

ENGINEERING INVENTIONS.

A car coupling has been patented by Mr. Lee P. Alden, of Tustin, Mich. This invention provides a coupling designed to be simple, durable, and effective, and in which the coupling may be automatically made and the cars uncoupled without the operator going between them.

A railroad switch has been patented by Mr. John S. Meyers, of St. Paul, Minn. This invention covers an improved switch adapted for use with fixed rails and points, designed to be simple and reliable, and capable of being operated by a lever located near the track or automatically from the engine.

A rotary engine has been patented by Mr. Charles F. Sleigh, of Fort Wayne, Ind. It has a cylinder having an outer steam chamber separated by annular inwardly extending flanges from an inner chamber in which a piston is held to rotate, provided at each end with a hub turning in suitable bearings on the steam cylinder, with other novel features.

A lubricator for car axles has been patented by Mr. Benjamin E. Dupont, of Lexington, Ky. This invention covers an improvement on a former patented invention of the same inventor, the lubricator being distributed to the bearing by a saturated waste packing, the present invention covering means to facilitate the introduction of the lubricating attachment and more equal distribution of the lubricant.

AGRICULTURAL INVENTIONS.

A stalk puller has been patented by Mr. John T. Whilden, of Stockton, Ga. A vertical shaft is supported by an axle platform, a wheel on the shaft having V-shaped teeth for holding the stalks, while a clearer is held above the wheel, so that as the machine advances the stalks will be pulled up by their roots and fall to the ground.

A churn has been patented by Mr. Nelson Smith, of Kearney, Neb. It has two sets of paddles, so arranged in a casing as to present their blades at an obtuse angle to each other, the length of the paddles being such that when revolved they will just clear the top, bottom, and ends of the case, and the paddle shaft adjacent, thus rapidly acting on every portion of the milk or cream.

MISCELLANEOUS INVENTIONS.

A combined latch and lock has been patented by Mr. Albert A. Kellogg, of Clinton, Mo. This invention covers a novel construction and combination of parts in a device which can be used for either or both purposes, and is durable and simple in construction and effective in operation.

A lock for sliding doors has been patented by Messrs. John M. Tunis and William F. Bedford, of Madison, N. J. This invention combines both a latch and lock, designed to be simple, durable, and inexpensive, which will not be unlocked by jarring, and applicable to rolling doors of all kinds.

A friction clutch has been patented by Mr. William E. Talcott, of Croton Landing, N. Y. It is especially adapted for use in connection with brick-making machines, the clutch section having a bearing face with undercut groove, in which ride the heads of clamping bolts of a second clutch section, with means for clamping the sections together quickly and readily.

A brick machine has also been patented by the above inventor. The invention provides means for starting, driving, and stopping the operating portions, improving the construction of the press box with yieldingly mounted traps, providing for adjusting the plunger when the machine is in operation, with other novel features.

An elastic pump rod has been patented by Mr. George D. Pierce, of Shelby, Iowa. The pump rod has a novel construction of springs and sliding guides for forming a connection between two sections of the pump rod, to cushion the stroke and thus reduce wear and tear by lessening the hammering action.

A roll paper holder and cutter has been patented by Mr. John Zerr, of Keokuk, Iowa. The construction is such that the paper, as it is drawn out in front of the fixture, is separated into the desired lengths by a slight pull sideways over a suitable cutter, the free end portion of the roll being thrown up ready for the fingers to take hold of again.

A device for increasing the speed of vessels has been patented by Mr. Henry C. Smith, of Brooklyn, N. Y. A jacket is provided into which the blades of the propeller discharge water, which is forced into violent and constant contact with the back water, in a manner designed to aid the propeller in propelling the vessel.

A chicken brooder has been patented by Mr. John D. Wingert, of Fayetteville, Pa. It has a novel heat-distributing apparatus, consisting of a sheet metal plate with central opening, transverse ridges and deflecting plate, in connection with a special construction of box, swinging gang board, ventilating openings, and other novel features.

An apparatus for grinding button edges has been patented by Mr. Jacob Mahla, of Gablonz-on-Neisse, Bohemia, Austria-Hungary. This invention covers a novel construction and arrangement of parts in a machine for grinding the edges of buttons into a cylindrical or conical shape, the machine being adapted to grind several buttons at the same time.

A rod joint has been patented by Mr. John G. Spear, of West Winsted, Conn. This invention relates to joints for coupling the sections of gun rods, and is designed to simplify and strengthen the mounting of the spring bolt in the rod section and to facilitate the disengagement of the bolt from the hole in the sleeve on the other section.

An escape attachment for vapors and odors from cooking vessels has been patented by Anna-

bella and Martha A. Kelly, of Holman Station, Ind. From each cooking vessel a bent pipe leads to a duct along the under side of the long or main cross bar of the stove top, and leading to the smoke pipe, whereby all obnoxious fumes or vapors will be conducted away.

