RECENTLY PATENTED INVENTIONS.

Engineering.

TO REDUCE AND SMELT SULPHIDE ORES.—Augustus L. Engelbach and Sidney E. Bretherton, Leadville, Col. A specially designed furnace is provided by these inventors for carrying out a method of reducing and smelting by which air is forced through a series of retorts heated by the matte and slag discharged from the blast furnace, and hydrocarbon gas injected into the heated air to produce an oxidizing flame which is forced into the blast furnace to reduce the ore. A channel in the wall of the crucible of the blast furnace is connected by tuyeres with the interior of the furnace, and connected with the channel is a combustion chamber connected with an oven containing retorts, the oven heating the air passing through the retorts, while through a nozzle extending into the combustion chamber passes a mixture of steam and oil.

Railway Appliances.

CAR COUPLING.—Valentine Erbach, Scranton, Pa. According to this invention a flat gravity coupling pin baving a transverse concavity in its lower end is combined with a gravity locking and tripping dog in the drawhead, the dog beingadapted to be acted upon by an entering link, and having a bearing surface to receive the lower end of the pin. The pin is held in elevated position to admit a link, the entry of which operates to trip the pin and cause it to be guided downward in the link. The pin may also be brought into such engagement with a link as to give the latter an upwardly inclined position, and thus hold it until readjustment or until a coupling has been effected.

CAR BRAKE.—Thaddeus J. Barrow, Duluth, Minn. This is a brake especially designed for use on street railway cars, occupying but little space beneath the car, and having a series of independent shoes. It comprises three-armed levers pivoted on opposite sides of the car truck, brake shoes pivotally connected with opposite arms of the levers, and operating levers connected with one arm of the three-armed levers. The shoes are operated independently, and if one or more of them should break, the others would do the work, while the lever mechanism allows the shoes to be set with great rigidity upon the wheels.

ELEVATED RAILWAY BRAKE.—John N. Valley, Jersey City, N. J. This is a brake for use on a railway in which the cars are suspended from an overhead track or stringer, and the invention consists of a mechanism in the form of a clamp, formed by the brake jaws or shoes, to clamp the rail or stringer. The brake is easily applied or released by an operating lever within the car.

Electrical.

ELECTRIC PROGRAM CLOCK.—Henry C. Hain, Booneville, Mo. This invention provides a clock attachment for giving calls at different times in the day and different days in the week, as a reminder of engagements, etc. An auxiliary dial has a series of openings and equidistant electrical contacts in a circle on the inside of the dial, there being also a contact arm adapted to inclose an electric circuit, mechanism between the clock and arm, and removable pins to be inserted in the openings in the dial.

ELECTRIC RAILWAY TROLLEY.—Wesley W. Pritchett, Ogden, Utah Ter. This invention provides a simple and cheap trolley mechanism to be carried on the top of a car, designed to hold the trolley wheels always in contact with the wire, and to guide the wheels to the wire when the trolley is to be applied. A shifting weight holds the trolley wheel in contact with the line wire, means being provided for shifting the weight and trolleys when the car is to be reversed or switched, which may be quickly done from the platform in such a way that the lights on the car will be but momentarily put out.

Mechanical.

ANTI-FRICTION BEARING.—Charles W. Wynn, Asheville, N. C. This bearing may be used on a revolving as well as on a fixed axle, and consists of a number of cages each containing longitudinally arranged rollers, and provided at their meeting ends with interlocking projections, whereby the rollers of each cage will be in line between those of the next cage, the rollers bearing evenly within a cylindrical bore. By the cages revolving on the spindle and istributing the wear, it is designed to avoid the wearing of the spindle flat on one side.

LUBRICATOR.—Benjamin F. Howard, Sheep Ranch, Cal. This is a device more especially designed for use on engine cylinders to automatically and positively feed the proper amount of lubricant into the cylinder. It has a large oil reservoir into which passes a limited amount of condensation water, and a sight feed tube so arranged that the oil bubble passing through the tube can be seen and the amount closely regulated, being also indicated by a pointer on a graduated dial.

