

RECENTLY PATENTED INVENTIONS.

Electrical Devices.

**TELEPHONE SYSTEM.**—C. L. BOYCE, Detroit, Mich. The inventor's objects are to carry out various sub-operations of receiving call-signals, the withdrawal of said signals in due season, and appropriate display and withdrawal of supervisory and disconnecting signals in a highly efficient manner; to dispense with relays in main circuit-conductors of the switchboard; to control the supervisory signals without the use of shunt-circuits, and to provide that the relays concerned in operating the call and supervisory signals of each sub-station-circuit shall belong to such line-circuit, and independent switchboard circuits, thus aiding in avoidance of faults and facilitating their location and removal.

Of Interest to Farmers.

**COMBINED SEPARATOR AND BAGGING DEVICE FOR GRAIN.**—T. C. HENNINGER, Markham, Texas. One of the principal objects of the invention is to provide an attachment for threshing-machines through the medium of which grain or other cereals may be taken directly from the machine and the lighter or inferior particles separated therefrom and the heavier or superior particles thereof delivered or loaded into bags or other receptacles therefor.

Of General Interest.

**LATHING SYSTEM.**—E. NIBBS, New York, N. Y. The invention pertains to lathing systems and more particularly to those employing metal. Its principal objects are to provide a convenient lath and to furnish a simple and strong construction. The system eliminates all auxiliary securing means either for the laths or bars. The invention is equally applicable to segmental arches as to ceilings. In fact, the arrangements in which it may be used are limited only to the capabilities of bending the bars and conforming the lathing.

**WINDOW FRAME AND SASH.**—R. F. NICHOLS, Oakland, Cal. One purpose of this improvement is the provision of such a construction of window-frame that the window-sashes may be singly or collectively swung within the frame a sufficient distance to enable the outer faces of their panes to be cleaned without the operator leaving the room or leaning from the window.

**CONNECTING DEVICE FOR WHEEL-FELLS.**—J. R. HUGHES, Chama, New Mexico Ter. In the form of the improvements in this invention a specially-constructed device is employed for the adjacent ends of the sections of the felly or wheel-rim, comprising complementary ferrules or caps, each of special construction, and co-operating with the other in the production of a close joint between the sections, which is highly resistive to strains from all directions, besides preventing splitting of the sections.

**GARMENT-SUPPORTER.**—H. P. COULTER, Philadelphia, Pa. In this instance the invention pertains to improvements in devices for attaching suspenders and drawers to trousers, the object being to provide a fastener to be used in place of the usual buttons, the device being so constructed that it may be easily and conveniently secured in position.

**COLLAR-SUPPORTER.**—MARGUERITE CONNELL, New York, N. Y. This supporter for lace collars or collars made from thin material is simple and economic of construction and capable of being expeditiously and conveniently applied to the collar or removed when the collar is to be washed. It will hold the most flimsy collar in an upright position, but will not cause discomfort to the wearer, injure the collar, or be visible when the collar is worn, even though considerable open-work is a feature of the collar.

Hardware.

**COMBINATION-TOOL.**—J. P. MCGINNITY, New York, N. Y., and E. H. WINKLER, Krebs, Indian Ter. The purpose of this improvement is to simplify the construction of a combination-tool, especially one which combines the functions of a brace and a wrench; and a special object is the provision of means for securing the handle of the brace to the spindle thereof when the handle is being used in connection with the wrench.

Pertaining to Recreation.

**AMUSEMENT APPARATUS.**—C. D. BUNNELL, New York, N. Y. It is sought in this improvement to provide a wheel with certain peculiarly-arranged elements, causing a car or other vehicle to be raised by the rotation of the wheel from the bottom periphery thereof upward to its center and thence by means of a switch to have its movement reversed and gradually lowered from its center back to the lower periphery of the wheel, which operation is carried on solely by the rotation of the wheel and coaction of said peculiar elements with the car or other vehicle referred to.

**GAME APPARATUS.**—W. SANDBERG, Chicago, Ill. The invention refers to game apparatus, its principal objects being to provide an entertaining game in which the ball is delivered from a chute and directed in transit over a ribbon against pieces or tea pins placed in position on a support, in the successful playing of which considerable skill may be displayed.

played. The apparatus though separable from the table upon which it is mounted is adapted to be knocked down into compact shape for storing away.

