

RECENTLY PATENTED INVENTIONS.

Engineering.

EXHAUST NOZZLE.—Lewis P. Garner, Ashland, Pa. This is a device specially adapted for locomotive engines, and is designed to govern the exhaust by increasing or diminishing the outlet, while it may also be made to produce back pressure on the piston in the cylinder when it is desired to brake the engine.

MANUFACTURE OF WATER GAS.—Charles E. Burdell, New York City. This invention is for an apparatus in which superheated steam and oil are injected into an incandescent mass of anthracite coal, decomposing the superheated steam and combining the oil vapor to form oil and water gas, the apparatus being designed to effect a saving in fuel, time and labor, and afford a gas having but a small portion of deleterious matter.

Railway Appliances.

GRIP FOR CARS.—Jacob M. Isenberg, Mines, Pa. Combined with a governor and a latch actuated thereby is a cradle pivoted at one end of the car and terminating in hooks or claws, the cradle being adapted for engagement by the latch, the device being designed for use with the cars of inclined roads, and acting automatically when the speed of the car is increased, as by the breaking of a cable, to clamp the ties of the track.

TRUSSING FOR CARS.—Ferdinand E. Canada, New York City. This invention provides for dividing the length of the car between the body bolsters into four or more panels by the addition of one or more cross sills and necessary supporting struts, the auxiliary sills, struts and truss rods being placed below the floor level to allow of supporting the central portions of the car without obstructing the floor space.

LABEL HOLDER FOR FREIGHT CARS.—Martin Williams, St. Johnsville, N. Y. This is a frame for card labels with an adjustable support journal to rock on the frame and release the card, displaying the destination, or for a similar use, to avoid nailing such cards on the side of the car, the device holding the card or label until it is designedly removed.

Miscellaneous.

VALVE.—Patrick Conway, New York City. In this valve the packing washer is made to bear against the smooth surface of the seat in the upper part of the bonnet, whereby the packing will wear a long time and allow no steam to escape around the stem, the valve being simple and positive and also applicable for other uses than with steam.

STRAW BURNING STOVE.—John R. Tacey and John Sharkey, Winnipeg, Manitoba, Canada. In this stove the fuel chamber is disposed laterally to the fire box, and connected therewith through a gravity cut-off damper, projections on the doors being adapted to push the fuel block. The stove is designed to burn past the gravity damper.

DRESS STEEL.—Mary E. Whalen, New York City. This steel has tabs on its outer side adjacent to its ends carrying rings, providing for the attachment of such steels to dress linings, so that there will be a flexible connection between the steels and the lining, and the elastic retaining bands will not cut at the point of connection with the steels.

AXLE NUT.—Ole Hansen, Mount Pleasant, Utah Ter. This nut is formed with a projecting flange and thread extending from the flange to the inner face of the nut, with other novel features, designed to give any desired amount of play to the wheel upon the axle, and to facilitate taking up the wear of the axle without the use of the ordinary washer.

HARNESS SADDLE.—Marcellus M. Hitt, Sheffield, Ala. This invention provides a detachable and adjustable tug strap loop adapted to clamp the skirts of the saddle, and also provides a shield attachment to the loop designed to effectually prevent the snap chafing the skirts.

TRACE CARRIER.—John S. Brown, Galveston, Texas. This is an improved back band buckle with hooks, its body portion formed of a single piece of wrought wire, the meeting edges being properly bent for the purpose, and the tongues pivoted upon the body portion, forming a cheap construction of great strength.

HOODWINK.—Amaziah B. Grubb, Goose Lake, Iowa. This is a device particularly adapted for use on vicious horned cattle, to hinder their attempts to gore other cattle and persons, and prevent their throwing or jumping fences, the shape being such as to allow free access of air and light laterally to the animal's eyes, and permit free vision save in front.

HOSE COUPLING.—Robert Franken, Pomona, Cal. This invention provides a novel design and arrangement of parts designed to simplify the construction, while providing a coupling which may be readily coupled and uncoupled, and which will effectually hold the coupling sections against accidental displacement.