WRENCH AND CUTTER.—Theodore Fletcher, Macdona, Texas. This is a strong, simple, and inexpensive tool, adapted for use for ordinary purposes as a wrench, to turn a nut, or as a pipe wrench, the clamp or pressure being applied in both cases with a power proportioned to the strength of the pull, while it may also be used as a powerful pipe cutter. Its construction also allows it to be used very rapidly, somewhat as a ratchet wrench.

Miscellaneous.

REFRIGERATOR.—George A. Bowen, Fond du Lac, Wis. The box or casing of this device consists of two hinged sections, the lower one forming a provision chamber, supporting in its upper portion an open-top ice receiver, while the hinged upper section has an opening in its top closed by a cover, and registering with the open end of the ice receiver. The construction insures the keeping of the interior of the refrigerator at a uniform temperature, and permits of conveniently removing the several parts for thoroughly cleaning the interior.

TEACHING BOTANY.—William H. Gibson, Washington, Conn. A mechanical educational appliance, for use by lecturers and in schools, colleges, etc., is provided by this invention, to facilitate explanations of the construction of plants and the means employed for fertilization or fecundation, and cross fertilization and dissemination or dispersion of seed and fruit. The invention consists principally of a mechanical plant and means for actuating the floral parts and the seed receptacle and seed, different mechanisms being necessary for the demonstrations called for of different plants, and these mechanisms being provided for the different typical plants chosen by the illustrator.

LOCK BRAKE.—Volney W. Mason, Providence, R. I. This is a brake for hoisting machines, with which any required amount of pressure may be applied to the wheel, which may be securely locked so that it will not turn under any load the machine is likely to carry. The brake lever, attached to the brake, is moved and locked by an adjustable toggle joint, an operating cord and counterweight being arranged in convenient position to facilitate applying and releasing the brake.

PAINT FILLING COMPOSITION.—Richard J. Parke and Isaac Goodman, New York City. These inventors provide a composition consisting of cotton, wool, or silk flock, and pulverized stone, with varnish, japan, and oil, to be applied to wood preparatory to varnishing, the coating being susceptible of polishing and smoothing with pumice stone or other material, after which varnish may be applied in the usual manner, the paint or varnish then not penetrating into the wood.

WATER GATE.—Christopher H. Watson, Riverside, Cal. This invention provides a gate of simple and durable construction, easily opened and closed, and designed to prevent all leakage by firmly seating and locking the gate over the opening. A gasket of rubber or similar material is held on the inner face of the gate proper, the gate being monnted to slide, and being carried by a stem which may be turned, the gasket not being injured while the gate is partly or wholly open, and being used only when the gate is entirely closed. The gate, when pulled up, can be locked in any desired position by turning its stem.

TOBACCO AND CIGAR BOX.—Theodore V. Smith, New York City. The storing and preserving of cigars and tobacco, to keep them in good condition, is the object of this invention, the box having a lining of water and moisture proof material, and being designed to receive absorbent pads for keeping the cigars and tobacco at a certain degree of moisture. The construction is durable and inexpensive, and all the parts can be readily removed to clean when needed.

CANVAS COT.—Camille Poirier, Duluth, Minn. This cot is more especially adapted for use in steel prison cells, the body of the cot being so connected with the hanging devices that the latter may be readily removed from the canvas, and all may be easily and thoroughly cleaned. The construction of the cot and hangers is such that nothing pertaining to them can be used by a prisoner as a weapon.

TAILOR'S INSEAM GAUGE.—Harry M. Cloud, Cincinnati, Ohio. This is a device for taking the inseam length, from the crotch to the feet, in measuring for trousers. It is a form of measure in which a standard, supported on a suitable base, is provided with a sliding and vertically adjustable section marked with graduations, and having a horizontal arm to be lifted between the legs as far as the crotch. It is designed that by this means the work may be more accurately and conveniently done, while a man may therewith correctly take his own measure.

GAS BURNER.—Daniel Daly, Maysville, Ky. According to this invention two approximately parallel tubes or sections have in their adjacent faces opposite slots, so that the gas issuing therefrom will come together and merge in a single flame. The commotion and suction produced by the currents of gas coming together are designed to serve to mix air with the gas to produce a hot, heating flame, the amount of air drawn in being varied by varying the distance between the tubes and changing the angle at which the gas flames impinge on each other.