Pertaining to Vehicles.

**VEHICLE-BRAKE.**—J. W. SMITH, Congress, Arizona Ter. The invention refers to improvements in brakes for vehicles, such as road-wagons, trucks, and the like, the object being to provide a brake of simple construction, that may be easily adjusted to a vehicle, that may be readily applied by suitable pressure to the rear wheels, and having no parts liable to get out of order.

**WAGON-TOP.**—J. POHLIG, New Orleans, La. There is provision in this invention for a simple and convenient means for operating and adjusting side curtains to serve as sunshades or to entirely close the sides, the operating devices being so constructed as to be readily attached to any form of delivery or similar wagon.

**VALVE.**—A. L. MOSS, Sandusky, Ohio. This new valve is more especially designed as a controller-valve or check-valve, for controlling the passage of compressed air or other fluid, and when closed being capable of holding a fluid pressure exceeding, say, sixty or seventy pounds, for a long period and without danger of leakage, thus rendering the valve exceedingly efficient for use in pneumatic sanding devices for automobiles and the like as shown and described in Letters Patent of the United States recently granted to Mr. Moss.

**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.

MUNN & CO.

Marine Iron Works. Chicago. Catalogue free. Inquiry No. 8120.—For address of the U. S. Cutlery Co.

"U. S." Metal Polish. Indianapolis. Samples free. Inquiry No. 8121.—For manufacturers of a soldering iron with the gasoline tank in the handle.

Handle & Spoke Mch. Ober Mfg. Co., 10 Bell St. Chagrin Falls, O.

Inquiry No. 8122.—Wanted, manufacturers of rotary, gas, gasoline and oil engines and turbines.

I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 8123.—For manufacturers of machinery that grinds leather scraps into a pulp; also manufacturers of leather door knobs.

Metal Novelty Works Co., manufacturers of all kinds of light Metal Goods, Dies and Metal Stampings our Specialty. 43-47 S. Canal Street, Chicago.

Inquiry No. 8124.—For manufacturers of small screws and nuts, such as used in scissors and shears.

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

Inquiry No. 8125.—For manufacturers of an instrument called the Automatic Telegraph Transmitter.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery tools, and wood fiber products. Quadriga Manufacturing Company, 18 South Canal St., Chicago.

Inquiry No. 8126.—For manufacturers of a machine for moving sand and shavings.

Automobile experts are in constant demand at high salaries. Our seven weeks' course is the most thorough and practical fitting men to drive, handle and repair. Day and evening classes. Special course for owners. New York School of Automobile Engineers, 146 West 56th Street, New York.

Inquiry No. 8127.—For manufacturers of positive rotary air compressors, delivering from one to five pounds pressure.

**WANTED.**—The partial services of several men who have facilities for observing, and ability to comprehend the performance and good features of different automobiles. The work will occupy little time, and be chiefly in the nature of correspondence. Address Thomas B. Jeffery & Company, Kenosha, Wis. Department of Construction.

Inquiry No. 8128.—For manufacturers of clock systems, consisting of one master clock controlling any number of secondary clocks.

Inquiry No. 8129.—For manufacturers of novelties and specialties suitable for selling to canvassing agents.

Inquiry No. 8130.—For manufacturer of Edison's patent electric rat trap.

Inquiry No. 8131.—For manufacturers of repairs for the Curtis & Mitchell foot power printing presses.

Inquiry No. 8132.—For manufacturers of a cheap substitute for celluloid.

Inquiry No. 8133.—For manufacturers of dairy machinery for making butter and cheese, capacity 10,000 liters of milk.

Inquiry No. 8134.—For parties installing incubators of different sizes, capacity 2, 5 and 10,000 chickens.

Inquiry No. 8135.—For parties installing large drying chambers of the most perfect kind for drying fruits, with a capacity for a very large number of fruits.

Inquiry No. 8136.—For manufacturers of grinding mills for preparing flour, barley, oats, malt, peas, lentils, beans, maize, etc.