ASSORTING MACHINE.—Samuel B. Smallwood, Long Island City, N. Y. This is a machine for conveniently and automatically assorting pickles and other articles, the invention covering various novel features and details of a machine with which the operator does not touch the pickles directly with the hand, and they are not injured in the process of assorting.

FENCE.—William G. Frost, Lebanon, Ind. This invention covers novel features in a fence made of posts, wire stringers, braces, and pickets, and designed to be inexpensive and durable, easily erected, moved, or repaired, while making a good barrier against stock and not likely to injure them.

FLOWER POT TRELLIS.—John S. Brown, Galveston, Texas. This trellis consists of vertical wires having the loops and horizontal wires bent into the form of rings with lapped and adjustable

ends to increase or diminish the size of the trellis, being adapted to be applied to flower pots of various sizes to support plants or vines without interfering with their roots.

PUZZLE.—Wofford Brown, Parkersburg, West Va. Combined with a movable board are pins arranged thereon to form end triangles at diametrically opposite corners, other triangles being placed centrally thereto, while there are single corner pins, and removable balls or objects are to be made to enter the different triangles as the board is held at different angles.

WIND WHEEL.—Asa W. Chamberlin, Stratford, Iowa. In this wheel the fans have upper and lower halves with rear projections and connected by an edge rod having a stop hinged on the fan arm, there being governor balls to attach to the arms by which the wheel may be gauged so that it cannot run above a certain speed, even if the work be light, and the usual vane being dispensed with.

CENTRIFUGAL CREAM SEPARATOR.—Carl A. Hult, Denver, Col., and Oscar W. Hult, New York City. In this separator the milk is supplied from a can to a spreader chamber below and thence to an inner receptacle capable of being rapidly revolved, whereby the milk is thrown in contact with the walls of the receptacle, and escapes by an outer channel, while the cream, being lighter, collects around the shaft and passes out thence through an undercut recess.

NEW BOOKS AND PUBLICATIONS.

GEMS AND FOREIGN STONES OF NORTH AMERICA. By George Frederick Kunz. The Scientific Publishing Company, New York, 1890. Large 8vo. Pp. 336. Price \$10.

This superb work is worthy of a high place in the literature of the subject. Its author has been for years gem expert for Tiffany & Co., New York City. He is also special agent of the United States Geological Survey and of the 11th United States census, member of the Mineralogical Survey of Great Britain and Ireland, and of the Imperial Mineralogical Society of St. Petersburg, the Society Francaise de Mineralogie, etc. The book is not only a thorough treatise upon this subject, but it is a work of art as regards both printing and illustrations. It contains eight very fine colored plates and numerous other illustrations. A chapter is devoted to pearls and remarkable foreign gems owned in the United States.

SCIENTIFIC AMERICAN

BUILDING EDITION.

MAY NUMBER.—(No. 55.)

TABLE OF CONTENTS.

