

RECENTLY PATENTED INVENTIONS.

Electrical Devices.

RAIL-SUPPORT.—L. STEINBERGER, New York, N. Y. The invention relates to an insulated support, and is particularly adapted for use in supporting and insulating a third rail of an electric railway, although it may be used for insulating and supporting various other electric conductors. One object is to provide an insulated conductor-support which will permit the rail ample freedom of movement in any direction, thereby providing for the expansion and contraction of the rail and for the vertical movement of the ties. Another, is to relieve the supports of strains and permit the rail to accommodate itself to positions of the collector-shoe, thereby insuring a constant and perfect contact.

Hardware.

REVERSIBLE SOCKET-WRENCH.—W. W. MURCH, New York, N. Y. In this patent the object of the invention is the provision of a new and reversible socket or nut wrench which is simple and durable in construction, easily manipulated, readily reversed, and more especially adapted for screwing axle-nuts on or off the axles.

JAW-WRENCH.—W. W. MURCH, New York, N. Y. The object of the invention in this case is to provide a new and improved jaw-wrench arranged to permit the operator to readily open or close the jaws to snugly fit the article to be turned and to allow convenient turning of the jaw-carrier and the jaws thereon in either a forward or backward direction.

Heating and Lighting.

STEAM-GENERATOR.—P. G. A. PEUGEOT, 83 Boulevard Gouvion St. Cyr, Paris, France. This invention relates to an improved boiler for the instantaneous production of superheated steam, which as in others of this class, comprises strong tubes which are brought to a high temperature within a non-conducting casing and constitute a tubulous system to which water under pressure is fed at one end and from which steam is supplied at the other in a more or less dry or superheated condition.

METALLURGICAL FURNACE.—E. C. WILLS, Altoona, Pa. That class of furnaces designed for the reduction of ore and for the melting of pig-iron and other metals is improved by this invention. Mr. Wills seeks to provide hearth-like surfaces down which the ore and metal may feed by gravity, and subject the materials so fed to the action of a flame from an oil-burner independently of or in conjunction with the heat from an ordinary furnace.

CHIMNEY-COWL.—B. S. WHITTON, Louisville, Ky. In this patent the invention is an improvement in chimney-cowls. The inventor seeks the provision of means whereby to prevent downdrafts and increase the upward draft, giving a powerful updraft to the chimney. The cowl may be made of galvanized iron, copper, terra-cotta, cast-iron, or any desired combination of these materials.

Machines and Mechanical Devices.

MUSIC-LEAF TURNER.—W. H. SAFFORD, Jr., New York, N. Y. In this music-leaf turner the rods range longitudinally between the leaves and the upper ends have arms carrying clips to engage the individual leaves. The rods are spring-acted and normally tend to open the leaves. Spring-acted key levers act to release rods in succession. The invention admits of general use.

COFFEE-MILL.—S. T. WALLACE, Los Angeles, Cal. Mr. Wallace's invention has reference to improvements in coffee-mills, an object being to provide a mill of simple construction having novel means for adjusting the rolls of different degrees of grinding and by means of which the grinding may be rapidly done. By employing rolls, the mill has a much greater capacity than mills having disks.

PRESSURE MECHANISM.—E. T. WOLF, New York, N. Y. In this mechanism the pressure can be applied uniformly to all parts of tapering material or work. It may be used in a variety of arts, and in machines of any character for subjecting irregular or tapering stock to pressure. One way it can be used resides in a machine for making piano-hammers disclosed in a former application by Mr. Wolf, in which variation in the materials or stock makes it difficult to apply pressure uniformly to the materials at all points. This practical objection is wholly overcome by the use of mechanism embodying the present invention.

MACHINE FOR SKINNING TOMATOES.—J. E. TRIMBLE, Albany, Ind. Mr. Trimble's invention is an improvement in apparatus for use in removing the skins from tomatoes, and has for an object to provide means whereby suction may operate in connection with the perforated bed to draw the skins from the tomatoes and to permit the pulp to discharge with the skin removed.

DREDGE ATTACHMENT.—H. A. FUNKE, Elizabethtown, New Mex. The attachment is especially adapted to dredges in which the buckets are arranged on an endless chain and dumping as they turn over at the upper portion of the dredge. In this class of dredges especially when working in clay and stiff soils the buckets fail to dump the mud completely. To overcome this a scraper device automatically enters each bucket as it arrives at dumping

position and throws out therefrom all the accumulated material. This device may be driven either by gearing direct thereto or by contact with the buckets; the latter arrangement being preferred by this inventor.

DUPLICATOR.—C. H. EPPLE, New York, N. Y. The intention in this improvement is to provide a device that may be easily operated, and by means of which a permanent record of the orders or sales may be made for the use of an accountant or cashier and at the same time duplicate the written matter on a check to be presented to a customer for settlement.