A tailor's square has been patented by Mr. Herman A. Sens, of Cincinnati, Ohio. This invention provides an instrument wherein measures may be taken from the true angle of a square in any direction, being especially adapted for use by merchant tailors, dress and mantua makers, for establishing accurately the essential lines of a garment.

A music rack holder has been patented by Mr. Albert W. Utzinger, of Astoria, Oregon. It is adapted more especially for holding a book or sheet music on a clarinet, piccolo, flute, or other musical instrument, having rings adapted to the body of the instrument, and eyes to which a bar is fitted, with a collar fitted on the bar carrying a music rack.

An attachment for window frames has been patented by Mr. Valdy C. Overton, of Mobile, Ala. It has revolving stops, which may be turned into recesses in the casements of the door or window frames when it is desired to remove the door or window sash, whereby such removal will be facilitated for cleaning, painting, etc., while also affording a protection lock when they are replaced.

SCIENTIFIC AMERICAN BUILDING EDITION.

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TABLE OF CONTENTS.

- 1. Elegant plate, in colors, of a dwelling lately erected on Jersey City Heights, N. J., with floor plans, sheet of details, etc. Cost, fourteen thousand dollars.
2. Elegant plate, in colors, of a comfortable dwelling, costing nineteen hundred and fifty dollars. Floor plans and details.
3. Perspective view and floor plans of a beautiful residence at Rochelle Park, near New York. Our engraving was made from a photograph taken specially for the SCIENTIFIC AMERICAN BUILDING EDITION.
4. Perspective and floor plans of the residence of I. C. Goodridge, Esq., at Rochester, N. Y.
5. A Queen Anne cottage lately erected in Rochelle Park, near New York. Perspective and floor plans. Cost, five thousand six hundred dollars, complete.
6. A beautiful seaside cottage, at Bath Beach, Long Island. Floor plans and perspective. Cost, about two thousand five hundred dollars.
7. A modern cottage for eighteen hundred dollars, lately built, at Asbury Park, N. J. Perspective and floor plans.
8. A beautiful house in the colonial style, lately erected, in Rochelle Park, New Rochelle, N. Y. Perspective view and floor plans. Cost, ten thousand dollars, complete.
9. Engraving showing perspective, with accompanying plans, of a six room cottage, lately erected on Hancock Avenue, Bridgeport, Conn., at a cost of sixteen hundred dollars.
10. A one thousand dollar cottage, built at Bridgeport, Conn. Perspective and plans.
11. A cottage for two thousand eight hundred dollars, built at Bridgeport, Conn. Plans and perspective.
12. A basement cottage, lately built, at Bath Beach, Long Island, at a cost of two thousand three hundred dollars, complete. Floor plans and perspective.
13. Page of engraving showing various residences and hotels.
14. Photographic illustration showing a cottage for two thousand five hundred dollars, built at Bridgeport, Conn. Perspective and floor plans.
15. A residence at Nangis. Plans and perspective.
16. A beautiful double house for four thousand five hundred dollars, lately erected in Bridgeport, Conn. Perspective view and floor plans.
17. Miscellaneous contents: Ancient use of bronze.—An experiment in optics.—Planting ornamental trees.—Disinfection of sewers.—The rose jar.—Effect of time on slaked lime.—How to build a barn, with plans.—Interior finish.—Seamless eaves troughs with mitered corners (illustrated).—The oscillation of high chimneys.—Imitative and conventional ornament.—A model Boston kitchen.—Weeds.—Artistic furniture (illustrated).—Improved ventilating fans (illustrated).—Bent glass for circular fronts and towers.—Stains for coloring and tinting mortar.—Roof painting.—The Florida steam and hot water heaters (illustrated).—A venerable larch.

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The Knowles Steam Pump Works, 113 Federal St., Boston, and 33 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

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The Holly Manufacturing Co., of Lockport, N. Y., will send their pamphlet, describing water works machinery, and containing reports of tests, on application.

Lockwood's Dictionary of Terms used in the practice of Mechanical Engineering, embracing those current in the drawing office, pattern shop, foundry, fitting, turning, smith's and boiler shop, etc., comprising over 6,000 definitions. Edited by a foreman patternmaker. 1888. Price, \$3.00. For sale by Munn & Co., 361 Broadway, New York.

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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.

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.

(1) A. L. S. asks: Is blacklead made of carbon? If so, could not the waste carbon stubs from electric lights be pulverized and used, and would it be suitable for moulding purposes? A. Blacklead is a mineral, and represents a modification of carbon never practically produced artificially. It exists in cast iron and to a certain extent in gas carbon, but battery carbons would not afford it.

(2) J. R. asks what oil of amber is, and how adulterated. A. Oil of amber is made from amber by dry distillation. It may be rectified by distillation from six volumes of water, (Sp.) gr. 0.840-0.940. Unattacked by iodine, sulphuric acid, or potash. It is used in medicine and perfumery. It is said that kerosene, turpentine, and resin are used in falsifications of it. We cannot give reliable formulæ of proprietary medicines.