1. Elegant plate in colors representing a tasteful cottage of moderate cost at Buffalo, N. Y. Perspective elevation, floor plans, sheet of details, etc.
2. Colored view of a residence at St. George, Staten Island, N. Y. Estimated cost \$20,000. Floor plans, perspective elevation, sheet of details, etc.
3. Stone residence, corner of St. Nicholas Place and 150th Street, New York city. S. Burrage Reed, architect.
4. New buildings at Eastgate and Bridge Streets, Chester.
5. Engravings of the residence of J. M. Johnson, Binghamton, N. Y. Perspective elevations and floor plans. Cost \$19,000 complete.
6. Perspective view of the office buildings of the Gotthard Railroad in Lucerne.
7. An English cottage. Perspective and floor plans.
8. A cottage recently erected at Binghamton, N. Y., cost complete \$3,800. Plans and perspective.
9. A residence in the Gothic style erected at New Brighton, S. I. Floor plans and perspective.
10. Excellent design of a country house recently erected at Belle Haven, Conn. Cost \$14,250. Oscar S. Teale of New York, architect. Perspective views and floor plans.
11. A double dwelling at Yonkers, N. Y., erected at a cost of \$8,000. Plans and perspective.
12. Residence of Chas. Kappes, Esq., at Stapleton, Staten Island, N. Y. Cost complete \$4,000. Perspective elevation and floor plans.
13. Cottage at Greenwich, Conn., erected at a cost of \$7,250 complete. Floor plans and perspective.
14. Miscellaneous Contents: High buildings.—Bad flues.—Imitation ebony.—Destruction of asphalt pavement by gas.—Art of building.—Improved dumb waiters, illustrated.—An improved skylight, illustrated.—Rogers miter planer, illustrated.—Dumb waiters and hand power elevators.—A fine window in the Convent of the Sacred Heart, illustrated.—Improved sash pulleys, illustrated.—A hot air and hot water heater, illustrated.—Colors for mortar.—Improved adjustable grooving head, illustrated.—An improved window screen frame, illustrated.

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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.

(2160) H. C. S. asks: What method is employed to write on glass under water, by electricity? Is there a solution of chemicals used to put in the water? A. The plate to be etched is put into a flat vessel connected with the positive pole of a secondary battery. The plate is covered with a saturated solution of saltpeter, and is then written upon with the negative electrode, which is provided with an insulating handle.

(2161) M. G. H.—The sugar maple could not be confounded with any other species indigenous to your place. It is a large, handsome tree, with 3 to 5 lobed leaves with rounded sinuses and heart-shaped at the base. The common red or swamp maple is a smaller tree, and has reddish twigs. Sugar exists in the sap of all the maples.

(2162) N. S. asks: 1. Can you give a recipe for a dip on silver that will give it a good black color, one that will give it a brown color like bronze medals? A. Use sulphide of sodium dissolved in water. To intensify the black, dip and wash metal in a solution of nitrate of mercury before immersing in the sulphide solution. 2. Can you tell me a good recipe for making a neutral silver solution? A. Dissolve in nitric acid, evaporate to dryness, and fuse at a low heat.

(2163) E. A. E. asks: What is the best treatment to give the front doors of my house? They are about three years old, and painted in imitation of black walnut. The weather has made the paint run a little, and streaked, like so many veins, running in all directions. A. There is no good remedy except to burn off the old paint and repaint the wood.

(2164) A. E. H. writes: 1. I want to have a lamp to read by, and I want it to be an incandescent electric lamp of about 8 candle power; could you tell me the cheapest primary battery to work, for lamp of this size? I am writing this letter by a 1/2 candle power (Edison's) 3 volt lamp by two small Bunsen cells (porous cup 3 1/2 x 2), and it is giving about 1 candle power, by which I can see very well to write without any other lamp, but this way of illumination is of course very expensive. I use about 25 cents' worth of nitric acid every time I use these two small Bunsens, which is too expensive. A. A simple plunge battery would be less expensive than the Bunsen, but it would run the lamp only two or three hours without recharging. We shall soon publish a description of a battery suitable for small lamps. 2. Would accumulators be efficient for a small lamp as mentioned above? A. Accumulators would run the lamp. 3. Is there a cheap way of making and using them? A. There is no very simple and cheap way of making and charging accumulators. 4. What is the advantage of charging accumulators in different directions at first? A. To secure a deeply oxidized surface. 5. Could I use a 1 horse power water engine if I were to get the 8 light dynamo described in SUPPLEMENT, No. 600? A. A 1 horse power engine will drive the 8 light dynamo. 6. Could I run the water engine by the ordinary pressure in a house? A. Yes. 7. Would it cost much to wind the field and armature if I bought the castings? A. The wire would probably cost \$4 or \$5. 8. Do you think that this dynamo could be run in an ordinary house with the ordinary water pressure? If so, would it be efficient? I mean not from a strictly practical point of view, but for using in a laboratory for comparatively strong currents. A. The pressure would be sufficient, provided the service pipe is large enough to keep up the supply. 9. How many Bunsen cells (ordinary size) would be required to run an electric motor of 1 man power? A. 8 or 10. 10. Is there a cheap way of making the metal aluminum? A. There is no very cheap process for making aluminum.

