

with gas or of volatilizable hydrocarbon as a heating medium. It is more particularly a combined muffle and melting furnace, comprising a central combustion chamber having a fire opening, a muffle which traverses the chamber above this opening, crucible chambers located on each side of the main chamber, and lateral passages connecting the three chambers, the latter being provided with removable covers.

STOCKING-GUARD.—H. WEIL, New York, N. Y. The stocking-guard is designed particularly for protecting children's stockings from wear at the knees, and it provides an inexpensive construction that will readily yield to the movement of the child's legs and which also, when not in use, may be folded in compact form.

TOOTH-PICK-HOLDER.—C. A. YARRINI, Havana, Cuba. The holder is so constructed that a bundle of picks contained therein may be ejected one at a time as required for use, thus preventing the handling and possible soiling of the toothpicks remaining in the bundle.

NECKTIE-FASTENER.—G. GREITE, Guttenberg, N. J. The necktie-fastener comprises a plate of sheet metal provided with ears and with fasteners secured to a necktie shield. A Y-shaped clasp is pivotally secured to the plate and provided with a rocker-like member terminating in pointed feet. A torsional spring engages the plate and the clasp. The clasp normally holds the Y-shaped member in such a position that the pointed feet engage the plate.

NUT-CRACKER.—W. V. DICKEY, San Antonio, Texas. The device is particularly well adapted for fracturing the shells of pecan nuts, so as to release the meats or kernels therefrom without injuring them. The hammer-blocks are provided with mating cavities in adjacent ends, wherein the nuts are separately placed when operated upon for fracturing their shells.

DRAFTSMAN'S INSTRUMENT.—E. C. LOETSCHER, Pittsburg, Pa. The instrument has for its object to provide a simple and convenient tool for drawing lines at various angles, for dividing lines into various numbers of parts, and for readily solving other problems occurring in the draftsman's practice. It comprises a rectangular celluloid plate upon which various scales and angles are marked.

MILK-MODIFYING GAGE.—J. A. MITCHELL, New York, N. Y. The gage comprises a strip of sheet-material bent twice at right angles, the bent portions being spaced apart a distance commensurate with the size of a milk bottle, for the purpose of embracing the exterior of the bottle. The gage is provided with graduated scales which indicate the quantity of milk, lime-water, and boiled water that are to be mixed together in the food of infants.

COOKING STOVE OR RANGE.—ELEANOR CLARKE, Mariasville, Pa. The stove embodies an extensive capacity for utensils in cooking, a graded radiation of heat throughout the plate surfaces, and a body occupying comparatively small floor space adapted for ventilation and to conduct away resulting steam and gases in cooking.

MINIATURE THEATER.—A. L. MCCORMICK, Port Huron, Mich. The miniature theater provides an automatically operated apparatus in the nature of a model playhouse, having scenery and other accessories by which to represent in succession a number of scenes or acts of a play. The stage is provided with slots through which actors or other figures are caused to pass into or out of view, the figures being supported upon suitable keys or levers operated automatically.

BEDSTEAD.—S. E. CLAUSSEN, Walla Walla, Wash. Mr. Claussen has invented an improvement in bedsteads relating particularly to the connection of the post with the rail of the bed. Means are provided for holding the rail and post together, permitting the regulation of these parts if they are not straight, and serving to brace the bed in that region.

PROCESS OF MAKING REPAIRED FABRICS.—D. MARGOLIUS, Norfolk, Va. This invention seeks to provide a method of effectually repairing mutilated rough bagging which has been used in covering cotton bales, so that it may be resold to the planters in practically as good a condition as when originally used. This is done by continuing the cut in the material along to its edges, thus dividing it into two disconnected parts. These two parts are then joined by knotting together the severed threads.

Designs.

DESIGN FOR PICTURE-FRAME.—E. GOETTE, Newark, N. J. The leading feature of the design consists of a semi-wreath of leaves arranged with scroll effect upon a border, and a ribbon-like appearing to secure the semi-wreath to the border.

DESIGN FOR RING TRAY.—J. L. HERZOG, New York, N. Y. The leading feature of the design consists in the body having a general diamond shape, the opposite sides of which are formed in segmental curves, giving an scalloped effect, while the opposite sides of the end-portion are formed in compound curves. Slots for the rings are arranged in various lines with relation to the center.

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

Business and Personal Wants.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. In every case it is necessary to give the number of the inquiry.

MUNN & CO.

Marine Iron Works. Chicago. Catalogue free.

Inquiry No. 2431.—For makers of bathroom appliances.

Motor Vehicles. Duryea Power Co., Reading, Pa.

Inquiry No. 2432.—For manufacturers of spring motors.

"C. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 2433.—For dealers in novelties.

WATER WHEELS. Alcott & Co., Mt. Holly, N. J.

Inquiry No. 2434.—For addresses of philatelic papers published in United States, Canada and South America.

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

Inquiry No. 2435.—For makers of solid rubber bicycle tires.

Castings to order for oil, gas and gasoline stoves. Atlantic Foundry, Phillipsburg, N. J.

Inquiry No. 2436.—For manufacturers of invalid chairs, etc.

Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.

Inquiry No. 2437.—For manufacturers of celluloid and xylonite suitable for knife handles, etc.

Rigs that Run. Hydrocarbon system. Write St. Louis Motor Carriage Co., St. Louis, Mo.

Inquiry No. 2438.—For dealers in rolled gold wire.

Steel name stamps, stencils, steel letters and figures and brass checks. C. L. Alderson, Cleveland, O.

Inquiry No. 2439.—For manufacturers of steam riding galleries.

