

RECENTLY PATENTED INVENTIONS.

Engineering Improvements.

**ROTARY ENGINE.**—C. E. SHUMWAY, Albion, Mich. Mr. Shumway is the inventor of improvements in rotary engines operated by steam pressure. Certain novel details are provided in this engine whereby the construction of the same is simplified. The parts are so arranged as not to be liable to get out of order.

**FLUID-PRESSURE BRAKE.**—T. J. LEBO, Chanute, Kans. The invention relates to fluid pressure brakes on a train having two or more engines. Certain improvements are provided whereby the engineer of the first or leading engine has complete control of the entire brake mechanism of the train, and by the air brakes and main reservoirs and pumps of both engines are used to furnish the compressed air for the auxiliary reservoirs. The parts are controlled without requiring any attention on the part of the engineer of the second engine.

**BOILER-PIPE CLEANER.**—J. H. WILLIAMS, Wilson, Kans. In steam boilers the water pipe that connects the water space of the boiler with the lower part of the water column and water gage, is very liable to become choked with sediment and scale, because the water in this pipe is free from violent ebullition. When so choked up it is liable to make the water level in the glass different from that in the boiler, and by so falsely indicating the amount of water in the boiler, might lead to a disastrous explosion. The object of this invention is to provide means for overcoming this difficulty.

Hardware.

**SAW-SET.**—O. R. JOHNSON, Escanaba, Mich. An improvement in saw-sets is provided by this invention which consists of a convenient hand tool by means of which, in one operation two teeth may be set in opposite directions, thus reducing the length of time required for setting the saw and assuring a uniform set. The device can be quickly adjusted to saws of different sizes.

**FENCE-WIRE FASTENER.**—G. H. WRIGHT, Spokane, Wash. The fastener provided in this invention has a peculiar construction, especially adapted for uniting crossing wires in wire fences. The device is adapted to co-operate with the bends of the wires at the point of intersection to hold the wires in proper position, and in such manner that the clamp or fastener will be retained against any tendency to displacement.

**NUT-LOCK.**—B. R. SWORDS, Ottawa, Ill. The object of the invention is to provide an improved nut-lock designed for use on bolts for rails, fishplates, locks and other parts of machines and devices. The nut-lock is simple and durable in construction, and is arranged to permit of screwing up the nut to the desired degree and then securing it against accidental unscrewing.

**OYSTER-TONGS.**—C. K. and W. T. SHAW, Bellport, N. Y. These inventors provided improved oyster tongs which are arranged for loosening, gathering, and securely holding the oysters without requiring undue physical exertion on the part of the operator when dredging for the oysters. The construction permits convenient and quick repair of any of the parts.

**CAN-OPENER.**—H. SIDMAN, Pomona, N. Y. An improved device is herein provided for cutting the ends from metal cans. The device has a simple construction by means of which the ends or top of the can may be quickly cut out and the edge of the metal turned or crimped to form a smooth surface not liable to scratch a person's fingers.

Mechanical Devices.

**PEARL-BUTTON-TURNING MACHINE.**—J. LOOG, Brooklyn, N. Y. Mr. Loog is the inventor of a machine for turning pearl buttons which is arranged to permit of turning the face of a button the desired depth, according to the thickness of the stock to be treated, and without removing the tool from the tool-rest.

**WASHING-MACHINE.**—H. J. LOCKHART, Fostoria, Ohio. An improvement in washing machines is provided by this invention. The articles to be washed are drawn between revolving rollers, one of which rollers has also a longitudinal reciprocating movement to accomplish the necessary rubbing of the goods. The invention provides improvements on a machine of this class whereby the results above specified are accomplished in a more efficient manner.

**HEMMING ATTACHMENT FOR SEWING MACHINES.**—THOMAS F. DENNISON, 251 Marcy Avenue, Brooklyn, N. Y. Mr. Dennison is the inventor of an improved attachment for sewing machines adapted for making a hem on linen, silk or cotton goods, handkerchiefs, garments, and the like. Means are provided for adjusting the device so that the hem may be of different widths, ranging from about an eighth of an inch upward. The construction of the scroll is such that it may be readily and quickly adjusted to goods of different thicknesses. The attachment is very simple and of a convenient size to operate and to apply to a machine.

**LINOTYPE-LEADER.**—B. COLE and A. WILSON, Lincoln, Neb. This invention forms no part of a machine for producing linotypes.

It is a separate and distinct machine adapted to support stored slugs and leads in separate quantities with mechanism operated to feed first one, then the other to a common galley or hopper in interlaid position.

