drying. The invention is applicable in various other arts, as will be apparent to skilled mechanics. The improvements reside in features of the construction by which a rack of large capacity compared to its size and adjustable to hold sheets of any standard dimensions is provided.

BOTTLE.—A. FRIEDMANN, Shreveport, La. In this case the object of the invention is the provision of a new and improved bottle of novel features and parts adapted to be readily destroyed when emptied of its contents, to prevent reuse of the bottle by any unauthorized and unscrupulous persons.

WINDOW-SCREEN.—W. A. CASSIDY, Fort Worth, Texas. The object of the invention in this instance is the provision of novel details of construction for a screen, that afford means for the escape of insects, prevent their free entrance, and also provide novel means for slidably connecting the screen with the casement of a window in a superior manner.

MEANS FOR REMOVING SAND-BARS.—E. H. ALLMAN, Mobile, Ala. The apparatus is adapted for use in removing sand-bars beneath the water where there is a sufficient current to wash away the sand loosened by the apparatus. A series of plows are employed for furrowing the sand, the same attached to beams which are pendent from and adjustable vertically in a framework secured to a scow or other floats and projecting beyond the bow and stern. The framework is peculiarly constructed and arranged, and the plow-standards are adjusted and supported by special mechanism. It is also adapted for use in finding and removing torpedo cables or conductors.

DIE FOR PRODUCING ARTICLES FROM PLASTIC MATERIALS.—L. STEINBERGER, New York, N. Y. The object in this improvement is to produce by molding perforated insulating-strips having both vertical and slanting holes in an efficient manner and to obtain a positive uniformity in location of holes and their given diameters. Vertical holes are adapted for receiving fastening devices, slanting holes are intended for receiving wires or cables. The insulating-strip is attached to the cable-box in a manner to prevent rain or moisture entering the box.

HANGER.—G. NISSENSON, New York, N. Y. This hanger is intended for supporting pipes, electric wires, electric lamps, and the like from ceilings and other supports in buildings. The object of the invention is to provide a hanger very ornamental in appearance, and arranged for convenient attachment to the supporting structure such as iron and wooden floor-beams. The device may be used as a junction-box for electric connections.

DENTAL-PLATE MOLD.—O. E. DRISCOLL, Charlottesville, Va. In the present instance the invention is in the nature of a mold to be used in molding plates for artificial teeth after the impression has been taken. It consists of a palate portion made in two sections of metal fitting together, the inner section of which is made one of an interchangeable series, each having an arch of different height to be selected and used according to the shape of the particular impression.

CONVEYER.—J. G. DELANEY, New York, N. Y. The invention has reference to an improvement in hoisting and conveying devices. The device is applied to a conveyer in which a cable is used as the trackway, although the invention may be applied to any form of hoisting and conveying apparatus in which a carriage is employed running upon a trackway, whether that way be a cable or other flexible member or is composed of rigid bars or beams.

HOISTING AND CONVEYING DEVICE.—J. G. DELANEY, New York, N. Y. This improvement is applied to a cableway, although it may be employed as well in connection with any form of tramway. The draft of the hoisting-chain is always kept in a direct line beneath the trackway rope and there is no side strain tending to pull the chain off the wheel. Draft is always central, the power constant. A chain of sufficient length brings in loads from great distances on either side of the line of cableway, thus increasing its efficiency. The guide rollers each side of the chain are not needed after the chain becomes strained, as then the carriage swings so that the draft is central.

SPOOL HOLDER AND CASE.—M. MAAS and F. RICAUD, Baton Rouge, La. The purpose of the invention is the provision of a compact case for receiving, holding, and protecting spools or reels of ribbon, tape, or like material, the body of the case being revoluble upon its support, and also to provide a perfect system for automatically measuring the material as it is drawn out from the case through suitable openings therein.

OBSERVATION-WHEEL.—D. W. BLAIR, Perth Amboy, N. J. Mr. Blair's invention relates to observation-wheels, his more particular object being to produce such a type of wheel as will afford amusement and recreation and will be distinctly adapted for public use. Passengers going forward only a few yards will have the sensation of traversing a great distance, the device thus acting to some extent as an illusion apparatus.

HORN.—W. GEBERT, Trenton, N. J. The object in this instance is to provide a reed horn or trumpet the tone of which may be regulated at will. It has been sought to attain this by providing a reed-adjusting member attached to the reed and projecting beyond the reed-box, so that the member may be grasped and the reed manipulated according to the tone desired. Mr. Gebert provides a horn in which this regulation of the reed may be effected by the tongue and lips whereby a much more delicate action is attained and a neat, compact instrument provided.

DESK.—O. C. DORNEY, Allentown, Pa. Mr. Dorney's invention pertains to improvements in desks designed to be used in school-rooms, libraries or the like; and the object is to provide a desk of simple construction that may be readily and quickly adjusted as to height and having all conveniences for a person in reading, writing or study.