Are you looking for anything in bent woodwork? Write Lucker Bicycle Woodwork Co., Urbana, Ohio.

Inquiry No. 2440.—For machinery for making brackets and pins for telephone lines.

We design and build special and automatic machinery for all purposes. The Anstutz-Osborn Company, Cleveland, Ohio.

Inquiry No. 2441.—For the firms who make the felt covering for the United States government caissons.

FOR SALE.—To party direct, for cash, patent 608,325 on folding umbrellas. No selling agencies need answer. M. R. Studams, Bridgeton, N. J.

Inquiry No. 2442.—For manufacturers of plates of aluminum.

Manufacturers of patent articles, dies, stamping tools, light machinery. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.

Inquiry No. 2443.—For machinery for making horn combs.

Factory room to let, with power, steam, elevators, etc. Good light, also storage room. Charles F. Kilburn, 84-86 Mechanic St., Newark, N. J.

Inquiry No. 2444.—For dealers in granulated copper or machinery for making the same.

WANTED.—Motor vehicle for passenger traffic on country roads. Large contract if sample all right. Electric Power Barred. Address E. and D., Box 774, N. Y.

Inquiry No. 2445.—For a cheap ice-making machine for household use.

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

Inquiry No. 2446.—For manufacturers of acetylene gas generators.

IDEAS DEVELOPED.—Designing, draughting machine work for inventors and others. Charles E. Hadley, 584 Hudson Street, New York.

Inquiry No. 2447.—For manufacturers of ear tubes, etc.

Inventions developed and perfected. Designing and machine work. Garvin Machine Co., 149 Varick, cor. Spring Sts., N. Y.

Inquiry No. 2448.—For makers of solid, rust-proof harness metals, dashboards, etc.

WANTED.—A thoroughly reliable man to manage Steam Specialties Department in large wholesale house. Must be sober, competent and experienced. Give age, experience, references and salary expected. Address Box 482, New Orleans, La.

Inquiry No. 2449.—For makers of hollow copper or brass wire.

Patents developed and manufactured, dies, special tools, metal stamping and screw machine work. Metal Novelty Works Co., 43-47 S. Canal St., Chicago.

Inquiry No. 2450.—For machinery for copying the flat surface of a clarinet mouthpiece.

Our specialty is cutting and forming metal parts any shape. Metal Stamping Co., Niagara Falls, N. Y.

Inquiry No. 2451.—For makers of paper rims or tires for placing over iron wheels.

FOR SALE.—Castings for 2 x 4 Corliss type engine with blue prints. Send for circular. E. A. Sikes, Lock Box 4, Cherry Valley, Mass.

Inquiry No. 2452.—For makers of electric motors.

INDEX OF INVENTIONS

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

April 15, 1902,

AND EACH BEARING THAT DATE.