GUMMED-STRIP-MOISTENING MACHINE.—J. E. COLVIN, Junction City, Kan. This improvement has for its object the provision of a strip-moistening machine which will contain gummed paper strips of appropriate length and width and be adapted to deliver these gummed strips in moistened condition as may be required for application to a filled paper bag or other package for its sealed closure.

ATTACHMENT FOR CUTTER-BAR SHARPENERS.—W. M. PNEUMAN, Meshoppen, Pa. In general terms, this invention consists of an attachment whereby the grinding-wheel may be gaged in its work. The particular type of cutter-bar sharpener to which the gage attachment is adapted employs a rotatable grinder at the free end of an oscillating arm. In sharpening cutter-bars with a device of the character stated the grinder is liable to cut away the blade injuriously and care is needed to prevent grinding through the bar or blade. Mr. Pneuman's attachment obviates all such objections and has the advantage of adjustability.

Of Interest to Farmers.

SULKY-PLOW.—J. E. RUSSELL, Tintonka, Iowa. One of the objects in this case is to be able to change the inclination of the plow to the ground in such a manner that the tilting of the point down to make it run deeper does not involve the raising of the heel of the plow, and vice versa, but when the point of the plow is tilted down the whole lay of the plow is tilted down about a center in rear of the beam.

PLATFORM ATTACHMENT FOR COMBINED HARVESTERS AND THRESHERS.—F. MCCOWN, A. G. LOUNDAIN, and W. A. WILLIAMS, Walla Walla, Wash. Their invention relates to an improvement in that class of combined threshers and harvesters or "combined harvesters," as they are called, which are provided with a side platform adapted for supporting one or more harvest hands while sacking grain, sewing the filled bags, and delivering them upon the ground.

COTTON, BERRY, OR VEGETABLE PICKING OR DAIRY STOOL.—J. C. FARLEY, Ennis, Texas. The object in this instance is to provide a construction which can be conveniently secured to the wearer, can be conveniently adjusted to form a stool of any desired height, will not interfere with the wearer walking from place to place, and will readily adjust to position for use when the operator stoops over, as in the act of milking, or picking berries, vegetables, cotton or other objects near the ground.

HAY-STACKER.—O. D. STALCUP, Unionville, Mo. The purpose in this case is to provide a stacker which can be operated close to the stack, thereby enabling an operator to keep the stack upright and in desirable shape. Another, is to so construct the stacker that springs or weights are not required to start it back on the return from its upright position and to so construct the draft device and mountings for the carrying-head that the head may be operated without interference, no matter how close the device may be to the stack.

Prime Movers and Their Accessories.

SANDER FOR LOCOMOTIVES.—G. W. FRAZIER, Alamogordo, New Mex. The object in this invention is to provide an apparatus which is adapted for depositing sand upon rails by means of an air-blast and which in case of failure of the air-supply may be used simply as a gravity-sanding device, the sand flowing by its own weight from the sand-box to the rails.

ROTARY ENGINE.—S. M. WADE and G. E. GARNER, Andover, Ohio. In carrying out the present improvement an object of the inventors is to provide an engine, the internal revoluble disk of which is supplied with a plurality of spring-tensioned pistons designed to be operated by the pressure of steam within the casing of the engine for the purpose of turning a power-shaft.

Pertaining to Vehicles.

BRACE ATTACHMENT FOR PIVOTED DRAFT-BARS OF VEHICLES.—L. H. PLANK and A. C. PLANK, Rochester, Minn. In this patent the object of the invention is to provide an adjustable brace for the combined draft and pivot-bolts of doubletrees and swingletrees, whereby the bolts are supported in such manner as to be capable of withstanding great draft strain without danger of bending or being broken.

VEHICLE-WHEEL.—W. D. WILLIAMS, Salt Lake City, Utah. The aim in this improvement is to provide details of construction for a wheel which afford a neat, strong, and durable wheel whereby the spokes of the wheel may be quickly and conveniently removed singly or in any number, and furthermore, enable the

assembling of all parts of the wheel without heating by the use of a hammer and wrench.

Of General Interest.

THERMOMETER-CASE.—H. A. SIEVERT, Fort Walla Walla, Wash. In this patent the invention relates to improvements in an antiseptic case especially designed for use of physicians and surgeons. Primarily the object in view is to provide a case adapted to contain an antiseptic liquid within which the thermometer is at all times bathed when in the case, the construction of the case being such that the thermometer may be withdrawn while the case is in any position.

SPATULA AND CORK-EXTRACTOR.—E. B. JELKS, Quitman, Ga. Mr. Jelks' invention is an improvement in spatulas, being in the nature of a combined spatula and cork-extractor. It will be found especially useful by druggists in filling prescriptions, the spatula being used in the ordinary way and the extractor for removing the corks of the large-mouthed bottles employed in drug-stores for holding different drugs employed in prescriptions.

