash.

FILTER.—Edward Wolford, Ellwood City, Pa. This filter is made with a conical shell and inner similar-shaped filtering medium, the bottom of the shell being closed by a cap, and a brush-carrying shaft having sliding and rotary movement in the casing, contacting with the faces of the shell and the filtering material. This shaft is revolved by a crank at the top of the casing to clean the shell and filtering material, the impurities then flowing out through a faucet specially provided for their exit, but which is closed when water is to be withdrawn through the filtered water faucet.

SORTING TABLE.—Edmond F. B. Bourne, Vancouver, Canada. To facilitate the assorting of mail matter, this inventor has devised a table which takes up but little space and yet will accommodate a considerable number of sorters, the sorting divisions being quickly and easily changed. The table has a ring-shaped top having inward and outward upwardly extended flanges, a number of radially disposed supporting walls, and means for removably securing the inner edges of the walls together.

DIAPER FASTENER AND SUPPORTER.—Lizzie G. Scully, Rome, N. Y. This device comprises an elastic band with button on one end to engage a loop on a baby's garment there being also other elastic bands adapted to engage the button, and a locking plate whereby the diaper will be held as adjusted without the use of safety pins.

CORSET FASTENER.—Carlton H. Merrill, Troy, N. Y. This is a simple, strong, cheaply manufactured device, not liable to get out of order, and enables the wearer to simultaneously manipulate the several fastening devices to open and close the edges of the corset. The invention consists of three busks, of which one is movable, the second carries studs, and the third is provided with a rigid jaw pivotally connected with a movable jaw fulcrumed on the movable busk, the jaws being adapted to engage the studs.

HAIR TONIC.—Micheal J. Fleming, Portland, Oregon. This invention is for a compound to

be applied to the scalp and rubbed in where the hair is thin or absent, to promote its restoration. Its ingredients include iron oxide, rum and bear's grease compounded and prepared in a manner specified.

CIGAR OR CIGARETTE HOLDER.—Arthur C. Morrison, Uniontown, Ky. This is a holder formed of a length of spring wire, so bent as to enable the smoker to readily grasp with it the cigar or cigarette, and hold the same with the finger of one hand, enabling the holder to otherwise have the use of both hands. The device is very light and inexpensive.

CIGARETTE BOX.—Howard Watkins, South Orange, N. J. This box is made in two sections, one received within the other, the inner section having a tongue with a notch in one side and the outer section having a slot receiving the tongue, with other novel details. The invention affords a cheap and superior box that may be produced from metal, pasteboard, vulcanite, or celluloid, etc.

PESSEY.—Newton E. Charlton, Trinidad, Col. This is a cup-shaped device having a thin bottom, an outer wall in which is an annular chamber, and a spring-pressed plug valve in the casing controlling a port leading from the chamber to the cup.

ANIMAL TRAP.—James M. Kellogg, Bozeman, Montana. This inventor has devised a trap especially designed for catching mice, rats, rabbits, etc., in large numbers, without requiring attention. It has a spring-pressed lifting wheel to automatically close the inlet doors, a releasing device for the wheel to permit the latter to close the doors, and an automatic resetting device to cause the wheel to open the doors. The animal, in passing from the entrance chamber from the cage, whence he cannot return, resets the trap.

LIQUID MEASURE DRAIN.—Samuel J. Wisdom, Montgomery, Ala. This is a receptacle adapted for attachment to the head or side of a barrel or like vessel, to support the measures used so that they will drain into the barrel or vessel, also preventing insects from getting into the measures. The receptacle has a contracted base, above which is a partition having slots, a wall of each slot being carried down below the partition to form a lip. The measures are at all times readily accessible, and the receptacle may be conveniently removed and cleaned.

Designs.

POCKET KNIFE HANDLE.—William Schmachtenberg, New York City. This design is for a metallic handle with dull finished faces and polished ends, the handle slightly tapering from the butt to the blade end, while the blade opening indentations are beveled and polished.

BOTTLE HOLDER.—Eugene L. Jacques, Waterbury, Conn. For holding ginger ale and similar bottles, this inventor has devised a block simulating ice, in the top surface of which are depressions of the general shape of the bottles.

SPOON HANDLE.—August Miller, Taunton, Mass. This handle is ornamented on its face with a central convex panel surrounded by a raised ornamental border broken into turned scrolls, and its back has a concave central panel with corresponding ornaments.

ASH PAN.—Mary V. Conner, Tuskegee, Ala. This pan is higher at the back than at the front, is generally of pleasing contour, and has at its front a skeleton handle, whose side members continue oppositely across the bottom of the pan to its rear corners.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co. for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

INORGANIC CHEMICAL PREPARATIONS. By Frank Hall Thorpe. Boston, U. S. A., and London: Ginn & Company, The Athenæum Press, 1896. Pp. iv, 238. Price \$1.60.