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

- Adjustable table or desk, E. Lindner..... 697,639
Air cooling apparatus, A. Siebert..... 697,679
Air masting apparatus, automatic, W. W. Pratt..... 697,659
Alkali, making caustic, H. A. Frisch..... 697,465
Alley, W. Rubel..... 697,544
Amusement apparatus, H. F. Schrader..... 697,891
Animal shears, S. W. Allen..... 697,771
Apparel, wearing, I. W. Collins..... 697,809
Assaying apparatus, ore, W. T. Armstrong..... 697,774
Automobile, H. K. Holsman..... 697,720
Automobile frame, G. A. Hunt..... 697,722
Axle spindle, T. De la Mare..... 697,455
Baby walker, C. O. & J. W. Glascock..... 697,474
Bag fastener, Gebhard & Rowley..... 697,710
Baler and rake, hay, Symank & Kitzler..... 697,692
Ball. See Billiard ball.
Barber chair, hydraulic, T. J. Collins..... 697,449
Basket, J. B. Peiret..... 697,537
Bearing, axle, O. C. Knipe..... 697,633
Bearing of bicycles, crankshaft, F. L. Johnson..... 697,944
Bearings, machine for grinding, H. La Casse..... 697,500
Beehive, G. Neiszer..... 697,741
Bell ringer, magneto, E. E. Yaxley..... 697,698
Belt adjuster, A. Coulter..... 697,608
Belt, lady's, E. Oldenbusch..... 697,873
Belts to pulleys, adjusting, J. W. Davison..... 697,454
Beverage and making same, M. Pereda..... 697,656
Bicycle driving gear, A. M. Shauck..... 697,675
Bicycle fork, N. Berglund..... 697,435
Billiard ball, E. Kempshall..... 697,925
Blinder, temporary, E. A. Trussell..... 697,571
Blinder, temporary, G. A. Reede..... 697,889
Boat, C. S. Pruden..... 697,539
Book holder, C. W. Kremenaker..... 697,499
Book holder, C. E. Moulton..... 697,518
Book section having wide and narrow leaves, A. O. & E. R. Kiltredge..... 697,495
Book stub holder, check, W. H. Hawkins..... 697,483
Bottle cap, machine, H. Scott..... 697,742
Bottle, non-refillable, A. J. Brooks..... 697,798
Bottle, non-refillable, F. Klein..... 697,851
Bottle, non-refillable, J. Y. Payton..... 697,878
Bottle or jar press, J. Haley..... 697,915
Bottle washer machinery, H. S. Brewington..... 697,797
Bottle washing machine, H. S. Brewington..... 697,796
Box or fagot pile, W. D. Murray..... 697,519
Bracket. See Lamp bracket.
Brake shoe, P. A. Brawner..... 697,795
Brick, P. Griffin..... 697,913
Bride attachment, J. A. Hull..... 697,486
Brush, A. R. Wiens..... 697,763
Brush holder, Bassett & Hill..... 697,432
Brush, scrubbing, A. W. Smith..... 697,682
Buckle, belt, A. E. Lee..... 697,855
Buckle chafe, W. Bauman..... 697,433
Buckle, tug strap, W. H. Rose..... 697,543
Burglar trap, safe, M. Elmer..... 697,462
Burr, T. Stines..... 697,690
Bushing for screws, etc., anchor, W. S. Smith..... 697,896
Bushing for sheaves, roller, C. E. McIntire..... 697,524
Butten, flexible shank collar or cuff, J. N. Crabb..... 697,812
Calculus, H. Abbott..... 697,426
Calculator, mechanical, H. W. MacCollin..... 697,861
Camera, photographic, H. E. Hickox..... 697,624
Can. See Garbage can.
Can body beamer and crimper combined, H. C. Black..... 697,786
Can body ending machine, H. C. Black..... 697,784
Can body flanging machine, W. J. Kenny..... 697,726
Can body forming and soldering machine, H. C. Black..... 697,785
Can opener, F. Kottick..... 697,634
Cap, dynamite detonating, A. B. Hoover..... 697,842
Car, automatic dumping ore, C. H. Snow..... 697,685
Car, freight, H. W. Frost..... 697,466
Car chair, parlor, A. P. Barney..... 697,777
Car door and grain door combined, Deerner & Whalen..... 697,820
Car door, grain, G. S. Smith..... 697,557
Car fender, L. White..... 697,762
Car, freight, F. Nagel..... 697,650
Car journal box, T. W. Mitchell..... 697,947
Car side bearing, J. E. Nerwood..... 697,531
Carbide cutting machine, Irwin & Miller..... 697,723
Carburetor, C. L. Champlin..... 697,807
Card or sign holder, P. P. Wilkin..... 697,908
Carpet fastener, stair, J. S. Jardine..... 697,488
Cart, ash, N. Barney..... 697,779
Cash register, F. P. Gorin..... 697,476
Caster, G. B. Magoun..... 697,735
Casting apparatus, A. M. Acklin..... 697,769
Casting mold, brake shoe, A. Brake..... 697,794
Chase box, hammer, H. W. Quade..... 697,883
Chepping knife hand, A. A. Lagg..... 697,615
Churn, J. M. Harper..... 697,715
Cigar wrapper cutting machine guide plate, N. Du Brul..... 697,706
Circuit breaker, W. E. Pimlett..... 697,533
Circuit closer safety device, F. Mackintosh..... 697,734
Circuit controller, J. J. Ghegan..... 697,834
Clamping device for work benches, H. Golke..... 697,475
Clay hydraulic pipe, vases, crocker work, etc., strengthening, L. Millet..... 697,642
Clutch, F. L. Smith..... 697,683
Clutch, W. H. Corbett..... 697,913
Coat hook, safety, O. C. Schulz..... 697,753
Coat hook, safety, Barten & Hansen..... 697,781
Coating metal plates, apparatus for, J. H. Williams..... 697,909
Cock for liquids, measuring and registering, Hughes & Campbell..... 697,844
Combination lock, W. J. Neid..... 697,651
Condenser, F. Sargent..... 697,666
Conductor system, multiple, A. D. Lunt..... 697,733
Conduit, W. Houghton..... 697,485
Conduit for electric or like cables, C. A. W. Hultman..... 697,845
Conveyer, J. Oldham..... 697,874
Cooking utensil, H. Giesel..... 697,472
Cork extractor, R. J. Williamson..... 697,587
Corner piece trimming machine, F. Latulip..... 697,728
Cortese, transm. bar, or mullion, J. Goldsmith..... 697,714
Corset and bust form, combined, C. H. Schepbach..... 697,669
Cotton, apparatus for unbalancing raw, Ecroyd & Marsden..... 697,459
Cracker machine, J. Rosborough..... 697,663
Crane, metallurgical, D. W. Blair..... 697,788
Crane, portable, G. F. Speer..... 697,686
Crate, folding, B. J. Casterline..... 697,806
Cream separator, A. D. Ellis..... 697,613
Cream separator, C. L. Morris..... 697,645
Cremating or incinerating human bodies, furnace for, H. O. Kuehne..... 697,946
Cultivator, G. G. Jones..... 697,490
Cultivator shovel, T. H. Smith..... 697,897
Current meter, alternating, F. Schrottker..... 697,671
Current meter, alternating, G. Stern..... 697,755
Current meter, alternating, F. Schrottker..... 697,670
Curtain dxture, A. E. W. Duffield..... 697,822
Curtain stretcher, F. Violette..... 697,695
Cutting edges of implements, rendering sharp and even, O. Newhouse..... 697,529
Dampener controller, D. H. Darrin..... 697,705
Dampener, fireplace, S. Shaw..... 697,893
Dash pot, M. R. Moore..... 697,644
Devulcanizing apparatus, L. A. Steizer..... 697,688
Distilling apparatus, water, A. J. Chase..... 697,912
Door and frame for air tight chambers, S. P. Stevenson..... 697,689
Dovetailing machine, J. J. Blackman..... 697,787
Draft equalizer, J. N. Schwalen..... 697,549
Draft equalizer, G. Linhard..... 697,732
Draft equalizer, H. J. Heider..... 697,841
Drawer for sewing machine stands, etc., S. H. Wheeler..... 697,582
Drawing guide, H. Becke..... 697,471
Drawing board, E. B. Jarvis..... 697,848
Drawing implement, F. A. Altender..... 697,594
Dredger, excavator, and elevator, hydraulic, G. L. Cudner..... 697,704
Drier. See Fruit drier.