WHEEL-OILER.—W. D. GRAVES, Brown Valley, Minn. This oiler may be applied to a loose pulley or any form of a wheel revolving on a stationary shaft. The purpose of the invention is to provide a suitable oil-receptacle that can be readily attached to a pulley or other wheel revoluble on a shaft between the portion of the hub containing the oil-passage and the opposite inner face of the rim of the wheel.

MARLINESPIKE.—F. KAPPLER, JR., Lake Linden, Mich. In use the spike may be inserted between coils of the rope, and then forced through the rope until the overlying coil of the rope will stand between the lateral opening in the spike and the butt-end of the spike. The end of the coil can then be inserted through the bore and be directed by an incline out through the lateral opening to form a convenient hand-hold for use in drawing the coil between the coils desired to splice.

MUSIC-LEAF TURNER.—W. PILOT, Denver, Col. This invention refers to improvements in music-leaf turners, an object being to provide a device for this purpose that shall be simple in construction and inexpensive and by means of which music may be quickly turned without interfering with the playing of an instrument.

MOORING-ANCHOR.—M. SHEPARD and T. S. WIMPENNEY, Edgartown, Mass. In this patent the invention has reference to improvements in mooring-anchors for vessels, an object being to provide an anchor that may be readily set in a water-bed or taken from the water-bed at any time and that will be practically impossible to draw out by the strain or pull of a vessel attached thereto.

TABLE.—T. S. USHER, Brantford, Ontario, Canada. Mr. Usher's invention is an improvement in tables, more particularly such as are adapted for use in playing cards, and are so constructed that they may be knocked down and packed in small places for storage or shipment. The invention is embodied in the improved construction of the supports for the table and the attachment of the same to the table-top.

SMOKELESS FUEL.—T. WEEPLE, Oakland, N. J. According to this invention Mr. Weeple employs a simple method of treating such carbonaceous substances as bituminous coal, coal-dust, oil residue, and the like as will produce a fuel that will burn free from "black smoke" during combustion, while retaining all its calorific properties, thus making the fuel especially available for domestic and steam purposes.

GARBAGE-CAN.—R. METZ, Atlantic City, N. J. This invention relates to improvements in cans for holding garbage, an object being to provide a can for this purpose with a practically air-tight cover and having means for disinfecting the interior of the can and also the space between the cover members, whereby germs will be effectually destroyed and odors prevented from escaping.

DETACHABLE BUTTON.—A. H. BROWNLEY, Onehunga, New Zealand. Mr. Brownley's invention has reference to detachable buttons—that is to means for securing buttons so that the same may be quickly and easily removed from the clothing. While his invention admits of general use, it is of peculiar value to soldiers and sailors for use in connection with their uniforms.

BOTTLE-STOPPER.—G. MILLER, New York, N. Y. This invention has reference particularly to improvements in stoppers for milk-bottles. Milk-bottles are often broken by the freezing and consequent expansion of the milk therein. The object is to provide a stopper or closure for the bottle so arranged that it will readily yield to the expansion strain, and thus prevent the breaking of the bottle.

HANDLE.—E. F. SMITH, Newfield, Maine. The aim of the invention is to provide a handle designed for use on crowbars, post-hole diggers, and other tools and implements on which a handle may be of temporary or permanent service, the handle being easily applied or removed, not liable to be injured when in use, and arranged to insure a firm grip.

NAIL-HOLDING ATTACHMENT FOR HAMMERS.—E. H. PLATNER, Mount Vernon, Iowa. The purpose of Mr. Platner's invention is the provision of a new combined hammer and nail-holding attachment which is simple and durable in construction, the same being

designed for holding a nail in position and slanting it into material preparatory to driving it home by the hammer proper.

HORSE-RELEASER.—G. H. SLATTERY, Jacksonville, Fla. In this instance the invention refers to improvements in devices for automatically releasing fire-department, fire-patrol, and police-patrol horses upon the sounding of an alarm, the object being to provide a releaser having few parts liable to get out of order, and that will operate with absolute certainty.

SECTIONAL CASE.—O. O. BUICE, Montgomery, Ala. The intention of this improvement is to provide a case designed for use as a bookcase, show-case, or like article and which permits of secure interlocking of the units and convenient manipulation of the door to move the same into a closed or open position and when in this position to be completely out of the way of the user of the case.

VENTILATOR.—F. M. THOMPSON, East Liverpool, Ohio. The intention of this inventor is to provide means whereby to deflect the wind into a room, so that when the wind is blowing in the direction at right angles to the window-opening it may be deflected into the room, and the invention will be found especially desirable where windows open into passages between two structures.

WELL-DIGGING APPARATUS.—T. E. LAW, Kingston, Mo. The apparatus comprises a frame mounted to travel in a circular path with the well tube as a center. A traction wheel contacting with the ground serves to drive an operating shaft, the latter comprising a driving and a driven section. Novel devices are provided for causing either a periodical movement to the driven section when a reciprocating drill is employed or imparting an uninterrupted rotary motion thereto when a boring tool such as a screw is used.

