

RECENTLY PATENTED INVENTIONS.
Mechanical.

HOISTING DEVICE.—Mr. William P. Campbell, of Rome, Ala., has patented a hoisting machine in which a weighted sweep pole is used. In this machine the multiplying power of a rope and pulleys is employed to give the bucket a greatly multiplied motion. This improvement is designed for raising water from wells, hoisting brick and other materials for building purposes, and for analogous uses.

WICK TRIMMER.—A practical device for trimming circular lampwicks has been patented by Mr. William R. Cole, of Pottsville, Pa. In this machine a frame or stock is provided with a lateral trimming knife, the stock being arranged to be rotated on or within the burner so as to carry the knife in uniform contact with the charred end of the wick. By means of this instrument a circular wick may be uniformly trimmed.

CIRCULAR SAW.—Mr. William A. Miller, of Wapinitia, Oregon, has patented a saw which will cut freely in different qualities of wood, when used either as a cross-cut or rip saw. This improved saw has a series of radial tooth sections, each composed of a thick leading main tooth and an integral thinner auxiliary tooth, the auxiliary teeth being formed by notching the peripheral edges of the tooth sections.

SPLIT PULLEY.—An inexpensive and efficient power-transmitting pulley, which may be easily applied to or removed from the driving shaft, has been patented by Mr. Henry C. Lewis, of Saginaw, Mich. This pulley is made of wood, and furnished with a fastening which prevents it from turning on the shaft under heavy strains, and will cause it to remain true on the shaft.

ATTACHMENT FOR PRINTING PRESSES.—An improved attachment for cylinder printing presses, designed for printing additional colors at one operation in the reading matter or advertising columns of newspapers, or on job work, has been patented by Mr. William E. Freer, of Norwalk, Ohio. This improvement consists of an auxiliary type cylinder arranged to be turned in unison with the other parts of the printing press, and carrying type charged with ink of the required color, the type being arranged so as to print in the blank spaces left in the printing regularly done by the press.

TRANSOM LIFTER.—Mr. Emil Herz, of New York City, has patented a device for opening, closing, and locking doors and pivoted or hinged windows. In this device a vertically arranged shaft on the door or window casing is provided at its lower end with a handle by which it may be turned, and at its upper end with a lever connected by a link with another lever on the door or transom, these levers being relatively arranged so that the movement of the door or transom corresponds to the movement of the shaft. In the support of the upper end of the shaft are formed notches, and the upper lever is provided with a lug adapted to enter either of these notches and lock the lever, and consequently the window or transom in any desired position. The device is unlocked by lifting the shaft.

Engineering.

RAILWAY GATE.—A railway gate of the class used on the elevated railways has been patented by Mr. John B. Carey, of Brooklyn, N. Y. This gate effectually prevents passengers from being crowded from the platform. It also prevents passengers from being pushed into contact with a moving train. The invention consists of a continuous barrier extending the whole length of the platform, and suspended from levers, the levers being so arranged that the entire barrier may be raised or lowered at one operation.

Electrical.

UNDERGROUND ELECTRIC CONDUIT.—This invention, which has been patented by Mr. Charles E. Loth, of Troy, N. Y., provides for laying the wires in such a way that insulating covering may be dispensed with. It also provides for the gathering and removal of water which might otherwise accumulate in the conduit. It is also furnished with means for protecting linemen from injurious shocks. The inventor has also devised means for ventilating the conduit so as to prevent the accumulation of gas.

COUPLING FOR ELECTRIC WIRES.—Mr. James J. Hinchey, of Boundbrook, N. J., has patented a coupling for electrical conductors such as are used on railway cars, for signaling from different parts of the train. This improved coupling is constructed so that in case of the separation of the cars, the circuit will be closed automatically as the electric couplings are detached, thus maintaining the circuit. This invention also provides means for signaling the engineer in case of the accidental separation of the couplings.

RHEOSTAT.—Dr. J. H. Gunning, of New York City, has patented a rheostat for controlling primary or secondary currents and for introducing resistance into the electric circuit wherever it is required. This invention consists in the combination with a tapering resistance piece formed of a conductor or semi-conductor of a roller adapted to roll upon the tapering piece, from the narrower to the wider end of the resistance piece, or in the reverse direction. The device is provided with means for graduating the pressure of the roller upon the resistance piece. This invention is designed more particularly for use in connection with medical batteries, but it may be employed in connection with electro-plating machines and in electric lighting.

Miscellaneous.

CIGAR CUTTER.—Wilhelm Scholer, Eiland, Solinger, Germany. This is a device of the class known as "piercers," and is designed to tip the cigar without tearing or disturbing the wrapper, the cutter being of suitable size to cut a small hole in the tip of a cigar to give free draught, while the device may be conveniently carried on a chain or in the pocket.