- Drilling machine, C. A. Wessman..... 697,581
Dye and making same, red cotton, E. Winter..... 697,765
Edger guard, gang, E. B. Thomas..... 697,586
Egg separator, L. Walker..... 697,764
Electric controller, F. E. Case..... 697,445
Electric furnace, M. R. Conley..... 697,810
Electric machine, dynamo, E. J. Berg..... 697,783
Electric motor controlling device, W. B. Potter..... 697,749
Electric transmission of power, E. M. Fraser..... 697,832
Electrical condenser, G. F. Mansbridge..... 697,507
Electrical control system, G. T. & L. Woods..... 697,76
Elevator hoists, removable tray for, J. M. Lemmen..... 697,502
Elevator system, electric, J. D. Ihler..... 697,847
Elliptical spring, C. A. Miller..... 697,865
Engine mixer or vaporizer, hydrocarbon, B. Settergren..... 697,555
Evaporating pan, Hill & Rivett..... 697,484
Exhibiting case, thimble, A. H. Peal..... 697,532
Fan, W. B. Coleman..... 697,445
Fan, J. L. Wood..... 697,597
Fan, electric, J. J. Wood..... 697,588
Farm gate, E. King..... 697,631
Faucet, J. C. Peetz..... 697,881
Faucet for fluids, compound, C. G. Loygerri y Murrieta..... 697,739
Filaments, apparatus for the production of fiberless, W. A. P. Werner..... 697,580
File and display book, H. Zevy..... 697,592
Fire arch, H. A. Popenhusen..... 697,853
Firearm lock, O. F. Messberg..... 697,516
Firearm, revolving, O. F. Messberg..... 697,517
Fire escape, J. T. Mahar..... 697,736
Fire extinguishing compound, J. B. Miller..... 697,641
Fire extinguishing device, W. Dell..... 697,611
Fishing gear, A. W. Willson..... 697,910
Food chopper, H. K. Wood..... 697,766
Frame, E. Oldenbusch..... 697,872
Fruit drier, L. Van Scaey..... 697,673
Furnace, W. M. Green et al..... 697,820
Furnace, G. S. Gallagher..... 697,833
Furnace arch, boiler, J. F. Michalski..... 697,737
Furnace bridge wall, H. A. Popenhusen..... 697,657
Fuse cut-out, plural, C. J. Dorsey..... 697,935
Game, F. Walenta..... 697,574
Game, C. & C. Nielsen, Jr..... 697,652
Game apparatus, A. R. Deering..... 697,457
Garbage can, M. Leary..... 697,655
Garbage or refuse can, E. Gilman..... 697,473
Garment, Walter & Brockert..... 697,576
Garment supporter fastening device, L. P. Chauvet..... 697,808
Garment supporting appliance, J. P. Conway..... 697,811
Garter, D. B. Littlefield..... 697,504
Gas and air mixing burner, W. J. Woodward..... 697,768
Gas burner, H. Eldridge..... 697,461
Gas burner, J. Harris..... 697,481
Gas fire appliance, J. E. Hewitt..... 697,812
Gas generator, acetylene, C. E. Drake..... 697,789
Gas generator, gas engine, G. W. Bonds..... 697,867
Gas producer, L. Mond..... 697,576
Gas purifying agents, making, H. S. Blackmore..... 697,931
Gate. See Farm gate.
Gate, W. M. Plaster..... 697,880
Gate opener, C. F. Lee..... 697,501
Gearing and casing therefor, combined, H. E. Keiper..... 697,629
Gearing, differential, W. G. Caffrey..... 697,801
Glass gathering machine, D. C. Ripley..... 697,886
Glassware finishing machine, W. R. McCloy..... 697,521
Glazing system, A. M. Whipple..... 697,583
Glove fastening, W. B. Murphy..... 697,869
Gold separator distributor, R. H. Postlethwaite..... 697,748
Golf ball, C. Davis..... 697,816
Golf ball, E. Kempshall..... 697,913
Golf ball, F. H. Richards..... 697,926
Golf balls, manufacture of, E. Kempshall..... 697,917
Golf club, W. Robertson..... 697,542
Governor, marine engine, B. W. Storey..... 697,899
Grain binder, J. W. Primmore..... 697,750
Grain binder, automatic, J. F. Appleby..... 697,429
Grate, G. R. Prowse..... 697,538
Grinding machine automatic work rest, A. E. Landis..... 697,854
Grinding machine drill H. B. White..... 697,584
Grinding machine work rest, A. B. Landis..... 697,852
Gun shield attachment, J. F. Meigs..... 697,862
Gun turret, main, C. H. Howland-Sherman..... 697,843
Hair drying device, W. J. O'Hara..... 697,743
Hammer, pneumatic, J. Boyer..... 697,793
Hat and coat rack, M. Braymes..... 697,438
Hat stay hanging machine, curved, Nielsen & Bentzen..... 697,871
Hay fork, S. A. Nichols..... 697,742
Head rest, folding, A. Rikli..... 697,752
Heating system, J. M. Crick..... 697,813
Hoisting engines or elevators, safety controller and indicator for, C. R. Allison..... 697,772
Horse detacher, E. Casker..... 697,805
Horse shoe, D. L. Bonmal..... 697,791
Hose supporter, M. Anderson..... 697,596
Hub, ball-bearing, D. McKay..... 697,825
Ice cream disher, G. W. Sherer..... 697,677
Ice cream shipping vessel, F. C. Kletz..... 697,496
Identification device, C. A. Hyde..... 697,846
Indigo, making, T. Sandmeyer..... 697,545
Injector, automatic, C. B. Allen..... 697,770
Insulator, Berg & Bechtold..... 697,782
Insulator and attachment for electric wires, C. C. Johnston..... 697,628
Isoceramite derivative and making same, A. Liebrecht..... 697,730
Jack and drop, combined, K. E. Miller..... 697,515
Jar closer, fruit, A. Smelker..... 697,681
Jars, temporary cap or cover holder for, A. Johnson..... 697,724
Journal bearing, I. Metzger..... 697,864
Kettle, jacketed, Johns & Kaufman..... 697,627
Kneading device, L. N. Campbell..... 697,804
Knitting machine, E. E. Franck..... 697,938
Knitting machine, R. W. Scott..... 697,953
Lamp and lamp holder, electric, H. J. Dowling..... 697,458
Lamp bracket, A. Thurber..... 697,901
Lamp, electric arc, H. Bremer..... 697,439
Lamp, electric arc, C. E. Harthan..... 697,482
Lamp globe holder, arc, G. E. Stevens..... 697,757
Lamp hood and switch, H. Etheridge..... 697,708
Lamp, street, Heitz & McCuen..... 697,717
Lamp switch, electric, J. F. Krayer..... 697,727
Lamp, train signal, Moses & Lange..... 697,868
Lamps, contact for electrical glow, A. LeFebvre..... 697,856
Lamps, manufacturing incandescent electric, E. S. Gardner..... 697,469
Lap ring, R. L. Kilgore..... 697,630
Lathe attachment, W. H. Dent..... 697,819
Leather stretching device, J. Caldwell..... 697,443
Level, T. F. Hickey..... 697,718
Lineum cutter, F. L. Tripp..... 697,902
Lineum, machinery for the manufacture of inlaid, C. H. Scott..... 697,551
Lineum, manufacture of, C. H. Scott..... 697,552
Linotype machine, P. T. Dodge..... 697,456
Liquid heating or cooling apparatus, H. Seller..... 697,554
Liquids, partial liquids, etc., device for mixing, Weimeler & Dabbenis..... 697,579
Lithopone, making, I. P. Lihme..... 697,731
Loading cars, wagons, etc., apparatus for, A. P. Hartzell..... 697,716
Lock. See Combination lock.
Lock, J. J. Treat..... 697,568
Lock, C. W. Barrett..... 697,599
Lock, A. R. Flagson..... 697,614
Lock, M. E. Bergsch..... 697,333
Locking device, C. B. Foote, Jr..... 697,536
Locomotive, J. Player..... 697,535
Locomotive driving wheel, L. H. Kenyon..... 697,850
Locomotive engine ventilator, N. Kershner..... 697,493
Loem, J. E. Painter..... 697,745
Loem picker check, C. A. St. Onge..... 697,562
Loem shuttle, F. H. Martin..... 697,508
Loem shuttle, O. Gleason..... 697,713
Loem, weft replenishing, H. W. Smith..... 697,684
Mail box, A. F. Corbin..... 697,601
Match box, S. Biron..... 697,514
Match box filling machine, L. Mettwie et al..... 697,514
Measuring and drawing liquids, apparatus for, E. Franc..... 697,830
Metal from receptacles, drawing molten, L. Lincoln..... 697,638
Metal sheet piling, G. W. Jackson..... 697,943
Metal wheel, W. H. Schofield..... 697,950
Metal working machine, W. M. Roberts..... 697,887
Metals by electrolysis, recovering, H. A. Frusch..... 697,831
Mica beard making machine, H. F. Watson..... 697,696

