Inquiry No. 1121.—For a buttonhole moistener and opener, preferably Miller Brothers.

Inquiry No. 1122.—For handles for rubber stamps,

Inquiry No. 1123.—For centrifugal gold-separating machinery.

Inquiry No. 1124.—For machinery for powder mills.

Inquiry No. 1125.—For an automobile lawnmower (gasoline preferred) with detachable roller.

Inquiry No. 1126.—For manufacturers of cigarette cardboard boxes,

Inquiry No. 1127.—For flexible steel ladder suitable for portable fire-escapes.

Inquiry No. 1128.—For a concentrator.

Inquiry No. 1129.—For manufacturers of printing presses, also type for same.

Inquiry No. 1130.—For manufacturers of paper for printing purposes.

Inquiry No. 1131.—For machinery for making toothpicks.

Inquiry No. 1132.—For machines for making linen collars.

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 publ cation.

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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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.

(8283) F. H. O. asks: What effect, if any, has a draught during a thunderstorm? Does a draught act as a conductor or in any way tend to change the direction of a lightning stroke? A. We cannot decide this matter. If doors and windows are open during a thunderstorm, the air is continuous and the path of the flash is direct through the openings into the house. Doors and glass are better insulators than air, and we feel protected to a greater degree when doors and windows are shut than when they are open. There is little scientific basis for this feeling, we are aware, but having it we shut the doors and windows.

(8284) J. S. C. asks: 1. What is the lifting power in pounds of one cubic foot of the gas used in balloons? A. The lifting power of any gas is the difference between the weight of the gas and the weight of the same volume of air. Since these weights vary with the temperature and the pressure of the atmosphere, it is common to give them for the freezing point and the normal barometer, 29.92 inches. The French aeronauts work upon the basis that one cubic meter of hydrogen will lift one kilogramme, and ordinary illuminating gas will lift about one-half as much as hydrogen. If a closer value is desired, it may be obtained as follows: 1 cubic foot of air at freezing and normal pressure weighs 1.29 ounces avoirdupois; 1 cubic foot of pure hydrogen under the same conditions weighs 0.089 ounce avoirdupois. The difference between these two weights is 1.2 ounces, which is the weight that 1 cubic foot of hydrogen will balance in the air. It will lift any ~~weight less~~ than that. Illuminating gas is of varying composition. If its density is taken at 0.458, its weight is 0.59 ounce per cubic foot, and 1 cubic foot of gas will balance a weight equal to the difference between 1.29 ounces and 0.59 ounce or 0.70 ounce. 2. What is the lifting power of a perfect vacuum (per cubic foot) if such could be obtained? A. The question is already answered above. It is 1.29 ounces per cubic foot, the weight of the air in a cubic foot. 3. What is the approximate weight per square foot of the gas holder of a balloon? A. We do not know. It varies greatly according to the material employed and the number of coats of varnish it has received. The total weight of bag and outfit is much more important.

(8285) R. E. M. writes: I am somewhat interested in some lead land in this part of the country which is as yet undeveloped, and with a view of starting to work on same at an early date, I write to ask you of your opinion of the electrolytic process of treating ores as compared with the stamp mill and smelter process. I understand there has been an electrolytic process whereby lead ore can be treated by electricity and a much larger per cent of the assayed value of the ore can be obtained than by the old method. A. Electrolytic processes are very rapidly coming into use and superseding the older methods of refining and smelting. We have not published any data upon the matter. The machinery can be secured from any of the large electric companies, and any good electric engineer can operate the plant.

(8286) F. F. asks: Can German silver wire be used in place of copper wire on voltmeter in SUPPLEMENT 1215, if only 1-12 as much wire was used and wind it all on the bobbin? A. German silver wire may be used in place of copper if it be made to meet the same conditions as are specified for the copper wire in the description of the voltmeter.

(8287) E. N. asks: Kindly inform me in what issues of the SUPPLEMENT shunt-wound and induction coils for medical purposes are described. A. SUPPLEMENT, No. 600, gives the connections of a shunt-wound dynamo or motor, and No. 569 contains the instructions for making a medical coil. The price of each of these is ten cents.

