

best writers and scientific experimentalists. In it we have the opinions and writings of English, American, German, and Austrian photographers side by side, which is of itself a new but very agreeable departure.

There is also much valuable information on emulsions, special developers, and photo-engraving processes, besides illustrations of new and novel apparatus.

We commend the book as a reliable guide to any disposed to take up photography.

THE PHOTOGRAPHER'S BOOK OF PRACTICAL FORMULÆ. Compiled by W. D. Holmes, Ph.B., and E. P. Griswold. Published in New York. 1888. Pp. 237. Price 50 cents.

In this book are published nearly all of the reliable formulas of the present time, relating more especially to the most approved developers, the wet plate process, intensifiers, carbon process, toning baths, albumen and bromide printing processes, and many other useful things desirable for a photographer to have for convenient reference.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.

References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(1) F. K. P. asks: If a large quantity of basswood shavings, kiln dried, mixed with green basswood sawdust, partially green, are stored in a large room at a depth of 8 feet, would the process of heating cause them to take fire? A. We should apprehend much danger from liability to spontaneous combustion.

(2) Theta.—Engines for utilizing the spent heat of exhaustion in vaporizing the highly volatile liquids, bisulphide of carbon, ether, and ammonia, have been built and largesums have been spent in endeavors to make them a success, but so far every form of combination has been a practical failure.

(3) A. B. C. asks if a thoroughbred horse does not have one more rib than an ordinary horse. A. Certain horses have 19 ribs; while others have only 18, but we do not think that there is any rule by which you can claim that the horse having the greater number of ribs is any better than the other.

(4) J. A. H. asks: Is there any means of preventing rain water stored in wooden cisterns from becoming foul? A. Use charcoal of about the size of beans, with the dust sifted out, with which cover the surface of the water in the cisterns.

(5) D. C. S. asks: 1. Is there any wash that I can use to wash lime stains out of oak? A. No. 2. Is there any kind of wash that I can apply to oak or cherry to prevent lime and plaster from staining them? Coat them with paraffin, and the lime will not go through.

(6) Gloss asks how to manufacture a good liquid polish or gloss for shoes. A. We presume you desire a gloss for shoes. Take of gum shellac 1/2 lb., alcohol 3 quarts, dissolve, and add camphor 1 1/2 oz. and lamp black 2 oz.

(7) W. S. P. asks: 1. How many pounds weight will a cubic foot of air, in an air-tight vessel, sustain on the surface of water? A. About 62 1/2 lb., less the weight of the inclosing vessel. 2. How many pounds weight will a cubic foot of vacuum sustain, with same conditions? A. The same weight plus about 535 grains.

(8) F. A. C. writes: Will you please explain the following phenomenon: In our station barometer I have noticed that from time to time an increasing number of very minute specks of quicksilver form above the mercurial column, and attach themselves to the inside of the tube, looking like fly specks.

(9) G. A. H. writes: I wish to have made several cells of Lalonde and Chaperon's oxide of copper batteries as described in Hospitalier's "Domestic Electricity for Amateurs" (C. J. Wharton), but desire further information upon the following points not given in the description: 1. Will commercial caustic potash do, or must it be the C. P. kind, such as is used by pharmacists in the preparation of liquor potassa? A. Use commercial caustic potash.

(10) C. S. W. asks: What will prevent a full nickel bicycle from tarnishing or rusting at the seaside? Is there any substance which will not gather the dust, and that can be easily removed? A. This is a constant trouble with nickelled parts of bicycles.

(11) F. B. C. says he is troubled in obtaining sufficient density in his negatives. He employs a Seed plate and a ready prepared single solution developer. Exposing instantaneously or up to five seconds, he obtains no better results.

(12) F. H. asks: How much mercury in an half inch brass tube (half inch diameter) will be required by an application of heat, to raise a piston weighing 4 ounces, and what is the maximum of heat the mercury will stand? A. You cannot use mercury in a brass tube, as it will destroy the brass.

(13) A. G. B. asks: Is there any substance which will prevent and stop fermentation in apple cider or other fruit juices? A. Sulphur burned in the barrel has the desired tendency.

(14) T. H. C. desires instructions for some sort of a sizing, such as is used on campaign flags to stiffen them up and put on a gloss.

(15) E. C. asks: Can lime be used to advantage with barn manures? If so, how? A. No; because it tends to set free the ammonia, which then escapes into the air.

(16) R. O. asks: Will you kindly tell me how I can remove the solder from platinum, so that it may be made comparatively pure. It is at present soldered to small German silver springs.

TO INVENTORS.

An experience of forty 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 Granted

July 31, 1888,

AND EACH BEARING THAT DATE.