(Continued on page 300)



Fitzsimmons Will Teach You to be Healthy and Strong

Perfect health casts out disease, and perfect health is a thing that I can give you.

Intelligent physical culture, such as I am teaching, will give you healthy circulation, steady nerves, firm muscles and a clear brain. I can make you healthy, quick, supple and muscular. My own unsurpassed physical condition is entirely due to my own system of training. What I have done for myself I can do for you.

I worked out the system myself, and have been practicing it and teaching it to others for years. However run down, ill or weak you may be, I can build you up. Mine is

The Best and Most Intelligent System of Physical Culture in the World

I can teach it to YOU by mail.

Follow my advice and I will make you stronger, healthier and happier than you ever thought you could be.

You will need no more medicine, for you will be as well as I am. I can cure your dyspepsia; I can prevent appendicitis, and I can preserve you from nervous prostration.

Mine is a scientific and individual method of instruction. I plan the exercises to fit you, gradually building you up to your proper condition. Afterwards I teach you how to keep yourself in perfect health.

Every pupil of mine has the benefit of my personal and individual attention. I write a separate personal letter to each pupil telling him just what to do and how to do it, after I have made a careful study of his case. Photographs and letters keep me constantly informed of my pupils' progress, so that I can tell just how they are getting along as well as if I had them at my side. All my hard-won experience is at my pupils' service. I am doing this thing myself.

No apparatus is used in my method. It is a system of exact and scientific physical culture for busy people who use their brains. It helps men and women to work and to think.

Write to me and I will send you a booklet telling you more particularly what I can do to make men and women physically perfect, as well as giving you information concerning terms. Address

The Robert Fitzsimmons Institute of Physical Culture Bensonhurst, New York

Table listing various mechanical and industrial items with prices, such as Middlings purifier, Milk can, Moistener, etc.

WOOD or METAL Workers Without Steam Power should use our Foot and Hand Power Machinery. Send for Catalogues.

