RECENTLY PATENTED INVENTIONS.

Pertaining to Apparel.

SUBSTITUTE BUTTONHOLE ATTACHMENT.—F. ROBERTSON, Denver, Colo. This attachment serves as an inexpensive substitute for frayed and worn-out buttonholes and may be quickly applied and detached without the use of any device other than the hands, and when applied presents a neat appearance and does not interfere with the flexibility of the surrounding material.

RECEPTACLE FOR BABY-CLOTHS.—C. BREWER, New York, N. Y. This receptacle is adapted to be set within the bowl of a water closet during the cleansing manipulation of the cloths and to retain no water when lifted therefrom. It is provided with a plug or stopper adapted to hold the water of the flushing system in the bowl.

Electrical Devices.

HAIR-DRYING APPARATUS.—W. A. SOLES, New York, N. Y. The invention is more especially designed for use in hairdressing establishments, barber shops and other places, and is arranged to insure drying of the hair by heated air and under the invigorating influence of artificial light, by the use of an electrically driven fan arranged in the rear of a cluster of electric lamps contained in a hood open at the front for the passage of the heated air and the rays of light.

Of Interest to Farmers.

MILK PASTEURIZER AND FILTER.—C. C. STAMBAUGH, New York, N. Y. In the present patent the invention has in view a simple apparatus for use in the pasteurization and filtration of milk, the pasteurizing and filtering being successively and continuously performed by passing the milk through a pail or vessel having the inventor's improvements.

Of General Interest.

PACKAGE-TIE.—H. J. LEE and E. F. GRAY, Scranton, Pa. The purpose here is to provide details of construction for a package tie, which are simple, practical, very convenient to tie or release a package, and that particularly well adapt the improvement for binding together a number of letters or documents in a compact package that may require separation quickly.

SHEET-METAL TUBING.—W. P. LAWRENCE, Colorado Springs, Colo. This improvement has reference more particularly to a construction of tubing for use in the frames of window sashes, window screens, or for the uprights or transverse members of metal furniture, or for paneling or any other similar structure in which it may be desired to employ sheet metal tubing.

KNOCKDOWN BOX.—W. L. HOWLAND, Cedar Rapids, Iowa. This hollow box frame is open at the top and bottom, close around the inner sides of which is disposed a continuous piece of material projecting beyond the top and bottom of the frame, and having its projecting portions cut and bent down and against the top and bottom of the frame, so that when the top and bottom members are secured, the continuous piece of material will be held close to the inner sides of the frame, while it may be readily removed by removing the top and bottom members.

HAND MIXING-RECEPTACLE.—A. HALLENBERG, Fargo, N. D. This inventor furnishes a receptacle for materials wherein the same may be mixed by compression of the walls of the receptacle. He provides a receptacle to receive materials to be mixed, provided with finger holds to protect the fingers, and to provide holding means for the receptacle.

MEANS FOR HANGING DOORS, SCREENS, ETC.—T. GILL, Follansbee, W. Va. The means consists in the main of a post or column of a length nearly equal to the height of the door opening or casing and provided with a suitable adjusting device for extending its length until it clamps at its ends against the door casing with sufficient force to retain it in place, the door being hinge-connected to this post in the usual manner of connecting it directly to a door casing.

BUTTER AND LARD CUTTER.—C. H. CARLSON, Iron Mountain, Mich. The aim in this instance is to provide a device especially adapted to cut out and remove a shaped pat of butter or lard from a firkin or other receptacle, and which is provided with means for ejecting the pat from the device without the necessity of touching it with the hands or any tool.

Hardware.

BENCH-STOP.—M. R. RAYNESFORD, Ellis, Kan. This invention relates to stops, and more particularly such as are adapted to be used on carpenters' benches for holding one end of a board firmly against the apron of a bench while the opposite end of the board is clamped in a vise. It constitutes an improvement on the device shown and described in a U. S. patent formerly granted to Mr. Raynesford.

HOSE-COUPLING.—W. F. KOPER, Chillicothe, Ohio. In using this invention, the head piece is introduced in the terminal of the union member having an annular chamber therein, and it is rotated in the terminal until the stems of the T-shaped members are in alinement with the slots that separate the pairs of lugs, when the head piece is pulled outwardly until the T-shaped members interlock with the inner faced lugs. In this position the head piece protrudes through an opening in the rubber cup.

Household Utilities.

CLOTHES-LINE HANGER.—C. C. LOVEJOY, New York, N. Y. The device may be conveniently attached, and will operate to support the line in such a way that the end of the line may be brought into the room to enable the clothes to be hung thereupon, and the device may be readily folded up out of the way when not in use.

CLOTHES-LINE TIGHTENER.—R. C. SCHEURER and L. MAREK, Union Hill, N. J. This invention pertains to clothes line tighteners, and the object of the inventors is to produce a device which can be readily applied to a clothes line, which will enable the slack of the line to be taken up, and which will maintain the line under tension.

Machines and Mechanical Devices.

DEVELOPING-MACHINE FOR PHOTOGRAPHIC FILMS.—ELIZABETH A. TAYLOR, Steilacoom, Wash. This invention consists of a plurality of cylinders of different diameters disposed one within the other, there being slots in the cylinders, and projecting therein which engage each other so that when one cylinder is rotated a predetermined distance the projection thereon will engage the one on a neighboring cylinder to rotate it. In use the end of the film is secured to one of the cylinders and as they are rotated the film is wound around them, the film passing through the slots from one cylinder to another.

Musical Devices.

REED-ORGAN.—L. A. MCCORD, Laurens, S. C. It is sought in this invention to provide an organ attachment which can be applied to any of the ordinary reed organs and will permit the playing of the organ by an automatic or self-player such for instance, as those using a certain perforated paper strip or sheet, and which self-playing attachment may be adjusted out of the way so the organ may be played in the usual manner.

ADJUSTABLE PIANO-PEDAL CONNECTION.—H. MEYER, New York, N. Y. The intention here is to provide an adjustable piano pedal connection, arranged to insure accurate working of the hammer rest rail, the damper rail and the muffler, as desired. The connecting bar is adjustably secured to a flat spring, which forms the fulcrum for the bar and is attached to a base secured to the bottom of the piano frame.

Railways and Their Accessories.

RAILROAD-TIE.—J. W. SNEDDEN, Falls Creek, Pa. Disclosed in this patent is a tie the sides of which are connected below the top by a web, the upper edges of the sides having inwardly projecting flanges between which the movable member of the rail fastening means coact with fixed rail retainers at the opposite side of the rail. The tie is hollow and between the walls either a filling of concrete or a block of wood is adapted to be received.

BLOCK-SIGNAL SYSTEM.—J. D. NIX, Ferriday, La. An object of this inventor is to provide a mechanism which is located on the engine and forms part of the mechanism thereof which may be automatically operated by an electric current from a generator carried on another engine which is in the same block. The generators for furnishing the current may be either dynamos or batteries.

FLAG OR SIGNAL.—G. W. DALLIMORE, Pocatello, Idaho. The object here is to produce a flag for use on railways, having a pole or staff within which the curtain or body of the flag may be received when the signal is not being displayed, and further, to provide a simple construction enabling a flag to be extended or withdrawn from view.

CAR-FENDER.—G. A. ESTLER, Standish, Mich. In this fender, a catching and supporting means prevents injury to a person with whom the fender has forcible contact, and the purpose of the invention is to provide for a fender effective in service, and which may be placed on street or other cars for service without requiring changes in the construction of the cars.

LOCK-VALVE.—T. M. SWANK, Louisville, Ky. This valve is for use in connection with the train pipe of an air brake system, which has locking mechanism serving to prevent unauthorized and malicious tampering with the valve, which also prevents accidental closing of the valve when open, and which will not cause unnecessary delay in certain operations such as in switching or coupling cars.

AUTOMATIC TRACK-INSPECTOR.—T. ELLIS, Tacoma; G. H. PURVIS, Seattle, and J. S. CREECH, Raymond, Wash. The invention relates to automatic track inspectors, that is, to mechanism for indicating the condition of a railway track. More particularly stated it comprises various improvements, whereby the general efficiency of such mechanism is greatly increased, and the operations rendered more practicable.

Pertaining to Recreation.

COMBINED CREEL AND KIT.—H. W. WAKEFIELD and C. F. HARTER, Seattle, Wash. The improvement is in anglers creels, the purpose of which is the provision of a kit in connection with the creel or basket for the storing of hooks, lines, leaders and other fishing paraphernalia, in order that the same may be at all times readily accessible and thus facilitate the replacing of lost hooks, etc.

GAME.—H. E. HIRE, Mark Center, Ohio. Mr. Hire's invention relates to games, and the object is to provide a game which has many of the features of the game of base ball and is especially devised to assist in the training of pitchers for the outdoor game of base ball, and to test their skill at the outdoor game.

TOY CANNON.—W. H. CORNFORD, Mornington, Victoria, Australia. This application is in part a division of the application formerly filed by Mr. Cornford for Letters Patent on a military game or toy, and the present invention relates to a toy cannon or gun of special construction adapted to be used in connection with the said game. It provides for rapid firing of pellets, retaining them in position till fired, automatically readjusting them if displaced, and means for elevating and depressing the cannon.

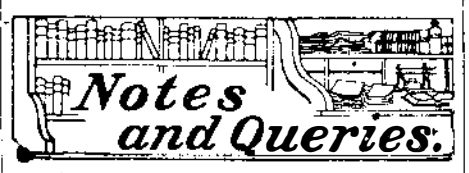
Pertaining to Vehicles.

