

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line.

Marine Iron Works. Chicago. Catalogue free. "U. S." Metal Polish. Indianapolis. Samples free.

Gear Cutting of every description accurately done. The Garvin Machine Co., Spring and Varick Sts., N. Y.

Notes & Queries

HINTS TO CORRESPONDENTS. Names and Address must accompany all letters or no attention will be paid thereto.

(7775) C. H. B. asks: What is meant by the repeater of a telephone, and why is it so difficult to construct?

(7776) H. I. asks: What are the proportions of corrosive sublimate, sal ammoniac and water for the purpose of depositing a very thin coat of mercury on articles which do not plate readily?

(7777) H. B. writes: I am making an automatic circuit breaker for my battery plant, and I would like to ask a few questions in regard to the solenoid and the solenoidal coil.

(7778) The A. & J. Co. writes: We believe there is in use a paper upon which brass will make a mark, something like a pencil mark.

(7779) B. T. S. asks: 1. What are the temperatures of air and of the various gases when liquidified? A. The boiling point of liquid air at the ordinary pressure is 312.6 degrees below zero Fah.

TO INVENTORS.

An experience of fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending DECEMBER 19, 1899.

AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.]

Table listing inventions with names of inventors and page numbers. Includes items like Advertising and display card, Air compressor, Alloy, aluminum, Amusement apparatus, Animal trap, Ash pan, Assembling machine, Automobile, Bag, Bale holder, Bandage, Barrel handling device, Battery, Bell striking mechanism, Belt fasteners, Bending machine, Bicycle, Bicycle brake, Bicycle chain, Bicycle driving mechanism, Bicycle frame, Bicycle pedal, Bicycle rack, Billiard cue, Binder, Boiler, Book cover, Book holder, Book indexed, Book rest, Boring machine, Bottle, Bottle non-refillable, Bottle stopper, Bottle washing apparatus, Bottle wrappers, Box, Box filling and covering machine, Bracket, Brake, Brake shoe key, Bridge girder, Brush, Brush, rotary, Burner, Button setting machine, Button, upholstering, Buttoner, Cabinet, Cables, Caliper attachment, Callipers and valve setting device, Car, Car holder and protector, Car mill, Car brake, Car brake adjuster, Car central, Car coupling, Car fender, Car grain door, Car, railway, Car roof, Cars, antifriction bearing, Carrier, Carbonating apparatus, Carburetor, Carbureter, Carriage, Carriage, child's, Carriage, motor, Cartage setting apparatus, Cash register, Chain adjustment, Chair, Chopping machine, Churn, Cigar machine, Cigarette making machine, Circuit breaker, Clasp, Clevis, plow, Clock setting mechanism, Clock, striking, Clock striking mechanism, Clock winding indicator, Clocks or watches, regulator for hair springs, O. Johanson, Closet, C. H. Lawrence, Cloth stretching machine, A. Ashworth, Clothes line fastener, G. A. Weber, Clothes pin, W. L. Martin, Clothes rack, J. K. Adams, Cook, G. O. H. Klapp, Cooking apparatus for leveling coal in, O. Hilgenstock, Collar protector, J. B. M. Cleveland, Compass for drawing connections, W. Zietzen, Composition of matter, G. W. Bailey, Conduit plow, E. M. Hewlett, Cooking cotton seed, process of and apparatus for, W. H. Cook, Coop, falding, Thomsen & Jorkensen, Corn husker and fodder shreeder, combined, A. Rosenthal, Corn husking and cutting machine, A. Rosenthal, Corset, A. K. Bin, Corset pin, A. H. Thomson, Cotton pin, A. R. Anthony, Cotton bearer safety locking device, J. O'Connell, Cotton compress, T. J. Griffin, Coupling, See Car coupling, Electric or other wire coupling, Thill coupling, Whitetree coupling, Cover fastener, vessel, R. W. Crocker, Crayon holder, R. T. Yates, Cream separator, K. H. Emry, Cultivator beet thinning shoe, Oeder & Wright, Curtain rod or fixture, sash, F. Perry, Cushion making apparatus, E. F. Braisher, Cutter, See Grass cutter, Paper cutter, Cutting tool, G. M. Grant, Cycle, ice, G. J. Dierbeck et al., Cycle wheel hubs, manufacture of, R. S. Courtman, Decoy, knockdown, J. H. Merrill, Dental filling material, C. H. Land, Dental plugger, C. H. Davis, Dentists' tools, cleaning pad for, J. A. Mitchell, Derrailing machine, E. G. Peck, Desk, adjustable, J. H. Burton, Die, See Screw cutting die.