Foot and Power and Turret Lathes, Planers, Shapers, and Drill Presses. SHEPARD LATHES CO.

ENGINE & FOOT LATHES MACHINE SHOP OUTFITS TOOLS AND SUPPLIES.

THE HALL BRASS PIPE WRENCH. A PERFECT TOOL WITH FRICTION GRIP.

To MANUFACTURERS GENERALLY. All factories should be equipped with our exhaust system for conveying shavings, sawdust and dust from wood-working machinery.

Apple Economical Gas Engine Igniters. Are positively the best built for Stationary, Automobile and Marine Gas Engines.

NOISELESS GEARS. We are specialists in Noiseless Gearing. If you are interested in anything in this line, write for our catalogue.

THE EUREKA CLIP. The most useful article ever invented for the purpose. Indispensable to Lawyers, Editors, Students, Bankers, Insurance Companies and business men generally.

THE B. F. BARNES WATER EMERY TOOL GRINDER. is the best on the market—bar none. No pump to cut out, no float to rust out, no adjustments required.

Presses for Sub-Press Work. Five sizes. Sub-Presses and Tools to order. Send for Catalogue.

WELL DRILLING Machines. Over 70 sizes and styles, for drilling either deep or shallow wells in any kind of soil or rock.

WORK SHOPS of Wood and Metal Workers, without steam power, equipped with BARNES' FOOT POWER MACHINERY.

TRUSCOTT MARINE MOTORS. The simplest, most powerful, and highest speed gasoline engines of their class upon the market.

GREY IRON CASTINGS FOR AUTOMOBILE WORK. UTICASTEAM ENGINE AND BOILER WORKS.

TRUSCOTT MARINE MOTORS. Made single, double, and triple cylinder, both two and four cycle, ranging from 1 to 40 H. P.

Table listing various mechanical and industrial items with prices, such as Tire, rubber vehicle, Tires of rubber, etc.

DESIGNS.

Table listing various designs with prices, such as Bedstead connecting piece, Box, cigarette, etc.

TRADE MARKS.

Table listing various trade marks with prices, such as Alterative compound, Asphaltum, Bindings, etc.

(Continued on page 301)

BICYCLE TRICYCLE RUNABOUT AUTOMOBILE & LAUNCH

WORLD'S RECORD. MOTORS \$50.00 UP

UNQUESTIONABLY THE LARGEST AMERICAN MANUFACTURERS.

E. R. THOMAS MOTOR CO. 100 BROADWAY, BUFFALO, N. Y.

CORK WALLS AND FLOORS

as well as Cork Ceilings, are now in vogue among up-to-date architects and builders on account of their durability, artistic beauty and economy.

NONPAREIL CORK

is water-proof, sound-proof and germ-proof; a non-conductor of heat or cold; noiseless and sanitary and is excellent for decorative ceilings and walls and for the floors of houses, churches, schools, etc., and the decks of yachts, etc.

THE NONPAREIL CORK M'FG CO., Bridgeport, Conn.

"WOLVERINE" Gas and Gasoline Engines STATIONARY and MARINE.

The "Wolverine" is the only reversible Marine Gas Engine on the market. It is the highest engine for its power. Requires no licensed engineer. Absolutely safe. Mfg. by **WOLVERINE MOTOR WORKS, 12 Huron Street, Grand Rapids, Mich.**

ACETYLENE GAS LIGHTING

Reduced to the Most Efficient, Safest, Simple and Economical Use. We guarantee our machines perfectly automatic in action, to extract all the gas from the carbide, and absolutely no overproduction or loss of gas. Approved by the various Boards of Fire Underwriters. Standard sizes 10 to 150 lights. Exclusive territory given to responsible agents. Correspond with **Niagara Falls Acetylene Gas Machine Co., Niagara Falls, N. Y. & Can.**

Cash for REAL ESTATE

no matter where it is. Send description and cash price and get my wonderfully successful plan. **W. M. OSTRANDER, North American Bldg., Philadelphia, Pa.**

"TANDEM" and "PEERLESS" Gas & Gasoline Engines

Write for particulars **Northern Engineering Works, 641 Atwater St., Detroit, Mich.**

THE "QUEEN" DRAWING PENS. SCIENTIFICALLY SHARPENED.

All Queen Pens are sharpened by experts who have had many years' experience in making and sharpening drawing pens. Only the finest English Steel is used in the Queen Pens, and they are hand-made and carefully tempered by our improved process. **QUEEN & CO. Inc., Mathematical, Engineering and Scientific Instrument Makers, 1010 Chestnut St., Philadelphia.**

TOOLS FOR MECHANICS.

Send for Free Catalogue No. 16 B. **The L. S. Starrett Co., Athol, Mass., U. S. A.**

D. L. HOLDEN REAL ESTATE TRUST BLDG PHILA., PA. SOLE MANUFACTURER. REGEALED ICE MACHINES

SEE FIRST PAGE SCIENTIFIC AMERICAN SEPT. 2, 1899.