VENTILATOR FOR BOOTS OR SHOES.—J. H. SANDMEYER, New York, N. Y. The purpose is to provide a ventilator for the uppers of boots or shoes, preferably placed at the side near the sole, and to so construct the ventilator that it will be readily applied and will not detract from the strength of the upper, and furthermore, to provide a perforated or reticulated front section for the ventilator, which while affording comparatively no resistance to the passage of air will serve to prevent small articles and in great measure dust from entering the shoe.

CANDY-CUTTER.—F. W. STUBBS, Manistee, Mich. The object in this improvement is to provide a candy machine that may be adjusted for cutting a variety of shapes and sizes and by means of which a large number of cuts may be made by one operation, thus reducing the cost of labor and manufacture as compared with the ordinary hand-cutters employed.

DOTTING-PEN.—E. G. RUEHLE, New York, N. Y. The purpose of this invention is to provide a dotting-pen, thoroughly effective in use and which may be conveniently and expeditiously cleaned, and so constructed that reserve dotting-wheels of various sizes may be carried in the body of the pen, and so that the dotting-wheel at the point of the pen can be readily removed to be cleaned, sharpened, and replaced.

TRUSS-PAD.—O. C. ROSS, Spokane, Wash. The object in this case is to provide features of construction for a pad which adapt it to contract the edges of the reputed wall of the groin or abdomen and so reduce the hernia that it will heal or unite at the edges, a further object being to adapt the pad in pairs for effectually compressing and supporting two ruptures that may be located high or low and either in the groin or other portion of the abdominal wall.

HOUSE-CARPENTER'S TOOL.—H. PLANTE, New York, N. Y. The object of the present patent is to enlarge the capacity of the gage illustrated in a previous patent granted to Mr. Plante so as to render the improved tool capable of use in a great number of operations in carpentry; for example, in the planing of door-jambes to enable the door to fit properly, the measurement and cutting out of panels to be inserted into the door, and other parts of the house-fittings and in the use of bead-planes generally, all of which functions are in addition to those embodied in the gage as above disclosed.

TUNNEL CONSTRUCTION.—D. PHILLIPS, Pony, Mont. In operation the false tunnel, which is divided into compartments by bulkheads each provided with a valve, while in a collapsed state, with the ties attached, is to be discharged from a vessel until extended entirely across the bed for the tunnel, and then a compartment is to be inflated, and a section of permanent tunnel built therein, after which the next section, by opening the valve, is to be inflated, the weighted cars run thereon, and another section of permanent tunnel built and joined to the preceding one, as indicated in a former patent granted to Mr. Phillips.

MATCH-SAFE.—J. H. MILLSAPS, Washington, D. C. Mr. Millsaps' invention is an improvement in match-safes, and has for an object, among others, to provide a novel construction for securing the friction-strip upon which to ignite the matches. By this invention the friction-strip can be conveniently removed whenever desired or necessary.

PRICE-TAG FOR MERCHANDISE.—W. MILLS, JR., New Rochelle, and A. E. MEDER,

New York, N. Y. The intention of these inventors is to provide a price-tag for merchandise which is simple in construction, cheap to manufacture, easily applied, and arranged to prevent injury to the merchandise, especially when using the tag on handkerchiefs, lace goods, and like frail articles.

BOTTLE-CAP.—A. L. BERNARDIN, Evansville, Ind. The improvement relates to that class of caps which are made of hard metal and comprise an inner corrugated section to screw on the bottle-neck and an outer unthreaded section which is held to and from rotary movement upon the inner threaded section; and relates to the construction of the cap with the inner and outer sections fitted together, the inner being rather a tight fit within the outer shell, so that when the inner shell is pressed into the outer the latter will be held to and from rotary movement upon the inner threaded section.

TROUSERS-PRESS.—E. GRAHAM, Orangeburg, S. C. In this apparatus legs of trousers are creased and pressed without the aid of a hot iron. It is an improvement upon a former device for which Mr. Graham obtained Letters Patent. The present invention relates particularly to means for hinging the two frames together and providing for vertical adjustment of the upper one relative to the lower for the purpose of adapting the apparatus for pressing trousers of varying thickness or pressing two or more simultaneously.

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.