INFLATING DEVICE FOR TIRES.—E. HAYNES, Bisbee, Ariz. Ter. This invention is particularly useful in connection with pneumatic tires such as are used on motor vehicles and the like. The aim is to provide an efficient device for tires, which is automatic in operation and which obviates the necessity for manually or otherwise extraneously inflating a tire.

VEHICLE-TIRE.—C. F. FISK, Allentown, N. J. The invention consists of a rim of two sections bolted or otherwise detachably secured to the felly and having relatively deep outwardly-extending flanges, with a shoe rim at the outside of each flange, a tire having resilient ribs in engagement only with the inner faces of the flanges and the tire and ribs otherwise disengaged from the rim, a shoe extending around the tread of the tire having its edges located in the shoe rims, and clamping rings securing the shoe to the shoe rims.

DRIVING-GEAR FOR AUTOMOBILES.—E. G. WHITACRE, Wellsville, Ohio. This invention relates more particularly to the mounting for the driving engines used in automobiles. The style of the engine may vary, but any form wherein the motive power is a gas under pressure will serve. It might be used in internal combustion engines provided any of the well known relief valves were used in conjunction with one or the other of the engines, which would be operated automatically as the automobile is driven in a curved path. The valve would lessen the power stroke on the engine on the inner side of the curved path being followed by the automobile.

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.



Kindly write queries on separate sheets when writing about other matters, such as patents, subscriptions books, etc. This will facilitate answering your questions. Be sure and give full name and address on every sheet.

Full hints to correspondents were printed at the head of this column in the issue of March 13th or will be sent by mail on request.

(12136) A. R. S. says: 1. Why when the moon is growing can one see a bright outline of that satellite, while the inner portion of the circle appears dark? A. When the moon is within two or three days of new, the earth reflects light enough from the sun to make the dark portion of the moon visible. The earth at that time is full as seen from the moon. This is called seeing "the old moon in the new 'moon's arms." The light is called "earthshine." It is described in the astronomies, such as Todd's "New Astronomy," which we send for $1.50. See page 225. 2. Why do moon and sun appear to be much larger when rising and setting? A. The sun and moon seem larger near the horizon by an optical illusion due to contrast. With an instrument they do not measure any larger near the horizon. The sky itself is affected in the same way. Stars seem farther apart. 3. How can I locate the following planets: Mercury, Mars, Jupiter, Neptune, Venus? A. The position of the planets is given each month in our article, "The Heavens in September," etc. The proper thing to do is to become a subscriber to the SCIENTIFIC AMERICAN and have the instruction given in the paper. Neptune cannot be seen excepting with a good telescope. The rest you name may be seen with the unaided eye. Mars is now very bright in the night sky. 4. What size wire will be necessary to wind an ordinary telephone generator for ten volts? How many turns will be required? A. A telephone generator is wound with wire from No. 30 to No. 35, and from 75 ohms to 550 ohms. From this you will see that we cannot tell you what to use. If you would make a generator to work with others, you would better copy one of the others.

(12137) C. L. L. says: Two horses are attached to opposite ends of a rope and are pulling against each other. Both horses are capable of pulling 200 pounds apiece. Is there more strain on the rope with the horses pulling against each other than if one end of the rope is attached to an immovable stake and only one horse pulling it? A. The pull upon the rope with a horse pulling 200 pounds at each end is 200 pounds. One horse is but a post for the other to pull against, and a post can as well be used as a second horse. This anyone can prove by having two persons pull against each other on a spring balance, and then letting one person pull with the balance fastened to a hook on the wall or to a hitching post in the yard. If the balance will indicate all that a person can pull, the experiment will be identical with the one you propose.

(12138) F. S. says: Some time ago we wrote to an electrical supply house asking them whether the numbers in the Brown & Sharp wire tables followed any regular law, and were told that they did not. We are of the impression that the people we wrote to concerning this question must be mistaken, and are writing you, and would like to have you either confirm or deny their statement. A. The sizes of wires by Brown & Sharp's, or as it is better termed, the American wire gage, are not determined by any formula, but are a growth. However, the sizes are such that a wire three sizes larger will have a sectional area about double that of a given wire. This is only an approximation. It is very convenient in electrical work. See our article, "How to Remember the Wire Table," in SUPPLEMENT No. 1,530, price ten cents.

(12139) W. B. H. says: 1. Why is a magneto used to make the spark for a gasoline engine in preference to a small dynamo? A. The field of a magneto is always ready for use, and does not require to build up its magnetism as a dynamo does. 2. Why are the permanent magnets of a magneto divided up into several instead of one large one? A. A compound magnet made from several thin magnets is much stronger than a single magnet of one thick piece of steel.

INDEX OF INVENTIONS

For which Letters Patent of the United States were issued for the Week Ending November 9, 1909,

AND EACH BEARING THAT DATE

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

Adjustable bolt, quickly, N. W. Trautner	939,933
Aeroplane, S. W. Applegate	939,651
Agitator, F. E. Goldsmith	939,905
Agricultural implement, W. B. Estis	939,820
Air brake regulator, C. J. Boerr	939,896
Air brake retaining valve, J. F. Speigel	939,928
Air compressor, F. A. Preuss	939,314
Arrship, B. W. Dysart	939,483
Annunciator case, H. D. Crouch	939,672
Ash tray, S. Grunthal	939,909
Auger attachment, post hole, B. Eisenbraun	939,235
Auger, square hole, J. Nielsen	939,438
Axle, combined steering and driving, J. W. Buchan	939,795
Bag closure, F. McKain	939,736
Bag fastener, Hiering & Fuller	939,256, 939,257
Bag fastener, N. L. Ranum	939,316
Bag frame catch, Hiering & Fuller	939,913
Bale tie straightening and cleaning machine, cotton, Morton & Dismuke	939,532
Baling press, F. A. Bothwell	939,466
Ball grinding machine, C. A. Hirth	939,502
Balloon, R. C. Tilghman	939,644
Ballot box, W. W. Wills	939,367
Band brake, J. N. Lawrence	939,519
Banking machine, A. Clark	939,472
Bath tub attachment, A. Bulin	939,797
Bearing, ball, W. E. Cane	939,391
Bearing, center, H. S. Rader	939,443
Bearing, thrust, A. T. Killian	939,269
Bed covering, W. H. Bender	939,585
Bed, folding, C. R. Gardner	939,241
Bed, wall or cabinet, N. B. Douglass	939,482
Beet blocker, E. Kraak	939,715
Belting, H. Loeb	939,724
Benzoate, manufacturing, E. O. Barstow, 939,584, 939,940,	939,941
Bin. See Display bin.	
Block signaling apparatus, S. A. Wood	939,370