(8288) G. S. W. writes: I wish directions for making an electric dynamo suitable for electrolysis and of such size as to consume at its full load nearly one man power. Have you the plans for one which will do this? A. Yes; in SUPPLEMENT, No. 161, price ten cents.

(8289) LeM. L. P. asks: Kindly give details of charging storage battery for automobile. The best current to use, voltage, amperes, etc. A. We recommend Salomon's "Practical Management of Accumulators," price $1.50 by mail, for the purpose you have in view. The chapter upon "Charging" contains 33 pages. It is obviously out of the question for us to give "details" on the point in this column.

(8290) E. H. R. G. asks: 1. What is the specific gravity of corn meal, and how is it ascertained? A. The specific gravity of corn meal would be the same as that of the corn from which it was made. This would differ with the sample, since the same bulk of corn does not always weigh the same. To ascertain the specific gravity of corn, weigh a quantity very exactly. Weigh it again hung in water, and find the difference between the two weights. Divide the first weight by the difference. The quotient is the specific gravity. The corn may be put into a wire basket or gauze bag and hung from the balance to obtain its weight in water. It must be thoroughly wet with the water before its weight in the water is taken. 2. Is corn meal heavier than water, and is not this the reason that it sinks when put into a glass or tumbler of water? A. Yes, to both parts.

(8291) L. H. H. asks: 1. Could you please inform me what is the voltage and amperage of one cell of Fuller battery? I have a ⅛ H. P. motor which requires 8 volts and 5 amperes to run it. Do you think 4 cells of Fuller battery would run it, giving that power? How long do you think they would run it on one charge? A. The motor requires 5 amperes at 8 volts. This is 5 x 8, or 40 watts; 746 watts are one horse power. Your motor is a little less than 1-18 horse power. You overrate it. Four cells of Fuller battery will not give 8 volts for any length of time after they are charged. Five cells should be used. To obtain 5 amperes discharge, the cells should be of the largest size. They would be run down in 6 to 8 hours so far that they could not furnish enough current to run full speed. 2. Do you think five cells of carbon cylinder battery charged with bichromate and sulphuric acid solution would run it six hours? A. Yes.

(8292) S. C. asks: 1. What should I use for the lining of the cells of the plunging bichromate battery described on page 394 in "Experimental Science" in the absence of gutta percha? A. Nothing will completely replace hard rubber for the cells of a battery. Glass cells are the next best, but they are fragile. Next to glass is a wooden box with a thick coating of asphaltum upon the wood of the box. This should be frequently renewed. 2. Which would be the most efficient way of connecting the cells of this same battery? A. If the battery is to be used for cautery, or for sudden heating, connect in multiple; if for power, connect in series.

(8293) I. M. A. asks: 1. Where can I get descriptive illustrated article on electric plants of the United States navy? A. No single article contains this information. It is scattered through the files of the technical electrical press for the last three years. 2. Name some good book on incandescent wiring that gives diagrams with full explanations as to putting in all kinds of switches. A. Herrick's "Modern Switchboards," price $3; Kilgour, Swan and Biggs' "Electrical Distribution in Theory and Practice," price $4; Walker's "Electric Lighting for Marine Engineers," price $2; Davis' "Standard Tables for Electric Wiremen," price $1; Noll's "How to Wire Buildings," price $1.50. All these are helpful in the various parts of the work.

