

binding strip, and enters the notches or grooves. The wires are then twisted around the strands and the strands secured to the intermediate posts.

AUTOMATIC WAGON-BRAKE.—ORION A. LITTLE, Oxford, Kans. To provide an automatically-operated mechanism by which a wagon is made to stop when running forward upon the horses, this inventor has devised a brake having a shaft with a gear thereon. An intermeshing gear is rotated from a carriage-wheel. A drum is loosely mounted on the shaft, and a spring-held clutch-mechanism is adapted to connect the drum with the shaft. A cable fastened to the drum is connected with the brake, and connections from the shaft-mechanism to the clutch separate the parts by the operation of the draft-mechanism. The brake is applied by a forward motion of the wagon and is released by the team's pulling forward upon the double-tree.

GATE.—WASHINGTON CROSS, Roseland, La. The gate of this inventor is mounted to swing on a vertical axis and is provided with a latch-mechanism and with devices by which the latch is operated in order to enable the gate to open. The devices in question comprise an operating lever fulcrumed on the gate-spindle and having connection at one end with the gate. A bell-crank lever is mounted in the other end of the lever and is connected with the gate-latch. An anti-friction roller having stationary bearings is engaged by the spindle of the bell-crank lever. In opening the gate, a cord is pulled, whereby the spindle is turned to cause the bell-crank lever to turn and release the latch. The gate will then be cant and swung open by gravity.

ATTACHMENT FOR PAPER-COATING MACHINES.—WILLIAM H. WALDRON, New Brunswick, N. J. In this attachment, two brushes are adapted to have the web of the stock passed between them and to be driven transversely of the web, so as to treat the stock as it passes between the brushes.

APPARATUS FOR HANDLING FABRICS.—HAMILTON K. PARRY, Lucas, Ohio. An apparatus on which rolls of fabric may be mounted, displayed, unwound, and measured, has been patented by this inventor. The fabric is mounted between cleats on rods or rolls, is laid over a cutter-bar, and extended over a rack by which it may be profitably displayed. When it is desired to cut off a portion of the fabric, the roll upon which it is carried is unwound. By means of a tape-measure carried on the frame of the apparatus, the fabric is measured, and, with the assistance of the cutter-bar and a knife, is cut from the roll.

FIREPLACE-FENDER.—LORENZO P. LEGG, Jefferson, Ga. This invention provides an improved fender adapted to be transferred from one fireplace to another, to be adjusted to permit free access to the fire, and to prevent the flying of sparks. The fender has two side frames, each embodying a top rail and a bottom rail. Each bottom rail has a forwardly-extending hook and each top rail has a pivot. The front frame of the fender has two side bars rigidly joined by horizontally-extending front bars, each side bar having a slot in which the pivots of the side frames are received. The lower end of each bar is adapted to be removably engaged with the hooks of the bottom rails of the side frames. A keeper-sleeve slides on each top rail of the side frames. The front frame and side frames are covered with wire netting. The front frame may be rocked up when it is necessary to clean the furnace.

GREAT CIRCLE COURSE-INDICATOR.—STEPHEN R. KIRBY, New York city. The arc of a great circle being the shortest distance between two points, navigators generally prefer to sail on such an arc. From the many charts now in existence it cannot be readily determined by most shipmasters on what course they should sail. The present device overcomes this difficulty. The apparatus consists of an equatorial arc connected with meridian-arcs. The meridian-arcs are connected with a polar pivot, so that the meridians may be swung to any desired point. The polar pivot is also mounted upon a meridian-plane so pivoted at a point representing the center of the earth, that the pole may be swung in this meridian-plane to adjust the device for any latitude. Passing through a central point representing the ship's position, is a great circle arc which has a pivot located in the meridian-plane and extended toward the center upon which the plane is pivoted. The distance between two points upon the arc of a great circle may be read from the great circle arc.

ADJUSTABLE DENTAL RUBBER DAM CLAMP.—ARTHUR S. COOPER, McMinnville, Ore. The dental device patented by this inventor is provided with a clamp which will grasp and tightly hold the tooth to which it is applied, regardless of the location of the cavity. An adjustable arm can be employed in connection with the clamp for working purposes, the arm and the clamp being adjustable vertically, laterally and to and from the tooth.

THERMOCAUTER-LANCET.—Dr. WILLIAM H. BEACH, Bridgerton, England. This invention provides an instrument which may be used for surgical purposes and for pyrographic etching on glass. The working point of such thermocauters is usually made of platinum, and often adheres to the fused particles of glass. Iridium, being free from this objection, is used by the inventor in his instrument. An improvement is provided by which the transmission of heat from the incandescent point to the hydrocarbon vaporizing chamber forming the handle of the instrument, is more effectually prevented than hitherto. In order that the mixture of air and vapor may be properly dosed, air is blown directly into the passage leading to the combustion-chamber, without first passing through the vaporizing chamber.

GATE.—WILLIAM A. WHITCOMB, Downs, Ill. This gate is provided with posts located near the gate and carrying levers projecting at opposite sides of the gate. The levers are connected through links with the latch of the gate. By pulling upon one lever the gate is unlocked and opened; by pulling upon the other lever the gate may be closed. Gates thus constructed are especially adapted for farms and country-seats.

PIN-HOLDER.—ALBERT E. ORMOND, Winnipeg, Canada. The pin-holder of this inventor is so constructed that a strip of paper containing pins is automatically fed to bring the pins, one at a time, to a discharge-opening, through which they are forced by a lever. The device may also be used as a paper-weight for use upon desks.