Bluing device, Willcocks & Thorley	939,649
Boat, W. T. Urie	939,878
Bobbin case, L. E. Weaver	939,647
Boiler bracket, W. Withem	939,368
Boiler compound mixer and feeder, Palmer & Baker	939,540
Boiler superheater, locomotive, L. E. Feightner	939,237
Bolt case, R. W. Hubbard	939,694
Boot and shoe polishing machine, H. C. Lowenstein	939,725
Boot or shoe upper, D. Sack	939,639
Bottle, antirefillable, J. N. Landon	939,602
Bottle, non-refillable, E. Ferguson	939,238
Bottle, non-refillable, L. M. Packard	939,300
Bottle, non-refillable, S. Peloso	939,305
Bottle, non-refillable, S. A. Miner	939,430
Bottling machine, J. H. Champ	939,214
Bowling alley amusement device, H. Leighton	939,280
Bowling alley finishing and leveling machine, O. L. Pickard	939,544
Box, H. L. Miner	939,287
Box, E. Langschmidt	939,517
Box filling machine, J. C. Thom	939,455
Box or case, F. J. Kress	939,272
Braiding machine, A. E. Chernack	939,216
Braiding machine, Parks & Wardwell	939,622
Brush guard, A. D. Lockwood	939,522
Buckle, A. Cohen	939,394
Built-up article, W. C. Harlow	939,833
Burette, automatic, S. D. Beard	939,382
Button, cuff, L. A. Gardner	939,680
Button, link cuff, E. W. Morehouse	939,851
Cabinet and display rack, combined, A. E. Baker	939,199
Cake coating machine, P. D. Harton	939,836
Calks, making steel center, J. R. Williams	939,884
Can bottoms, machine for applying, J. C. Thom	939,454
Cans, heading sheet metal, B. Adriance	939,197
Canning apparatus, T. H. Eidson	939,485
Car angle cock holder, railway, L. A. Hoerr	939,421
Car brake, J. W. Johnson	939,701
Car coupling, W. S. Lennon	939,720
Car door, F. X. Malocsay	939,919
Car door, grain, Bickle & McMillan	939,660
Car door operating mechanism, C. A. Lindstrom	939,425, 939,426
Car door operating mechanism, dump, S. Otis	939,298
Car, dump, C. H. Clark	939,588
Car end gate, mine, L. F. Brubaker	939,944
Car fender, M. L. Keizur	939,915
Car fender, J. O'Leary	939,952, 939,953
Car, motor hand, Hovey & Rix	939,423
Car mover, R. F. Hageman	939,249
Car, pay-within passenger railway, A. H. Englund	939,899
Car seat, folding, Farrell & Lewis	939,593
Car ventilator, C. M. Askegren	939,784
Car, weed burning, G. L. O'Neale	939,538
Cars, lumber roller for, E. L. Stocking	939,452
Cars, radiator suspension for motor, G. Enrico	939,961
Carboy, A. J. Miller	939,286
Carboy protector, F. B. Lothrop	939,283
Carbureter, E. A. Dickson	939,481
Carbureter, R. Papanti	939,856
Carbureter, reed air intake regulator for, F. C. Reineking	939,549
Card case or pocketbook, Cummings & Jordan	939,673
Carding machine alarm, E. P. Schmitt	939,750
Carpet fastener, stair, C. W. Kirsch	939,601
Carpet fasteners, tool for detaching, W. H. Boles	939,207
Carpet sweeper brushes, device for cleaning, F. W. Myers	939,290
Carrying and pressing apparatus, C. S. Wheelwright	939,576
Cartridge, blasting, Wolsey & Fussey	939,886
Cash register, W. H. Muzzy	939,289
Catamenial garment, A. L. Brodton	939,943
Cement block machine, Emal & Horn	939,236
Cement kiln, T. A. Edison	939,817
Cement, manufacture of, S. O. Cowper-Coles	939,217
Centrifugal machine, G. N. Goddard	939,904
Chain manipulating tool, J. C. Jensen	939,511
Chair attachment, A. V. & W. H. Jackson	939,841
Chair detachable book rest, Vickers & Henry	939,764
Chair extension arm, Payne & House	939,623
Chairs, adjustable foot rest for Morris, C. L. Greilick	939,827
Chalice, G. Valley	939,960
Chopper. See Cotton chopper.	
Chuck, Pearson & Seward	939,304
Churn and ice cream freezer, combined, W. A. Jones	939,512
Chute, bean, R. A. & H. O. Haenke	939,830
Chute, waste, G. A. Hofmeyer	939,690, 939,691
Circuit breaker, automatic electric, Meter & Rideout	939,730
Clay gathering machine, C. E. Olden	939,855
Cleaner, J. Hadka	939,248
Clothes drier, G. B. Deacon	939,398
Clothes line reel, S. S. Rider	939,862
Clothes line support, G. A. Culbertson	939,811
Clutch, driving and brake, F. T. Gottschalk	939,411
Clutch, pulley, A. H. Cameron	939,663
Coin operated machine, W. W. Rosenfield	939,746
Collar, E. L. Bevington	939,204
Collar machine, horse, Collett & Jackson	939,218
Collar supporter, B. C. Bubar	939,388
Compass, beam, F. S. Hurst	939,597
Compasses, apparatus for recording, Schuette & Dedrick	939,866
Compasses, chart for recording, E. Schuette	939,867
Composition of matter, C. F. Ackerman	939,938
Computing machine, J. M. Daly	939,221, 939,479
Concrete beams, girders, and arch ribs, constructing and erecting reinforced, F. W. Skinner	939,642
Concrete block machine, O. H. Davis	939,225
Concrete block machine, C. E. Phillips	939,543
Concrete conveying and mixing cart, F. H. Lathrop	939,275
Concrete mixer, M. H. Reed	939,629
Concrete mixers, power charging device for, A. E. Smith	939,341
Concrete, reinforced, F. Thun	939,567
Concrete reinforcing bar, J. M. Dudley	939,403
Concrete reinforcing, holder for, J. W. Reed	939,743
Concrete tile mold, portable, F. M. Wiltrout	939,578
Conveyer bucket, J. B. Gibson	939,243
Coop, poultry, C. I. Bumpass	939,798
Copper or copper-nickel mattes, treatment of, J. T. Carrick	939,947
Cornet, Z. A. Meredith	939,285
Corset, A. M. C. & M. M. J. Serruys	939,868
Corset, J. A. Daley	939,893
Cotton chopper, I. F. Harris	939,253
Cotton chopper, S. L. Martin	939,429
Cotton separator, W. A. Patterson	939,303
Craft adapted to travel in a resisting medium, C. M. Stanley	939,344
Crate, folding, J. I. Hull	939,250
Crate, folding, F. C. Edson	939,484
Crate, shipping, H. N. Backus	939,582
Credit system, J. O. Greenwald	939,245
Crown matrices, machine for contouring, F. O. Jaques, Jr.	939,261
Cuff, E. L. Bevington	939,203
Cuff holder, W. S. Bachman	939,464
Cultivator, S. Waltman	939,766
Curtain bracket, C. B. Dumond	939,815
Cushion stuffing device, C. A. Lee	939,278
Cutting, heating, and pulverizing machine, C. M. Lauritzen	939,276
Cutting tool, A. E. Waller	939,359
Dental inlay holder, B. F. Copp	939,476
Dental tooth clamp, G. A. Harper	939,834
Detonator, C. A. Woodbury	939,371
Die, F. H. Hotchkiss	939,505
Die stock, F. E. & F. W. Wells	939,648
Dies, forming, E. D. Boyce	939,468
Disk drill, S. E. Davis	939,812
Display bin, A. H. Plumer	939,546
Display box, A. & J. Eichhorn	939,234
Display box and tray, E. M. Lewis	939,721
Display device, heat operated, J. R. Keller	939,705
Display holder, J. Brauchli	939,942
Distilling alcohols and other volatile liquids, A. G. Waterhouse	939,361
Ditch digging machine, E. Jeschke	939,598
Door fastener, J. Auger	939,785

WANTED.—One third-class mechanical draftsman at $4.48 per diem. A competitive examination will be held November 19, 1909, to fill the above position. For further information address "Commandant, Navy Yard, Norfolk, Va."

WANTED.—One first-class laboratorian at $3.52 per diem. A competitive examination will be held November 22, 1909, to fill the above position. For further information address "Inspector of Ordnance in Charge, Naval Torpedo Station, Newport, R. I."

HOW TO MAKE AN ELECTRICAL Furnace for Amateur's Use.—The utilization of 110 volt electric circuits for small furnace work. By N. Monroe Hopkins. This valuable article is accompanied by detailed working drawings on a large scale, and the furnace can be made by any amateur who is versed in the use of tools. This article is contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1182. Price 10 cents. For sale by MUNN & Co., Inc., 361 Broadway, New York City, or by any bookseller or newsdealer.

NEW BOOKS, ETC.

RAILROAD STRUCTURES AND ESTIMATES. By J. W. Orrock, C.E. New York: John Wiley & Sons, 1909. 8vo.; 270 pp.; 93 figures. Price, $4 net.

Under the title of Railroad Structures and Estimates, the intention is to cover in brief and concise form the numerous subjects that enter into the Engineer's Estimates of Railroad Building, for the purpose of ready reference, as to general construction and cost, on a business rather than a technical basis. As it is impossible to give the data to suit all conditions, the weights, quantities, and cost are given in detail in most instances, and may be varied as desired.

FRAMING. By William A. Radford. Assisted by Alfred S. Johnson, A.M., Ph.D., and Bernard L. Johnson, B.S. Chicago: The Radford Architectural Company. New York: Industrial Book Company. 12mo.; 388 pp. Price, $1.

To the carpenter especially, and to all others interested in wood in a structural way, this is a most important subject. The framing of a building has been likened to the skeleton of the human body. It is important that it be put together properly and connected up in the right way. The whole stability and success of the edifice depend on the strength and proper arrangement of the supporting frame. The present work is divided into four heads: (1) Timber framing for houses; (2) barn framing; (3) framing of factories, stores, and public buildings; (4) miscellaneous framing, including strength of timbers and the principles of truss construction. The work, accordingly, will be taken up in this order. In some cases certain subjects of an introductory or explanatory nature will be discussed, although, strictly speaking, they are no part of "framing" and possibly are not done by the carpenter. Yet a knowledge of them will add to the carpenter's equipment, and will help him to do his work more intelligently.

METAL SPINNING. Practical Instructions in a Fascinating Art. By Fred D. Crawshaw, M.D. Chicago: Popular Mechanics, 1909. 18mo.; 72 pp. Price, 25 cents.

Like so many of the other old-time crafts, the one of metal spinning has partially gone into disuse because of commercial competition and the failure of the younger generation of men to familiarize themselves with the handwork of their fathers. In the United States it is only in the larger cities that one finds an artisan who does metal spinning. When such a person is found, he is usually occupied in producing forms out of thin metal that require great care in making and are difficult to produce with the stamp or press. It is believed in some circles, particularly among metal spinners, that the pressing and stamping of metal can never fully take the place of spinning it. The object of this book is to assist amateurs in an interesting art, and also give practical metal spinners additional instruction.

THE SCIENTIFIC AMERICAN BOY AT SCHOOL. By A. Russell Bond. New York: Munn & Co., Inc., 1909. Pp. 338. Price, $2.

One of the most interesting and helpful of recent books for boys was "The Scientific American Boy," by the accomplished author of the present volume, in which was described the adventures of a youth of mechanical turn of mind with his companions in a vacation season. Mr. Bond now carries the story further, places his hero in boarding school, and invites his readers to enjoy his later adventures, and profit by them as well. It is pre-eminently a boy's book for boys, for boys with sound bodies and healthy minds, who like to be out of doors and making things with their hands—just the kind of boys one reads about and would like to have or know, but who sometimes seem rather scarce when one scans the list of one's boy acquaintances. Mr. Bond has been more fortunate than some of us, for his boys are fine young chaps, full of life and vigor and endowed with mechanical turns of mind that must have given some of their elders pause. But at all events they are not prigs, but good, wholesome boys of the right sort; and if one does not meet them in the streets every day, it is good to know there are such young people and to read about them in Mr. Bond's agreeable pages. The book is not at all a history of school life, but might be scientifically described as an essay on surplus energy. It deals, not with what the boys did in school hours, but what they did outside of them. These, of course, are the real hours of a boy's life, the time in which he is free and unrestrained, in which he seeks to please himself and work off some of that boy energy that is sometimes not always so appreciated by his elders as it might be. So the book brims over with good nature and ingenuity and with the breath of outdoor activity. If the mechanical performances of these young fellows seem sometimes a bit audacious, we may rest assured, with the author's certificate, that they never did anything boys of real earnestness and ingenuity could not have accomplished. The careful parent may perhaps be disposed to pause a little at the flying machine, but—read Mr. Bond and find out what happened. The book is agreeably written with a fine sympathy for boy life and boy activity. It abounds in practical ideas and suggestions, and will prove a veritable boon to the parent

FLY PAPERS.—FORMULAS FOR Sticky Fly Papers are contained in SCIENTIFIC AMERICAN SUPPLEMENT Nos. 1057 and 1324. Each issue contains several recipes. Price 10 cents each, from this office, and from all newsdealers.

who wishes to interest his boy in the value of thinking and doing. The numerous illustrations are extraordinarily helpful and practical.

