RECENTLY PATENTED INVENTIONS.

Engineering.

ROTARY ENGINE.—Sturgeon Kershner, Blue Hill, Neb. In this engine a piston block on the shaft peripherally engages the cylinder, the block having spaced channels on opposite sides, each channel ending in an incline, having cam formations to be engaged by abutment bars slidable in the sides of the cylinders, the bars being supported to reciprocate at their outer ends. There is an inlet supply pipe at one side of the cylinder and an exhaust at the opposite side.

EXPLOSIVE ENGINE.—George A. Newman, Cliff, Neb. This invention comprises a pawl and ratchet mechanism connected with the main driving shaft, and one or more spiral springs attached by their inner ends to the ratchet wheel of the pawl and ratchet mechanism, while a piston moving in a cylinder is adapted to receive an impulse, the piston being secured to and carried by the ratchet wheel.

Bicycles, Etc.

BICYCLE TOE CLIP. — David Basch, New York City. This clip is preferably made of sheet metal, and has a bottom and a top and a front section, the latter being in the form of a divided hood, each section of which is capable of receiving a portion of the front and a portion of the side of a shoe. Lugs prevent the clip from shifting on the pedal and from having lateral or side movement.

Musical.

MUSICAL INSTRUMENT. — P. Casolin, New York City. In this instrument, belonging to that class in which guitars are included, the neck and body are separable, the latter having a recess with sloping sides opening to one side and adapted to receive the similarly shaped end of the neck. A plate is located at the bottom of the recess and is provided with slots extending to the open edge of the recess; another plate is located on the end of the neck and is provided with bars adapted to fit into the slots in the plate of the recess. The purpose of the invention is to render the instrument more portable.

Metallurgical.

APPARATUS FOR MAKING CHILLED IRON CASTINGS.—A. K. Barber, Boonton, N. J. This machine for making chilled castings at a comparatively low cost consists essentially of a rotating table carrying a series of chill moulds, a central water supply with branches leading to the moulds and a subjacent annular trough which receives the discharge water from all the chill moulds. The operation of the apparatus is nearly continuous and the time employed in manipulating the machine is exceedingly short.

Mechanical.

THILL COUPLING.—Zadoc L. Wheeler, Cedar Falls, Ia. This thill coupling has a clip with two transversely alined eyes through which a pin passes having a head with two upbent ends, one end forming an eye and the other a hook. A retractile spring is permanentlyengaged at one end with the eye on the head of the pin. The other end of the spring has a loop capable of removable engagement with the hook on the head of the pin.

Agricultural.

PLOWSHARE.—Frederick Wolf, Quincy, Ill. The plow, in addition to turning the soil, is made to pulverize by means of teeth which are formed on the front of the share and on the landside.

Chemical.

FORMALDEHYDE STARCH AND ITS MANUFACTURE. — Alexander Classen, Aix-la-Chapelle, Germany. The process for the manufacture of compounds of starch and formaldehyde for which this patent was granted consists in causing the various substances to react with formaldehyde and heating the products of the resulting reaction for 24 hours to a temperature of 120° C. The compounds thus obtained are again treated with formaldehyde and then freed from the excess thereof by means of a solvent of formaldehyde. They are then dried.

Electrical.

APPARATUS FOR REDUCING ELECTRIC CURRENTS AND VOLTAGE. — Alexander F. Vetter, Long Island City, N. Y. This invention provides a means for using a high voltage current in the operation of devices, such as medical appliances, requiring a current of lower tension. The apparatus comprises a supply circuit, a shunt circuit in which is included the appliance to be operated, and a switch by means of which a portion of a resistance placed in the supply circuit may be transferred to the shunt circuit. Another resistance controls the current strength. The amperage of the current may be varied as well as its voltage.

Miscellaneous.

PRESSING BOARD. — Louis Siegfried, Easton, Pa. The pressing board is carried by a post at the lower end of which a suitable clamp is provided for securing the devices to a table. The post is mounted to rotate and has clutch devices for holding it in a given position, and the board is pivoted to swing down when not in use.

VALVE CONTROLLING DEVICE FOR GAS BURNERS.—Joseph D. C. Chateau, Paris, France. In connection with a valve in the burner, a permanent magnet and an electromagnet are employed, the electromagnet, by reinforcing or opposing the permanent magnet, according to the direction of the electric current, serving to control the valve.

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Notes & Queries

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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.

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(7422) A. J. F. asks: 1. Can cast iron field magnets be used in making the motor designated in SUPPLEMENT, No. 641? A. Yes. 2. Can cast iron be softened? If so, how? A. The quality of the iron determines its hardness when cast. Only the best should be used, soft gray cast iron. 3. Can a cast iron core be used for the armature of the above motor? A. Do not use cast iron for armature cores. 4. Give a formula for an acidproof cement? A. Sulphur, 100 parts; tallow, 2 parts; resin, 2 parts. Melt these together to a ruddy sirup, add sifted ground glass to form a paste, and heat when used.

(7423) C. H. J. asks: 1. Could a gas generator such as you describe on page 260 (April 23) be made to generate a pressure of 10 to 15 pounds per square foot by adding weight to the inner tank? A. Yes, if the tank is high enough to balance pressure by the water seal, but this is not practicable. 2. How long will the generator as described, with one charging, burn a regular 4 foot burner? A. One pound carbide generates 5¾ cubic feet acetylene. One foot burners are as large as can be used. 3. Can acetylene gas be used in either a Bunsen or Welsbach lamp either for heating or illuminating? A. Yes; by diluting the gas at the burner with a small portion of air, as in a Bunsen burner. 4. Would acetylene gas deteriorate if stored in a tank for several hours? A. It is a permanent gas and will keep in storage as other gases. 5. Have you given a full description of a generator in any of your SUPPLEMENTS? A. For illustrated articles on acetylene gas, see SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 1057, 1149, 1150, 10 cents each mailed.

NEW BOOKS, ETC.

THE STATESMAN'S YEAR BOOK. Statistical and Historical Annual of the States of the World for the Year 1898. Edited by J. Scott Keltie. With the assistance of I. P. A. Renwick. Thirty-fifth annual publication. Revised after official returns. London and New York: Macmillan & Company, Ltd. 1898. Pp. xxx, 1166. Price $3.

It is not too much to say this book is one of the most valuable and important publications which is issued anywhere in the world. While libraries, newspapers, etc., absolutely require every volume of this splendid compendium, the average reader will be satisfied with one every two or three years. It is brimful with the most recent and important statistics derived from the best sources. The volume, which comprises nearly 1,200 pages, treats of the constitution and government of every country and colony of the world, with full particulars as to area, population, religion, instruction, justice, crime, pauperism, finance, defense, production, industry, commerce, shipping and navigation, internal communications, money and credit, weights and measures and bibliographies of important and up to date books. The information is given in concise sentences, and the tables are reduced for the sake of clearness to the lowest terms. The bibliographical matter is of the greatest possible value, referring as it does to the very latest publications, to which the reader is directed for further information. This book is simply invaluable for the library and it is very surprising that a work which requires such great labor by trained statisticians can be sold for so very moderate a price.

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