- Marine Iron Works. Chicago. Catalogue free.
Inquiry No. 5575.—For a machine for preparing Spanish moss to be used in stuffing furniture and mattresses, instead of hair.
AUTOS.—Duryea Power Co., Reading, Pa.
Inquiry No. 5576.—For the present address of the Farmers Mfg. Co.
"U. S." Metal Polish. Indianapolis. Samples free.
Inquiry No. 5577.—For machinery for extracting turpentine from pine stumps.
Handle & Spoke Mch. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.
Inquiry No. 5578.—For makers of small German silver spring wire.
Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.
Inquiry No. 5579.—For manufacturers of oil-making machinery.
American inventions negotiated in Europe. Wenzel & Hamburger, Equitable Building, Berlin, Germany.
Inquiry No. 5580.—For makers of machinery patented by M. M. Lyall, for making seamless bags.
Patent rights for driving chain for sale. German invention. Fully protected in America. Address inquiries to J. J. Kirberg, 114 Broadway, Paterson, N. J.
Inquiry No. 5581.—For parties to manufacture a display card for lace trimmings, dress goods, etc.
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. 5582.—For makers of a dust protector for the eyes and nose.
We manufacture anything in metal. Patented articles, metal stamping, dies, screw mach. work, etc., Metal Novelty Works, 43 Canal Street, Chicago.
Inquiry No. 5583.—For information regarding the lockout system in telephones.
The celebrated "Hornsbly-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Machine Company, Foot of East 138th Street, New York.
Inquiry No. 5584.—For parties dealing in the seeds of catalpa trees or the trees themselves.
Partners for Foreign Patents Wanted.—Incubator-brooder, a money-making combination. Entirely new principle. Half interest. Chas. H. Sperle, Bound Brook, New Jersey.
Inquiry No. 5585.—For manufacturers of steel collar springs.
Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery and tools. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.
Inquiry No. 5586.—For manufacturers of a pocket lighter or lamp, shaped like a pencil.
Inquiry No. 5587.—For manufacturers of souvenir novelties made from photos.
Inquiry No. 5588.—Formakers of glass bottles with a cork and metal screw top.
Inquiry No. 5589.—For manufacturers of punches and dies for lamp burners.
Inquiry No. 5590.—For the manufacturers of the "Gem Egg Separator."
Inquiry No. 5591.—For the manufacturers of Cole's patent geared crank lift for drop stamp.
Inquiry No. 5592.—For a gun for testing the breech pressure of gunpowder.
Inquiry No. 5593.—For manufacturers of coin-counting and wrapping machines.
Inquiry No. 5594.—For an apparatus for heating furnaces with liquid fuel.
Inquiry No. 5595.—For a brass, nickel or aluminum case, constructed similar to a match box, opening near top of case, but must be a trifle larger than a match safe, about 3 inches long, 2 inches wide and 3/4 inch through.
Inquiry No. 5596.—For parties engaged in metal stamping and forming, cut with dies.
Inquiry No. 5597.—For machines for weaving hats of straw or palm leaves.
Inquiry No. 5598.—For a small rock crusher
Inquiry No. 5599.—For manufacturers of leather articles, such as upholstered tool bags, 20 inches long.



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.

(9401) E. G. says: I am perplexed with the following problems, and so take advantage of your notes and query column. 1. In photo-trichromatic printing: (a) Kindly explain what Koenig's diagrams (corrected by Capt. Abney) of the three primary color sensations really try to show. How are the curves constructed? (b) Images that we look at are formed inverted on the retina. How is it then, that we see them correctly? A. We have not at hand any description of Koenig's "Diagram Corrected by Captain Abney, of the Three Primary Color Sensations," and so are unable to give you the information concerning it which you ask. (b) It is true, as you say, that the images formed upon the retina in the eye are inverted with reference to the objects from which they are derived, but no person has ever come to the knowledge of that fact except by instruction. He could never have found it out by himself alone, from his own sensations or experience. The explanation commonly given to this curious phenomenon is that we are conscious of our own erect attitude and call the directions up and down as they seem to us, and therefore we consider up and down with reference to other objects the same as up and down with reference to our own person. 2. In physics: Why is it that a pendulum will not describe a plane surface but a conical one in its oscillations? A. The reason why a pendulum ball hung by a cord usually changes its swing into a conical surface, is that the place of the suspension of the cord in some way acts upon the pendulum unequally. Thus, if we could drill a perfectly round hole in a plate, equally smooth on all its edges, and pass through it a cord or wire which exactly filled and fitted the hole, so that the pendulum in all parts of its swing would bear equally upon the hole, it is not at all likely that the pendulum would change from swinging back and forth in a true plane. We should answer your question then, "Why is it that a pendulum will not describe a plane surface but a conical one in its oscillations?" by saying that it will, if you will give it a chance to do so. Of course, a pendulum hung by a rigid rod is forced to describe a plane surface in its oscillations. Only a pendulum hung by a flexible cord or wire can change to a conical swing. 3. If a resistance box be introduced in an electrical circuit, how will the potential of the current before entering and after leaving the resistance box be effected? A. The introduction of the resistance box into an electric circuit does not change the potential of a current in any way. It does, however, change the resistance between the two poles of the circuit, so that the drop of potential along that portion of the circuit in which the box is placed is changed. Thus, if the resistance of the piece of apparatus were 50 ohms, and the circuit is one of 110 volts, in order that 1 ampere should flow, we must have a total resistance of 110 ohms, and as there are but 50 in the apparatus there must be 60 ohms, added from the resistance box to produce this effect. The principles upon which this acts are, first, that the drop of potential in any part of an electric circuit is proportional to the resistance of that part of the circuit, and second that the current depends upon the ratio of the voltage to the resistance, according to Ohm's law. Now to answer your question: The resistance box forms a part of the circuit. Its resistance, plus the resistance of the rest of the circuit, constitutes the total resistance over which the drop of potential is to be distributed, and according to the first principle stated, the drop of potential in each of these two portions is proportional to the resistance of each portion of the circuit. As an illustration, if a circuit has its resistance in two parts 20 ohms and 30 ohms, there will be 50 ohms in the total circuit, and two-fifths of the drop will be in the 20 ohms and three-fifths in the 30 ohms. If, now, the voltage is 100, the drop in the 20 ohms will be two-fifths of 100, or 40 volts, and the drop in the 30 ohms will be three-fifths of 100 or 60 volts. 4. When a wire on the armature of a dynamo makes an angle of 0 deg. with the lines of force of the magnets, is the induced current in the wire at its maximum or minimum? A. The induced E. M. F. of a coil of the armature of a dynamo is at its minimum when the coil is under the brushes