HANDY MAN'S WORKSHOP AND LABORATORY. Compiled and edited by A. Russell Bond. New York: Munn & Co., Inc., 1909. Pp. 467. Price, $2.

This is a book of first-rate importance and interest, and is a notable contribution to practical work from the office of the SCIENTIFIC AMERICAN. It is a book that not only aims to be practical, but which is practical from cover to cover. It is a collection of ideas and methods, of ways to do things, of what to do and how to do it as proposed, tried out and tested by resourceful men, both amateur and professional. It contains, in short, upward of a thousand ingenious "kinks," ideas, and hints, useful to the household, attractive to the mechanic, and interesting to everyone who loves to tinker and make articles of use and value, or in whom the spirit of experimentation is inbred. Unlike many books of this kind, however, this is no collection of scientific experiments. In fact, it is not an experimental book at all, but a treatise of useful things. It is not concerned with theory, but with fact. It deals, not with what will give curious results, but with achievements of real value and utility. And this it does in the most direct way possible. The descriptions of methods are concise and clear, and at every point they are supplemented with drawings and diagrams, many of which are in the form of working drawings that show, in a very precise and definite way, just what to do, and how to do it. There are 370 such illustrations in the book, very clearly drawn and lettered, and illustrations that illustrate in the best sense of the word. The origin of the book is a department established some time ago in the SCIENTIFIC AMERICAN, devoted to the interests of the "Handy Man." A flood of suggestions poured in from a multitude of sources, and the best of these have been reproduced in the present volume. It is, however, in no sense a reprint from the SCIENTIFIC AMERICAN, since much of its contents is now printed for the first time. Mr. Bond has devised a book that will very successfully appeal to a very wide circle. The amateur workman is attracted by the opening chapter on fitting up a workshop. Both he and the professional mechanic will find a host of suggestions on the greatest diversity of topics in the next chapter on Shop Kinks. Both again will be interested in the very valuable chapter on the soldering of metals and the preparation of solders and soldering agents. Here is a long list of formulas for solders of tried and tested accuracy. The professional mechanic is especially appealed to in the fourth chapter on the Handy Man in the Factory, while still another class of readers will be interested in the fifth chapter on the Experimental Laboratory. Electricity is very fully treated in the sixth chapter, and the householder will find a wealth of suggestion in the numerous devices described in the seventh. The sportsman will be helped with the hints of the eighth chapter, while the final chapter on flying machines is of the greatest possible present-day interest. It is, in short, a book of the widest general interest, and both editor and publisher are to be heartily congratulated on the success obtained in this very valuable publication.

CONCRETE POTTERY AND GARDEN FURNITURE. By Ralph C. Davison. New York: Munn & Co., Inc., 1909. Pp. 196. Price, $1.50.

The publishers' statement that this is a new book on a new subject is very true. Neither concrete pottery nor concrete garden furniture is in itself new; but a book dealing with their making by the amateur has not heretofore been published, and hence this volume amply supports the claim of novelty made for it. Readers of American Homes and Gardens have already acquired some familiarity with Mr. Davison's guidance in this fascinating art, and while the articles he contributed to these pages have been reproduced in this book, they have been given a new form and much new and additional matter has been added to them. The illustrations have been greatly increased in number, and the whole given the form of a practical handbook. Books on handicraft of any kind are apt to fail, more or less, in the inadequacy of their directions. The author, too, often knows so well what to do and how to do it as not to realize that those who have not followed the work before may not quite follow what are supposed to be careful directions. Mr. Davison has been fully alive to this misfortune in books of this kind, and has, therefore, taken especial pains to make his descriptions most accurate and detailed. No other method is, of course, really feasible; but it is seldom this sort of thing has been so well done as in his pages. The careful text is supplemented with illustrations as carefully made and lettered, so that the book is a genuine handbook of craftwork, thoroughly practical in every part, and admirably adapted to its special purpose of explaining every portion of the work involved in the production of the various articles described. Mr. Davison has opened up quite a new field for the amateur. The materials required are abundant and cheap; the methods, in the simpler pieces at least, easy and devoid of difficulties. And the work is not only pleasant, but the results are agreeable and decorative. The author thoroughly knows and understands his subject, and has the gift of imparting his knowledge to his readers.

Door lock, combination, Brown & Roberts	939,210
Doubletree, four-horse, M. McEvoy	939,534
Dough mixing machine, C. Chambers, Jr.	939,392
Draft appliance, O. Atkinson	939,378
Dredge, C. W. Diehl	939,227
Dress shield, R. S. Kleinert	939,712
Drilling machine, J. W. Green	939,907
Drinking fountain for birds, fowls, and animals, W. B. Gething	939,493
Drinking glasses, bowls, cups, spoons, etc., labial protecting means for, L. Jancey	939,698
Drinking vessel, sealed, J. C. Schleicher	939,554
Drip receiver, H. O. Bessette	939,202
Drum batch mixer, W. R. Tuttle	939,762
Eaves trough, G. Hensler	939,838
Educational device, A. S. Kilroy	939,515
Egg box, folding, C. T. Bloomer	939,661
Egg tester, J. W. Billings	939,205
Electric conductor coupling, J. L. Hinds, 939,501,	939,689
Electric discharges, apparatus for producing, H. Pauling	939,441
Electric machine for ignition purposes, magneto, Vandervell & Hoffman	939,357
Electric motor, alternating current, J. T. Schaaff	939,331
Electric switch, F. Hoerle	939,258
Electric switch, J. H. Rusby	939,863
Electric transmission of messages, G. Sellers	939,339
Electrical currents, apparatus for strengthening weak, A. Pollak	939,625
Electrical transmission of graphic messages, G. Sellers	939,338
Elevator feed wheel, liquid, J. F. Barker	939,380
Embroidering machine, J. Brunnschweiler	939,471
Engine. See Explosive engine.	
Engine ignition device, explosive, A. F. Clarke	939,805
Engines, combustion device for doing away with exhaust gases in combustion, K. & E. Lehmann	939,844
Envelop, L. R. Swett	939,876
Envelop, safety, R. Hasel	939,949
Excavating machine, D. W. Miller	939,731, 939,850
Expansion bolt, Vernon & Morningstar	939,457
Explosive engine, A. J. Cole	939,669
Eyeglass guard, C. L. Merry	939,527
Eyeglasses, S. J. Clulee	939,668
Fabrics, machinery for manufacturing textile, W. Bowker	939,467
Fan, L. L. Korach	939,916
Fan, electric motor, N. A. Locke	939,723
Fare recorder, F. Batt	939,789
Fastener setting machine, W. E. Bennett	939,200
Faucet and hose coupling, H. P. Towle	939,931
Faucet hose coupling, H. P. Towle	939,932
Feed box, A. D. Myers	939,533
Feed water injectors, attachment for, C. Phillips	939,310
Feed water regulator, C. Brent	939,889
Fence clamp, A. C. Harrison	939,835
Ferrule, waste, J. Klein	939,711
Fiber cleaning apparatus, J. K. Toles	939,569
Fifth wheel, J. Herby	939,254
Film dryng machine, F. B. Thompson	939,350
Filter, A. G. Sheak	939,448
Filter, J. W. Hammett	939,497
Filter, water, Hisey & Wardle	939,418
Finger ring, L. E. Sadler	939,564
Fire alarm test apparatus, J. G. Nolen	939,292
Fire escape, J. E. Andrews	939,375
Fire pail, air-tight, C. F. Crane	939,220
Fire protection signal system, Nolen & Shepherd	939,293
Firearm, automatic, W. J. Whiting	939,882
Firearm sight, W. J. C. Downey	939,813
Flashlight apparatus, J. W. Underwood	939,354
Float coupling, C. Dargent	939,397
Flue, metallic, L. D. Armstrong	939,652
Fluid pressure regulator, F. H. Brown	939,470
Flushing tank, C. C. Lindley	939,521
Fly screen, E. Curtiss	939,395
Folding seat, W. G. Winans	939,937
Folding table, Forbes & Singer	939,824
Forging press, C. Mercader	939,920
Frangible receptacle, J. L. Watson, Sr. & Jr.	939,572
Fruit cooling apparatus, M. W. Groom	939,685
Fruit cutter and squeezer, D. H. Mosteller	939,615
Fruit packing device, F. B. Pease	939,740
Furnace, W. B. Merkel	939,526
Furnace, U. Wedge	939,934
Furnace charging apparatus, blast, W. & A. Crooke	939,671
Furring strip, F. E. Sagendorph	939,749
Fuses of projectiles, safety device for the, E. Schneider	939,447
Game apparatus, L. T. Young	939,580
Game element carrier, coin controlled, R. F. Pendleton	939,306
Garment, P. B. Sherman	939,871
Garment holder, C. C. Livingston	939,606
Garment presser, C. A. Friedrich	939,408
Gas burner, B. A. Geurink	939,242
Gas burner, self-closing, C. A. Johnson	939,263
Gas generator, acetylene, F. J. Moss	939,614
Gas manufacturing apparatus, B. Loomis	939,282
Gas or oil burner, O. J. Heindel	939,415
Gas producer, G. L. Morton	939,288
Gas regulator, M. Graetz	939,684
Gasoline apparatus, storage, H. E. Grant	939,596
Gasoline supply, strainer and separator for, G. M. Schebler	939,551
Gate, F. B. Tice	939,568
Gear, transmission, W. S. Hovey	939,914
Gear, variable speed transmission, E. P. Cowles	939,589
Gears, draw bar and yoke attachment for draft, Bundy & Acker	939,390
Gearing for stentering machines, A. E. Simpson	939,959
Gearing, frictional, L. C. Arnaud	939,653
Generator and mixer, E. R. Wilson	939,779
Glass cutting tool, J. Lamb	939,843
Glazier's point, C. A. Buffat	939,796
Governor, N. C. Bassett	939,656
Governor for internal combustion engines, W. M. Power	939,923
Grain separator, W. P. Silver	939,449
Graphophone horn and record case, combined, W. Smith	939,753
Grass cutting device, W. S. Hayden	939,837
Grate, C. F. Butler	939,945
Gun carriage for field ordnance, J. A. Deport	939,399
Gun stock, L. F. Kennedy	939,707
Hair tonic, F. W. E. Muller	939,431
Hame and trace connection, F. F. Hodges	939,420
Hame fastener, G. W. Reyer	939,321
Hammer, pneumatic, H. H. Grobes	939,828
Handle, G. A. Schehr	939,332
Hat carrier, G. H. Wheary	939,364
Hat holder, W. T. Truitt	939,352
Hat protector, W. J. Stewart	939,874
Hatchet, W. S. Ward	939,458
Hay sling, J. M. Boyd	939,469
Head rest, J. Barker et al	939,655
Headlight, locomotive, Hamby & Butcher	939,832
Heat, composition of matter for the generation of, F. J. Tone	939,930
Heat generating composition, F. J. Tone	939,570
Heater. See Milk heater.	
Heater, A. L. Schellhammer	939,925
Heel building machine, W. Paris	939,302
Heel compressing machine, G. B. Grover	939,686
Hinge joint for lockets, etc., E. Morris	939,530
Hinge structure, gate, Kendrick & Carroll	939,706
Hog trap, J. Dobry	939,228
Hoisting apparatus, H. W. Bachelder	939,955
Hoisting or conveying apparatus, A. E. Norris	939,294
Hoisting or logging device, W. H. Corbett	939,670
Horse blanket, E. S. Burwell	939,662
Horse detacher, W. J. S. Ritscher	939,745
Horseshoe, I. C. Patsch	939,440
Horseshoe, Cogswell & MacCrone	939,473
Horseshoe bending machine, D. Freuler	939,901
Hose coupling, V. P. McVoy 939,434 to	939,437
Hose coupling, air, E. L. Brown	939,211
Hosiery turner, F. Pope	939,312
Humidifier, M. Tillotson	939,351
Ice cream can, L. H. Scheck	939,865
Indicator, W. Houghton	939,422
Inseam trimming machine, Hawkins & Bourgeois	939,498
Insulating shaft coupling, J. B. Grundy	939,829