KNOCKDOWN CHAIR.—E. BEHN, New York, N. Y. In this patent the improvement refers to chairs or seats that have detachable legs, and has for its object to provide novel details of construction for a chair which affords means for the quick and convenient detachment of the legs from the seat of the chair and for securing them thereto in a reliable manner when the chair is to be set up for use.

Designs.

DESIGN FOR HAMMOCK-CLOTH.—D. W. SHOYER, New York, N. Y. The design in this case is intended to produce an attractive effect by running bands mainly of checker-board pattern across parallel cords. The plain and other bands are irregularly spaced and present a clear ornamental field.

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.

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The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

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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. 5271.—For soap-making machinery and outfits.

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Highest references.

Inquiry No. 5272.—For a second-hand hand-power elevator for lifting furniture.

FOR SALE.—Canadian patent on garment fasteners The most advantageous method of holding ladies skirts, shirt-waists and belts, or supporting men's trousers. Inexpensive to manufacture. G. Schmitt. Monongahela Club, Pittsburg, Pa.

Inquiry No. 5273.—For the manufacturers of the "Ecco" dry batteries and searchlights.

Inquiry No. 5274.—For a traction engine of about 10 h. p., suitable for climbing steep grades.

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Inquiry No. 5278.—For a machine for stamping or imprinting names on pencils.

Inquiry No. 5279.—For makers of anhydrous and aqua ammonia, also machinery for making the same.

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Inquiry No. 5281.—For power and hand machines for slicing, pulping and grating Cassava roots.

Inquiry No. 5282.—For machines used in cutting paper for making cigarettes.

Inquiry No. 5283.—For the manufacturers of the "Magazine Tack Hammer."

Inquiry No. 5284.—For manufacturers of a machine for grinding or cutting "spermaceti."

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.

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(9326) J. F. S. says: I have been called on to investigate a peculiar case which has puzzled me, and I would ask your advice on the same. The case in question is a house which seems to be a veritable frictional machine. By walking on the carpet a spark can be produced by bringing the finger near any metal substance, whether grounded or not, such as a brass tack in furniture, picture frames, etc. If this condition existed to a small extent, nothing would be said, but it is to such an extent as to be very objectionable. The house is heated by a hot-air furnace, and everything about the house is very dry. I have suggested keeping water pan in furnace constantly filled with water, as I believe that the moisture produced will tend to allow the charge to neutralize itself. Two persons coming in contact with each other produce a spark. Can you suggest a remedy for this, or something which will make it less pronounced? If so, you will oblige a constant reader of SCIENTIFIC AMERICAN. A. It is most likely that moistening the air of the house which you describe will free its occupants from the trouble with static electricity. We have no other suggestion to make. Moisture is relied upon to cure this condition, which is universal at this season of the year.

(9327) H. G. A. asks. 1. In a recent issue you explained how to demagnetize a watch with direct current. Will you explain fully how this may be done with alternating current? A. A watch may be demagnetized by an alternating current by sending the current through an electromagnet, and holding the watch near the wire core of the magnet. Now turn the watch over and over as you slowly remove it from the field of the magnet, till it is quite out of the sphere of influence. 2. In a direct-current electric plant I understand the current flows continually in the same direction through the circuit. Which wire carries the outgoing current, and how may this be known at the dynamo? A. The current is taken to flow out from the positive pole of a direct-current dynamo and return to the negative pole. The positive pole may be found by a voltmeter or by a pole detector. These can be bought of dealers in electrical supplies. 3. If the armature of an alternator runs 1,500 R. P. M. and is surrounded by ten field magnets, would the alternations be 15,000 per minute, or would the current only change five times per revolution, as the magnets must be in pairs? A. At 1,500 turns per minute with ten field magnets, an alternator will have 15,000 alternations per minute, and half as many cycles per minute.

(9328) C. A. R. asks: What power or voltage, if any, has a gravity battery, the jar of which is 6 inches x 8 inches and has a 3-pound zinc? A. A gravity cell in good condition will have from 1.07 to 1.10 volts. The size of the jar and the plates has no effect on the voltage, which depends only upon the materials used.

(9329) F. A. B. writes: We are much troubled with water hammer in the hot-water pipes. It can sometimes be stopped by turning on the hot water and then turning it off very slowly. I found a loose gland on one of the faucets the other day. When I tightened this gland, the water hammer became very faint but much more rapid. What can I do to remedy this matter? A. The hammer or rattle in house pipes may be due to the generation of steam in the water back, which in passing into the boiler condenses suddenly, producing the hammer action. The noise from open faucets is caused by looseness of the valve in the faucet. The remedy for the first is less fire or the use of more hot water or its waste by drawing off. For the latter use solid plug faucets or valves without loose disks. 2. What size fuse wire should be used in connection with a 5-ampere 100 to 110-volt wattmeter? A. Fuse wire if of lead should be 2 inches long, No. 16 wire gage or 1-20 inch diameter. 3. Why do our hot-water pipes freeze before the cold water pipes when they are both in the same place and subject to the same cold? A. The water in the hot-water pipe is free of air, which is discharged by heating, and the pure water freezes quicker than the cold or aerated water.