MATCH BOX.—Edward J. Hill, London, England. This box, which is also adapted to hold cigarettes, cigars, lozenges, and other small articles, is preferably made of a single sheet of stamped or cut sheet metal, foldable in such a manner as to form a complete self-closing spring box. It has a movable part forming a container and a discharge orifice with which the movable part does not normally communicate, but with which, by reason of the spring action, it may be made to communicate for the discharge of the articles one at a time.

Designs.

TEA POT.—Charles Osborne, New York City. The leading features of this design are the heavy leaf-like borders of the upper and lower portions of the pot, the ornamentation at the base of the spout and at the points where the handle connects with the pot, and its faceted sides.

POCKET BOOK CASE, OR WALLET.—Charles Scheuer, New York City. The article made after this design is intended to present the appearance of a letter, one side showing the lines of joining of the tabs and the other showing simulations of a canceled stamp, postmark, and address.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

ART OUT OF DOORS; OR, HINTS ON GOOD TASTE IN GARDENING. By Mrs. Schuyler Van Rensselaer. New York: Charles Scribner's Sons. Pp. 398.

This is an exquisitely beautiful book typographically. It is not a practical treatise on gardening, but a series of essays on different kinds of gardening and other means of beautifying grounds, pleading for the more general recognition of this class of work as one of the high arts. It seeks to impress upon the reader the importance of "aim and method" in the art of gardening, now "practiced much more often than any other in ignorant, impulsive ways, by people who never stop to think that it is an art at all." The impressions gained by extensive observation are here noted with a refined taste and with an orderly arrangement of widely different branches of the subject which make the book excedingly attractive.

THE STATISTICIAN AND ECONOMIST—1893, 1894. San Francisco: L. P. McCarty. Pp. 672. Price, cloth, $4.

This is the seventeenth issue of a volume which has been successively enlarged year by year, and which gives a great deal of very many kinds of curious and useful information. Its topics include population, election returns, important laws, historical data, trade statistics, geographical information, useful facts in mechanics and engineering and numerous other subjects. A full index facilitates reference to the contents.

OUT DOORS is the title of a neat little paper-covered book, sent by mail for ten cents, and published by the Pope Manufacturing Company, of Boston. Lawn tennis, yachting, foot ball, base ball, horsemanship, rowing, canoeing, and cycling, are each treated in a most interesting manner, by a writer of reputation. The primary object of the book is to give added interest to all kin s of outdoor exercise, thereby naturally drawing more attention to bicycling, and for this reason the book is issued. The book is calculated to effectively preach the gospel of outdoors—fresh air.

Received.

CONFLICT OF THE NINETEENTH CENTURY: THE BIBLE AND FREE THOUGHT. By Rev. Thomas Mitchell. New York: The Universal Book Company.

☞ Any of the above books may be purchased through this office. Send for new book catalogue just published. MUNN & Co., 361 Broadway, New York.

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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.
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Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(4982) J. E. D. asks how a well that has notbeen used for some time can be cleaned, and if the water can be made drinkable without drawing it all off. A. It is not safe to use the water of a well that has not been recently used until a thorough examination has been made as to the possibility of its containing dead animals. If you are assured of this by examination, or by the smell of the water as drawn and by heating, then a thorough pumping will remove so much of the water that the fresh incoming water will make the well safe for household use for washing and finally for cooking; but we do not recommend it for drinking for some time after it has been in use for other purposes.

(4983) J. G. H. asks: Is a cantilever bridge a truss bridge? How long a span has ever been built constructed on similar plan to one on front page of recent number of SCIENTIFIC AMERICAN? A. A cantilever bridge is a truss bridge of a particular type or construction of truss. The Forth Bridge in Scotland has the longest cantilever spans yet made. In this bridge there are two spans of 1,710 feet each. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 478, for illustrated details and description.

(4984) J. G. R. says: Can you give me any points on tempering springs made of cast steel wire, No. 8 gauge, about 6 inches long? A. For tempering steel springs as described, heat the springs in a fire that is only moderately hot and large enough to heat the whole spring evenly. A muffle is preferred where many are to be done. When the springs are at a cherry red heat, they are to be plunged endwise into an oil bath (lard oil); then heated with the oil on them in the muffle or a slow fire until the oil takes fire; then plunge them into the oil bath. A plain, straight spring is very easy to