

this parachute rigid guys or braces operate in conjunction with a sail or kite to extend it; and the inventor's objects are to provide means for effecting the opening of the parachute in descent; to afford facilities for folding and stowing the device, and to provide a durable and simple construction of the several parts of the parachute and its entirety.

CAPPING-MACHINE.—C. A. YOUNGMAN, Louisville, Ky. The intention of the inventor is to provide a machine, arranged to press the cap or capsule snugly onto the head and neck of the receptacle, without danger of marring the cap or capsule, or scratching or removing the paint, wax, or other material with which the cap is decorated.

Railways and Their Accessories.

SWITCH MECHANISM.—F. F. YOUNG, Lowell, Ohio. The invention pertains to railway switches, and particularly to the switches of light railways such as trolley tracks. The inventor's aim is to provide means for operating the switch from the car platform so as to obviate the necessity for operating the switch by hand.

AUTOMATIC SWITCH-STAND.—E. E. STAGGS, Hachita, New Mex. An object here is to provide a switch in which the target will always indicate the true condition of the switch. This obviates a grave danger which arises from the use of switch stands of the ordinary kind since with this invention there must be a positive movement by some one who wishes the switch to be changed before the target will indicate such change. The change made, the target will be shifted to indicate the change and will be positively locked in its shifted position.

LOCOMOTIVE ASH-PAN.—J. S. DOWNING, Atlanta, Ga. The inventor's object is to provide a novel positively operating construction for discharging ashes from the ash pan. This is an automatic self-cleaning ash pan having a system of hoes attached to the piston rod, and a cylinder adapted to receive fluid pressure for reciprocating the hoes in the ash pans for discharging the ashes thereon.

RAIL CHAIR AND BRACE.—E. JANDREAU, Cherry Valley, N. Y. The object of the invention is to provide a chair and brace, by means of which railroad rails can be securely held in place upon the cross ties, and which serve to brace the rails against lateral movement at curves and other points of the track where such bracing is necessary.

METALLIC CROSS-TIE AND RAIL-CLAMP.—H. S. KILBOURNE, Washington, D. C. An object of this invention is to provide a cross-tie of light weight but strong and durable. In carrying this out I-beams of standard sizes and shapes are used, thereby reducing cost of manufacture. The tie requires but few bolts, the main connecting member being a clamp of a peculiar form.

Pertaining to Recreation.

MOVING-PICTURE DEVICE.—W. HENDRICK, New Haven, Conn. The object of the present invention is to provide certain improvements in chaplets and shrines of the holy rosary, whereby actuating mechanism is employed and the endless web containing pictures is properly actuated, to accurately display one of the pictures at a time and to display the several pictures in the proper order according to the intended devotional exercise.

Pertaining to Vehicles.

THILL-COUPLING.—V. B. HENBY and H. FINTEL, JR., Hardy, Neb. The main object in this case is to provide an improved means for enabling the draft eye to be detached or inserted, while at the same time means are provided for holding the draft eye in close contact with the coupling pin to prevent rattling of the various parts.

POLE-TIP.—J. W. DEAM, Geary, Okla. The invention relates to tips for wagon poles and the like, and more particularly such as have resiliently controlled means for securely holding a neck yoke in place on the pole. In operation, the latch cannot drop out through the slot of the casing, as the stop with its shoulders, which are transversely disposed with respect to the slot, is covered by the end of the pole.

PNEUMATIC TIRE.—P. I. VIEL, 27 Rue de Rivoli, Paris, France. This invention relates to a tire characterized by the use of a lining formed of a metal cable of wire. This packing or lining is intended to entirely do away with ruptures resulting from excessive pressure or excessive weight, or overheating and punctures. This lining diminishes in no way the flexibility of the tire.

BOLSTER.—J. HELMLICHER, Defiance, Ohio. The aim in this instance is to provide a bolster for wagon bodies and the like, which is light in weight and inexpensive to manufacture, and which can be easily fashioned from standard structural iron or other metal pieces, such as I-beams and channels.

Designs.

DESIGN FOR A CUT-GLASS DISH.—T. B. CLARK, Honesdale, Pa. This highly ornamental dish is of a circular form and its height is about one-half the diameter of the top and open part. The pattern cuttings are of great variety and exquisite design.

DESIGN FOR A TOBACCO-PIPE.—J. M. TATTUM, Athens, Texas. The bowl in this ornamental design represents the body of a tree with

several roots sawed off close at the base. The handle has a symmetrical curve. The words Dum Tacket Clamet are inscribed across the bowl and also large initial letters W. O. W. arranged vertically.

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.

NEW BOOKS, ETC.

THE COMMERCIAL PRODUCTS OF INDIA. By Sir George Watt. New York: E. P. Dutton & Co., 1908. 8vo.; 1,189 pp. Price, \$5.

This work is an abridgment of "A Dictionary of the Economic Products of India," which was published in 1893-4, and which has been out of print for some time. The government of India therefore decided that a correct and abridged edition should be brought out. The instructions provided that the work should be limited to a single volume, the arrangement of which should follow that of the dictionary and should be confined to products which are at present of prospective industrial and commercial importance. The book is a monumental work, and represents a vast amount of labor. It will prove valuable to those who are in any way identified with Indian industries.

THE PHOTOGRAPHIC MANUAL. Edited by H. Snowden Ward. London: Dawbarn & Ward, Ltd. New York: Tennant & Ward. 12mo.; 237 pp. Price, paper, 50 cents; cloth, \$1, postage extra.