Advertisements.

ORDINARY RATES. Inside Page, each insertion, - 75 cents a line Back Page, each insertion, - \$1.00 a line For some classes of Advertisements, Special and Higher rates are required.

Star Foot power Screw... cutting Lathes Automatic Cross feed 9 and 11-inch Swing. New and Original Features. Send for Catalogue B. Seneca Falls Mfg. Company, 695 Water St., Seneca Falls, N. Y.

AMERICAN PATENTS.—AN INTERESTING and valuable table showing the number of patents granted for the various subjects upon which petitions have been filed from the beginning down to December 31, 1894.

ENGINE & FOOT LATHES MACHINE SHOP OUTFITS TOOLS AND SUPPLIES SEBASTIAN LATHÉ CO. CINCINNATI, O.

The Man behind the Books holds a responsible position. We guarantee to prepare young men and women to fill the highest places in bookkeeping if they are anxious to advance and will study "between times." Thousands have prospered through our unequalled course of EDUCATION BY MAIL in Electrical, Mechanical, Steam, Mining and Civil Engineering, Metallurgy, Art, Architecture, Practical Newspaper Work, English Branches, stenography, Machine Design and Mechanical Drawing.

THE HALL BRASS PIPE WRENCH. A PERFECT TOOL WITH FRICTION GRIP. Bushings for all sizes and shapes. Highly polished pipes made up without scar or injury. For Circulars and Prices WALWORTH MANUFACTURING CO., 128 to 136 FEDERAL ST., BOSTON, MASS.

SAVE 1/2 Your FUEL wasted up chimney. BY USING THE ROCHESTER RADIATOR. COST \$2.00 AND UP. Money refunded if not satisfactory. Write for booklet on economy in heating homes. ROCHESTER RADIATOR CO., 60 Furnace Street, Rochester, N. Y.

ROUND OR SQUARE BASE SKINNER IMPROVED PLANNER CHUCKS. Heavy, strong accurately made. Greater capacity than any other chuck. Set screws of crucible steel. All nuts case-hardened. Drop forged steel wrench with each chuck. Holds straight or taper work. Can be instantly adjusted from 0 to greatest capacity. SKINNER CHUCK CO., Church St., New Britain, Conn.

LATHES FOR GUNSMITHS, TOOL MAKERS, EXPERIMENTAL AND REPAIR WORK, ETC. Send for Illus. Catalog. W. F. & Jno. Barnes Co. 1999 Broadway Street, ROCKFORD, ILL.

SUB-PRESS PUNCHES AND DIES We make to order to drawings or models blanking, shaving and swaging dies, either simple or compound, for work requiring accuracy and finish. Sub-Press Dies for the parts of watches, clocks, cyclometers, and other small mechanisms a specialty. We carry in stock different sizes of Sub-Press Bases and Stands. Send for Descriptive Circular. THE PRATT & WHITNEY CO. Hartford, Conn., U. S. A.

NEW BINOCULAR. (The Triëder.) Small as an opera glass. More powerful than the largest field glass. Send for Circulars. QUEEN & CO. Optical and Scientific Instrument Works, 1010 Chestnut Street, NEW YORK: 59 Fifth Ave. PHILADELPHIA, PA.