BOX SCREW AND CLAMP.—Phillip N. Bailey, Winston, N. C. This is a device particularly

adapted for use in packing tobacco in boxes and lining the top of the box while held down upon the tobacco the device being simple and durable and dispensing with the cumbersome and expensive ones now in use.

TRUSS.—Alonzo D. Smith, New Woodstock, N. Y. Combined with a curved spring is an adjustable spring-pressed pad, to produce an inward and upward pressure, while there is a curved slide for adjusting the pressure of the spring, another pad being added to adapt the truss to a double hernia.

URINAL.—Joshua R. Gibson, Cincinnati, Ohio. This invention consists of a combined spreading and spraying nozzle arranged adjacent to the rear slab of the stall, and at an angle thereto, whereby the water is spread in a thin sheet upon the slab and all splashing is avoided.

SASH FASTENER.—Mr. Francis E. Drake, of Columbus, O., has recently patented a device for fastening together the ends of two parts of an overlapping sash or belt. This device consists of a stud furnished with suitable fastening plates attached to one end of the belt or scarf, and a socket secured to the opposite end, the socket being provided with a spring catch for engaging or holding the stud.

WHIP.—Mr. J. W. Middleton, of Kingston, Jamaica, West Indies, has patented a whip having a hollow tapering stock provided with a removable cover at its butt end, a thong fitting loosely in the small end of the stock, and a wedge in the butt of the thong, to prevent its removal from the stock.

PAPER FILE.—Mr. John M. Willis, of New York City, has patented a paper file which may be expanded more or less so as to inclose a large or small bundle of papers. This file is provided with a rigid front and back section, consisting of a plate or board having a transverse opening therein extending through from side to side. To the back board are attached bands or aprons, one of which is permanently attached to the front board, while the other is provided with an end strip, which is inserted in the slot of the front board when the file is closed.

METHOD OF TREATING COTTON SEED HULLS.—Mr. Emil Bohn, of Galveston, Texas, has recently patented a process of producing paper stock from cotton seed hulls. The object of this invention is to utilize a product that has heretofore been wasted. By means of suitable machinery, the hulls are reduced to fine particles, which are capable of "felted." The material thus produced forms a superior article of paper stock.

KNIFE.—Mr. Wm. P. Bailey, of Stowe, Vt., has patented an improved guard, which is particularly adapted for use upon knives of various kinds, but which may be also applied to fishing rods, hammer handles, and other tools. The guard is furnished with a thumb rest and ring, which enable the user of the implement to which it is applied to obtain a firm hold of the handle.

SCIENTIFIC AMERICAN BUILDING EDITION.
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4. Architectural sketches in Bradford, England. The technical school and the town hall.
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6. A cottage at Short Hills, N. J., erected at a cost of \$7,000. Floor plans and perspective view.
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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.

(2440) H. W. S. asks: Will you kindly inform me how I can obtain the skeletons of small animals, such as mice, rats, etc.? I wish to make a collection of some. A. Place the carcass near some ant hills. The ants will in time strip the skeleton.

(2441) E. S. wishes to know how to refine photographic wastes and obtain the amount of nitrate of silver they contain. Also give me a process for making nitrate of silver and of pure silver metal, and the same for chloride of gold in a dry state, the same as put up in 15 gr. bottles. A. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 377, page 6013, as to recovering residues. To make nitrate of silver out of pure silver, place the silver in a beaker and pour into it three quarters of a fluid ounce of strong nitric acid sp. gr. 1.4 for every ounce of metal. The beaker is heated till the whole of the silver dissolves, the solution is then poured into an evaporating basin, and the excess of acid driven off by boiling. The operations should be conducted in the open air. The salts left may be recrystallized by dissolving in the smallest possible quantity of boiling water, and allowing it to cool. The crystals of pure nitrate of silver will gradually form. The salt remaining in the mother liquor can be recovered by evaporation. To prepare chloride of gold the copper in the coin must first be eliminated. The gold coin is put into a beaker, and a mixture of three parts of hydrochloric acid and one of nitric acid is poured into it and heat applied until the metal is dissolved. The excess of acid is then expelled by evaporation. The impure gold chloride, when free from acid, is dissolved in boiling water, and a cold saturated solution of protosulphate of iron added, till a dark precipitate of pure gold is no longer produced. The precipitate of gold must be poured on a filter, and washed by pouring boiling water constantly over it, till the wash water no longer produces a precipitate with a solution of barium chloride, proving that the

gold is free from the excess of sulphate of iron. The gold is again dissolved in nitro-hydrochloric acid, the solution evaporated to dryness, the latter part of the operation being carried on slowly to prevent spurring. The yellow crystalline chloride of gold thus prepared should be preserved in a well stoppered bottle or a sealed tube, as the salt is very deliquescent.

(2442) H. B. asks for blue print paper that will keep well. A. The following:

Chem. pure ferricyanide potassium.....256 grs.
Water..... 4 ozs.