PERFECT - PUMP - POWER.

is attained only in the **TABER ROTARY PUMPS**. They are mechanical, simple and durable. Will pump hot or cold fluid, thin or thick. Requires no skilled mechanic. Most power at least cost. All parts interchangeable. Made of iron, steel or bronze. Can be driven by belt, motor or engine attachment. **Large Illustrated Catalogue free. TABER PUMP CO., 32 Wells St., Buffalo, N. Y., U. S. A.**

GASOLINE ENGINES

Marine & Stationary from 1.4 to 16 H. P. A thoroughly satisfactory engine at a moderate price. Write for catalogue. **THE CLIFTON MOTOR WORKS, 233 1/2 Clifton Ave., Cincinnati, O.**

V. n Norman Universal Bench Lathes

have a large line of attachments. Cut shows milling attachment as applied to end of bed of lathe. Converts lathe into first-class small milling machine. Send for catalog. **WALTHAM WATCH TOOL CO., Springfield, Mass.**

MACHINE WORK WANTED

Have your Models of Engines, etc., made, and small Machine Work done in a thoroughly equipped machine shop. Estimates cheerfully given. **H. BARTOL BRAZIER, Engineer and Machinist, Manufacturer of Gasoline Vehicles, 1811-18-15 Fitzwater Street, Philadelphia, Pa.**

12-inch Pipe cut off and Threaded with ease by one man and a **FORBES PATENT DIE STOCK**

Smaller sizes proportionately easy. Send for Catalogue. **THE CURTIS & CURTIS CO., 6 Garden St., Bridgeport, Conn.**

Vehicle brakes, F. F. Weston..... 38,143
Washing compounds, Phoenix Chemical Co. 38,121
Water, spring, G. J. Carney..... 38,118

LABELS.

"Antiseptic Health Fabric," for fabrics, J. S. Given..... 9,079
"El Pagano," for cigars, A. C. Henschel & Co..... 9,080
"La Flor de Luis Martinez," for cigars, Martinez & Hecesa Co..... 9,081
"None Such Furniture & Floor Polish," for furniture and floor polish, G. W. Saums..... 9,082
"Snyder's All Food Emulsion," for a medicine, M. E. Snyder..... 9,083
"Sword's Great Tonic and System Renovator," for a medicine, Sword Medicine Co..... 9,084

PRINTS.

"Drexel Box," for overcoats, Kub, Nathan & Fischer Co..... 490
"Erdman's Absorption Food Sachet," for an absorption food sachet, Erdman & Co..... 494
"Spring Clothing and Apparel," for clothing, W. C. Both..... 489
"The Harvard Sack," for sack coats, Kub, Nathan & Fischer Co..... 492
"The Kenmore Sack," for sack coats, Kub, Nathan & Fischer Co..... 493
"The Mansfield," for overcoats, Kub, Nathan & Fischer Co..... 491

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., 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., 361 Broadway, New York.**

NEW BOOKS, ETC.

HINTS ON PLAYING THE JANE NAVAL WAR GAME. (Naval Kriegsspiel.) Together With All the New Rules and Official Changes. By Fred. T. Jane, inventor of the game. London: Sampson Low, Marston & Co. 1902. Pp. 47.

The Naval War Game, or Kriegsspiel, was designed to enable the players to realize as close a simulation of real warfare as is possible. The idea of the game is that any naval officer should be able, without any knowledge of the game, to direct the evolutions of the fleet. It is described by the author as the antithesis of chess, billiards, etc., in that mere proficiency of moving, and so on, does not entail victory, which depends upon the skillful handling of the fleets. The game is played with miniature models of the various warships of the world on boards marked out in squares. There is a code of rules drawn up, and a system of awarding points. That the game gives a very close approximation to actual naval warfare conditions is proved by the fact that it is enormously popular among the navies of the world, practically all of which have officially adopted it. The hints on playing the game are designed to familiarize the players more completely with the true intention and scope of the game. We notice, by the way, that in the sum total of points given to the various warships of the world, the "New Jersey" comes as first with 116 points, the "King Edward" of the British navy and the "Brin" of the Italian navy next with 104 points. There is a mass of information in this work which would be of interest to those who follow the growth of our navies, but who have no intention of playing the game itself.

EXPERIMENTAL SOCIOLOGY. Descriptive and Analytical. By Frances A. Keller. New York: The Macmillan Company. London: Macmillan & Co., Ltd. 1901. 16mo. Pp. 316.

The author, who, as the title page informs us, is a graduate student of the University of Chicago, has produced a book which is devoted primarily to the study of methods of the investigation of delinquents and their treatment. The author recognizes that what has been done is not a complete study. But taking the book for what it is worth, it certainly should secure interest. The information which has been collected is presented in such an attractive form that the reading of the book is more agreeable than might be expected from its title.

ALL THE WORLD'S FIGHTING SHIPS. A Practical Naval Annual for Practical Men. By Fred. T. Jane, inventor of the Jane Naval War Game. New York: Harper & Bros. 1901. Pp. 397. Illustrations.

This work is by far the most complete naval annual in the world. It is also the most practical and technical. It contains a photograph of every warship in the world, also a deck plan and sheer plan on which the position and thickness of all the armor, and the position and caliber of every gun are indicated. There are also two silhouettes of every warship and also of every merchant ship that might be of service in war. On the same page with the photograph and the plan of each ship is a table giving the leading dimensions of the vessel, the size and character of its guns, thickness and nature of its armor, together with its speed, fuel supply, etc. There are also articles on the year's progress in gunnery, marine engineering, armor, torpedoes, construction, strategy, tactics, signaling, etc. For the use of officers at sea it is a particularly valuable work, inasmuch as there is crowded into its pages matter that would ordinarily require several volumes for its presentation.