Internal combustion engine, W. M. Appleton 939,376
Internal combustion engine, A. J. West..... 939,459
Iron oxid scale, electrolytically removing, Danforth & Jones 939,223, 939,224
Key fastener, W. A. Loveland 939,607
Kinetoscope, A. C. Roebuck 939,634
Kinetoscopic apparatus, J. E. Lagergren.... 939,274
Kitchen utensil, F. H. Hamblin..... 939,251
Kitchen utensil, J. Saul 939,329
Knife blade, detachable, M. H. Sterling.... 939,346
Knitting machines, lace pattern mechanism for straight, Salzer & Walther..... 939,328
Lacing tips and the like and composition for the same, fabric for, G. W. Prentice... 939,313
Lamp, carriage, H. Blau..... 939,385
Lamp, gas or vapor electric, P. C. Hewitt.. 939,912
Lamp, mercury and other vapor electric, Kent & Lacell 939,708
Lamp, miner's electric, H. Remane..... 939,630
Lantern, J. H. Pence 939,542
Lantern and heater, combination, O. H. Armington 939,377
Last, locking collapsible, C. F. Pym..... 939,860
Last, shoe, A. J. Buch 939,212
Lathe tool post, C. L. Libby 939,722
Lawn rake, rotary, C. Walte..... 939,765
Lead joint runner, W. Vanderman..... 939,356
Lens carrier, lantern, F. D. Spear..... 939,754
Lens grinding machine, automatic prescription, E. O. Mattern 939,845
Leveler, automatic, E. Woodward..... 939,372
Lever, J. R. Weatherly 939,574
Lifting jack, F. M. Allerton..... 939,374
Lighting and extinguishing device, automatic, A. J. Bedford..... 939,790
Line casting machine, J. McNamara..... 939,291
Line casting machines, keyboard mechanism for, J. R. Rogers..... 939,325
Lino slug trimming machine, S. R. Carter.. 939,800
Linotype machine, F. Johannesen..... 939,262
Liquid as a motive power, method and means of utilizing, E. Taylor..... 939,757
Liquid cooling and dispensing apparatus, G. W. & W. H. Fulper..... 939,954
Liquid dropper, E. K. Scott..... 939,556
Liquid fuel burner, B. Moore..... 939,613
Liquid fuel lighting system, A. Burton... 939,799
Lock bolt, L. & D. Moeller..... 939,921
Lock key, I. C. Freud 939,679
Locks, seal attachment for, C. H. Johnson. 939,699
Loom filling detector mechanism, G. F. Hutchins 939,696
Loom filling detector mechanism, weft replenishing, E. H. Ryon..... 939,954
Loom pattern mechanism, Owen & Pratt... 939,299
Loom picker stick mechanism, L. P. Sherman 939,560
Loom shuttle, Cunniff & Rafferty..... 939,892
Loom, weft replenishing, E. H. Ryon..... 939,326
Looms, filling thread cutting device for weft replenishing, B. F. McGuiness..... 939,433
Looms for weaving, beating up mechanism of, W. Hollas 939,503
Loss preventing device, M. T. Fish..... 939,487
Lubricant, J. W. Watkins..... 939,646
Lubricating device, F. R. Paine..... 939,301
Magneto generator, R. H. Hassler..... 939,910
Mail bag deliverer, S. B. Colbert..... 939,806
Mail catcher and deliverer, railway, W. T. Sebree 939,557
Mail delivering and receiving device, J. A. Bossie 939,793
Mail delivering apparatus, J. T. Howard.... 939,259
Mail delivering appliance for railway trains, H. J. Hill 939,688
Mail pouch catching and delivering apparatus, J. A. Olbon 939,738
Manhole closure, C. C. Puffer 939,628
Massage and air compressing machine, J. B. Fey 939,822
Match box, automatic, J. G. Hanna..... 939,252
Match holder or safe, H. M. King..... 939,710
Match machine, W. R. Swett 939,348
Match safe, pocket, J. F. Beatty..... 939,657
Matrices, dovetail notch chamfering machine for, H. A. Reynolds 939,632
Matrix channeling machine, H. A. Reynolds 939,631
Matrix combination punching machine, H. A. Reynolds 939,633
Measurer, liquid, C. C. Allen 939,198
Metal box, Klenk & Fink, reissue..... 13,038
Metal shears, G. Potstada 939,627
Metallic tie, T. B. Bradford 939,794
Micrometer, H. Spahn 939,562
Milk, desiccating, F. X. Govers..... 939,495
Milk heater, H. C. Root..... 939,936
Miter gage, Erikson & Wikander..... 939,405
Mold, J. N. Erixon 939,819
Molding flask, J. D. Millar..... 939,849
Molding mechanism, W. Zimmerman..... 939,581
Mop, Wichmann & Rich..... 939,883
Mower trimming attachment, lawn, H. Smith 939,926
Music turner, W. & R. Mark..... 939,525
Musical instrument strings, holder and protector for, O. J. Muller..... 939,734
Musical instrument tracker mechanism, T. P. Brown 939,387
Net frame, landing, G. M. Barnes..... 939,381
Nut lock, W. Atkins..... 939,654
Oil and grease gun, combined, F. J. Ball... 939,465
Oil burner, C. Eckland 939,816
Oil cake forming machine, A. W. French... 939,492
Oiling device for gas meter diaphragms, automatic, J. R. Daly..... 939,675
Ore separator, magnetic, W. D. Ludwick... 939,523
Oven, bake, B. A. Geurink 939,410
Packaging machine, B. W. Tucker..... 939,353
Packing and display receptacle, W. E. Collins 939,807
Painting machine, wheel, J. Heinz..... 939,416
Paper box blank machine, J. R. Van Wormer 939,571
Paper cutter and printer, automatic roll, G. V. A. Pine 939,545
Paper dish-making machine, I. Bertin..... 939,888
Paper feeder, automatic, J. Hren..... 939,260
Paper shells, machine for making, J. Chesney 939,948
Pedal and panel mechanism, T. P. Brown.. 939,386
Pen, fountain, H. J. Upton 939,456
Pen holder, R. J. Cox 939,810
Pendant, A. Jacques 939,510
Percolator, J. B. Livingston 939,281
Perforator, casing, Lapp & Harrison..... 939,917
Permutation lock, O. Anderson..... 939,887
Phonograph, F. E. Holman..... 939,692
Piano violin, J. Bajde..... 939,786
Pianos, repeating action for grand, F. A. Wessell et al. 939,362
Pianos, sostenuto attachment for, E. Peterson 939,309
Picture hanger, adjustable, J. Degan..... 939,226
Picture machines and phonographs, synchronizing device for, P. Seiler..... 939,337
Pipe and cleaner therefor, M. A. Hadcock.. 939,247
Pipe cleaning apparatus, G. A. Lutz..... 939,608
Pipe coupling, F. C. Pahlow 939,539
Pipe joint, flexible, W. A. Greenlaw..... 939,908
Planter and harrow, combined, J. M. Tucker 939,761
Planter, corn, C. W. Lanham 939,717
Planter, corn, L. E. McQuitty..... 939,853
Plow, H. H. Julich 939,704
Plow, reversible, W. Koehler..... 939,271
Plow, reversible, J. J. Nall..... 939,617
Plowing machine, Kuster & Niemann..... 939,716
Pneumatic despatch system, P. R. Shill... 939,872
Pot and kettle cover, I. Chapman..... 939,802
Powder cutting machine, C. Dobbs..... 939,895
Powder distributer, enameling, W. Lindsay. 939,918
Press, L. H. Conner 939,475
Press, H. G. Miller 939,732
Press button, R. Scheewe 939,446
Pressure control, automatic, J. H. Smith... 939,752
Pressure generating and applying device, hydraulic, J. W. Nelson..... 939,535
Pressure generating, controlling, and applying apparatus, hydraulic, J. W. Nelson. 939,737
Printer's galley, A. S. Orchard..... 939,620
Printing and issuing machine, ticket, R. North 939,297
Printing and issuing tickets and registering fares, machine for, R. North..... 939,295
Printing machines, sheet inverting apparatus for use in connection with, T. R. G. Parker 939,541