(3) J. B. W.—The water pressure in locks is static, and equal to 0.43 of a pound per square inch for each foot in depth. Thus, at the bottom of a gate 10 feet in depth, the pressure would be 4.03 lb. per square inch, but the average pressure against the whole gate would be half the bottom pressure, as there is no pressure at the top. The pressure, is much greater on the paddle wheels of steamers from the impact or striking of the water by the paddles. The amount of pressure varies with the relative speed of the vessel and the slip. The dip of the wheels also is a factor.

(4) A. H. S. asks: If a boiler is tested to a pressure of 100 pounds per square inch, cold water pressure, what is the pressure of steam the boiler will safely carry? A. Boilers, when tested by competent inspectors at 100 pounds pressure, are allowed to carry two-thirds the test pressure. 2. The difference between hydraulic and steam pressure as generally used in testing boilers. A. There is no difference between hydraulic pressure and steam pressure, except the safety and convenience of examination. 3. Should the city inspector injure a boiler by putting on excessive pressure, would the city be responsible? A. This depends upon their motive. They are supposed to apply a test of 50 per cent more than the pressure that engineers and owners desire to carry. If the boiler does not stand it, or is injured, the boiler must be repaired, strengthened, or condemned.

(5) T. P. L.—The setting of the slide valves on a double engine is not different from the setting of the valves of two separate engines, i. e., set each valve for its own engine. See Edwards' Practical Steam Engineer's Guide, \$2.50, which we can mail. Die-cut threads on bolts and the like are slightly stronger than chased threads. The die compresses and hardens the iron in the thread.

(6) H. J. G.—For a free flowing solder use a mixture of two parts tin, one part lead. For a good soldering fluid dissolve zinc in muriatic acid to saturation. Then add a little sal ammoniac and dilute with 10 to 20 per cent of water.

(7) F. X. B. asks: Can the best quality of imported English tool steel be manufactured in this country? If not, what is the reason? A. Tool steel is made in the United States fully equal to the best English tool steel. What is still better, it is made in all the grades suitable for various kinds of tools.

(8) H. R. Y. writes: 1. Am making the Holtz electric machine described in SUPPLEMENT, No. 278, and would like to know if wood posts will do as a substitute for glass for holding the collecting combs. A. Wood dried and dipped in melted paraffine or thickly shellaced will answer. 2. Will diamond cement do to cement the apertured plate with? A. Yes.

(9) S. E. H. asks: 1. How much will a body of air be reduced from its original volume when subjected to a pressure of 20 pounds to the square inch? A. 1/4 of its original volume. 2. What pressure per square inch will reduce the volume to one third? A. 45 pounds. 3. One half the original volume? A. 30 pounds. These are all on the assumption that the normal pressure of the atmosphere is 15 pounds to the square inch, which is approximately true.

(10) W. B. C. asks: How should I change the winding on the motor described some time ago, in order to use gravity cells? If these cannot be used, what is the reason? A. Gravity cells cannot be used for the motor, owing to their high resistance.

(11) C. H. F. asks: 1. How are steel ornaments, such as beads, etc., prepared to resist rusting as well as they do? A. Their very high degree of polish preserves the steel ornaments. 2. What compound placed in a case with albuminized silvered paper will prevent the paper from discoloring without injuring it? A. Keep the sheets of silvered paper between dry blotting pads previously dipped in a saturated solution of carbonate of soda. It should also be kept in a dry place. Prepared paper is sometimes preserved in tin boxes having a small quantity of chloride of calcium in the bottom.

(12) A. H. A. asks for a good acid proof cement for lining storage cells. A. Apply to the perfectly dry cells a mixture of 4 parts resin, 1 part gutta percha, and a little boiled oil, melted together and used hot.

(13) A. C. P. writes: A bets B that the sun is nearer New York city in summer than in winter. If at same distance, bet is off. Who wins A or B? A. B wins. The earth's orbit is eccentric. The perihelion or nearest approach to the sun takes place during the last days of December. New York is farthest from the sun about the last of June.

(14) C. A. B. asks in what year copper toed boots and shoes were introduced. A. The first use of copper for such purpose in any way is probably very ancient, but we believe the modern manufacture in a large way of such goods was commenced about twenty years ago.

(15) Q. A. S. asks: 1. Of what should I make the valves of a small air pump in connection with a small steam engine? A. Of rubber pure gum. 2. Provided the air pump has the same stroke as the engine, of what diameter should it be for a single, a double, and a triple cylinder engine, in comparison with the diameter of the high pressure cylinder? A. For equal stroke one-fifth the area of the high pressure cylinder in either case.

(16) E. G. B. asks the different ingredients that are put into the cheap blue glass that bottles are made of at the present time. A. 100 parts sand, 30 parts kelp or impure soda, 40 parts wood ashes, 100 parts potter's clay, 100 parts cullet or broken glass. Oxide of cobalt or smalt is added to produce the blue color.

(17) A. E. S. — Corrosive sublimate is chloride of mercury, an active poison. The Mammoth Cave, in Kentucky, had a subterranean stream that was called a river. Eyeless fishes were caught there many years since.