DOOR-HANGER.—RICHARD B. BROWNE, New York city. This invention is an improvement in means for suspending a door from a track-rail so as to permit the door to be readily moved along the track-rail. To this end an anti-friction, self-leveling door-hanger has been devised, comprising two spaced oppositely-slotted side plates; a journaled sheave, the journals of which project loosely into the slots; and an eyebolt whereon the lower ends of the side plates are pivoted, the eyebolt being adapted to hang a door in place.

SNOW-PLOW.—CYRILLE DUFF, Millbury, Mass. The body of this plow consists of two shovel-blades joined at an angle. The lower edges of the blades at the point of the nose extend beyond the upper edges, while the upper edges of the blades overhang the lower edges from a point near the center to their rear ends. Rearwardly-extending tapering pockets are formed in each blade. Correspondingly-tapering screws are held to turn in the pockets, and carry the snow back, keep the blades properly cleaned and cause the bulk of the snow to be delivered at the rear ends of the blades.

Designs.

SKIRT-PROTECTOR.—HUGO MAUL, Rahway, N. J. This skirt-protector has a head with a plain upper edge; a brush hanging from the lower edge of the head; and two rows of spaced ornaments, extending transversely of the head and raised on the sides of the head.

COVERED DISH.—ADOLPH PAROUTAUD, New York city. The body of this dish is depressed near its base and formed with a horizontal ridge between the base and the depression. The surface between the ridge and the top edge of the body is given an outward swell. The handles of the dish and cover are ribbon-like in form. The body and cover are decorated with raised figures.

FOOT FOR STOOLS.—WILLIAM R. SHAW, New York city. The body members of this design combine at their converging ends to form a foot member. The upper ends of the body members diverge and are furnished with oppositely extended arms, so as to permit the foot to be readily secured to a stool.

CARPET.—ALFRED BUNEL, New Rochelle, N. Y. This design consists of a central bouquet of flowers and foliage, the flowers being roses and daisies. Smaller bouquets of similar flowers and foliage are grouped around the main figure.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for 10 cents each. Please send the name of the patentee, title of the invention, and date of this paper.

NEW BOOKS, ETC.

RAILWAY ENGINEERING. MECHANICAL AND ELECTRICAL. By J. W. C. Haldane. With many plates and other illustrations. London: E. & F. N. Spon, Limited. New York: Spon & Chamberlain. 1897. Pp. 562. Price \$6.

The volume before us is of a popular nature, and is largely made up of pictures of machine tools, wood working tools, rolls, hammers, engines, boilers, etc., and as it is written in popular style intended for the lay reader it will doubtless appeal to many readers. Various railways and railway plants are considered and the subjects of bridges, electric railways, locomotives, boilers, etc., are taken up. The volume is freely illustrated.

THE THETA-PHI DIAGRAM. Practically Applied to Steam, Gas, Oil, and Air Engines. By Henry A. Golding. London: John Heywood, Manchester; The Technical Publishing Company, Limited. 1898. Pp. 127. Price 3 shillings net; \$1.25.

In the present volume the author has presented in as simple and practical manner as possible the use of the temperature entropy diagram and the various methods of drawing it for different heat motors. Most of the literature upon the subject has presented the mathematical rather than the graphical side of the question, with the result that the students have become afraid of both, and with what they believe to be an intricate mathematical investigation. The present volume will do much to disabuse their minds of this idea, and all engineers and gas engine men will find it eminently useful.

AN INTRODUCTION TO MACHINE DRAWING AND DESIGN. By David Allan Low. Eighth Edition. Revised and Enlarged. New York and Bombay: Longmans, Green & Company. 1898. Pp. 187. Price 75 cents.

Most practical work upon machine drawing and design is before us. We have rarely seen a book of the same compass which contains so much valuable information regarding the essentials which all draughtsmen should know. As an introduction to mechanical drawing, either alone or supplementary to other books, it is to be recommended. It is unfortunately tangled up by the examination papers of the Departments of Science and Arts. Fortunately, we have nothing of this kind to hamper our progress in this country, and this section of the book, which is less than twenty pages, may be disregarded by the student.

BULLETIN OF THE UNITED STATES GEOLOGICAL SURVEY. No. 149. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for 1896. Weeks, Washington: Government Printing Office. 1897. Pp. 152, ix.

BULLETIN OF THE UNITED STATES GEOLOGICAL SURVEY. No. 89. Some Lava Flows of the Western Slope of the Sierra Nevada, California. Ransome. Washington: Government Printing Office. 1898. Pp. 74, ix.

BULLETIN OF THE UNITED STATES GEOLOGICAL SURVEY. No. 88. The Creaceous Foraminifera of New Jersey. Bagg. Washington: Government Printing Office. 1898. Pp. 89, ix.

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

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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.

(7538) H. W. asks: 1. What is the best insulating compound to apply on armature? I have used shellac, but after the machine has been run for an hour or so the shellac begins to blister. A. The bars of an armature should be separated from each other by mica. If the insulation has been destroyed, it cannot be permanently repaired by any liquid insulator. The proper remedy is to have the armature taken apart so far as is necessary and new insulation put in as when it was built. 2. What is the most reliable material to put on a pulley to stop belt from slipping? A. A piece of beeswax rubbed on the belt and pulley occasionally is probably the best application that can be made.

(7539) F. A. M. asks: 1. Is there anything better or more adhesive than shellac for cementing the convolutions of the armature coils together on simple electric motor? A. There is nothing better than shellac for coating coils after they are wound. It is one of the best insulators and is quite strong when well dried. You can tie the coils with a cord. 2. Would it do any harm to put a few coats of furniture glue on the coils? A. The objection to the use of glue to bind the wires together is that it will soften if it is in a wet place at any time. If it absorbs water, the insulation is injured.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted DECEMBER 30, 1898, AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.]

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