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

Agricultural implements, spring attachment for, C. R. Hartman..... 386,982 Air brake, automatic, R. Solano..... 387,018 Album, picture, C. Hood..... 386,884 Artist's mechanical sketching apparatus, J. Pulsifer..... 386,831

Auger, post hole, F. P. Stanley..... 386,901 Augers and bits, machine for cutting floor lips and spurs on, J. Swan..... 387,188 Axle box, car, W. S. Sharpneck..... 386,890 Axle car, A. M. Wright..... 387,197 Axle, vehicle, L. T. Weaver..... 387,028 Bail ear, T. F. Reilly..... 387,182 Bandage, hygienic, J. Grossmann..... 387,159 Bandages, machine for making plastic, J. R. Rodman..... 387,183 Bar. See Locomotive draw bar. Basket, fruit, W. A. Hess..... 387,073 Battery. See Secondary battery. Battery zinc, Carr & Borden..... 387,049 Beam end protector, H. A. Goetz..... 386,976 Beam end protector, M. W. Mitchell..... 387,004 Bed bottom, spring, D. J. Powers..... 386,846 Bees, device for hiving, W. J. Daniel..... 386,968 Bell striking mechanism, L. D. Jones..... 387,079 Bench. See Work bench. Bit. See Bridle bit. Block. See Printing block. Sawmill head block. Snatch block. Blower and induction apparatus, combined fan, F. Murphy..... 387,177 Blower and induction apparatus, fan, F. Murphy..... 387,178 Board. See Multiple switch board. Bobbin winding machine, J. Koerber..... 387,080 Boiler. See Steam boiler. Boiler, G. E. Hopkin..... 387,076 Boiler, W. B. Mack..... 386,998 Boiler cleaning compound, galvanic, F. J. Clamer, 387,145, 387,146 Boiler tube cleaner, C. E. Kendall..... 386,988 Book stapling machine, Donnell & McAuliffe..... 386,972 Boot or shoe, C. W. King..... 386,538 Boot or shoe, W. H. Stevens..... 387,119, 387,120 Boot or shoe heel, S. D. Densmore..... 386,969 Boot or shoe soles, machine for channeling and feather edging, A. Eppler, Jr..... 387,058 Boots or shoes, machine for marking the uppers of, J. E. Plummer..... 387,106 Box. See Axle box. Box fastener, W. N. Barr..... 386,912 Braiding machine, A. S. Hood..... 387,075 Brake. See Air brake. Car brake. Vehicle brake. Brick kiln, J. B. Grawcock..... 386,518 Bridges, connection for end posts and bottom chords of, S. A. Buchanan..... 387,139 Bridle bit, H. W. Campbell..... 387,048 Buckle, L. C. Voorhees..... 386,944 Burner. See Gas burner. Hydrocarbon burner. Lamp burner. Burnishing machine, J. J. Fitzgibbon..... 386,920 Bustle, A. H. Jackson..... 386,827 Button attaching machine, J. F. Thayer..... 386,856 Cable gripper and pick-up, Holmes & Charles..... 386,824 Calk for hoses, removable, T. B. Mason..... 387,000 Camera. See Photographic camera. Candle case, pocket, J. H. Johnson..... 386,829 Car brake, F. G. Taylor..... 386,940 Car brake, automatic, T. Tait..... 387,019 Car coupling, Conn & Pugh..... 386,915 Car coupling, C. E. Fox..... 387,062 Car coupling, J. T. Haugh..... 386,818 Car coupling, J. Skinner..... 386,854 Car coupling, H. W. Warner..... 387,025 Car heating apparatus, Timlin & Heidinger..... 387,124 Car starter and brake, A. Jeanel..... 