Keypbottle covered with black paper and well corked; 1 drachm equals 8 grains. This solution will keep indefinitely. No. 2, which should be mixed fresh each time:

Citrate of iron and ammonia.....50 grs.
Water..... 1/2 oz.

Mix equal parts of above different solutions before coating the paper, and add also to each ounce of solution 1 grain of bromide of potassium. The bromide tends to make the paperwork slower, but keeps it fresh.

(2443) G. B. D. asks how to color sand blue and black for painters' use. A. We presume you refer to blue and black smalt. These are composed of pulverized glasses of the desired color.

(2444) O. J. H. asks: 1. In case of an electrical storm is it best to close up the house tight, or else leave it wide open, and why? A. It is best to close the house, as the warm air currents from the open windows and doors form good paths for the lightning discharge. 2. If a person is above the clouds, can an electrical storm or any other do him harm? A. If above the clouds and still upon the earth, there would be danger. 3. How can I harden paper so as to make it as hard as wood or canvas? A. It is generally hardened by treatment with dilute sulphuric acid. It is also hardened by compression and by treatment with size. 4. Which propels a vessel the fastest, a screw or paddle wheels, and are there any other kinds of propellers? A. In the matter of speed there is not much difference. There are many other propellers, among which are the turbine, the water jet, reciprocating paddles, etc. 5. What is air composed of? A. Oxygen 20.96, nitrogen 79, carbonic acid 0.04.

(2445) F. W. L. asks (1) how to make a photograph on a ten cent silver piece. I tried it in different ways, but without success. A. Make a reduced negative from the picture to be imprinted. From the negative print a positive by development on Eastman's transferotype paper. Coat the coin with weak solution of gelatine and transfer the picture from the paper to the coin as per directions accompanying paper. 2. Where are the five currents taken from in an electro-medical coil? A. One current is taken from the primary, another from the secondary; the others are obtained by fractioning or combining these.

(2446) A. T. F. asks: 1. Is fuel gas (for fuel purposes only) actually manufactured upon a large scale? And if so, at what price is it supplied to consumers? A. It is not manufactured to any extent except for particular metallurgical or other works. If the supply of natural gas diminishes, then it may become a most important manufacture. 2. What is the equivalent (say in pounds of good anthracite coal) of 1,000 feet of water gas, not enriched with carbon? A. It consists of equal volumes of carbonic oxide and hydrogen. One thousand cubic feet contain 36.97 pounds carbonic oxide and 264 pounds hydrogen, equal in heating power to 22.42 pounds pure carbon, or to about nine-tenths of this amount of anthracite coal. 3. Can gas made by passing superheated steam through incandescent coal or coke, and not enriched with carbon, be sent for long distances through pipes? Or will it condense in transit, or otherwise lose its value? A. Yes; but it will be apt to lose hydrogen, especially through leakage.

(2447) W. E. V. writes: I have a valuable old opera glass incased in an ivory shell. Same has turned quite yellow with age, and would ask you if there is not some way that I could change the color to black. A. Soak the ivory alone in dilute solution of nitrate of silver and expose to the sun under glass. Repeat until black. Absolutely none of the metal parts must be immersed or they will be ruined. You might try bleaching it by exposing to the sun in a vessel of spirits of turpentine.

(2448) W. B. writes: I would like to experiment with condensed magnesia on electric lighting. It has been used with the sun lamp, but I have so far been unable to procure it. A. The substance is simply magnesia which has been pressed by hydraulic pressure. You could have this done for experimental purposes in any machine shop possessing a powerful press. Even a machine punch used for boiler plates might do the work. The sun lamp has not come into general use as yet.

(2449) S. H. G. writes: I want to generate hydrogen gas in a cast iron retort that is of 1 gallon capacity, and convey it direct by iron tubing 1/2 inch, opening into a medium sized iron cylinder. Cannot get over 9 pounds pressure (by accurate gauge) in the cylinder. What is wrong? A. Your cylinder may be so large that the retort will not generate from one charge enough gas to develop more than the pressure stated. Possibly there is a leak. Your cast iron retort will not stand the action of acids very long, as even if zinc is used, some corrosion is inevitable.

(2450) T. L. J. asks: 1. Is a current supposed to be induced in a coil in one direction by approaching and in reverse by receding from the pole of a magnet, or simply by cutting lines of force emanating from pole? A. By both. In general terms, any change in relation of coil to fixed pole, whether of position or of intensity, produces a current. It can almost always be represented by cutting lines of force. 2. In the formation of water from hydrogen and oxygen gas do the gases expand, or is the explosion caused by the sudden contraction of the gases? A. The expansion of the vapor of water produced in the combustion causes the explosion.

(2451) F. V. B. writes: Can you tell me how I can get silica of impalpable fineness with least trouble and expense? A. Buy silicate of soda solution