This is the fifth edition of an excellent English manual which incorporates the figures, facts, and formulae of photography, and is a guide to their practical use, and is intended for all photographers. This collection of formulae is one of the best that we have ever seen. It is a book which should be in the hands of every photographer.

THE ANGLER'S GUIDE. A Manual for Campers and Anglers. Edited by Wainwright Randall. New York: The Field and Stream Publishing Company, 1909. 18mo.; 242 pp. Price, 50 cents.

This little volume contains a description of all popular fresh-water and salt-water fish. It describes tackle and bait for the expert angler; it gives complete information on how, when, and where to fish, and a summary of the fishing resorts of the United States and Canada. The book is admirably arranged, and is very well printed. Its form is so convenient that it can be carried in the pocket. Among the features which appeal to us particularly are the views and plans of bungalows, the fishing charts, and the directions for preparing food suitable for a fishing camp. The book should be in the possession of every fisherman.

THE DIRECTORY OF DIRECTORS IN THE CITY OF NEW YORK. New York: The Audit Company, 1909. 12mo.; 860 pp. Price, \$5.

The tenth edition of this useful work has just come from the press, and maintains the reputation of its predecessors for completeness and reliability. The Directory this year contains over 32,000 directors, each director's name being followed first by the name of the firm or company with which he is directly associated, and then by all the companies in which he is a director. Select lists of corporations in banking, insurance, transportation, manufacturing, and other lines of business, alphabetically arranged, accompanied in each case by the names of the company's officers and directors, are to be found in the appendix, as well as a list of the principal exchanges in New York, with their officers and managers. This is a book which no business house dealing with a large number of companies or their stocks and desiring to know by whom their clients' interests are controlled, can afford to be without.

THE IMPLEMENT BLUE BOOK. St. Louis: Midland Publishing Company, 1909. 8vo.; 460 pp.

This is a very useful book of reference for all users of or dealers in vehicles of all kinds, agricultural machinery and implements. A remarkable feature is the simplicity with which one can find any name or subject heading one wants, the book being described as "self-indexed, double-indexed, and cross-indexed." It begins with a classification of manufacturers in the alphabetical order of the implements they make, following with vehicles in the same manner. Then comes a list of manufacturers in alphabetical order, with lists of the specialties they make, and then a list of branch jobbing and transfer houses in geographical order, with the names of manufacturers whose lines they handle.

ENGINE LATHE WORK. By Fred H. Colvin. New York: Hill Publishing Company, 1909. 16mo.; pp. 180. Price, \$1.

The writer is Assistant Editor of the American Machinist, and is the author of many well-known books on mechanical subjects. The present volume gives practical suggestions which will give the young machinist or apprentice the foundation principles of engine lathe work. The illustrations number 127, and are well executed. The author states that while the suggestions have been written especially for those with a limited experience, it is quite probable that many of the ideas and suggestions may be new to some of the older

men who have not had a chance to see what other shops were doing.

RADFORD'S ARTISTIC BUNGALOWS. Unique Collection of 208 Designs. Chicago and New York: The Radford Architectural Company, 1908. 4to.; pp. 221. Price, \$1.

In the last three years the number of bungalows which have been built in the United States has increased by leaps and bounds, and whole farms are being split up into lots for the erection of bungalows consisting of from two to five or more rooms. The work before us consists of a collection of wash drawings and floor plans. Plans and specifications for any of them are furnished by the publishers at moderate rates. The illustrations are hardly as attractive as they would be if they were made from photographs of bungalows which have actually been built.

THIRD REPORT OF THE WELLCOME RESEARCH LABORATORIES AT THE GORDON MEMORIAL COLLEGE, KHARTOUM. Andrew Balfour, M.D., B.Sc., F.R.C.P. Edin., D.P.H. Camb., Director. Published for Department of Education, Sudan Government, Khartoum, by Balliere, Tindall & Cox, 8 Henrietta Street, Covent Garden, London. Depot for U. S. A.: Toga Publishing Company, 45 Lafayette Street, New York city, 1908. 4to.; pp. 476.

The admirable work conducted in the Wellcome Research Laboratories is undoubtedly familiar to our readers. The laboratories were established to promote technical education in general; to further the study of tropical disorders, especially the infective diseases of both man and beast peculiar to the Sudan; to render assistance to the officers of health and to the clinics of the civil and military hospitals; to aid experimental investigations in poisoning cases by the detection and experimental determination of toxic agents, particularly the obscure potent substances employed by the natives of the Sudan; to carry out such chemical and bacteriological tests in connection with water, food stuffs, and health and sanitary matters as may be found desirable; to promote the study of disorders and pests which attack food and textile produce and other economic plant life in Sudan; and to undertake the testing and assaying of agricultural, mineral, and other substances of practical interest in the industrial development of the Sudan. The two volumes of reports previously issued by the laboratories cover the period from the foundation of these laboratories in 1903 to 1906. The third report completes the record up to 1908. The work of the laboratories has been so far extended that the latest report contains some 480 pages or detailed records of many interesting experiments, and researches principally connected with tropical medicine. The volume is profusely illustrated, and includes many valuable colored plates. Simultaneously with the Third Report, and as a Supplement to it, is published a Review of the Progress made in Tropical Medicine during recent years, compiled by Dr. Balfour and Dr. R. G. Archibald.

DICTIONARY OF CHEMICAL AND METALLURGICAL MACHINERY, APPLIANCES, AND MATERIAL MANUFACTURED OR SOLD BY ADVERTISERS IN ELECTRO-CHEMICAL AND METALLURGICAL INDUSTRY. First Edition. New York: Electro-Chemical and Metallurgical Industry, 1909. 12mo.; pp. 182. Price, 50 cents.