of the commutator. It is at a maximum at 90 deg. from this position, since there the number of lines of force are changing most rapidly. This coil makes an angle 0 deg. with the lines of force between the pole pieces. As the E. M. F. is at a maximum, so also, the current may be said to be at a maximum in a coil at 0 deg. with the lines of force.

(9402) E. L. A. says: Will you, through your inquiry column of the SCIENTIFIC AMERICAN, give me the easiest and best process for dissolving flower of sulphur? A. Sulphur dissolves easily in carbon bisulphide and readily in chloroform, benzole, and turpentine.

NEW BOOKS, ETC.

THE MANUFACTURE OF IRON AND STEEL TUBES. By Edward C. R. Marks, Associate Member of the Institution of Civil Engineers, etc. Manchester, England: The Technical Publishing Company, Ltd., 1903. 12mo.; pp. 156. Price, \$2.

The writer confines his discussion to butt and lap welded tubes of iron, open or close jointed and consolidated tubes, and processes and appliances for the production of seamless steel tubing. The many illustrations appearing throughout the work were prepared from the drawings attached to the printed patent specifications. In addition to the table of contents there is a comprehensive index which makes any desired information readily accessible. The work is an outgrowth of a series of lectures delivered by the author before the Birmingham Municipal Technical School. It should prove a useful handbook for manufacturers and others interested in the subject of iron and steel tubes.

ELEMENTE DES WASSERBAUES. Fuer studierende an hoeherer Lehranstalten und juengere Techniker. Bearbeitet von Eduard Sonne und Karl Esselborn. With 226 illustrations. Leipzig: Wilhelm Engelmann, 1904. 8vo.; pp. 337.

DER WASSERBAU. Nach den Vortraegen gehalten am Finnlaendischen Polytechnischen Institute in Helsingfors. Von M. Strukel. IV. (letzter) Teil. Leipzig: A. Twietmeyer, 1904. Sq. 8vo.; pp. 200 and 37 plates.

Both of these works cover pretty much the same field and are written quite in the same vein. Both are intended for post-graduate students and young engineers. We are unable to judge of the relative merits of the two works, for the reason that we have before us only the fourth part of Prof. Strukel's papers, discussing dikes, harbors, and the like. The work of Prof. Sonne and Prof. Esselborn seems to us in every way a most excellent text book, prepared with characteristic German thoroughness and in every way adapted for the purpose for which it was written. Prof. Strukel's discussion is considerably fuller and will for that reason probably find no slight appreciation among practising engineers.

INDEX OF INVENTIONS For which Letters Patent of the United States were Issued for the Week Ending May 24, 1904.