Railway Improvements.

**ATTACHMENT FOR RAILWAY WATER-TANKS.**—R. T. CUMMINGS and W. W. WYKOFF, Maysville, Ky. Water tanks for supplying water to locomotive tenders are usually provided with a delivery pipe which is attached and hinged in such manner as to be adapted to swing in a vertical plane, but not for movement parallel to the track. Consequently the locomotive must be stopped on the track in such position that the inlet opening of the tender will be exactly opposite this delivery pipe. This is often a matter of considerable difficulty, and in order to avoid this objection Messrs. Cummings and Wykoff have invented an apparatus so constructed as to allow considerable range of movement of the delivery pipe parallel to the pipe.

**SWITCH.**—A. E. JAMES, Natchez, Miss. In this invention Mr. James provides a novel construction whereby the switch tongue will be held normally in one position by means of a spring, so it can yield from such position to permit the cars to pass in one direction. The switch tongue is thus made automatic and delay incident to the operation of the switch point by the motorman is thus avoided.

Vehicles and Their Accessories.

**COMBINED HUB SPINDLE AND THIMBLE.**—S. GREGORY, Trinidad, Colo. The purpose of this invention is to provide a combination of hub spindle and thimble which will insure a hub remaining and properly turning upon the spindle in the presence of a lubricant until purposely removed, and which will prevent undue lateral movement of the hub or undue wear and tear upon the spindle and hub-thimble.

**SECURING-ROD FOR END-GATES.**—H. M. MCGREW, Pickrell, Neb. Means are provided in this invention for detachably securing in place the rear end gate of a wagon body. The invention comprises certain novel details of construction for a securing rod that adapt it for every convenient application and removal and afford means for adjusting the length of the rod to conform with the width of the wagon body it is applied upon.

**WAGON-BODY LIFTER.**—C. W. NABB, Charleston, Mo. Mr. Nabb herein provides an improvement in wagon-body lifters. The novel construction employed is adapted to lift the wagon body and subsequently to lift the running gear. The several devices provided are in such form and arrangement that almost all of them can be made by a farmer from the timber at hand, thus avoiding the expense and inconvenience of securing the best timber.

Miscellaneous.

**HOLDER FOR PEGS FOR STRINGED MUSICAL INSTRUMENTS.**—S. A. GREGG, Sedalia, Mo. This invention relates to improvements in devices for holding and regulating the friction of pegs for musical instruments, such, for instance, as violins, cellos and the like. The holding device may be readily attached to a peg and will not scratch or mar the varnish on the peg box. The device is adapted to firmly hold the pegs from turning or slipping under the strain of the strings.

**BOX.**—H. L. AVERILL, Piermont, N. H. This improved box is adapted to receive and protect butter especially during transportation. The box has an economic form made in hinged sections, which when open will expose the top and a portion of the sides of the contents of the box, enabling the contents to be inspected. Means are provided on the box by which the butter may be cut, and a handle is employed which serves as a lock for the box when closed.

**BROODER.**—M. J. MAPES, Springvalley, N. Y. The invention provides an apparatus for sheltering young chickens, particularly those which have been hatched by means of incubators. The construction embodies various novel features by which the brooder may be more effectively and uniformly heated without in any way interfering with its proper ventilation.

**HAY-CAP.**—G. W. SIMONS, Posey, Ill. Mr. Simons' invention consists in peculiar fastening means whereby a series of boards may be secured together in a way especially adapted to form hay-caps, as also roof and other coverings. In carrying out the invention Mr. Simons employs a series of boards of desired length and thickness, and arranges them with lapping edges adapted to be screwed by fastening links.

**DIVING APPARATUS.**—E. B. PETRIE, New York, N. Y. The diving apparatus which is provided in this invention is adapted for deep-sea diving, withstanding the pressure of deep water without detracting from the comparative comfort of the diver. The invention also provides perfectly articulating water and air tight joints at the connections of the hip, body, and leg sections, and the knee, ankle and elbow sections. Thus affording the diver in a heavy suit the greatest freedom of action.

**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.

Business and Personal Wants.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. In every case it is necessary to give the number of the inquiry. MUNN & CO.

**Marine Iron Works.** Chicago. Catalogue free. **Inquiry No. 3341.**—For manufacturers of wire racks or baskets.

**AUTOS.**—Duryea Power Co., Reading, Pa. **Inquiry No. 3342.**—For tin and nickel plated nozzle sprays similar to those used in bathtubs.