(8294) W. W. P. asks: 1. Can lithium, calcium, barium phosphates, potassium and zinc be used in colored lights, and what salts of these elements, and which phosphates will give the best results? A. The chemistry of this inquiry seems to be slightly mixed, but it will not explode as some of the compounds would if they were mixed as badly. In general, it may be said that chlorides and carbonates of lithium, barium, strontium, etc., are used for colored lights. Phosphates do not seem to be adapted to such a use. 2. How are ammonia, sulphate of copper and oxychloride of copper ($Cu_4O_3Cl_2 4H_2O$) made commercially and in the laboratory? A. Ammonio-sulphate of copper is made by adding ammonic hydrate to a solution of sulphate of copper in water, till the precipitate which is formed at first is dissolved. A clear blue liquid results. The oxychloride of copper is a common paint under the name of Brunswick green. For its manufacture consult works on the manufacture of paints. 3. What furnishes the oxygen necessary for combustion in the following: Chlorate of barium, 2 ounces; nitrate of barium, 3 ounces; sulphur, 1 ounce? A. All chlorates contain a large proportion of oxygen and are very unstable compounds, easily decomposed, often with violent explosions. It is from potassium chlorate that oxygen is manufactured for commercial uses. Nitrates contain three equivalents of oxygen. Potassium nitrate is used in the manufacture of gunpowder because of the oxygen it furnishes to consume the carbon and the sulphur. The compound whose formula you give is explosive. 4. I recently saw that "flowers" is the name applied to distillates, but I also saw that "floreszinci" is oxide of zinc. What, therefore, is flowers of zinc? A. We are not familiar with the usage of the word "flower" as a *distillate;* nor do we find any such definition given in Webster. It may be sublimate was used where you read distillate. In this sense of flowers, the word simply means a fine powder. Flowers of zinc is finely powdered zinc oxide as used by the druggist in preparing ointment. 5. Where can copper disulphide and mealpowder be bought, and how much does mealpowder cost? A. Apply to the nearest druggist.

INDEX OF INVENTIONS

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

July 23, 1901,

AND EACH BEARING THAT DATE.