- AND EACH BEARING THAT DATE [See note at end of list about copies of these patents.]
Accordion, R. Carbonari 760,730
Aerial navigation apparatus, C. F. Morrison 761,053
Air brake hose coupling, Allan & Lenhoff 761,024
Alarm mechanism, A. T. Cunningham 760,525
Alcohol making, S. J. Vance 760,939
Alkaline silicate solutions, evaporating, C. Reim 760,563
Aluminum sulfid and alloys, manufacture of M. Onda 760,554
Amusement apparatus, A. F. Mueller 760,469
Animal trap A. E. Huguley 760,738
Annealing apparatus, E. A. Uehling 760,825
Ashes or garbage receptacle, M. A. Donohue 760,434
Automatic brake, L. F. Weeber 760,940
Automatic gate, R. Bolinger 760,950
Axle, car, J. M. Wilcox 760,505
Axle, vehicle, J. B. Bartholomew 760,605
Bag frame handle, E. E. Witte 760,717
Bag holder, A. M. Harris 760,690
Basket making machine, E. Horton 760,791
Bath, E. W. Lancaster 760,540
Bathing apparatus, electrical, R. S. Lawrence 760,794
Battery plate, storage, E. W. Smith 760,712
Battery plate, storage, A. Meygret 760,897
Bead loom, F. C. Poole 760,919
Bearing, roller, Wood & Douglass 760,598
Bed bottom, spring, Logan & Brown 760,746
Bed, invalid, C. G. Radcliff 760,755
Bed, spring, L. P. Norton 760,552
Beer or water cooler, E. S. Wiesenfeld 760,715
Beet topper, digger, and screener, sugar, I. Bentley 760,414
Belt, rubber, J. W. Blodgett 760,054
Belt sanding machine dust hood, C. S. Yarnell 760,834
Belts, automatic gripper for conveyor, J. J. Ridgway 760,702
Binder, loose leaf, C. R. Nelson 760,799
Biscuit stamping and cutting machine, T. & J. Vicars, Jr. 760,827
Blank, negotiable instrument, P. S. Nagle 760,850
Block. See building block.
Blow-out chute, F. B. Corey 760,550
Bobbin and spindle connector, F. W. Saworski 760,704
Boiler, J. C. Beckley 760,840
Boiler tube, J. & A. Niclausse 760,475
Bolster spring crank plate, G. B. Freeman 760,977
Bolt and nut lock, W. H. Smith 760,812
Bolt turning head, B. D. Jackson 760,933
Bomb, G. Supnick 760,820
Bottle corking machine, J. F. Schneider 760,925
Bottle, non-refillable, S. N. Sparks 760,496
Bottle, non-refillable, G. Zister 760,836
Bottle, non-refillable, E. C. Luks 760,887
Boxes, etc., corner stay for, Dyarman & Perrin 760,974
Brake, J. D. De Pew 760,968
Brake beam, C. F. Huntoon 760,863
Brake beam fulcrum post, W. D. Sharp 760,709
Brake slack adjuster, F. L. Clark 760,778
Brick drier, J. W. Aregood 761,025
Brick or stone mold, solid, J. P. Oosting 760,803
Broiler, C. B. Daniel 760,430
Brush handle, H. A. Hayden 760,451
Brushes of loose bristles, machine for freeing, Tottle & Fairman 760,938
Buckle and cockeye, combined, F. W. Hawes 760,857
Building block, F. W. Blakeslee 760,774
Building block, mid, L. O. Burnham 760,678
Building construction, A. Haag 760,688
Burial apparatus, W. J. Barrett 760,529
Burnishing machine, P. Duplessis 760,529
Button carding machine, A. J. Meetz 760,893
Calipers or dividers, F. H. Cawley 760,956
Call box, J. C. Barclay 761,026
Camera, photographic, J. E. Thornton 760,584
Car coupling knuckle, D. W. Alderman 760,946
Car door, R. Mobley 760,902
Car draft gear, railway, W. F. Richards 760,757
Car fender, Sullivan & Taylor 760,662
Car fender, J. C. Cooper 760,781
Car fender, J. Derr 760,969
Car friction draft rigging, railway, F. B. Townsen 760,824
Car gate, automatic, W. N. Hays 760,536
Car heating system, E. H. Gold, reissue 12,224
Car loading mechanism, F. R. Willson, Jr. 760,597
Car, motor, A. Paluros 760,556
Car, railway, J. H. Bruce 760,847
Car running board, railway, M. S. Nolan 760,916
Car stanchion, F. J. Buzbee 760,418
Car step folding extension, C. K. Turley 760,663
Car step, supplemental, E. Howe 760,990
Car ventilator, R. S. Lawrence 760,795
Car wheel, J. E. Downer 760,857
Car wheels, manufacturing, Connolly & Weidlein 760,960
Car wheels, trucks, etc., apparatus for removing, W. A. Haller 760,622
Card clothing to cylinders, machine for applying, C. Mills 760,696
Carriage top, L. C. Shipley 760,928
Carrier. See Pneumatic carrier.
Cart, tank, T. D. Ulrich 760,588
Cash indicator and register, F. M. Boring 760,415
Cash register attachment, J. Schinneller 760,705
Cash register signal, W. F. Bockhoff 760,724
Casting machine, metal, E. Crossley 760,523
Cement brick machine, Luttrell & Cantrell 760,585
Chain, J. M. Dodge 761,034
Checks, lock stub for sale, R. Woodman 760,718
Chimney canopy top, G. H. Huse 760,992
Churn, J. W. Newton 760,699
Churn vent, Lancaster & Andrews 760,693
Chute and bag support for vehicles, C. W. Lanpher 760,834