THE ELECTRIC HEATER.—A VALUABLE paper, with working drawings of various forms of the electric heaters, including electric soldering iron, electric pad for the sick, etc. 6 illustrations. SCIENTIFIC AMERICAN SUPPLEMENT 1112. Price 10 cents. For sale by Munn & Co. and all newdealers. THE H.-C. Gas Engine Igniter The most satisfactory machine yet devised for igniting Gas and Gasoline Engines. It has permanent magnet fields; an inclosed armature; self-feeding carbon brushes; and it may be run in either direction. Send for Descriptive Circular "S. A." The Holtzer-Cabot Elec. Co., Boston (Brookline) Mass.

Table listing various mechanical and scientific items with their respective prices. Includes items like Disinfecting device for water closets, Sommer, Disintegrator, E. Kreiss, Dit ch check, portable expansion, O. D. Shields, Do or or gate banker, E. D. Bradford, Dress shirt, pockets for garments, M. Jacks, Drill, See Metal drill, Dust collector, L. S. Hozebloom, Dyeing, etc., machine for, G. W. Mosely, Electric crane, W. N. Sherman, Electric ground detector for constant current arc light circuits, S. F. Stevens, Electric or other wire coupling, R. Thompson, Electric transformer, Loring & Clark, Electric transformer, J. W. Packard, Electrical snap switch, M. Guett, Electrical transformer, A. F. Berry, Electrically driven spindle, Sawyer & Robb, Elevator, See Water elevator, Elevator, A. Ithenfeldt, Elevator and conveyor, E. C. Berg hoefler, Engine, See Fluid pressure engine, Gas engine, Pumping engine, Rotary engine, Steam engine wheel traction, L. H. Seely, Equipment carrier, C. P. Nutter, Faucet, J. B. Woodworth, Feed water heater, L. Carrer, Fence wires, machine for attaching pickets to, J. B. Carpenter, Filter, faucet, G. W. Van Aistine, Filter, oil, S. Schonfeld, Filtering tunnel, W. S. Keene, Firearm, recoil operated, P. Mauser, Firearm safety device, G. Luger, Fire escape, M. H. Dooly, Fire escape, J. Spaulding, Fire escape, E. Winston, Fire extinguishing compound, G. Edwards, Fire refuge, J. P. Lowell, Fireworks body or the like, L. Nordlinger, Fish hook, H. S. Butz, Fishing hook keeper, snood, J. Smith, Floor surfacing machine, F. K. Patch, Flooring and ceiling, H. C. W. Weyhe, Flower pot molding machine, H. N. Brooks, Fluid pressure engine, A. F. Parks, Folding chair and couch, combined, A. Grenjer, Folding gate, J. S. P. Kinman, Fruit wrapping machine, J. C. Wilson, Fulfilling mill stop motion, A. Murdock, Furnace, See Hot air furnace, Furnaces, nozzle for feeding fine fuel to, C. A. Robinson, Furnace, combined, L. Wolz, Gag, E. H. De Smith, Garbage crematory and water heater, combined, M. J. Cragin, Garment, C. Rutenberg, Garnet supporter, F. C. Raymond, Gas apparatus for collecting carbonic acid, J. F. Wittenmann, Gas burner, M. P. Worley, Gas engine, A. H. Neale, Gas generator, acetylene, P. Rucher, Gas motor engine and rough combined, M. E. Hertel, Gas valve, self closing, J. Blevins, Gases, instrument for recording variations in tension of, A. Steinbart, Gate, See Folding gate, Mine gate, Gate, Ferguson & Brace, Gate, H. N. Hart, Gear, change speed, B. L. Schmitt, Gear, variable speed driving, T. C. Field, Generator, See Gas generator, Glass grinding and polishing machine, P. Semmer, Glass grinding and polishing machine, plate, M. R. Welty, Glass pipe, apparatus for manufacturing, J. W. Bonta, Goat cart, folding, E. Depersenaire, Governor mechanism, R. Shireffs, Gram sprout, G. H. Birchard, Grappling