This work, very well selected as regards its subject, touches on the preparation of the most generally used chemicals, from convenient sources. The idea is that a deficiency exists in the usual curriculum, wherein the student on entering the laboratory uses the chemicals supplied to him, takes his course in chemistry and graduates without knowing how a single one of the reagents is made. This deficiency in our present courses of instruction Dr. Thorpe aims to supply, and the work makes an admirable supplement to a chemical course. It is written by the instructor in industrial chemistry in the Massachusetts Institute of Technology. The book suggests a system which, if followed, would add to the value of any course in chemistry as given on the usual lines, for the work certainly covers ground which has hitherto been decidedly neglected in our technical schools.

THE CAMERA AND THE PEN. By T. C. Hepworth. London: Percy Lund, Humphries & Company, Limited. The Country Press, Bradford; and Amen Corner, Paternoster Row, London. Pp. 64. With illustrations.

This capital little work reviews photography from the aspect of the reporter, and gives largely a newspaper man's view of it. It is simply designed to elucidate the application of process and photographic work to the production of illustrations in newspapers, especially of such as are to be executed with the pen for reproduction. The work is not only practical but anecdotal as well, and forms quite good reading. It is well illustrated and the make-up of the book is quite attractive.

THE X RAYS. By Arthur Thornton. Bradford: Percy Lund & Company. London: Memorial Hall, Ludgate Circus, 1896. Pp. 63.

From these publishers we have a very pretty treatise on the X rays, constituting No. 10 of what the publishers term "The Popular Photographic Series." It is similar in style to Mr. Hepworth's book and contains numerous practical suggestions of value to the experimenter.

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.

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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.

(7127) F. C. W. asks: 1. How many volts are required to run a motor, of one-twelfth to one-sixteenth horse power, wound for battery circuit? A. It depends on the winding of the motor. As it needs about 40 watts and a primary battery, current should be kept low, probably 20 volts would be a fair guess at the figure asked. 2. How many gravity cells would be required to run it? A. Several hundred. This class of cell is entirely unsuited for this work, unless you are willing to use a very large number. The use of such a number entails a great deal of labor in the care of them. 3. How many Leclanche cells would run it? A. The Leclanche cells are still worse. They cannot be used on closed circuit work except for exceedingly small currents. 4. Would this motor run an ordinary sewing machine? A. Yes. 5. Is the number of volts produced by a Leclanche carbon cylinder battery as great as that made on the principle of Sampson? A. They are about the same. 6. Would any power be obtained if above motor was converted into a dynamo? A. Probably very little. Small motors are not generally constructed so as to be available for generators. 7. Can you tell me if a small powder cannon can be fired by electricity, by means of a platinum wire? A. Yes; without difficulty. For other queries address our advertisers of electrical goods.

(7128) H. K. C. says: I am anxious to secure the formula for etching on steel plate or iron, and do not know where I can learn it, unless you will give it to me. If you will do this, I will be very much indebted to you. 1. Two ounces copper sulphate, alum ¼ ounce, salt ¼ ounce, mixed with ¼ pint vinegar, and 40 drops nitric acid can be used for frosting the steel. 2. Glacial acetic acid, 4 parts; absolute alcohol, 1 part; nitric acid (s. g. 1.28), 1 part; allow the acetic acid and alcohol to remain for half hour, then add nitric acid carefully. Etch from one to fifteen minutes. 3. Alcohol, 3 parts; water (distilled), 5 parts; nitric acid, 8 parts; silver nitrate, 8 parts. Wash the plate with very dilute nitrate acid, then apply the solution for three minutes, and wash with 6 per cent solution of alcohol. Repeat if necessary. 4. (Deleschamp's for vertical bite.) Silver acetate, 2 parts; rectified spirits, 125 parts; distilled water, 125 parts; nitric acid, 65 parts; nitric ether (see No. 5 of copper etching above), 16 parts; oxalic acid, 1 part. 5. Iodine, 4 parts; potassium iodide, 10 parts; water, 80 parts. This is very highly recommended.

(7129) F. C. G. asks: 1. Will the zincs and coppers in a gravity battery waste away if kept in the solution when the battery is on an open circuit? A. Yes; a small current will operate to prevent the deposition of copper on the zincs. 2. How is Faure's accumulator or secondary battery made? A. See our SUPPLEMENT, Nos. 322, 593 and 838. 3. How many quart gravity batteries should it take to run a telegraph line about ¼ mile long with 31 instruments of 20 ohms resistance each? Line with ground circuit. A. Allow ten cells for this work.

(7130) H. G. J. asks: 1. Can you talk over any line with an electric telephone that you can ring a magneto bell over? A. With proper telephone apparatus you can do this. The telephone should have an equal or greater range of action. 2. Has it ever been tried to use a barb wire fence for a telephoneline? Would it be possible? A. This has often been done successfully. 3. Is there any cheap liquid insulator that can be put on the post that will harden? Am thinking of putting in a line from here to my ranch (ten miles); have a barb wire