Cigarette mouthpiece blanks, mechanism for attaching fibrous material to, A. A. Drutschenkow 760,436
Circuit breaker, C. F. Stoddard 760,658
Circuit breaker, J. Barry 760,679
Circuit breaker, C. Miller 760,708
Cistern forming device, W. M. McNeill 760,912
Clock striking mechanism, electric, E. Meyer 760,895
Closet connection, D. Keohane 760,874
Closet joint, W. E. Hinsdale 760,863
Clothes line reel and stretcher, A. E. Hall 760,450
Clutch, W. S. Timmis 760,822
Clutch, friction, Baumgartner & Ziegler 760,516
Clutch mechanism, S. D. Sprong 760,577
Coaling apparatus, boat, H. D. Stearns 760,934
Coaster brake, J. Zimmerman 760,720
Cock, bib, H. F. Schroeder 760,705
Coin actuating mechanism, S. A. G. 760,725
Coin controlled apparatus, A. E. Wells 760,502
Collapsible box, C. H. Stonebridge 760,660
Collar fastener, horse, Sheldon & Butterfuss 760,492
Collar, horse, J. H. Miller 760,544
Collar, horse, A. G. Couch, reissue 12,221
Comb, A. F. Mott 760,906
Compound fabric, F. B. Uebel 761,051
Concrete molding apparatus, G. M. Graham 760,446
Conveyer, T. S. Miller 760,468
Conveyer, W. J. Patterson 760,479
Conveyer, E. Crossley 760,529
Conveying apparatus clamp, G. A. Amsden 760,711
Cooler. See beer or water cooler.
Copy holder, M. L. McAloney 760,910
Copying press, H. F. Seales 760,652
Cord adjuster, H. E. E. Strunk 760,819
Cord making machine, covered, W. Meyer 760,896
Core molding apparatus, sand, J. E. Price 760,806
Cork extractor, M. D. Pollock 760,918
Corn popping apparatus, J. B. Bartholomew 760,604
Corn shredding machine self feeder, E. McAdams 760,909
Corn stripper and husker, combined, E. W. Miller 760,899
Cotton ball wipers, machine for destroying, F. Riewe 760,486
Cotton bundle tie, G. L. Edgerton 761,038
Cotton elevator and gin feeder, B. D. Sory 760,494
Cotton picker, W. Bennie 760,413
Coupling pins, etc., machine for making, J. F. Lober 760,883
Cover, pot, C. H. Pickett 760,753
Crackers, machine for separating and assembling, W. H. Budd, Jr. 760,417
Grate or box, folding, W. H. Beckett 760,517
Cultivator, single row, J. E. Bieler 761,027
Current transformation, alternating, Hutin & Leblanc, reissue 12,223
Curtain fixture, Ziegler & Brandan 760,835
Cuspidor, car, Cummins & Ivie 760,964
Cutting board, C. H. Farmer 760,618
Cyanids, apparatus for manufacturing, J. A. Kendall 760,997
Decoy duck, J. Coudon 760,683
Dental manikin, E. P. Wright 760,943
Derrick, A. E. Parker 760,577
Dish washing machine, C. S. Chamberlain 760,777
Display box, neckwear, W. R. Delaney 760,431
Display rack for umbrellas, etc., F. H. Hoff 760,866
Door check, sliding, W. H. Taylor 760,583
Door fastener, W. Box 760,951
Door or gate opening or closing device, J. F. Connell 760,780
Door securer, W. Stamp 760,933
Door stop, C. C. Davies 760,528
Drawing press, J. J. Rigby 760,921
Drier, L. Gathmann 761,041, 761,042
Drill, C. W. Crossman 760,525
Driving mechanism, F. D. Howe 760,628
Drop light, E. E. Grove 760,533, 760,534
Dumping rack, G. Walrath 760,866
Dust pan, C. Michaud 760,407
Egg case tray or filler, F. F. Bischoff 760,842
Electric apparatus, gas or vapor, M. von Recklinghausen 760,483
Electric circuits, controlling means for, J. K. Lux 761,003
Electric currents, means for controlling, I. Deutsch 760,970
Electric currents, means for safely conducting, E. A. Jarvis 760,740
Electric generators, automatic regulators for, W. A. Turbayne 760,713
Electric generators, automatic regulator for, M. R. Shedd 761,012
Electric indicator, E. Sadler 760,568
Electric pole changer, C. E. Scribner 760,574
Electric switch, H. P. Ball 760,603
Electric switch, F. Stevens 760,815
Electrical distribution system, Peck & Farley 760,480
Electrical distribution system, W. A. Turbayne 760,714
Electrically controlled switch, W. H. Hillier 760,988
Electrodes for batteries, manufacturing hard porous, Forseeck & Wedekind 760,561
Elevator, J. J. Schwob 761,011
Embroidering machine, Bourquin & Loeb 761,028
Emery wheel, J. W. Clarke 760,957
Engine cooling device, internal combustion, A. J. Fisher 760,531
Engine mixer and governor, gas, L. H. Nash 760,750
Engine speed regulator, explosive, C. O. Lucas 760,462
Engine vaporizer, explosive, White & Durvea 760,673
Envelop, C. A. Meadows 761,004
Evaporating or distilling apparatus, J. S. Forbes 760,440
Excavator, V. P. Keller 760,996
Exhibition of series of objects, device for the automatic, L. Strumpf 760,581
Explosive engine, quadruple four cycle, F. E. Schoonmaker 760,649
Extension table, D. F. Oliver 760,553