386,923 Cars, heating railway, Lyon & Moore..... 387,173 Carriage, J. T. Clarkson..... 386,963 Carriage spring, H. S. Smith..... 386,937 Carriage top irons, manufacturing, F. Schreidt..... 386,851 Carriage top prop, W. R. Jacobs..... 387,077 Cartridge loader, A. Jutz..... 387,171 Case. See Candle case. File case. Cash indicator and register, J. H. Voss..... 387,198 Casting, S. E. Thomas..... 386,941 Cement compound, hydraulic, G. L. Eagan..... 387,190 Centrifugal reel, Z. C. Eldred..... 387,057 Chain, drive, B. A. Lezg..... 387,081 Chain, drive, B. F. Orton..... 387,006 Chopping knife and slicer, H. W. Bridgman..... 387,047 Churn, S. J. Loveless..... 386,883 Churn, Rudasill & Long..... 387,165 Churn, A. Tschur..... 387,190 Cigar bunching machine, J. M. Montgomery..... 387,088 Cigar mould, H. C. Palmbeck..... 386,894 Cigar retailer, P. C. Osterberg..... 387,103 Clay crusher and drier, R. Freygang..... 387,158 Cleaner. See Boiler tube cleaner. Tube cleaner. Clip. See Felly clip. Clock, calendar, P. F. Nilson..... 387,005 Clutch, J. D. Westgate..... 386,948 Clutch, friction, J. D. Westgate..... 386,947 Coffee pot, A. Harry..... 386,817 Coin-operated machine, C. F. Winch..... 387,180 Conical wheel, A. Twyman..... 387,191 Corn shocker, E. F. Evans..... 387,155 Counting and recording the number of packages, apparatus for, M. Gottfried..... 386,879 Coupling. See Car coupling. Pipe coupling. Thill coupling. Trunk strap coupling. Vehicle reach coupling. Crank, anti-dead center, T. C. Thomas..... 386,942 Crusher. See Clay crusher. Cuff holder, B. F. Walker..... 386,945 Cup. See Egg cup. Cutter. See Feed cutter. Mining machine cutter. Damper for cooking stoves, etc., regulating, J. Mahedy..... 387,091 Damper regulator for furnaces, G. A. Goodenough..... 386,811 Desk appendage, writing, E. Lemberger..... 387,082 Die. See Screw cutting die. Door hanger, R. J. Hosner..... 386,885 Door mat, metallic, S. Toffer..... 387,189 Draught equalizer, W. Cazier..... 386,962 Draw shave, W. B. Swan..... 386,855 Draw shave, J. Swan..... 386,903 Dredging machine, M. F. Brainard..... 386,866 Drill. See Expansion drill. Rock drill. Drilling or chipping device, W. S. Sherman..... 387,115 Drum head strainer, G. Van Zandt..... 387,021 Drum, heating, E. C. Gran..... 386,978 Dyeing apparatus, G. Jagenburg..... 386,985 Dyeing apparatus, Lee & Bradshaw..... 386,835 Dyeing colors by the simultaneous oxidation of diamines and monamines, P. Monnet..... 387,087 Dyeing purposes, preparing a solution of indigo for, F. E. Schumuckert..... 386,933 Egg cup, J. Casey..... 386,804 Electric circuit regulator, R. Belfield..... 386,956 Electric converter, Shallenberger & Byllesby..... 387,013 Electric currents, automatic regulation for, R. Belfield..... 386,797 Electric indicator, W. A. Anthony..... 387,131 Electric machines, brush holder for, A. Schmid..... 387,010 Electric motor regulator, A. G. Waterhouse..... 387,194 Electric motors, regulation of, A. G. Waterhouse..... 387,195 Electrical apparatus, coin-operated, P. Everitt..... 386,919