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

Advertising device for doors, M. J. Quinn.. 678,902
Alarm. See Fire alarm.
Alkali metals, apparatus for electrolysis of the salts of, H. S. Anderson..... 678,851
Annealing box, W. E. Harris..... 679,145
Antiseptic applying apparatus, W. M. Kelso 679,262
Armature winding, W. Lau..... 679,284
Artillery mount, field, L. L. Driggs..... 679,113
Autocar starting means, Hope & Buckley... 679,024
Automatic brake, J. Hughes..... 679,001
Axle, vehicle, B. S. Morden..... 679,180
Baling press, W. R. Colman..... 678,941
Barrel, O. H. P. Cornell..... 679,277
Barrels, manufacture of, O. H. P. Cornell.. 679,276
Basket and cover therefor, H. J. Sitterly... 678,985
Bearing, vertical shaft, P. L. Kimball..... 679,078
Bicycle driving mechanism, M. L. Nichols.. 679,283
Bicycle handle bar, L. L. Luce..... 679,086
Bleaching powder, apparatus for making, P. Naef 678,970
Blending machine, automatic, J. S. Ulmer.. 679,096
Bobeche lifter, M. O'Carroll..... 678,898
Book support, shelf, G. J. Kraushaar..... 679,054
Boot or shoe trimming machines, attachment for grinding shank cutters for, G. A. Knowlton 679,027
Bottle caps, device for applying, A. Baumgarten 679,012
Bottle filling machine, R. R. Stone..... 679,064
Bottle, non-refillable, P. F. Lenhart..... 679,173
Bowling alley pin, Barrett & Phillips..... 679,205
Box lock, cigar or other, F. H. Mitchell.... 679,030
Brake shoe, W. E. Gorton..... 678,997
Brick or artificial stone, mold for, S. M. Kimble 679,232
Broiler, A. Tenu..... 679,130
Brush, shaving, Nettlich & Korzinger..... 678,971
Buckle and hame tug loop, combined trace, C. N. Ling..... 679,282
Buckle, suspender, A. A. Abrams..... 679,200
Bungs, implement for operating spring, E. C. Phillips 679,160
Burglar proof bar for window gratings, W. H. Larmore 679,028
Button, W. Hornich, Jr..... 679,052
Button, collar, J. W. McAuliffe..... 679,157
Calender roll grinding machine, J. Linton... 678,961
Calipers, micrometer, E. Giebeler..... 679,258
Camera, C. W. Barnekov..... 679,271
Can cutting machine, F. W. Prael..... 678,901
Can filling machine, F. D. Cleveland..... 678,862
Can or vessel, E. M. Jones..... 679,171
Car bolster, railway, G. I. King... 678,885, 678,886
Car brake, T. B. Hyland..... 679,150
Car coupling, J. E. Wade..... 678,921
Car draft rigging, J. Timms..... 679,194
Car fender, R. F. Preusser..... 678,974, 678,975
Car loader, C. D. Cole..... 679,048
Car, ore or gravel, F. Peteler..... 679,033
Car platform closure, W. M. King, Sr..... 679,080
Car seat, F. G. Koehler..... 679,081
Cars, etc., operating lever for hand, J. L. Twyman 679,095
Carbureted air, making, S. C. North..... 678,973
Carbureter, G. Fischer..... 679,019
Carbureter oil feed, G. Fischer..... 679,018
Carpet fastener, G. B. Somers..... 678,910
Carriage washing device, F. W. Mott..... 678,967
Carrier. See Stone carrier.
Carving and delineation machine, A. C. Feron 679,120
Cash indicator, D. K. Allison..... 679,250
Cash register, D. W. Harper.... 679,073 to 679,075
Cash register, G. Browning..... 679,251
Cataphoric pad, J. F. Mossberg..... 679,239
Cheese press, L. Middleton..... 678,965
Cigar mold, S. K. Snavely..... 678,986
Circuit breaker, C. E. Holmes..... 678,881
Circuit breaker, H. P. Ball..... 678,991
Circuits, controlling high potential, E. W. Rice, Jr. 678,905
Cleaning and polishing compound, L. G. Tomoor 678,919
Clock, electric, G. Hookham..... 678,953
Cloth cutting machine, G. E. Lewis..... 679,056
Cloth folding and holding device, N. P. Denckla 678,945
Clutch hub, friction, J. McCaffrey..... 679,060
Coal dust and carrying it to furnaces, apparatus for producing, F. de Camp..... 679,046
Coat, J. De Mayo..... 678,996
Cock, J. Garnier..... 679,071
Cock, stop, Staedeli & Vogt..... 679,062
Coil retaining device, J. T. H. Dempster... 678,864
Coin receptacle, Burns & Strauss..... 678,916
Collar fastener, J. H. Emerson..... 679,118
Commutator for dynamo electric machines, F. A. Merrick..... 678,964
Compress, J. C. Davis..... 678,943
Concentrator, J. J. Montgomery..... 679,155
Concrete material, producing elastic, Nobis & Wenzel 679,158
Conduit plow, J. Hoffman..... 678,880
Corn chopper, C. E. Lykke..... 679,177
Corn from the cob, machine for cutting green, S. E. & W. W. Morral..... 679,156