LA MORPHOLOGIE DE L'INSECTE. Par Charles Janet. Limoges, France: Imprimerie-Librairie Ducourtieux et Gout, 1909.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending August 17, 1909,

AND EACH BEARING THAT DATE

[See note at end of list about copies of these patents.]

- Adding machine, O. W. Gooch..... 931,410
Addressing machine, W. F. Kellett..... 931,619
Advertising device, M. H. Singer..... 931,509
Advertising machine, F. W. Remer..... 931,218
Aerodart, C. R. Bannibr..... 931,026
Air brake, Turner & Farmer..... 931,237
Air brake system, E. M. Swift..... 931,234
Air motor or locomotive, Pittman & Harrison..... 931,643
Air ship, R. Schmiedchen..... 931,225
Amusement device, F. W. Nall..... 931,139
Annunciator board, J. Zickel..... 931,548
Armatures for alternating current motors, winding of, B. C. Shipman..... 931,150
Atomizer, Venner & Brown..... 931,240
Automobile lock, Crim & Loy..... 931,684
Automobile rear axle, F. C. Miller..... 931,451
Automobile wheel, J. A. Fleming..... 931,403
Awning, M. L. Bond..... 931,259
Axle bearing device, car, J. W. Stephenson..... 931,658
Axle box lubricating device, car, H. C. Gamge..... 931,053
Bag bundling device, G. J. Nuessen..... 931,468
Baker's goods, milk, postal packages, newspapers, and the like, arrangement for receiving, W. Eichelkraut..... 931,285
Baking powder, W. A. Beatty..... 931,027
Baking utensil, potato, J. F. Fairbanks..... 931,587
Basin, toilet, W. Bieck..... 931,489
Batteries, preparing alkaline electrolytes for storage, D. P. Perry..... 931,082
Battery elements, preparing storage, D. P. Perry..... 931,081
Bearing for upright shafts, step, W. H. Larrabee..... 931,069
Beater, M. A. Vail..... 931,100
Bed bottom, W. Shannon..... 931,149
Bed or douche pan, Williams & Scott..... 931,539
Bedstead lock or joint, M. D. L. Martin..... 931,447

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- Beer drawing apparatus, Handy & Phillips..... 931,297
Bell ringer, E. Wilson..... 931,108
Bell striker, T. L. Wilson..... 931,172
Blige drainer, C. W. Moore..... 931,633
Biscuits, machine for making shredded wheat, W. E. Williams..... 931,243
Bit, See Boring bit.
Blast and pressure meter, E. H. Schulz..... 931,348
Blasting device, J. Phillips..... 931,341
Blowpipe, E. S. Kibball..... 931,623
Boat, W. N. Bell..... 931,177
Boat and tent, convertible, J. Vaghi..... 931,529
Boiler tube cleaner, J. Zilloch..... 931,245
Boll weevil exterminator, J. W. Evans..... 931,401
Bolt and nut lock, Egenas & Chapman..... 931,187
Book holder, E. S. Antisdale..... 931,111
Book, loose back, C. Chivers..... 931,679
Boring bit, expandible, L. W. Garner..... 931,593
Bottle, L. V. Phillips..... 931,216
Bottle cap, A. M. Miller..... 931,450
Bottle filling and capping head, G. Kirkegaard..... 931,624
Bottle filling and capping machine, T. G. Redington..... 931,649
Bottle filling machine, T. Roberts..... 931,344
Bottle stopper, G. Kirkegaard..... 931,625
Box, S. Bachmann..... 931,373
Box, A. Sabor..... 931,655
Box strap reel, A. Griesbeck..... 931,294
Braid, cord making, and similar machines, carrier for, A. Petersen..... 931,083
Braiding machines, etc., carrier for, A. Petersen..... 931,084
Brake shoe adjuster, O. S. McCurdy..... 931,212
Bread raiser, J. M. McIntosh..... 931,075
Brick molding machine, C. Simpson..... 931,154
Brine cooling apparatus, G. F. Dickson..... 931,687
Broom, S. F. Frazier..... 931,290
Brush, F. M. Hauaway..... 931,602
Brush, rotary tooth, C. L. Phillips..... 931,143
Brush stud support, B. A. Behrend..... 931,376
Building block molding machine, A. L. Post..... 931,644