Electrical conversion and distribution, apparatus for, W. Stanley, Jr..... 387,177 Electrical distribution, system of, M. M. M. Slatery..... 386,936 Electrical non-conductor, Lee & Waite..... 386,925 Engine. See Explosive engine. Gas engine. Gas motor engine. Hot air engine. Steam engine. Envelope machine, rotary, S. A. Grant..... 387,065 Evaporating apparatus, vacuum, O. Biemann..... 386,958 Expansion drill or reamer, E. A. Lilly..... 387,169 Explosive engine, Julig & Ewald..... 387,167 Extractor. See Stump extractor. Eyeglasses, J. Bowles..... 386,799 Fabric. See Non-heat-conducting fabric. Faucet, T. Haynes..... 387,182 Faucet, C. F. Smith..... 387,014 Feed cutter, R. F. Vermillion..... 387,126 Felly clip, Higgins & Sullivan..... 386,963 Fence, O. E. H. Neichling..... 387,107 Fence, J. Sjoström..... 387,116 Fence, flood, C. Herring..... 387,072 Fence machine, wire, J. W. Roberts..... 387,108 Fence post, C. S. Long..... 387,065 Fence post base, C. S. Long..... 387,084 File case, W. F. Altfather..... 386,952 Filter, D. Wise..... 386,978 Firearm, magazine, R. Mallen..... 386,859 Fire escape, J. K. O'Neil..... 387,180 Fire extinguisher for railway cars, G. Gibbs..... 387,084 Fire extinguishing apparatus, automatic, A. F. Nagle..... 387,179 Fire kindler, T. T. Prosser..... 386,895 Fireproof material for drop curtains, Brown & Orr..... 387,137 Fish hook, G. Smith..... 387,015 Flood gate, G. E. Tegardin..... 387,020 Flossing machine, J. McDermott..... 386,839 Flour bolting machine, C. Bostel..... 386,959 Flue for electric transformers, E. Thomson..... 387,123 Frame. See Photographic printing frame. Fuel, automatic feed regulator for liquid, W. E. Eastman..... 387,065 Fuel feeding apparatus, W. E. Eastman..... 387,066 Furnace. See Open hearth furnace. Furnace for smelting and reducing ores, R. Bonehill..... 387,043 Galvanometer, P. Lange..... 386,992 Gas burner, incandescent, E. Moreau..... 387,099 Gas burner, natural, G. K. Detwiler..... 386,871 Gas burner tip, W. M. Jackson..... 386,984 Gas engine, Delamare-Deboutteville & Malandrin (F.)..... 10,951 Gas governor, G. A. Gessner..... 386,809 Gas meter, A. Langlais..... 386,994 Gas motor engine, H. Williams..... 386,949 Gas motor engines, igniting apparatus for, N. A. Otto..... 386,929 Gas producers, etc., poking bar for, J. H. Thomas..... 387,021 Gas regulator or governor, G. Porter..... 387,181 Gate. See Flood gate. Gear, friction, O. Zobel..... 387,198 Generator. See Steam generator. Glove or corset fastening, A. Rammoser..... 387,009 Gloves, manufacture of, J. Upsdale..... 386,943 Gold and silver where mechanically coated in ores with refractory substances, cleansing, C. P. Bellows..... 387,036 Gong sounding mechanism, C. F. West..... 387,027 Grain binder, A. Tetrault..... 386,905 Grain drills, runner for, J. L. Ashurst..... 386,911 Grain dumping device, J. P. & J. R. Sevier..... 386,934 Gunpowder mills, automatic feed and delivery apparatus for, P. A. Oliver..... 386,843 Hanger. See Door hanger. Hay carrier track hanger. Harnessmaker's tool, W. G. Bunker..... 386,801 Harrow, R. G. Patton..... 386,845 Harrow, H. C. Pratt..... 386,847 Harrow, rotary, M. D. Bronner..... 387,136 Harvester, sugar cane, H. Fatic..... 387,061 Harvesters, adjustable wind board for, H. J. Case..... 386,803 Hat stretching and blocking machine, W. Becklerle..... 386,955 Hat ventilator, C. Potter..... 386,930 Hay carrier track hanger, Burnham & Miller..... 387,142 Hay press, J. R. & A. W. Bigham..... 387,039 Hay rake horse, E. P. Lynch..... 387,172 Hay raking and loading apparatus, M. O. Royce..... 386,897 Heat and power, plant for supplying, R. R. Zell..... 386,882 Heat, apparatus for chemically producing, W. G. MacLaughlin..... 387,089 Heater. See Water heater. Hinge, D. N. Bryant..... 386,800 Holder. See Cuff holder. Paper bag holder. Pen and pencil holder. Pen or pencil holder. Photographic plateholder. Sash holder. Hook. See Fish hook. Hook, A. Sanford..... 387,109 Hook, R. Sanford..... 386,850 Horse blanket, A. M. Crooker..... 387,150 Horse checking device, D. S. Munger..... 387,175 Horse checking device, Munger & Price..... 387,176 Horse detacher, P. Geyer..... 386,877 Horseshoes, machine for making, A. M. Sweder..... 386,904 Hose, clamping collar for attaching, C. Hecox..... 386,882 Hot air engine or aerothermic motor, L. Genty..... 387,063 Hydrocarbon burner, Cole & Pihlstrom..... 387,053 Indicator. See Cash indicator. Electric indicator. Station indicator. Induction coil, coin-operated, Williams & Roovers..... 386,860 Ingot mould, McCleane & Faber, Jr..... 387,174 Insole, C. W. King..... 386,832 Insulator peg, electric, W. E. Joslin..... 386,986 Iron and steel with rustless oxide, coating, A. A. Breneman..... 387,046 Jack. See Lifting jack. Shoe jack. Wagon jack. Joint. See Railway fish joint. Journal bearing, J. W. Garratt..... 386,808 Kiln. See Brick kiln. Knife. See Chopping knife. Knitting machine, S. Henshall..... 386,819, 386,821 Knitting machine, circular, S. Henshall..... 386,820 Ladder and chair, combined step, P. Braun..... 387,045 Lamp, G. W. Woodward..... 386,891 Lamp, Argand, L. J. Atwood..... 386,953 Lamp burner, E. H. Hickok..... 386,822 Lamp, regenerative gas, J. Franklin..... 387,157 Lamp, triangular tubular, C. Bergener..... 387,088 Lamps, automatic regulator for electric, R. Belfield..... 386,796 Lamps, storm protector for electric, T. H. Brady..... 387,044 Lead pigment from galena ore, manufacturing sublimed, G. T. Lewis..... 386,836 Leak stopper for ships, etc., C. H. S. Schultz..... 387,200 Leveling instrument, A. Kezel..... 386,924 Lever, draught, F. R. Webster..... 386,946 Lifter. See Plate or dish lifter. Transom lifter. Lifting jack, A. W. Anderson..... 386,864 Lifting jack, J. Baldwin..... 386,954 Light. See Magnesium light.