**Small Steam Motors.** F. G. Grove, Luray, Va. **Inquiry No. 3343.**—For manufacturers of 1/2-inch rubber hose and hose couplings.

**"C. S." Metal Polish.** Indianapolis. Samples free. **Inquiry No. 3344.**—For machines for knitting hose and underwear.

**Dies, tools, models.** Am. Hardware Co., Ottawa, Ill. **Inquiry No. 3345.**—For manufacturers of fly-paper machinery.

**Coin-operated machines.** Willard, 284 Clarkson St., Brooklyn. **Inquiry No. 3346.**—For a pneumatic or other machine for pulling flax.

**Sawmill machinery and outfits manufactured by the Lane Mfg. Co.** Box 13, Montpelier, Vt. **Inquiry No. 3347.**—For makers of the Gravity coal oil burner.

Let me sell your patent. I have buyers waiting. Charles A. Scott, Granite Building, Rochester, N. Y. **Inquiry No. 3348.**—For manufacturers of novelties.

**MANUFACTURERS!** Want any parts made of any metal? Write us. Metal Stamping Company, Niagara Falls, N. Y.

**Inquiry No. 3349.**—For makers of a machine for printing several copies of typewritten work by a photographic process.

**Automobiles built to drawings and special work done promptly.** The Garvin Machine Co., 149 Varick, cor. Spring Streets, New York.

**Inquiry No. 3350.**—For manufacturers of adding and listing machines.

**Manufacturers of patent articles, dies, stamping tools, light machinery.** Quadriga Manufacturing Company, 18 South Canal Street, Chicago.

**Inquiry No. 3351.**—Wanted, parties to manufacture a small cast and wrought iron machine in large quantities.

The largest manufacturer in the world of merry-go-rounds, shooting galleries and hand organs. For prices and terms write to C. W. Parker, Abilene, Kan.

**Inquiry No. 3352.**—For makers of iron or steel water wheels.

We manufacture anything in metal. Patented articles, metal stamping, dies, screw mach. work, etc. Metal Novelty Works, 43 Canal Street, Chicago.

**Inquiry No. 3353.**—For practical men to suggest how to lay off dam and canal for county mill.

The celebrated "Hornsby-Akroff" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company, Foot of East 138th Street, New York.

**Inquiry No. 3354.**—For machinery for making pearl buttons.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$5. Munn & Co., publishers, 361 Broadway, N. Y.

**Inquiry No. 3355.**—For machines for manufacturing articles from the hull of the cocoanut.

We manufacture on contract: patented hardware specialties, tools, dies, metal stampings, special machinery, etc. Edmonds-Metzel Mfg. Co., 778 West Lake Street, Chicago.

**Inquiry No. 3356.**—For makers of polishing preparations for metals.

A qualified person desires position as assistant superintendent in machine shop in north or east. For particulars address R. Kreiter, care of Dickson Car Wheel Co., Houston, Tex.

**Inquiry No. 3357.**—For makers of practical dish-washing machines.

**WANTED.**—First-class machinery draughtsman. One with gas engine experience preferred. Address giving references, to Holland Torpedo Boat Company, New Suffolk, Long Island, N. Y.

**Inquiry No. 3358.**—For dealers in electro-plating apparatus in Chicago or St. Louis.

**Gasoline Automobile Batteries.** William Roche's "Autogas" used properly will carry vehicle twice as far as any other battery of same weight. William Roche, inventor and manufacturer, 42 Vesey Street, New York, N. Y., U. S. A.

**Inquiry No. 3359.**—For coiled iron pipe of special dimensions.

To Ambitious Persons.

A prominent business man of New York City writes that he would like to come in touch immediately with a few well-recommended persons who are desirous of a higher education. This party has at his disposal a limited number of Free Tuition Contracts in the following courses: Electrical Engineering (including Interior Wiring and Lighting, Electric Railways and Telephone and Telegraph Engineering), Practical Electricity, Illustrating, Caricature, Ad-writing, Journalism, Proof-reading, Bookkeeping and Stenography. There is absolutely no immediate expense for tuition, if you are awarded one of these contracts, the only cost to you being postage, etc., and you can pay these during the first four months. We would strongly recommend that you write to this gentleman, if you are ambitious to get ahead. Address W. L. B., Box 53 Madison Square, New York City, and enclose your references, and be sure and mention Scientific American.