Burglar alarm, G. J. Deffner..... 931,395
Burglar screen, E. A. Wayland..... 931,360
Cabinet for the sacristy, R. A. McEachen..... 931,462
Cable hanger clamp, S. B. & G. B. Dusingherre..... 931,399
Cager and sump guard, G. Holmes..... 931,203
Calorimeter, C. J. Emerson..... 931,189
Can capping machine, G. W. E. Brooks..... 931,262
Can filling machine, C. S. Bucklin..... 931,561
Cans and their heads, machine for clenching-sheet metal, Adriance & Calleson..... 931,022
Cans to operating mechanisms, device for feeding, Krummel & Tallafiero..... 931,434
Candy, sugared nut, McDonald & Hopson..... 931,137
Cap, miner's, I. M. McPherson..... 931,463
Caps, device for applying protectors to fulminate, W. E. Miller..... 931,454
Capping machine, C. A. Youngman..... 931,244
Capping machine head, G. Kirkegaard..... 931,626
Car coupling, G. E. Tomlinson..... 931,097
Car coupling, E. F. Pendexter..... 931,338
Car draw bar and extension shank, M. A. Garrett..... 931,193
Car fender, G. W. Mahan..... 931,326
Car framework, E. C. Anderson..... 931,555
Car side bearing, railway, J. F. Courson..... 931,681
Carbureter, M. D. Colbath..... 931,356
Carton, G. Mortson..... 931,074
Carton, egg, R. M. Odell..... 931,637
Cash register attachment, O. K. Sletto..... 931,349
Casket lamp for hearse or funeral cars, adjustable, Roe & Antes..... 931,490
Celery bleaching sleeve, C. W. Mark..... 931,628
Cellulose article, colored, O. Muller..... 931,634
Cement and making same, package of sticky, A. Thoma..... 931,350
Centrifugal apparatus, H. E. Warren..... 931,707
Centrifugal screen, W. R. Cunningham..... 931,200
Characters on sheet material, machine for impressing, E. B. Stilwell..... 931,158
Chasing mill working in looped patbs, G. Ehrlich..... 931,585
Check receptacle, C. Boulard..... 931,266
Chenille strip manufacturing mechanism, W. P. Zimmermann..... 931,365
Chilian mill, W. B. Easton..... 931,180
Chuck, drill, C. W. Manzel..... 931,327
Chuck release, lathe, W. L. White..... 931,167
Churn, M. V. Dudley..... 931,583
Cigar, F. Meyer..... 931,629
Cigar machine, F. E. Kelsey..... 931,314
Cigarette detachable and collapsible tip, C. A. Drucklieb..... 931,582
Circle divider, N. Perris..... 931,080
Circuit breaker, Browne & Howell..... 931,264
Clasp, See Veil clasp.
Clasp, Albertoni & Tropeano..... 931,023
Clock, electric self-winding, Steiger & Besancon..... 931,157
Clock register, nautical, T. Cunningham..... 931,278
Clutch, J. Schneider..... 931,596
Clutch, M. H. Fischer..... 931,358
Clutch, car cable, H. S. Robinson..... 931,089
Clutch mechanism for printing, stamping, and die presses and the like, friction, M. Rockstroh..... 931,651
Coal scuttle, D. O. Hedges..... 931,300
Coat fastening means, W. S. Barker..... 931,250
Coating articles, dipping process for, W. G. Scott..... 931,503
Coating composition, receptacle, W. R. Long..... 931,324
Cook, safety gas, O. R. Rasky..... 931,174
Coin controlled mechanism, B. M. Davis..... 931,574
Coke loader, Wright & Monroe..... 931,110
Collection box, E. E. Adams..... 931,549
Colliery and other inclines, safety appliance for, J. Morton..... 931,078
Combination rack, Haas & Giles..... 931,059
Commutator, dynamo electric machine, J. E. Webster..... 931,105
Commutator, dynamo electric machine, B. G. Lamme..... 931,130
Compasses, attachment for, A. E. Washburn..... 931,359
Compound, H. M. Sinclair..... 931,094
Concrete construction, reinforced, Foster & Schulz..... 931,049
Concrete construction reinforcing bar, P. T. Large..... 931,320
Concrete mixing machine, Scott & Dilgard..... 931,657
Concrete mold, D. E. Tingley..... 931,351