hook, G. T. Smallwood, Grass cutter, W. S. Seales, Graves, receptacles used in constructing, H. D. Cameron, Grinding machine, tool, A. Van Dillenbeck, Guns, apparatus for adjusting elevation of, J. Krone, Half-tone plate and making it, G. V. A. Ahelmann, Hame fastener, J. H. Cutliff, Hammer, power, H. G. Dittbenner, Hammer, power, H. G. homes, Hand shears, E. B. Trueschmann, Hanger, See Door or gate banker, Meat hanger, Harrow, J. A. Smith, Harvester, peanut, G. W. Williams, Heater, See Feed water heater, Water heater, Heater, J. R. Froberg, Heating and steaming device, band, J. S. Berry, Heel, F. Wiesen, Hem folding machine, R. Leob, Hides or skins, machine for treating, C. P. Vaughn, Hinge, anti-friction, W. H. Hill, Hinge, spring, J. Lehnbeuter, Hook, See Fish hook, Snap hook, Trap hook, Horse breaking apparatus, J. Craig, Horseshoe calk, W. G. Brooks, Horseshoe calk shaper, H. I. Stanley, Horseshoe nail, D. W. K. H. Horseshoe, nailless, D. Kerekas, Hot air furnace, J. Booker, Hot air furnace, W. H. Hillier, Hot air furnace, J. Timms, Hub securing device, vehicle, H. P. Childress, Hub and wheel, W. Wilson & Perkins, Hydrocarbon burner, J. F. Shultz, Incandescent mantles, machine for treating, J. H. Abercrombie, Ingots, billets, etc., device for manipulating, J. J. McNeil, Iron and steel, manufacture of, polished, W. Dickey, Iron or steel, producing phosphoric, S. P. Etter, Ironing board and ladder, combined, L. Nelson, Jar fastener, R. H. Hansee, Joint, for hollow building blocks, tubes, etc., Hickson & Bushnell, Journal bearing, lubricating, B. J. Kiapp, Journal box, J. W. Heaton, Label holder for bottles or packages, E. L. Brown, Labeling machine, C. E. Tebbets, Ladder shelf attachment, F. K. Randall, Ladder, step, J. D. Hall, Lamp, acetylene gas, H. Riemann, Lamp, central draught, J. C. Miller, Lamp globe, Pennycook & Barrett, Last for making overshoes, G. S. & H. D. Bronson, Last hanging machine, E. A. Eastman, Latch, C. G. Peck, Lathe, spoke, I. G. Robinson, Lead oxide, manufacture of, Bunn & Case, Leather snipping machine, T. F. Hart, Ledger, detachable leaf, E. Mursky, Lid and card holder, R. H. Suttlinger, Linter, M. W. Swoon, Liquid dispensing can, C. M. Husted, Liquids, apparatus for drawing off fixed quantities of, W. Turnbull, Lock, See Sash lock, Lock, Dillenbeck & Flues, Locks, manipulating attachment for combination, M. Mesier, Loom, narrow fabric, O. A. Steere, Magnet, polyphase alternating current, W. M. Scott, Mail bag, E. C. Jordan, Match making and boxing machine, C. Carr, Meat hanger, S. J. Fitzgerald, Merry-go-round, J. W. Hile, Metal drill, Mills & Smith, Metal working tool, B. M. W. Hanson, Metal wheel, E. C. Peck, Milk test bottles, machine for shaking Babcock, H. Kolls, Mill, See Cane mill, Mine gate, W. H. Tschantz, Mining machine, W. T. Moss, Miter board attachment, P. A. Holmberg, Moistener and sealer, envelop, H. A. Thexton, Mop, V. Winquist, Motor, See Water motor, Wave power motor, Mower grass catcher, lawn, W. J. Brennau, Mowing machine, J. A. Allen, Mowing machine, gathering attachment, H. L. Everett, Music leaf turner, G. A. Robbins, Nail, See Horseshoe nail, Nut lock, J. A. Overall, Oil, apparatus for volatilizing and burning, H. Luckenbach, Oil cup, sight feed, H. Ritter, Oil from water, apparatus for separating, Camiz & Bettoni, Oilstone box, W. Black, Jr, Optical surfaces, machine for forming, P. Gau-Lien, Ore pulverizing, H. Mann, Ore separator, F. A. Pratt.

(Continued on page 428.)