(2165) E. S. B. asks: 1. In making an induction coil such as described in SUPPLEMENT, No. 160, can I use No. 36 silk-covered wire and wind close together instead of using bare wire and leaving a space between each wire as I wind it? Would I get as good results by doing it the first way? A. The silk-covered wire will answer every purpose. 2. Will a secondary current ring an electric bell? A. It will ring a bell provided with a polarized magnet wound with very fine wire. 3. Can the dynamo described in SUPPLEMENT, No. 161, after being changed into a motor be run by battery power? If so, how many cells will it take? A. Yes. It will require four or five large cells of plunging battery, with plates 6x8 inches. 4. Would one cell of Leclanche battery run a small 2 inch induction coil? A. Yes; provided the primary wire has sufficient length. 5. Where can I find a description of a lightning arrester? A. In any elementary work on electricity or on telegraphy. 6. I have taken a very thin wooden spool, five inches long, and wound on it two layers of No. 16 cotton-covered wire, and after placing in the inside a bundle of soft iron wire and passing the current from two Leclanche cells, I cannot magnetize the iron, even when the current is passing through the coil. What is the trouble? A. Your primary wire is too large and too short for Leclanche cells; try a Grenet bichromate cell. For Leclanche cells you should use 2 layers of No. 24 wire in the primary coil. 7. Please give me the numbers of all of your papers containing descriptions of the Blake transmitter. A. SUPPLEMENT, No. 250, contains a description of the Blake transmitter. 8. In the Blake transmitter can some other metal be used in the place of the platinum button? A. Platinum is preferable; copper or carbon will answer for temporary use.

(2166) L. A. C. asks: 1. How is the insulating covering wound and braided on magnet and other insulated wires? A. By special machinery. 2. a. What is ebontite? b. What is vulcanite? c. What is vulcanized rubber? A. Vulcanized India rubber, exposed to high pressure in the process. 3. When power is transmitted electrically over a distance of several miles, is the strength of current very greatly diminished by the resistance of the conducting wires? A. It depends on the resistance of the wire, and on its relation to the resistance of other parts of the circuit. As a general rule, it is largely reduced. 4. Are permanent magnets used in any part of a dynamo, and if so where? A. The field of a dynamo retains a little residual magnetism, but in the sense of your question there is no permanent magnet. 5. What can be mixed with whitewash to prevent it from being washed off by the rain? A. See query 977 for government receipt for whitewash. 6. What are the principal electrical schools in this country, and where are they? What is your opinion as to the best way in which to get an electrical education? A. All the leading universities give courses now. A college course followed by practical work is the way to learn the science. 7. How can a person obtain information concerning the educational and physical requirements necessary to enter West Point? Also concerning the appointments? A. Address the superintendent. For appointments address your congressional representative. 8. In what way can a compass needle be made to point in a north and south direction after it has been partly demagnetized by the action of a strong horseshoe magnet which has lain near the compass? A. Hold the south pole of a strong magnet as near to the north pole of the needle as possible. This will improve it often if you cannot take it out of the case. 9. Is there a book published which is a dictionary of electrical and mechanical terms? If so, what is its name? A. Houston's "Electrical Dictionary," \$2.50, is an excellent work, which we can supply by mail.

(2167) W. H. S. writes: The definition of the term dielectric in Houston's dictionary is a substance which permits induction to take place through its mass, and it says further that all dielectrics are non-conductors. Now, unfortunately, Houston has omitted the definition of the term induction in his dictionary. My impression is that induction through a mass is conduction through of an electric current; consequently I cannot reconcile the apparently opposite definition. A. Induction is a property of electric currents, and refers to their power of forming a field of force in space. Every current develops lines of force in the space sur-