THE WELLCOME TROPICAL RESEARCH LABORATORIES AT KHARTUM.

(*Continued from page 375.*)

under the direction of Dr. C. N. Wenyon, proto-zoologist to the London Tropical School of Medicine, and proved such a complete success that the work in this direction is being considerably developed.

Entomology is another very promising science that has claimed considerable attention in these laboratories. There is an immense field in the Sudan for an economic entomologist, and the scope and variety of the work done is almost bewildering. There are pests of every kind infesting every living being and plant, and the task of reducing these would at times seem almost hopeless. Every year taxes, aggregating large sums, have to be remitted owing to the ravages of *Aphis sorghi* and other pests. Fatalism, natural indolence, and improvidence often prevent the natives, unless supervised, from taking those active measures so necessary in cases of insect infestation of crops. These labors have also a direct bearing on tropical medicine, as results have abundantly testified.

In the field of anthropology very valuable work has been accomplished. The laboratories are recognized as a working place for fellows of the Carnegie Research Fund; and on the recommendation of the director, Dr. A. MacTier Pirrie was appointed anthropologist to the Institution. In addition to his medical qualifications, Dr. Pirrie held a special degree in anthropology, and was particularly well versed in physical work. Although he labored under the great disadvantage of not knowing the country, he undertook and successfully completed remarkable journeys into the totally unknown Burun country, which lies between the White Nile and Abyssinia. He lived and moved among the tribes inhabiting this territory, and his method of handling the natives was highly appreciated by the government. By his free movement among them he was able to acquire extensive data of their life, manners, and customs of the most highly prized character. Unfortunately, these expeditions proved fatal to the young, enthusiastic investigator. During one journey he contracted an indigenous disease propagated by the parasite of kala-azar. He was prostrated and invalided home to Scotland, but died six months later before he had the opportunity of setting out the results of his work. His notes and observations, as well as those of archæological and ethnological aspect, were worked up by competent authorities, and have thrown much light upon a people and their country about which nothing has previously been known.

The chemistry section has received as much attention as tropical medicine, for it has an important bearing upon the commercial development of the country. The principal fields of investigation in this direction have been Sudan gums, food-stuffs, and seeds, as well as water supply from the Blue and the White Nile and wells. The study of gums has been particularly exhaustive. The Sudan has extensive forests of gum trees; in fact, such constitutes one of its staple products. Inquiry showed that comparatively little was known about gums, so that great attention was concentrated upon this subject. After some four years of labor, the laboratories have made some valuable additions to the chemistry of this commodity, and it is hoped that their labors may result in placing the Sudanese gum industry upon a sound basis.

Unfortunately, on May 11th, 1908, the laboratories suffered a heavy calamity in a fire, which breaking out in the photographic dark room, practically gutted the building, except the library, directors' room, and one or two other departments. Not only was a very large quantity of equipment destroyed, but all the trypanosomiasis specimens were lost, together with the records of two years' work on the subject. Nearly all the paraffin blocks prepared during the previous

(*Concluded on page 383.*)

Classified Advertisements

Advertising in this column is 75 cents a line. No less than four nor more than 10 lines accepted. Count seven words to the line. All orders must be accompanied by a remittance. Further information sent on request.

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. There is no charge for this service. **In every case it is necessary to give the number of the inquiry.** Where manufacturers do not respond promptly the inquiry may be repeated.

MUNN & CO., Inc.

BUSINESS OPPORTUNITIES.

ANYONE, anywhere, can start a mail order business at home. No canvassing. Be your own boss. Send for free booklet. Tells how. Heacock, 1279, Lockport, N. Y.

Inquiry No. 8868.—Wanted to buy nickeloid for buttons.

HELP WANTED.

WE WANT LOCAL REPRESENTATIVES in every city, also salesmen to handle a lighting system which makes and burns its own gas. Much cheaper and superior to gas or electricity. For further particulars address Gillett Light, 9 W. Michigan St., Chicago.

Inquiry No. 8960.—For the address of the Windsor Mfg. Co., manufacturers of waterproof collars and cuffs.

WANTED.—Marine Engineer with capital to invest, capable of taking management of machine shop in steel ship building plant now under construction. For particulars address Post Office Box 64, Vancouver, B. C.

Inquiry No. 8918.—For manufacturers of "Wydt's Electro-Catalytic Sparking Plug."

PARTNERS WANTED.

WANTED.—Partner with sufficient capital or a business firm or corporation to manufacture article under Patent No. 855,032 on a royalty basis or for sale. Goods are staple and cheaply made. Partner, Box 773, N. Y.

Inquiry No. 8987.—Wanted, the manufacturers of the Van Winkle Woods & Sons, and the Weber power meters.

PATENTS FOR SALE.

FOR SALE.—Patent No. 936,141. Improvements on airships and aeroplanes. For further information write to A. E. G. Lubke, 852 Clayton Street, San Francisco, Cal.

Inquiry No. 8996.—Wanted addresses of manufacturers of machinery for working orange wood manicure sticks.

FOR SALE. Patent No. 900,457. An improved lathe rest for holding cylinders while being bored in an engine lathe. For further particulars address A. E. Whiting, Weston, W. Va.

Inquiry No. 8990.—For information regarding shoes not made of leather but similar to the same and are as durable.

PATENT FOR SALE.—Combination trunk and typewriter desk; a very useful device for travelers. The change can be made in a minute from a trunk to office desk, with typewriter in place, and pigeon hole annex; remove typewriter and put in its place a looking glass, and you will have a perfect dressing table, useful for either sex. I will sell this patent outright or grant license to manufacture on royalty. U. S. Patent No. 917,161, April 6, 1909. Address M. R. Schultze, Southampton, N. Y.

Inquiry No. 9014.—For manufacturers of machinery, supplies, etc., to equip a small plant for the manufacture of iridium-tipped gold nib making for fountain pens.

THE SANBORN BAG LIFTER. A device to assist in handling bags of grain, cement, etc. Saves the fingers and avoids damage to bag. Sample sent free on request. H. & E. Sanborn, Portland, Maine.

Inquiry No. 9016.—Wanted, machinery necessary for an installation of a plant for refining salt by a modification of the Bessemer process.

FOR SALE.

FOR SALE.—Engine lathe, swings 9½ in., takes 25 in. between centers. Complete with full set change gears to cut all size threads, 3 to 40 in. Price only $43.50. Address L. F. Grammes & Sons, Allentown, Pa.

Inquiry No. 9023.—Wanted, to buy silk machines from re-reeling, twisting, doubling, to the final process of making it into clothes.

SITUATIONS WANTED.

MECHANICAL ENGINEER.—Graduate Karlsruhe Technical University; 27 years of age; two years practical experience, with excellent references desires immediate employment. Address R. F. Seubert, 109 Garfield Place, Brooklyn.

Inquiry No. 9025.—Wanted, address of rubber manufacturers in Germany.

MISCELLANEOUS.

"LIGHT, HEAT, MAGNETISM AND ELECTRICITY are all one and the same thing." If you want to know what they are, send fifty cents for a copy of this pamphlet to A. M. Howland, El Paso, Texas.

Inquiry No. 9028.—Wanted, to buy a washing machine that is run by a coil spring motor.

HAIR GROWS when our Vacuum Cap is used a few minutes daily. Sent on 60 days' free trial at our expense. No drugs or electricity. Stops falling hair. Cures dandruff. Postal brings illustrated booklet. Modern Vacuum Cap Co., 556 Barclay Block, Denver, Colo.

Inquiry No. 9029.—Wanted, catalogues and all information on machinery for braiding straw in manufacturing straw hats.

LISTS OF MANUFACTURERS.

COMPLETE LISTS of manufacturers in all lines supplied at short notice at moderate rates. Small and special lists compiled to order at various prices. Estimates should be obtained in advance. Address Munn & Co., Inc., List Department, Box 773, New York.