Inquiry No. 8137.—For manufacturers of small looms and mechanical spinning machinery for preparing silk fabrics, etc.

Inquiry No. 8138.—For manufacturers of small looms and mechanical spinning machinery for preparing bemp, jute, linen, ramie, etc.

Inquiry No. 8139.—For parties installing machinery on a large scale for preserving fruits and vegetables, such as asparagus, tomatoes, green peas, peaches, pears, apples, grapes, etc.

Inquiry No. 8140.—For parties installing machinery for drawing oil from peanuts, almonds, olives etc.



HINTS TO CORRESPONDENTS.

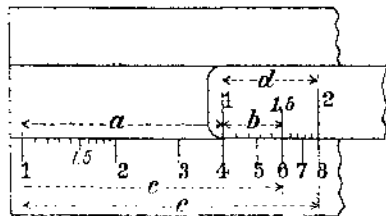
Names and Address must accompany all letters of no attention will be paid thereto. This is for our information and not for publication. References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents 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.

(9991) R. W. asks for a rough method of estimating the horse-power of a steam engine. A. Multiply the square of the diameter of the cylinder in inches by 0.7854, and this product by the mean engine pressure, and the last product by the piston travel in feet per minute. Divide the last product by 33,000 for the indicated horse-power. In the absence of logarithmic formulæ or expansion table, multiply the boiler pressure for  $\frac{1}{2}$  cut-off by 0.91, for  $\frac{1}{3}$  cut-off by 0.85,  $\frac{2}{3}$  cut-off by 0.75, 3-10 cut-off by 0.68. This will give the mean engine pressure per square inch near enough for ordinary practice, for steam pressures between 60 and 100 pounds, always remembering that the piston travel is twice the stroke multiplied by the number of revolutions per minute.

(9992) B. J. W. asks for information concerning India-rubber production. A. India rubber is the product of many euphorbiaceous plants. We get most of it from the Brazils and Central America. In Brazil it is obtained from the *Siphonia elastica*, which grows to a height of between fifty to sixty feet, and in Central America it is obtained from *Castilloa elastica*. Most of that we now use comes from Central America, where the juice is simply collected into cups, from incisions made in the bark. To coagulate the milky juice and convert it into rubber fit for exportation, the juice of a vine called achuca is mixed with it, and so powerful is its action that five or six minutes is sufficient to produce coagulation. The Brazilian method slightly differs. The juice is first collected in clay bowls, it is then smeared over various shaped molds, made also in clay and taking the form of bottles, balls, spindles, etc. Successive coats are laid on, each one having previously been allowed to thoroughly dry, either in the sun or the smoke of a fire, which blackens it. When a sufficient thickness is obtained, the clay is washed out, leaving the India rubber ready for exportation. The trees yield twenty or thirty gallons of juice, and when we consider that each gallon will produce two pounds of market India rubber, the harvest is not so bad. Other trees producing caoutchouc are *Siphonia brasiliensis*, *S. lutea* and *S. brevifolia*.

(9993) H. B. asks for a formula for insulating material. A. Linseed oil, 2 parts; cotton seed oil, 1 part; heavy petroleum, 2 parts; light coal tar, 2 parts; Venice turpentine,  $\frac{1}{2}$  part; spirits of turpentine, 1 part; gutta percha, 1-6 part; sulphur, 2 parts; heat the oils separately to about 300 deg. F.; cool to 240 deg., and mix in the other materials, the sulphur last. Heat to 300 deg. F., for about an hour or until the mixture becomes pasty, and on cooling is soft and elastic.

(9994) M. D. says: I have lately bought a slide rule, and not knowing how it works I thought you could explain its operation. A. The slide rule is a graphical logarithm table. If you understand the use of logarithms, you ought to be able to work out the principles of the slide rule. When we wish to multiply two numbers, we add together their logarithms and find the number corresponding to the sum. Thus if we wish to multiply 4 by  $1 \frac{5}{10}$ , we add together



on the slide rule the distances *a* and *b*. The sum is *c*, which corresponds to 6. If we wish to multiply 2 by 4, we add together *a* and *b*. The sum is *c*, and number corresponding is 8. The slide rule takes no account of the decimal point. The person using it is obliged to keep track of this in his head, and add to the figures given by the slide rule whatever ciphers may be needed to make the decimal point come in the right place. For more definite information we would refer you to the booklets published by the dealers in slide rules.