(Continued on page 302)

WE TRUST YOU

For one dozen boxes **THOMAS A. EDISON, JR., INK TABLETS** for you to sell at 10c, a box, retain your profits and remit us the balance, and if we find you honest and industrious we will offer you such inducements as will enable you to earn money very rapidly. **THE WIZARD INK TABLET** sells in every home and every business house. They retail at 10c per box containing eight tablets. Each tablet when dissolved in water makes the same quantity of ink that would cost 10c at the stores. Over two thousand testimonials from Banks and Business Men. Made in six colors. Write for sample tablets and full particulars of our offer to Agents. **THOMAS A. EDISON, JR., CHEMICAL CO., 31-33-35 Stone Street, New York, N. Y.**

SELECT A PEN

Suitable for your handwriting from a sample card of 12 leading numbers for correspondence, sent postpaid on receipt of 6 cents in stamps.

SPENCERIAN PEN CO.
349 Broadway, New York.

2000 Revolutions a Minute! FAN \$1.50

Measurement 10 inches. Throws air equal to any \$15 electric fan. **RUNS BY WATER.** Can be connected in any room or to any spigot. Fed by 1/2 inch Hole. Descriptive Circular free on request. **AGENTS WANTED. DELAWARE RUBBER COMPANY, 631 Market Street, Philadelphia, Pa.**

BOGART GAS ENGINES

Double Cylinder, 50 h. p. and upward. **FARR & TREETS, Steam Engine & Boiler Works...** 54 to 56 Perry Street, BUFFALO, N. Y. Catalogue on application

JUST \$1 buys best bell outfit built. Easy to put up and an up-to-date convenience. We sell Bells, 32c; dry batteries, 15c; push buttons, 7c; insulated wire, 30c. lb.; lamps, 35c. Write for price list. LIBERTY ELECTRICAL SUPPLY CO. 136 Liberty St., New York

80c USE GRINDSTONES?

If so we can supply you. All sizes mounted and unmounted, always kept in stock. Remember, we make a specialty of selecting stones for all special purposes. Ask for catalogue. **THE CLEVELAND STONE CO. 2d Floor, Wilshire, Cleveland, O.**

MATCH FACTORY.—DESCRIPTION of an English factory. SCIENTIFIC AMERICAN SUPPLEMENT 1113. Price 10 cents. For sale by Munn & Co. and all newsdealers.

We want to send you a circular of the **Rich Handy Drawing Outfit**

It is a time saver for the Draughtsman, and an aid to the learner. Circulars free. **J. & G. RICH, 125 N. 6th St., Philadelphia, Pa., U.S.A.**

2 BATTERY CALL TELEPHONES for \$5.50

Guaranteed good for 500 feet metallic circuit.

2 GENERATOR CALL TELEPHONES for \$8.50

Good for 3 miles single iron wire, batteries included. Sent C. O. D. if \$1.00 is sent with order for express charges. **Telephones guaranteed satisfactory or money refunded. FARR & FARR, 119 W. Jackson Blvd., CHICAGO.**

If you want the best CHUCKS, buy Westcott's

Little Giant Double Grip Drill Chucks, Little Giant Drill Chucks Improved, Oneida Drill Chucks, Cutting-off Chucks, Scroll Combination Lathe Chucks, Geared Combination Lathe Chucks, Plain Universal Lathe Chucks, Independent Lathe Chucks. Made by **Westcott Chuck Co., Oneida, N. Y., U. S. A.** Ask for catalogue in English, French, Spanish or German. **FIRST PRIZE AT COLUMBIAN EXPOSITION, 1893.**

A. W. FABER

Manufactory Established 1761. **LEAD PENCILS, COLORED PENCILS, SLATE PENCILS, WRITING SLATES, INKS, STATIONERS' RUBBER GOODS, RULERS, ARTISTS' COLORS.** **78 Reade Street, New York, N. Y. GRAND PRIZE, Highest Award, PARIS, 1900.**

MADE BY THE WHITMAN SADDLES

IT MUST BE GOOD **THE MEHLBACH SADDLE CO.** Illustrated Catalogue Sent Free **108 Chambers Street, NEW YORK, U. S. A.**

Pick a Perfect Pencil

One with a "dependable" point, a uniform grade—one that draws a clear, sharp, well-defined line, and to do this you will have to choose **DIXON'S AMERICAN GRAPHITE PENCILS**

the best made lead pencil in any country. Hard, soft or medium. Suitable for all purposes. Architects, draftsmen, clerks, reporters, etc. find them a boon. Send 16 cents for samples. Worth double the money. **JOSEPH DIXON CRUCIBLE CO. Jersey City, N. J.**

Patents Protected

Against Infringers. Dealers in and Manufacturers of **PATENTED ARTICLES.** Owners and Users of **COPYRIGHTS AND TRADE-MARKS** PROTECTED against dangerous litigation at a nominal cost. Booklet on application. **PATENT TITLE & GUARANTEE CO., CAPITAL \$500,000.00. Tel. 4232 Cortlandt. 150 Broadway, New York.**

THE EQUITABLE

"STRONGEST IN THE WORLD"

J. W. ALEXANDER PRESIDENT J. H. HYDE VICE PRESIDENT

"What lawsuits grow out of the graves of rich men every day; sowing perjury, hatred and lies among near kindred, when there should be nothing but love." —DICKENS.

The Continuous Instalment Policy of the Equitable does away with any possibility of a lawsuit. It permits a man to practically probate his own will, and to protect any dependent as long as he, or she, lives. He even protects them against themselves, for the money paid under such a policy can neither be squandered nor wasted. It provides a fixed yearly income during the life of the beneficiary, and the Equitable, the strongest financial institution of its kind in the world, is the executor of the will.

For information fill up and mail the following coupon.

THE EQUITABLE SOCIETY, Dept. No. 29. 120 Broadway, New York.

I would like to receive information regarding a Continuous Installment Policy, issued to a man aged..... years for a beneficiary aged..... years.

NAME.....
ADDRESS.....