Inquiry No. 9034.—For manufacturers of machinery that could reduce stumps to kindling wood.

A LIST OF 1,500 mining and consulting engineers on cards. A very valuable list for circularizing, etc. Price $15.00. Address Munn & Co., Inc., List Department, Box 773, New York.

Inquiry No. 9036.—Wanted, the address of the manufacturers of "Cycle Ball Bearing Suspenders."

Inquiry No. 9038.—Wanted, the address of the Chipman Electric Purifying Co.

Inquiry No. 9042.—Wanted the addressof Farney Safety Razor Co.

Inquiry No. 9043.—Wanted the address of the manufacturers of mirrors that are transparent when the light in the rear is stronger.

Inquiry No. 9044.—Wanted to buy outfits necessary for agate polishing.

Inquiry No. 9045.—Wanted the address of the International Lumber and Development Co., manufacturers of hardwood.

Printing plate, C. Owens	939,739
Printing press, multiple, A. Scheuerer, Jr.	939,553
Projectile, H. M. Gleason	939,682
Pulverizer, M. J. Williams	939,769 to 939,778
Pump, Heimann & Flatow	939,911
Pump, air lift, F. G. Kimball	939,270
Pump, blower, and the like, centrifugal and similar, W. Scheurmann	939,333
Pump bracket, L. A. Washburne	939,360
Pump or apparatus for raising water by means of compressed air, pneumatic, T. O. Perry	939,307
Punch, metal, W. C. Robinson	939,324
Punching machine, rotary, F. Koelsch	939,958
Purse or bag frame, Hiering & Fuller	939,255
Puzzle, A. Schesnack	939,552
Puzzle, base ball, T. Mooney	939,612
Quadrant adjustment, split switch, J. L. Soutar	939,561
Quebracho extract, treatment of, Redlich & Wladika	939,742
Quoin, M. Muehler	939,950
Race strap, L. B. Garrison	939,902
Rail, N. Rendleman	939,319
Rail fastening, J. Hitzert	939,419
Rail joint, E. J. Frost	939,240
Rail support, G. M. Cote	939,477
Rail tie, A. J. Chambliss	939,801
Rails, manufacturing, N. Rendleman	939,320
Railway crossings, groove filling device for street, P. K. Young	939,463
Railway rail joint, H. T. Fiske	939,239
Railway rail joint, W. Wallace	939,358
Railway rail joint, R. S. Du Bose	939,814
Railway safety device, O. J. Berend	939,201
Railway switch mechanism, B. Legault	939,279
Railway tie, metallic, J. G. Snyder	939,343
Railway track construction, S. J. Scott	939,836
Railway track rail holder and brace, J. T. West	939,767
Railway track tamping machine, W. C. Maxwell	939,847
Railway traffic controlling system, H. Bezer	939,659
Rake. See Lawn rake.	
Ratchet and drill extension, H. J. Forster	939,900
Razor blade strop, I. Conrad	939,219
Razor, safety, W. Diebel	939,400
Razor, safety, H. Wilcox	939,935
Reamers, arbor for shell, R. H. Stearns	939,345
Receptacle closure removing device, H. E. Shepard	939,641
Refrigerator, E. F. Cramer	939,891
Refrigerator car, H. Pries	939,315
Refrigerator drip pans, automatic alarm for, J. F. Phillips	939,311
Registering apparatus, R. North	939,296
Reinforcing bar, T. W. Jenks	939,962
Relay, electromagnetic, D. I. Garretson	939,409
Resawing machine, H. J. Gilbert	939,903
Resilient wheel, J. Rountree	939,748
Rivet spinning machine, W. P. Seng	939,558, 939,559
Roasting and like furnace, U. Wedge	939,880
Roasting furnace, U. Wedge	939,881
Roasting furnace, A. R. Wilfley	939,936
Roll shaping apparatus, W. U. Dennison	939,590
Roller, A. E. Blight	939,206
Roller, road, Todd & Farquhar	939,877
Rolling structural material, regulating initial strains in, A. H. Emery	939,676
Rope making machine, H. Personett	939,308
Rope portieres, laying table for, W. T. Smith	939,873
Rosin, bleaching, L. C. Minor	939,733
Rotary carrier, F. A. Johnson	939,700
Rotary engine, J. A. Mack	939,609
Rotary engine, J. Marks	939,729
Rotary engine, G. Schulz	939,751
Rotary engine, J. A. Quill	939,861
Rubber soles to boots and shoes, apparatus for applying, E. A. Saunders	939,830
Sack holder, J. E. Hull	939,508
Safe, wall, W. H. Reynolds	939,322
Sage brush and weed cutter, Gale & Krengel	939,595
Sand mold flask, J. D. Millar	939,848
Sash bar construction for skylights in greenhouses, J. F. M. Farquhar	939,592
Sash holder, J. N. Hilton	939,500
Sash holder and lock, T. Kephart	939,709
Sash lock, J. C. Deggim	939,480
Sash lock, H. Neble	939,854
Sash, metal, H. H. Forsyth	939,407
Sawing machine, A. Fisher	939,488
Sawing machine, F. N. Trevor	939,760
Sawmill carriage operating mechanism, C. A. Jones	939,264
Scaffolding, G. E. Humphries, reissue.	13,036, 13,037
Scale, F. H. Buckingham	939,213
Scale, S. C. Cooper	939,809
Scale, J. L. Pine	939,857
Scale, W. F. Stimpson	939,875
Scales, friction and inertia counteracting device for, E. H. Strauss	939,347
Scorer, pork or like, H. Matthews	939,846
Scraper, Dumond & Hall	939,404
Scraper, road, C. H. Casner	939,664, 939,665
Screw machine, automatic, H. B. Lester	939,604
Sealing apparatus, J. C. Thom	939,453
Search lights and the like, remote electric control system for, A. Le Blanc	939,719
Seat frame, Budd & Wolle	939,389
Seeder, sugar beet, G. M. Roos	939,635
Semiplastic substances, instrument for handling, J. Holtzmann	939,693
Sewer traps, testing plug for, J. F. Christy	939,804
Sewing machine embroidering attachment, D. C. Lee	939,603
Sewing machine, overseaming, E. Prazak	939,548
Sewing machine work holder, A. H. De Voe	939,894
Shade and lace curtain support, window, H. F. Cook	939,808
Shaft coupling, F. B. Richardson	939,744
Shaft support, buggy, J. D. McCabe	939,852
Sharpener, dental instrument, C. Wiethoff	939,365
Sharpener, disk, F. H. Klenke	939,713
Sharpener, lawn mower cutter, V. Willimack	939,885
Sharpening and honing device, razor, T. Doswald	939,402
Sharpening device, blade, W. D. Chapin	939,215
Shears. See Metal shears.	
Sheet metal bodies, forming, I. N. Jones	939,702
Sheets, guide mechanism for traveling, L. B. Doman	939,897
Shipping package, F. F. East	939,232
Shock loader, J. B. Schuman	939,335
Shoe, sewed, G. L. Pierce	939,624
Shutters and elevators, etc., electrical controlling system for rolling or sliding, L. G. Wilson	939,650
Sign apparatus, repeating mechanical, F. A. Rudolph	939,550
Sign, rotatable, D. I. Whiteside	939,768
Silo, F. J. Van Cott	939,355
Silo, C. Gminer	939,826
Silver, assaying for, J. C. Hames	939,413
Sinks, adjustable support for, F. J. Raehn	939,741
Skate brake, roller, S. J. Nesbitt, Sr.	939,536
Skate, roller, T. Spacie	939,451
Sled, J. Z. Ducharme	939,231
Sleigh attachment, S. L. Charles	939,666
Slicing machine, meat, I. Heller	939,417
Snap hook, T. T. Morrow	939,531
Snap hook, M. Maki	939,727
Snap switch, two-pole, L. Kellner	939,[illegible]
Snow from streets and sidewalks, machine for melting, H. E. Willsie	939,461
Snow guard for roofs, J. M. Laird	939,516
Soap making apparatus, W. A. Grant	939,906
Solder for aluminium, L. Goppman	939,494
Sole leveling machine, Parker & Collyer	939,621
Sole pressing machine, E. E. Winkley	939,462
Sound locating device, J. B. Taylor	939,349
Spark arrester, E. L. Ridgway	939,444
Speed device, variable, W. F. Main	939,427
Speed indicating or recording device, W. H. Bristol	939,209
Speed transmission mechanism, changeable, A. L. Slee	939,643
Spice box, E. Frank	939,825
Spoon, souvenir locket, I. Holsman	939,840
Spring wheel, H. H. Taylor	939,565
Stacker, hay, A. B. & M. A. Clippinger	939,393
Stalk cutter, J. R. Weatherly	939,573
Stamp affixer, E. W. Nielsen	939,537
Stamp, hand, A. D. Joslin	939,513

(*Concluded from page 381.*)

eighteen months, and containing the imbedded organs of fowls dead of spirochætosis, were lost, and thus a far-reaching investigation has been temporarily arrested, and it has not yet been possible to replace the material. Upon the receipt of the news of the catastrophe, Mr. Henry S. Wellcome, to whose munificence the Institution was due, immediately offered to replace the lost equipment; and through his generosity the laboratories were completely refitted and re-equipped with the most modern appliances, so that work could be resumed with the minimum delay. Consequently, so far as general usefulness goes, the Institution was only temporarily crippled.

Work is now again in full swing, and it should be pointed out that there is a very large field to be covered yet. If the various countries interested in the exploitation of the continent could establish similar laboratories to this in their respective territories, it would soon become a white man's land, and through concerted action the terrible maladies which at present arrest development would be completely subjugated.