(9330) W. J. H. asks: Can you give me the names of the ingredients of a light which is confined in a bottle, as used in the powder magazines in France? Not being exposed to the air, it lessens the danger of explosion. When dim it is replenished by a supply of fresh air by removing cork of bottle. A. The light to which you refer is probably produced by phosphureted oil. A piece of dry phosphorus about the size of a pea is placed in a test tube, and a little pure olive oil poured upon it. The tube is held in a water bath till the oil is heated above the melting point of the phosphorus. Now shake the tube till the oil will take up more phosphorus. After the oil is cooled, put it into a glass-stoppered bottle. When the small quantity of oil in the bottle is shaken about so as to coat the sides of the bottle, a good amount of light is given, and when this becomes dim it may be made luminous again by removing the stopper and admitting fresh air. Use care in handling phosphorus.

NEW BOOKS, ETC.

TABLES GIVING THE LENGTHS OF BARS FOR SKYLIGHTS AND RAFTERS FOR ROOFS. By H. Collier Smith. New York: David Williams Company. 1903. 18mo. Pp. 84. Price $2.

The author of these tables is a practical sheet-metal worker of many years' experience in the manufacture of skylights. In order to save time during the day, he devoted his leisure hours in the evenings, for several years, to computing tables, from which the length of bars for any ordinary pitch of skylight could be copied, and thus avoid the loss of time and chance of error involved in working out the length of bars for each separate skylight during the rush and stress of working hours. A labor-saving book of this nature is invaluable to those in the business.

ELECTRICAL ENGINEERING. An Elementary Textbook. By E. Rosenberg. Translated by W. W. Haldane Gee, B.Sc., and Carl Kinzbrunner. New York: John Wiley & Sons. 1903. 8vo. Pp. 267. Price $1.50.

The present book will be distinctly helpful to less advanced students of electrical engineering in English-speaking countries. It is the work of an electrical engineer, and is written from an engineering standpoint. The explanation of principles is particularly clear. In polyphase work the author has been specially careful to make his explanation easy to follow. Particular attention has been given to alternating currents. The diagrams are very clear, and this new book will certainly prove helpful to the young electrical engineer.

INTERNATIONAL EXCHANGE. Its Terms, Parts, Operations, and Scope. By Anthony W. Margraff. Chicago: Fergus Printing Company. 1903. 8vo. Pp. 299.

The exporter and importer can, with the present textbook and the daily journals, quoting the rates for interest in the financial centers of the world, readily determine the approximate value of any foreign bill of exchange. The examples which are given are admirable, and the book can be safely recommended to all those who have financial transactions with banks, firms, or individuals in foreign countries.

LEHRBUCH DER BAUMATERIALIENKUNDE ZUM GEBRAUCHE AN TECHNISCHEN HOCHSCHULEN UND ZUM SELBTSTUDIUM. Von Max Foerster. Heft 1. Die Natürlichen Gesteine. Mit Einer Tafel. Leipzig: Verlag von Wilhelm Engelmann. 1903. 8vo. Price $2.

The book which lies before us discusses structural materials, and is intended for civil engineers and architects. The first volume issued is devoted to a treatment of natural stones. The author has laid particular stress upon the adoption of a scientific nomenclature, as well as upon the physical and chemical constituency of the various stones. Prof. Foerster holds, and holds rightly, that only by this means is it possible to obtain anything like a definite knowledge of the composition, structure, and durability of various stones as structural materials. A chapter of the book is devoted to testing methods and processes of determining the resistance of structural materials. The various applications of structural materials are also discussed in a coherent manner. Considered as a whole, the work bears the mark of the same accuracy and thoroughness that characterized Foerster's Handbook of Engineering, which we had the pleasure of reviewing some time ago.

THE PHOTOGRAM. Vol. X. London: Dawbarn & Ward, Ltd. 1903. 8vo. Pp. 380.

The Photogram is always a most welcome visitor. The present volume, which consists of the numbers for 1903, is filled with useful information. The artistic presentation of good examples of up-to-date photography will be appreciated. The photographs chosen for reproduction are particularly well selected.

A MANUAL OF MECHANICAL DRAWING. By Philip D. Johnston. New York: David Williams Company. 1903. Oblong 8vo. 69 plates. Price $2.

Of the making of books on mechanical draw-

ing there seems to be no end, but the present volume is a most admirable treatise. It will be specially appreciated by those who have to learn mechanical drawing at home. The author's selection of typical examples is most excellent. It is a thoroughly safe book.

We have received from the American School of Correspondence at Armour Institute of Technology, Chicago, Ill., the first number of a new periodical issued by the school, called the Technical World. The magazine promises to become a valuable addition to technical magazine literature. This first number contains an excellent article by Prof. R. A. Millikan, on Radium, and general discussions of such subjects as wireless telegraphy, current science and industry, new things in engineering, and great technical schools. A consulting department tells instructive things about the control of electric lights, comparative weight of motors, transferring heat to boilers, and the like.

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