Concrete post, E. U. Down.....	931,396
Concrete post, H. H. Johannig.....	931,616
Concrete reinforcing bar, J. M. Dudley.....	931,185
Connection for co-operating members, flexible, J. E. Webster.....	931,165
Container, safety, W. Asbury.....	931,370
Control switch and system, H. D. James.....	931,126, 931,205
Conveyer, cross, C. L. Gardner.....	931,054
Cooker, steam, F. C. Roberts.....	931,088
Cookers, food tray for steam, M. A. Warner.....	931,533
Cooking utensil, I. E. & R. Q. Lincoln.....	931,209
Corn cabinet, seed storage, S. Babcock.....	931,569
Cotton folder, F. Phelps.....	931,474
Coupling, J. C. Zimmerman.....	931,173
Croquet arches, socket post for supporting, H. E. Collier.....	931,568
Cross tie and rail clamp, metallic, H. S. Kilbourne.....	931,622
Crossover, removable, C. B. Ryan.....	931,493
Cultivating attachment, C. S. Norcross.....	931,333
Cultivator swivel wheel attachment, S. Seitner, Jr.....	931,504
Culvert flexible joint, J. Doyle.....	931,581
Current motor, variable speed alternating, R. D. Mershon.....	931,136
Current rectifying apparatus, R. P. Jackson.....	931,124
Currents having limited strength, process and apparatus for producing, M. M. Osnos.....	931,336
Cutter thimble for grape and other picking, A. M. Southworth.....	931,511
Cutting off machine, L. D. Davis.....	931,043
Cycle change speed and back pedaling brake mechanism, C. T. B. Sangster.....	931,056
Damper regulator, G. Steele.....	931,029
Deodorizer, C. E. Blood.....	931,253
Depth gage, L. B. Benton.....	931,703
Derrick platform and turntable, J. W. Page.....	931,311
Desk, R. T. Jackson, Jr.....	931,311
Dish, butter, F. Schille.....	931,497
Dock, dry, L. M. Cox.....	931,182
Door attachment, screen, A. R. Gordon.....	931,411
Door closure, J. Newsam.....	931,701
Door, double action double, W. P. Armstrong.....	931,247
Door, grain, G. S. Ney.....	931,467
Door hanger, bush, G. Erstad.....	931,052
Door lock, W. A. Schurman.....	931,502
Door storm, F. A. Schurman.....	931,219
Douche pan protector, E. Reynolds.....	931,183
Draft ventilator, B. E. Cummings.....	931,682
Draw gear apparatus, J. F. Courson.....	931,439
Drawbridge gate, automatic, A. Lichtfuss.....	931,591
Dress shield, E. N. Gillard.....	931,695
Drier, W. E. Koop.....	931,119
Drilling machine, stay bolt, J. Hocking.....	931,102
Drop light bracket, adjustable, P. L. Tenney.....	931,102
Drying and heating apparatus, L. T. Tucker.....	931,098
Dye and making same, antracene, F. Kacer.....	931,598
Dye and making same, sulphur, L. Haas.....	931,424
Dye, azo, L. Hesse, et al.....	931,423
Dynamometer, F. N. Connet.....	931,274
Edge protecting clamp, G. Stiehle.....	931,233
Electric ground clamp, F. Stevens.....	931,706
Electric machine connection board, J. G. Crawford.....	931,573
Electric machine, dynamo, J. D. Forrer.....	931,110
Electric machine, dynamo, B. A. Behrend.....	931,375
Electric machine, dynamo, B. Mattman.....	931,448
Electric machine, dynamo, Balcombe & Freier.....	931,606
Electric machine, dynamo, W. S. Hitt.....	931,620
Electric machine, dynamo, W. S. Kelley.....	931,150
Electric machines, winding for dynamo, H. C. Specht.....	931,416
Electric motor, H. C. Grant.....	931,632
Electric signaling, J. Mladek.....	931,617
Electric time switch, J. & J. Jones, Jr.....	931,617
Electrical appliance, J. S. Stewart.....	931,518
Electrical distribution system, B. Frankenhof.....	931,404
Electrode, H. Speckter.....	931,513
Electrode, arc lamp, G. M. Little.....	931,133
Electrode, arc lamp, S. P. Wilbur.....	931,169
Electromagnet coil construction, A. A. Low.....	931,445
Electromagnet coil construction, Wohl & Hertzberg.....	931,540
Elevator, See Pneumatic elevator.....	
Elevator, W. E. Courtney.....	931,570
Elevator car and well door operating mechanism, H. Rowntree.....	931,224
Elevator gate automatic latch, automatic, Gilson & Beattie.....	931,693
Elevator mechanism, safety, H. O. Barnes.....	931,175
Elevator safety, E. E. Moulton.....	931,211
Emulsion and producing the same, J. Stockhausen.....	931,520
Engine electrical interrupter, explosive, G. Honold.....	931,065
Engine electromagnetic igniter, explosion, G. Honold.....	931,068
Erasor hold-r. C. Frederick.....	931,405
Ether, santalol, J. Callsen, reissue.....	13,008
Exercising apparatus, P. S. Medart.....	931,699
Exercising device, A. Day.....	931,394
Explosive engine, W. R. Beaton.....	931,476
Explosive engine, W. R. Beaton.....	931,469
Explosive engine, W. R. Beaton.....	931,050
Fabric, E. H. Outerbridge.....	931,469
Fanning mill, L. O. Hage.....	931,050
Fastening device, Layman & Boutillier.....	931,131
Fastening, self-locking, G. Adams.....	931,665
Faucet, R. Bell.....	931,252
Faucet, J. P. Urbanek.....	931,528
Feed regulator, Hall & Holmes.....	931,195
Feed water heater, W. S. Ferguson.....	931,196
Feeding barned draft animals, W. H. & J. H. Granbery.....	931,040
Fence clamp, woven wire, W. N. Squires.....	931,516
Fence construction, W. M. Rankin.....	931,486
Fence post, R. T. Jones.....	931,236
Fence post, F. E. Saunders.....	931,495
Fences, wire entanglements, etc., standard or support for wire, L. Andersen.....	931,554
Filter, E. Burt.....	931,267
Filter, Pendergast & Hinsley.....	931,472
Flitering bed, P. F. Bussman.....	931,032
Fire alarm, automatic, P. Bonin.....	931,377
Fire alarm keys, device for holding, A. & A. Iske.....	931,123
Fire escape, E. J. Cooke.....	931,040
Fire escape, E. W. Brooks.....	931,031
Fire escape, traveling, L. Otter.....	931,702
Fire extinguisher and other air pressure liquid ejecting vessel, H. T. Blake.....	931,255
Fire extinguisher, automatic stationary, W. Bsty.....	931,190
Firearm, W. L. Marble.....	931,328
Firearm, revolving, O. W. Ringqvist.....	931,146
Fishing rod, E. H. Crane.....	931,277
Flatiron, G. H. Heindelman.....	931,198
Floor scraper, F. J. King.....	931,432
Floor scraper, F. F. Hase, reissue.....	13,011
Flue collar and pipe supporter, adjustable, A. L. McElvain.....	931,213
Flushing apparatus, C. A. Wulf.....	931,540
Folding machine, R. C. Seymour.....	931,230
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**A NEW SPEED INDICATOR FOR MARINE PROPELLERS.**  
(Continued from page 156.)  
function enters largely. Each marine plant has its most efficient cruising speed, and in the case of cargo-bearing merchant marine vessels, every pound of coal saved means increased earnings, also increased cruising area to warships. When this economical speed had been determined, with a tachometer system consisting of a plurality of indicators distributed about the vessel to guide, the engines can be kept at this rate of speed accurately and with but slight effort. The captain, in his cabin or on the bridge, the chief engineer when off duty—all can keep track of exactly what rotation speed is being maintained.