ARTILLERY FOR AIRSHIP ATTACK.

(*Concluded from page 373.*)

is clamped tight against the axles. The third type of cannon is of a much heavier build than the two which precede, seeing that in this case it is designed to be mounted on shipboard, and hence the weight does not need to be reduced as in the other cases. It is of a considerably larger caliber, this being 10.5 centimeters (4.2 inches). In most of the details it is designed on the same lines as the second type. It is intended to be mounted generally upon torpedo boats or swift cruisers, and naturally the gun can be brought into service as an ordinary cannon in cases where it is needed. For the gun proper, the weight is 3,080 pounds, while the support weighs 3,520 pounds, giving a total weight of 6,600 pounds for this type. Like the former, the angle of elevation is 75 degrees at a maximum. The projectile, weighing 40 pounds, has an initial speed of 2,300 feet per second. A horizontal range of 44,500 feet is reached in this case, and we have the unusual height of 37,620 feet.

The present types of gun were given a series of tests by firing upon captive balloons, and two of our engravings illustrate this feature. In one case we observe the balloon, which has not been hit by the shot, and this can be clearly seen by the trail of smoke which shows the path of the projectile. In the second view is represented the effect which takes place when the projectile strikes the balloon, and we have the detonation of the grenade and at the same time the explosion of the gas and the destruction of the balloon.

Alcohol vs. Gasoline Engines.

Almost any engine with a well-designed carbureter will run as well with alcohol as with gasoline, except for a difference in ease of starting and in certainty of operation at low speeds. By using alcohol in an alcohol engine with a high degree of compression the fuel-consumption rate in gallons per horse-power hour can be made practically the same as for gasoline in a gasoline engine of the same size and speed. An alcohol engine with the maximum compression for alcohol will have 30 per cent more available horse-power than a gasoline engine of the same size, stroke, and speed, and the weight per horse-power may be less. Tests with mixtures of gasoline and alcohol showed no gain in efficiency over gasoline or alcohol alone. Diluting gasoline with water did not affect fuel economy.

With alcohol the case was different, but with dilutions up to 80 per cent alcohol the effect was so slight that 80 per cent alcohol is a cheaper fuel than 90 per cent if it can be had for 15 per cent less.

Stamp mortar, M. P. Boss	939,208
Starting and separating gate, R. V. Jones	939,703
Steam generator, F. N. Tilton	939,759
Steam trap, Singer & Pratt	939,450
Steam trap, N. English	939,667
Steering gear, R. S. Riley	939,323
Stirrup, safety, J. L. James	939,697
Stoker for furnaces, mechanical, F. W. Seyboth	939,869
Stone cutting machine, W. F. Meyers	939,528
Stone fluting machine, G. N. Williams, Jr.	939,577
Store service credit system apparatus, C. F. Kettering	939,267
Stove, L. Moore	939,529
Stove, Choltus & Jeannesson	939,890
Superheater for use in connection with vulcanizers and other apparatus, J. Berliner	939,956
Surfacing machine, A. H. Whatley	939,363
Surfacing machine, F. R. Allen	939,373
Suspender check, F. B. Hawes	939,687
Suspenders, G. M. Edgarton	939,898
Suspending device, portable, C. F. Redman	939,318
Sweeping compound, Wolfgram & Klausman	939,369
Syringe or the like, C. P. Leyner	939,520
Syringe, vaginal, E. H. Keske	939,266
Table lock, extension, J. A. Barbrake	939,379
Talking machine, W. W. Wooster	939,781
Tape, T. P. Himes	939,839
Telegraph sending machine, J. A. Hulit	939,507
Telegraph system and apparatus, T. B. Dixon	939,401
Telegraph transmitter, B. F. Bellows	939,383
Telegraph transmitter, G. M. Goddard	939,683
Telemeter, H. Wild	939,366
Telemeter rod, C. E. Flanagan	939,489
Telephone attachment, H. R. Palmer	939,439
Telephone system, F. E. Summers	939,756
Temperature regulating apparatus, J. M. Pullen	939,858
Thermostat, H. G. Geissinger	939,957
Thread cop, A. N. Chartier	939,667
Thread cutting mechanism, filling, E. H. Ryon	939,445
Thread cutting tool, W. Murchey	939,735
Tie holder, A. A. Felix	939,678
Time lock, E. M. Benham	939,384
Tire antislipping attachment, M. J. Frambach	939,491
Tire, cushion, W. E. Marengo	939,524
Tire fastener, L. M. Nelson	939,619
Tire for vehicle wheels, elastic, B. M. de Sa	939,327
Tire, pneumatic, J. L. Maitland	939,428
Tire protector, F. R. & C. R. Colvin	939,474
Tire, resilient, W. H. Rowling	939,638
Tire, vehicle wheel, T. Midgley	939,610, 939,611
Tongue, draft, T. Pojar	939,547
Tonnage equating machine, J. M. Daly	939,222
Tool, F. H. Gruer	939,496
Tool, pneumatic, C. Christiansen	939,803
Toy, J. B. Bowman	939,586
Track sanding device, E. L. Larson	939,718
Track supporting device, overhead, Neller & Louden	939,618
Traction device, M. E. Schmidt	939,334
Train switch, electrically actuated, J. Y. Porter	939,626
Tramways, point operating mechanism for, T. N. Atkinson	939,939
Transmission mechanism, temperature controlled, H. H. Taylor	939,566
Trap, P. Elfstrom	939,818
Tripod, J. M. Pullen	939,850
Trolley head, T. R. Stam	939,564
Trolley head, J. J. Bennett	939,658
Trough. See Eaves trough.	
Trousers stretcher, E. N. Hallett	939,831
Truck, J. F. Fierke	939,406
Truck bolster, J. J. Byers	939,946
Truck, car, C. S. Shallenberger	939,870
Truck, hand, A. B. Kernel	939,600
Truck, lifting, A. A. Ake	939,783
Trucks, blocking device for, Lattneer & Robinson	939,518
Trunk, wardrobe, G. H. Wheary	939,575
Tube mill lining, G. H. Rotherham	939,637
Tube welding apparatus, Dicke & Klinkmann	939,591
Tubing, apparatus for making spiral, E. T. Greenfield	939,244
Turbine, C. A. Kaiser	939,514
Turbine, J. H. Felthousen	939,821
Turtine, internal combustion, gas, G. E. Doe	939,229
Twine making machine, C. Kieren	939,268
Twine, take-up, J. B. Eastman	939,233
Typewriter attachment, A. C. Kendrick	939,265
Typewriter carriage stop mechanism, M. B. Sargent	939,640
Typewriting machine, C. B. Yaw	939,779
Typewriting machine, E. E. Barney	939,583
Typewriting machine, A. T. Brown	939,587
Umbrella, folding, X. J. Zoller	939,842
Valve, T. J. Hendricks	939,499
Valve, J. L. Fitts	939,823
Valve, air, J. W. Ledoux	939,277
Valve device for corrosive liquids, W. H. Smith	939,927
Valve, regulating, B. Blumel	939,792
Vault closure, Myers & Poister	939,922
Vegetable cutter, Myers & Kahne	939,951
Vehicle body, E. W. Crosby	939,478
Vehicle wheel, L. Garnier	939,681
Vehicle wheel, T. Hubscher	939,695
Vehicle wheel, spring, E. Murray	939,432
Vehicles, fore carriage of, J. Schmitt	939,555
Vending machine, coin controlled, E. F. Spaulding	939,563
Violin, F. O. Fish	939,486
Vise, quick acting woodworking, W. Y. Mentzer	939,284
Voltaic high-current arcs, production of, H. Pauling	939,442
Voting machine, Stacy & Julius	939,755, 939,929
Voting machine counter construction, C. F. Currey	939,674
Vulcanizer, F. E. Smith	939,242
Wagon bed, C. B. Tillery	939,758
Wagon, dumping, J. Heberling	939,414
Wagon, dumping, T. Wright	939,782
Wall and constructing same, composite, J. H. Magdiel	939,726
Ware stop motion, electric, J. Regan	939,924
Washing machine, W. C. & L. R. Simmons	939,340
Washington machine gearing, A. Van Wormer	939,645
Water closet disinfecting devices, valve for, J. Kneen	939,424
Water gage, H. H. Vaage	939,673
Water heater, electric, Levy & Blanchard	939,605
Water meter, J. Hubmann	939,506
Web coating machine, W. A. Daniels	939,396
Weighing machine, W. W. Rosenfield	939,747
Wet machine, W. White	939,460
Wheels, manufacturing metal, G. Kowarsky	939,714
Whip socket, R. Habekost	939,246
Winding mechanism, self, Blodgett & Atkinson	939,791
Windmill tower, W. Hopper	939,504
Window operating mechanism, swinging, J. S. Gourlay	939,412
Window screen, H. B. Wilson	939,780
Wire reel and mounting therefor, F. P. Murphey	939,616
Wire splicer, I. G. Huston	939,509
Wire stretcher, J. F. Ball	939,787
Wood blight composition, J. W. Lafer	939,273
Woven fabric, T. B. Dornan	939,230
Wrench, E. C. & G. W. Rea	939,317
Wrench, D. Mabry	939,728
Wrench, P. Bartok	939,788
Wrench, L. G. Van Ormer	939,879
Yarn cleaner or slub catcher, G. W. Foster	939,490

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, provided the name and number of the patent desired and the date be given. Address Munn & Co., Inc., 361 Broadway, New York.

Canadian patents may now be obtained by the inventors for any of the inventions named in the foregoing list. For terms and further particulars address Munn & Co., Inc., 361 Broadway, New York.