NEW BOOKS, ETC.

**STEAM TURBINES.** Their Development, Styles of Build, Construction, and Uses. By Wilhelm Gentsch. Translated from the German by Arthur R. Liddell. New York: Longmans, Green & Co., 1906. 8vo.; pp. 375; 637 figures; 19 plates. Price, \$6.

It is not only the technical men who are concerned with the progress and development of the steam turbine, but a keen interest is also manifested by the general public as well. Unfortunately, the majority of works on this subject, by reason of their free use of mathematics and technical terms, are much too involved to be of interest to the lay reader. It is with the special purpose of meeting the needs of the non-technical man that the present volume on steam turbines has been written. The work is very complete, every typical turbine being fully described, but in so simple a manner as to be intelligible to all. So complete is the work, that it will be of great value to the specialist as well as to the layman. The book opens with a brief historical sketch of the steam turbine. The subject is then dealt with under the following divisions: Pressure Turbines; Velocity Turbines; and Combined and Velocity Turbines. Following this are a number of chapters which cover various constructional details and special features of different turbines. Finally, there is a chapter on Steam Turbines for Dynamos, another chapter on Turbine Pumps and Blowers, another on Steam Turbines for Land Vehicles, and a final chapter on Turbines for Use on Shipboard.

**CONCRETE-BLOCK MANUFACTURE.** Processes and Machines. By Harmon Howard Rice. New York: John Wiley & Sons, 1906. 8vo.; pp. 152; 46 half-tone cuts. Price, \$2 net.

Notwithstanding the tremendous advances which have been made within recent years in the concrete industry, the literature on the subject is still comparatively limited. This book will be welcomed by many interested in concrete and its uses as practically the first which treats the subject in a comprehensive and painstaking manner. The author discusses concrete, cement, aggregates, water, and other ingredients for blocks, and explains the methods of proportioning and mixing them. Other phases of the question, such as general processes of manufacture, are given due weight in various chapters. However, the book unfortunately does not state in a sufficiently definite manner that the entire industry is at present in a rather formative condition, that almost all of the questions involved are still open to discussion, and that many diverse opinions are held by different experts.

**MARINE BOILERS.** Their Construction and Working, Dealing More Especially With Tubulous Boilers. Based on the Work of L. E. Bertin, late Chief Constructor of the French Navy. Translated and edited by L. S. Robertson. New York: D. Van Nostrand Company, 1906. 8vo.; pp. 658; 350 illustrations. Price, \$5.

Notwithstanding the large number of really excellent books covering the subject of the marine boiler at present available, this volume can be incorporated with advantage in any technical library. M. Bertin's recognized standing as a naval engineer, both here and abroad, would alone be sufficient to command consideration for his work; but the intrinsic value of the book itself really makes this unnecessary. The marine boiler is treated in the greatest detail; and while mathematical discussions are avoided as far as possible, this is not done at the expense of the theoretical side of the subject. The illustrations are up-to-date, and will be found of great value in the perusal of the text.

**SHAFT GOVERNORS.** By W. Trinks, M.E., and C. Housum. New York: D. Van Nostrand Company, 1906. 32mo.; pp. 97. Price, 50 cents.

Notwithstanding the extensive use of the shaft governor for nearly a quarter of a century, the discussions in technical literature of this very useful mechanism are altogether too limited. The book is really the result of collections of notes and rules used by the authors in the design and adjustment of engines, and it relates to the statics of shaft governing alone. The volume does not completely fill the want in various text-books on engine design, as far as shaft governors are concerned, but students and engineers in practice will find many valuable suggestions within its pages. A revised and enlarged edition would seem advisable; for not only is the space too limited, but there are numerous typographical errors to be corrected.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

May 22, 1906.

AND EACH BEARING THAT DATE

(See note at end of list about copies of these patents.)

Advertising apparatus, Walton & Rogers... 821,146  
Air compressor and the like, A. J. Lavioie... 821,299  
Alcohol burner, J. H. Ernst... 821,406