**Inquiry No. 3360.**—For parties dealing in parts for horizontal engines.

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

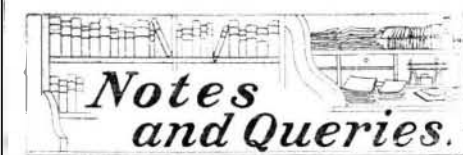
**Inquiry No. 3361.**—For a hand machine to make buttons from fish scales.

**Inquiry No. 3362.**—For the makers of an "Assay" outfit.

**Inquiry No. 3363.**—For broom-making machinery operated by electric power.

**Inquiry No. 3364.**—For machines for affixing stamps to envelopes or cards.

**Inquiry No. 3365.**—For makers of oil burners for engines.



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.

(8733) W. D. S. says: In your "Scientific American Cyclopaedia," under the head of "Soaps," is a formula for making "Yellow Soap," the last of the list of soaps. It gives: Tallow, 1/2 lb.; sal soda, 1 1/2 lb.; resin, 5-6 lbs.; stone lime, 28 lbs.; palm oil, 8 oz.; soft water, 28 gal. Surely this is a misprint. Will you kindly give me the correct formula, as I wish to make a soap with sal soda and lime. Also, could you give me the formula for making bisulphide of carbon for killing gophers and weevil? A. For the manufacture of ordinary yellow soaps, the fats used are tallow, palm oil and resin. These may be used in such varying proportions that a few general facts will be of more value than one specific formula. Fats require from 13 1/2 to 15 per cent of caustic soda for complete saponification. Rosin also requires about 15 per cent. As caustic soda is more expensive than soda ash (carbonate of soda), it is common practice to take soda ash and caustic with lime. An excess of lime is usually used. 100 parts of soda ash are dissolved and heated to boiling; 75 to 100 parts of lime are then added, and the boiling continued for about one-half hour. It is then allowed to settle, and the clear solution is used for making the soap. In estimating the amount of soda ash required, it may be assumed that 100 parts of soda ash are equivalent to 75 parts of caustic soda. The proportion of rosin used is extremely variable; in some cases, equal amounts of fat and rosin are taken, but this is considered excessive. For a good laundry soap the amount of rosin may vary from 25 per cent to 40 per cent of the fat taken. Carbon bisulphide is now largely being made in the electric furnace. It could not be manufactured on a small scale. It can be purchased in any quantities at reasonable price.

(8734) A. B. S. says: I am using large quantities of soft zinc from which I make small stampings, leaving about 30 per cent that I am obliged to put into scrap. This scrap is worth to me 4 cents a pound, whereas the new material costs me 12 cents. My idea would be to melt down this scrap that I have and re-roll, but in trying this I find that the metal becomes so hard that it breaks in rolling. I presume that during the process of melting one or more of the component parts passes off in the form of a gas, or perhaps my appliance for melting is not what it should be. I am familiar with the melting of copper and with the various alloys of brass, but this matter of remelting zinc and putting it in shape to stamp properly is something I am unfamiliar with. A. Melt the zinc at the least possible temperature, and pour into heated iron moulds so that the cooling shall proceed very slowly. Avoid introducing any iron accidentally into the zinc during the melting, as iron causes brittleness. Adding 0.5 per cent lead makes the zinc more malleable. It should be rolled out at a temperature of 150 deg. C. to 200 deg. C., at which zinc is most malleable; at temperatures much above or below these limits, the zinc becomes too brittle to roll.

(8735) D. J. B. wishes to know what the back pressure per square inch would be in the cylinder of an engine operated by compressed air instead of steam, and where the air is allowed to expand fully in the cylinder before the exhaust valve opens. A. The back pressure at the exhaust of an air motor depends entirely upon the cut-off point and the initial pressure as with steam in principle, but does not follow the same ratio. See Hiscox's book on "Compressed Air."

(8736) F. M. wishes to know the best chemical used to purify acetylene gas. A. First wash with water to remove ammonia. To remove the other impurities, chiefly compounds of phosphorus and of sulphur, the following chemicals have been used: 1. Chloride of lime; unless all ammonia has been removed, nitrogen chloride may form. 2. Solution of cuprous chloride; one liter of this solution will purify 14 to 16 cubic meters of gas. 3. Solution of chromic acid in sulphuric acid; 5 1/2 grammes of chromic acid will purify 1 cubic meter of gas. 4. Paraffin oil or other hydrocarbon oils. Solutions 2 and 3 give the best results. 4. used in conjunction with 2 or 3, increases the certainty of the purification.