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Efforts along this line have been made for a number of years, but have been productive of no dependable and accurate device prior to the invention of the system which is the subject of this article.

Centrifugal devices are not susceptible to mechanical transmission to various remote parts of the vessel, and lack extreme accuracy over protracted periods of operation. Pneumatic devices, operated by air-pumps actuated by the propeller shaft, are less accurate. Electrical tachometers have failed in accuracy heretofore because of the error introduced, and varying from day to day, by rubbing or abutting contacts becoming foul, thereby introducing a resistance in the circuit with corresponding inaccuracy of reading of a voltmeter operated by the dynamo, calibrated in R. P. M. of the propeller shaft. Owing to the former use of direct-current instruments, commutators and brushes were necessary on the magneto. The spring tension of these brushes varied, the commutator became oxidized and covered by oil from the bearings, and considerable error crept in. As a warship going ten knots per hour with engines turning over 72 R. P. M. is not traveling ten knots at 71 or 70 R. P. M., it is seen that a tachometer, to be of value, must be accurate to a fraction of a revolution, and maintain its calibration.

All reciprocating engines, owing to the use of connecting rods between the crank and the piston, impart rotation to their shafts of constantly varying angular velocity. The fewer the number of cylinders or the slower the speed of rotation, the greater this variation. These variations are smoothed out more or less by the flywheel on the stationary engine, but a marine engine has no flywheel except a propeller, the weight of which is not sufficient to possess flywheel action to any extent. Therefore, any tachometer actuated by the propeller shaft by gearing or otherwise, has imparted to it an unsteady rate of speed. If the tachometer is geared up to the shaft so that it will rotate faster than the shaft, any momentary irregularity in the revolution of the main shaft is multiplied in the tachometer proportionally to the ratio of gearing between the main shaft and the tachometer. Therefore, whatever indicating device is used in connection with the tachometer will pulsate, and the reading of the pointer on the scale of the instrument will be largely a matter of guesswork between two values of low and high. Hence it is evident that some sort of compensating device must be used to take up these momentary fluctuations of the propeller shaft, and impart to the generator of the tachometer a steady av-

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**HOW A TANGENT GALVANOMETER CAN BE USED FOR MAKING ELECTRICAL MEASUREMENTS** is described in Scientific American Supplement 1584.

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**HOW TO MAKE A MAGIC LANTERN,** Scientific American Supplement 1546.

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(Continued from page 167.)

erage speed, not affected except by decided slowing up or acceleration of the engine.

A tachometer has recently been perfected by Mr. Mellor Reece Hutchison, in which these defects are avoided by very simple and dependable means.

The accompanying illustration shows a merchant marine generating set of this electrical tachometer, installed in the shaft alley of a steamer.

The large split sprocket wheel B, of proper diameter to conform to the shaft A, is firmly clamped thereto. A Morse silent chain C, engaged by the sprocket wheel B, drives a similar sprocket wheel D mounted on a countershaft E, which forms part of the tachometer generating set. The rotation of this small sprocket is transmitted to the flywheel F, keyed to the countershaft E, through the intermediary of two opposite coiled spiral springs G, H. Inside the rim of the flywheel F, and on the end opposite to the spiral springs G, H, gear teeth are cut which engage two pinions. These pinions respectively actuate magnetos XY. It is seen that any momentary fluctuation in the rotation of sprocket D, occasioned by variations in the angular velocity of the main shaft A, are smoothed out by the springs G, H, imparting to the flywheel F and countershaft E a steady average speed. To protect the springs G, H, against rupture from sudden reversal of rotation of main shaft A, stop pin K is mounted on the flywheel, and engages radial arm L, mounted on the sprocket wheel D, thereby preventing more than one-half an independent revolution of the countershaft. This one-half revolution is sufficient to take care of practical conditions on marine equipments.

The magnetos XY are of the inductor type. The armatures and the pole pieces are stationary. 1 is a permanent magnet of finest steel, properly aged to insure absolute permanence. 2 2 are the pole pieces of soft iron attached thereto. 3 is a stationary shuttle armature, on which is winding 4. Rotating between the pole pieces and the armatures is the soft iron inductor 5. As the inductor is rotated, an alternating electromotive force is generated in the armature, two cycles per revolution.

The magneto is so designed that the voltage is directly proportional to the speed of rotation of the inductor, over a wide range. Therefore, the faster the propeller shaft turns, the higher the voltage directly proportional thereto.

It will be noted there are no commutators or brushes, the armature being stationary and the leading-out wires soldered to the main-line wires. Therefore, no error can creep in from increase of resistance of contacts.

The indicators are alternating-current voltmeters of the dynamometer type, i. e., having a moving coil and stationary coils.

In present practice, however, alternating-current voltmeters read but one way, with the zero on the left of the scale. A tachometer, specially for marine use, must show direction of rotation of main shaft as well as the speed. In the design of this, therefore, the zero is at the center, deflections of the pointer to the left indicating speed of rotation of the propeller shaft astern, and to the right ahead.

The pointer of the indicator is deadbeat at its reading, and is not influenced by the rolling or pitching of the ship. Provision is also made to protect the instrument against concussion or atmospheric disturbance from heavy gunfire.

In the naval type each indicator is entirely independent of all the rest, being connected to its own pair of magnetos; hence, should one indicator be shot away or otherwise damaged, it will not affect the reading of any of the other indicators.

In the merchant marine type, however, this is not deemed necessary, one pair

(Concluded on page 169.)



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 Telephone transmitting mouthpiece, R. E. Miller ..... 931,452  
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 Tire antiskidding device, T. I. Duffy ..... 931,284

(Concluded from page 168.)

of magnetos supplying all the indicators, which are connected in multiple.

