tents. The can may be conveniently filled, and the device is of simple construction and not liable to get out of order.

VENDING MACHINE.—James Walton, Phoenicia, N. Y. This is a machine for vending either stamps or paper and envelopes, but it is preferably arranged with duplicate parts, so that both may be delivered by one machine. It is designed to be simple and inexpensive, and with easily working mechanism, which is not liable to get out of order, the delivery of the postage stamps and paper and envelopes being effected by mechanism controlled by dropping a coin in the slot of the machine.

STREET SWEEPER.—August G. Rosenbauer and Richard Brussel, New York City. This sweeper is designed to afford means of sweeping the entire breadth of the roadway, elevating the sweepings as the machine moves along and depositing them in a dirt receptacle, which can be conveniently dumped at any desired point. The movements of the brushes are controlled from the driver's seat in such manner that the brushes may have a light contact with the roadway, or may be made to bear heavily thereon, or lifted entirely clear and their motion stopped.

Designs.

DESIGN FOR TRIMMING.—Josephine Muller, New York City. The principal feature of the invention consists of serpentine opposing side lines, forming a series of curved loops appearing independently formed, one merging into the other, imparting to the trimming a plaited appearance. In the details of the design a central ornament is formed between the marginal lines, having an embossed appearance, and cross ties appear to separate the series of loops.

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.

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 This is for our information and not for publication.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 address of houses manufacturing or carrying the same.

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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.

(6305) J. J. H. asks: 1. How high above the level of its source will an ordinary hydraulic ram raise water? A. The ordinary water rams will force water to 100 feet, and in small quantity under favorable conditions to 200 feet, if the distance is not excessive. See the possibilities and computed conditions for hydraulic rams in SCIENTIFIC AMERICAN SUPPLEMENT, No. 793, 10 cents mailed. 2. Will a sheet of zinc burned in a stove loosen soot in a chimney? A. The burning of zinc is said to loosen soot in the chimney. We apprehend the cause to be in the deposit of zinc oxide on the surface, which prevents the soot from sticking. The burning of zinc should be done after a chimney has been cleaned. 3. Does the temperature of steam increase with the pressure? A. The temperature of steam increases with the pressure. 4. What is taggers iron? A. The brand of iron from which tin plate is rolled.

(6306) H. E. J. B. asks: 1. How is white or cream sealing wax made and what can I use in place of bleached shellac for making bronze or gold sealing wax? How is the wax poured in small strips about ¼ inch in diameter? A. A beautiful variety (aventurin), which can be prepared at comparatively low cost, is obtained by stirring finely powdered mica into the melted ground mass. Gold and silver waxes are obtained by mixing finely powdered leaf metal with the melted ground mass. Ground mass for translucent wax is:

Bleached shellac	3 parts.
Viscid turpentine	3 "
Mastic	6 "
Chalk	2 "

For white sealing wax add zinc white. Bleached shellac must be used. For information in regard to moulding sealing wax we refer you to Brannt's "Varnishes, Lacquers, Printing Inks and Sealing Waxes," $2.50. 2. How can I make gold plating to rub on, also silver plating to rub on places that is buffed off too much? A. Gilding.—Articles of steel, copper, silver, and some other of the baser metals may be gilded by simply immersing them in a weak solution of the chloride of gold. Silvering.—Dissolve 1 ounce crystals of silver nitrate in 12 ounces soft water, then dissolve in the water 2 ounces potassium cyanide. Shake the whole together and let it stand until it becomes clear. Have ready some half ounce vials and fill them half full of Paris white or fine whiting and then fill up the bottles with the liqnid and it is ready for use. The silver coating is not as tenacious to the article as when electrolytically deposited. This is very poisonous and should be handled with great caution—if at all. 3. In making gold chloride from coin after dissolving in nitro-muriatic acid and precipitate with ammonia, will any copper be thrown down with the gold if there had been any in the gold coin or will it remain in the acid? A. Precipitate the copper first by adding sodium bicarbonate until effervescence ceases. The copper will be deposited as a green carbonate of copper. Filter, and add enough nitric acid to turn blue litmus paper red. 4. I have "Experimental Science" and would like to know if I made a dynamo one-quarter size of the hand power dynamo on page 488, would I get a sufficient power to ring an ordinary 2½ inch bell, such as is used with a battery? A. Yes. 5. What will dissolve bichromate of potash and gelatin off glass that has been exposed to sunlight? A. Try weak hydrofluoric acid. 6. How can I put the finishing polish on an opal? A. Use fine emery applied to a lead lap, finish with rottenstone and water. 7. How can iron or steel be blued without heat? A. Solution of potassium ferricyanide and water, one part of the potassium salt in two hundred of water; solution of ferric chloride same proportion. Mix the two solutions and dip.

(6307) M. W. asks: Why is it that dirt taken from an excavation will not fill it when replaced? A. The dirt and sand of all original soils, except wind-driven sand, is solidly packed, having been deposited slowly in water in the early geological ages, by which action the particles were floated into contact, thus occupying the smallest possible volume. When such earth is disturbed the contact is broken, a thin film of air separates the particles and keeps them from falling into the closest relation. This is proved by pouring and ramming dry sand into a keg and then pouring in water to saturation; then by shaking the keg the sand will settle into close contact, showing the difference in volume.

(6308) J. E. H. asks: 1. What is the best kind of glass to be used in making Wimshurst machine? A. Thin crystal plate. 2. What size wire shall I use to wind sewing machine motor for 110 volts? A. For motor described in SUPPLEMENT, No. 641, use No. 3 wire on field and No. 28 on armature. Start it with a resistance in series or you will burn out the armature. 3. A good method to cut the tops off two quart bottles. I would like to make battery jars out of them. A. Notch the glass with a file; rub it back and forth with a red hot pipe stem or poker. When a crack starts, lead it around with the hot poker or pipe stem. It is well to tie a string around the bottle as a guide. Rub off the sharp edges with a whetstone such as used for scythes.

(6309) N. B. P. asks for browning for shotgun barrels. Also how is the best way to remove what is left of the old browning? A. Wet a piece of rag with chloride of antimony, dip it into olive oil, and rub the barrel over. In 48 hours it will be covered with a fine coat of rust Then rub the barrel with a fine steel scratch brush, and wipe with a rag dipped in boiled linseed oil. Remove the old coating with oil and emery paper, then remove the grease with caustic potash and treat as above.

(6310) O. S. asks for the relation of the armature wire resistance to the field winding of a series and a shunt dynamo. A. In a series dynamo the resistance of the field magnets should be two-thirds that of the armature; in a shunt-wound dynamo the product of armature and field resistance should be equal to the square of the external resistance. The armature resistance is equal to one-quarter the resistance of the length of wire used in winding it, unless of course the wire is used in parallel.

(6311) W. D. asks: If a bar of wrought iron 1 inch in diameter and 1 foot long, carrying a coil of insulated wire and moving at a speed of 20 feet per second past a permanent magnet distant 1 foot, this magnet having a cross section of 3 inches and a space between its poles of 1 foot, is it possible by varying the quantity of wire to induce a current having a value of 1 watt? A. A current is not measured in watts, but in amperes. It would be very difficult to produce a one ampere current with one volt potential difference in the circuit under the conditions named.

(6312) H. C. W. asks how many storage cells it would take to run the motor 641 to the best advantage, and can the motor be used as a dynamo to charge the batteries? A. Four cells of storage battery will run the motor. It is not adapted for use as a dynamo.

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November 20, 1894,

AND EACH BEARING THAT DATE.

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