A very important fact in Mr. Hutchison's system is the use of an exceedingly small current value and low voltage; hence, in the event of the indicators being located in proximity to ammunition, should the circuit be opened by the breaking of a wire or otherwise, the resultant spark is barely perceptible and cool, therefore incapable of igniting anything. Should the line become short-circuited, no heating effect whatever is produced and no damage done to the magnetos, as they can run for an indefinite time on dead short circuit. No effect is produced on the compass by the current in the wires, and, taken all in all, the system seems to meet every requirement of accuracy and safety.

POWERFUL HOISTING AND CONVEYING MACHINE.

(Continued from page 156.)

in the machinery house at the pier end of the bridge, the power from which is transferred to the moving gear wheels by a line of shafting on top of the bridge, thence to lines of shafting down the pier and shear supports, and thence by a proper train of gears to the wheels.

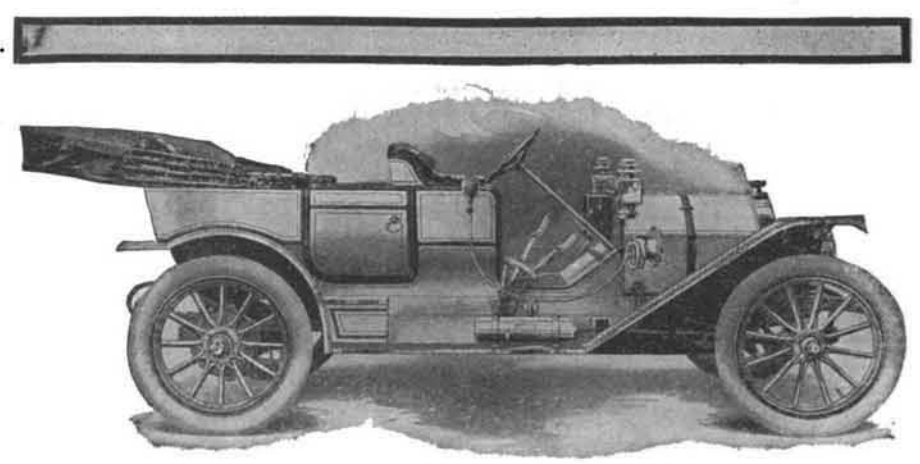
The moving gear mechanism is attached to the operating mechanism by means of friction clutches, so arranged that the motion of the crane may be made in either direction at the will of the operator. Further provision is made for disconnecting the gearing, in order to skew the bridge within the limits given.

The main operating mechanism for the bridge is located in the machinery house, and consists of two drums. Each of these drums is mounted loose on its supporting shaft. Each drum is controlled by a Brown friction clutch and a band friction brake. The drums are connected one to the other through an equalizing gear mechanism, which is equipped also with a powerful foot brake, so that the two main operating drums may be made to rotate in opposite directions with the same speed. This feature of connecting the two drums is one of the all-important points in the Brown two-drum operating mechanism. The main operating machinery is further arranged to operate from the intermediate shaft the bridge crane moving gear mechanism, to which the supporting truck wheels are connected by shafting and gearing. This mechanism is controlled also by a powerful clutch and band friction foot brake.

In further connection with the two main operating drums is a small closing drum which, in conjunction with the two main drums, controls all of the motions of hoisting and lowering the load and traveling the trolley. The trolley, which in reality forms also a part of the main hoisting mechanism, is specially designed to operate in conjunction with the drum arrangement above described. In general, this trolley consists of a steel structural frame mounted on four turned cast-steel track wheels arranged to run on the trolley runway of the bridge crane. In the trolley there are mounted specially-designed drums, which run loose on their supporting shafts. The large section of each drum on the trolley is connected to the main hoisting drums in the machinery house in the following manner:

One length of wire rope will connect, from the under side, one of the main hoisting drums to the top side of one of the large sections of the trolley drums. The under side of this trolley drum is connected by wire ropes to the top side of the other main hoisting drum. The top side of this same hoisting drum is connected by suitable cable to the top side of the other trolley drum, and likewise this trolley drum from the under side is connected to the underside of the other main hoisting drum. By this arrangement of ropes, if one of the main

(Continued on page 170.)



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Inquiry No. 9019.—Wanted, address of The Old Town Canoe Co.

Inquiry No. 9020.—Wanted the addresses of the manufacturers of metal novelties.

(Continued from page 169.)

hoisting drums is connected through its clutch mechanism to the driving shaft, and the other main hoisting drum is allowed to work through the equalizing gear mechanism loose on its supporting shaft, the motion of the drums will be in opposite directions and with the same speed, and when working under this condition the motion produced on the trolley drums will be nil, thus giving to the trolley a motion or translation along its supporting runway, and by the reversal of the motion of the main hoisting drums the trolley will be traveled in an opposite direction. Further, if the main hoisting drums are both rotated in the same direction, the drums on the trolley will be rotated in opposite directions with respect to one another, and by the proper reeving of the ropes from the small drums on the trolley, the suspended load may be raised and lowered by the reversal of the motions of the main hoisting mechanism. When equipped with grab bucket, the opening and closing of the same is accomplished by the ropes leading from one of the main trolley drums. The shell lines from the grab bucket are attached to the other of the main trolley drums, and for the same reasons as given above, the bucket may be raised and lowered. But to carry out the motion of opening and closing, the two main hoisting drums in the machinery house are held stationary, and the small auxiliary hoisting drum is put in operation. This drum is connected to a sliding loop attachment located at a convenient point on the bridge structures, and in such a way that the ropes leading from the large section of the drum controlling the opening and closing lines of the bucket are reeved through this sliding loop mechanism, and, by the operation of this closing drum, the one set of lines leading to the trolley is lengthened while the other set is shortened. By this means the one drum, controlling the opening and closing of the bucket, may be rotated in either direction by the proper operating of the closing drum above referred to. From this description it will be seen that in reality the main hoisting mechanism consists of the two main hoisting drums and the auxiliary closing drum, all of which drums are under the complete control of the operator, and work in conjunction with one another to properly carry out the various motions of the trolley and its load.

In the operation, however, of the scoop bucket, with which the above bridge crane is equipped, only one main drum on the trolley is used, this being the drum operating the shell lines of the drum operating the shell lines of the grab bucket. The lines leading from the small drum sections of this main drum are arranged to work in parallel and carry the shovel bucket. All of the clutches, brakes, etc., going to make up the main operating machinery are connected to the operator's cage by suitable rods and levers, so that the entire mechanism is under the complete control of one operator.

The 200 horse-power motor and electrical equipment is designed so that dur-

(Concluded on page 171.)

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(Concluded from page 170.)

ing a run of twenty-four hours, when handling material at the speeds as specified in the contract, no part of the motor will rise in temperature more than 70 deg. C. above the surrounding air. All electrical equipment is designed for a direct current of 220 volts. The grab bucket has a cubical capacity of 100 cubic feet of limestone, and the scoop bucket of 132 cubic feet. Both buckets are especially designed for working in limestone. The grab bucket has an overall width of about 7 feet 6 inches and an over-all length when open of 17 feet 6 inches. The capacity of the machine is 200 tons per hour. The hoisting speed is 250 to 275 feet per minute; the racking speed 900 feet per minute; and the whole bridge travels at the rate of 100 to 150 feet per minute.

MEASURING A RIVER'S FLOW.

(Concluded from page 160.)

the velocity recorded at a number of different depths in each strip. By the vertical integration method the meter is moved at a slow uniform speed from the surface of the stream to the bottom and back again.

For convenience of reference and comparison the results obtained are plotted in the form of a curve on a chart.

Another illustration shows the Great Falls of the Missouri River in Montana. A gaging station at the point from which the photograph is taken was established by the Geological Survey in July, 1902.

The river is favorable at this point for water-power development and shows the kind of stream, apart from navigable rivers, measured and reported upon by the Survey. In this way the Survey constantly brings to the attention of the investing and developing public many previously unnoticed but valuable water-power sites.

We are indebted to the director of the U. S. Geological Survey for the use of the accompanying illustrations.

THE AVIATION MEETING AT RHEIMS.

(Concluded from page 159.)

with their Bleriot monoplanes. Both Bleriot and Curtiss tried to lower their speed records for one circuit of the course, and the latter succeeded in making 2 seconds better time than before. His time of 8:09 1/5 corresponds to almost 45.7 miles an hour. Bleriot made the circuit in 8:08 2/5, which was 4 seconds slower than formerly.

At the end of 2 hours, 22 minutes, and 51 seconds, Farman had flown 140 kilometers (86.99 miles) and beaten Paulhan's record. It was getting dark rapidly and the spectators could only see the machine as it passed before the grand stand. Ten minutes and 19 seconds later he completed his fifteenth round, and less than five minutes later he had beaten Latham's record. One hundred and sixty kilometers (99.4 miles) were covered in 2:43:35 2/5, and 180 kilometers (111.83 miles) in 3 hours, 4 minutes, 55 2/5 seconds. As it was now 7:30, the nineteenth round afterward made by Farman was not counted in the official figures. He actually covered over 190 kilometers (118.06 miles) and remained in the air all told about 3 1/4 hours. As he finished in front of the grand stand a searchlight was thrown upon him. He was pulled from his machine and carried upon the shoulders of his friends, receiving a decided ovation. Thus, for the second time, he has won a \$10,000 cash prize, the first instance being when he flew 1 kilometer in a closed circuit on January 13th, 1908. It is possible that he will try again to win this sum by making the 140-mile flight from New York to Albany. In the flight for the Grand Prix, he carried enough fuel to fly 3 1/2 hours.

The other prizes awarded in the Grand Prix de la Champagne distance race were as follows:

Second, \$5,000, won by Hubert Latham on his Antoinette monoplane. Distance, 154.5 kilometers (96 miles).

Third, \$2,000, won by M. Paulhan with his Voisin biplane. Distance, 131 kilometers (81.4 miles).

Fourth, \$1,000, won by Count de Lambert with his Wright biplane. Distance, 116 kilometers (72.1 miles).

Fifth, \$1,000, won by Paul M. Tissandier. Distance, 111 kilometers (68.97 miles).

Sixth, \$1,000, won by M. Roger Sommer with a Farman biplane. Distance, 60 kilometers (37.3 miles).

The distances covered by the other competitors were: 50 kilometers (31.1 miles) by M. Delagrang, with a Bleriot monoplane; 40 kilometers (24.9 miles) covered by M. Bleriot with one of his monoplanes; 30 kilometers (18.64 miles) covered by Mr. Curtiss with his biplane; and 21 kilometers (13.04 miles) covered by M. LeFebvre with his Wright machine.

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Table listing various inventions and their inventors with corresponding page numbers. Includes items like 'Tire cover and fastening therefor', 'Tobacco cutter', 'Track laying machine', etc.

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