Cotton press self-locking door clamp, J. A. Westbrook 678,923
Crate, buggy, C. Varner et al..... 679,098
Crayon sharpener, G. O. Anderson..... 679,136
Cultivator, D. Hill..... 678,879
Cut out block, H. O. Swoboda..... 678,990
Cutting articles from sheet material, machine for, J. J. Breach..... 678,935
Cycle, motor, G. W. Manson..... 678,963
Damper regulator, E. G. Tilden..... 678,917
Die head locking mechanism, H. W. Oster.. 679,241
Discharging apparatus, E. P. Waggoner.... 679,042
Disintegrating mill, A. J. Sackett..... 678,983
Display rack, W. H. Blandin..... 679,210
Display rack or stand, W. S. McRay..... 679,003
Door, J. W. Rapp..... 678,903
Door check, G. W. Mallory..... 678,889
Doors, automatically operating, J. H. Whitaker 679,009
Driving mechanism, frictional, S. F. Allen.. 679,270
Dust absorbent, L. Rosenfeld..... 678,981
Dust guard, H. S. Goughnour..... 679,021
Dust pan, H. W. Rogers..... 678,906
Dye and making same, black polyazo, O. Ernst 679,221
Dye and making same, blue sulfur, J. Abel. 679,199
Dye and making same, orange, P. Julius... 679,172
Dye, producing blue sulfur, A. Kertesz..... 678,884
Elbow forming machine, F. Dieckmann..... 678,946
Electric circuits, locating grounds on, E. M. Hewlett 678,878
Electric machine, dynamo, E. W. Rice, Jr.. 678,904
Electric meter, Barker & Ewing..... 678,929
Electric metering system, L. Bell..... 679,138
Electric motor, J. A. Heany..... 678,874, 678,875
Electric motor controller, E. W. Stull..... 678,914
Electric motor controller, E. W. Stull..... 678,989
Electrical distribution system, H. E. Heath 678,998
Electrical distribution system, E. W. Rice, Jr.... 679,006
Electrical distribution system, C. P. Steinmetz 679,008, 679,092
Electrical distribution system, E. J. Berg.. 679,102
Electrical installation, junction box and adapter for, J. Meehan..... 679,057
Electrical instrument, J. F. Kelly..... 678,957
Electrolytic apparatus, liquid feed device for, R. Grouard 679,050
Elevator, A. R. Farmer..... 679,142
Elevators, automatic electric stop for, H. B. Newhall, Jr..... 679,004
End gate and scoop board, combined, G. Brittell 679,165
Engine. See Rotary engine.
Engine piston, rotary, H. A. Buck..... 679,105
Engine vaporizer, explosive, L. M. Johnson. 679,053
Engines, electrical sparking device for explosive, R. Varley, Jr..... 679,041
Engines, mixing and controlling device for gas, R. E. Olds..... 679,263
Engines, sparking igniter for explosive, Rhode & Dubord..... 679,243
Ensilage cutter, E. W. Hoyt..... 679,168
Envelop or wrapper opener, W. S. Timmis. 679,066
Extension table, E. Estes..... 678,948
Fare register and recorder, W. J. Fordney. 678,950
Feather renovator, J. A. Mooney..... 678,966
Feed water regulator, F. M. Chappell..... 679,273
Feed water regulator, steam boiler, Bibb & Duncan 679,209
Feeder, boiler, H. H. Clover..... 679,252
Fence, wire, V. Hoxie..... 679,954
Fence, wires, die for joining intersecting, V. Hoxie 678,955
Fiber separating machine, S. B. Allison.... 679,164
Filter, J. J. Betzold..... 678,857
Filter, A. R. Grever..... 678,870
Filter beds, apparatus for spreading liquids onto, G. E. Ridgway..... 678,979
Filter, driven well, A. E. Hunt..... 679,169
Filter press, oil or other, P. Bonvillain.... 678,858
Fire alarm, A. J. Linden..... 679,176
Fire extinguishing apparatus, H. Eversmann 679,049
Flue cutter, expansible, J. W. Collins..... 679,274
Foot power machine starter, G. Sims..... 679,190
Frequency or speed indicating and regulating device, P. M. Lincoln..... 679,175
Fruit picker, H. F. Rambler..... 679,265
Furnace, McKenzie & Sargent..... 679,240
Furrow opener attachment, C. S. Kemper.. 679,025
Garment supporter, A. Henning..... 679,122
Gas burner, electrically operated, H. W. Webb 679,197
Gas cooling apparatus, H. E. Eddy et al.. 679,117
Gas jet cage, W. C. Perkins..... 679,159
Gas, making coal, R. S. Moss..... 679,059
Gold from sea water, extracting, H. C. Bull 679,215
Governor, centrifugal engine, H. Lentz..... 679,055
Grain, apparatus for removing and separating bran from, Lind & McKee..... 679,233
Grain, removing and separating bran from, Lind & McKee..... 679,234
Grain, treating spent, J. A. Tilden..... 679,065
Graphophone, T. H. Macdonald..... 679,236
Grinding machine, S. Diescher..... 678,865
Gun, automatic, J. M. Browning..... 682,937
Gun carriage for heavy ordnance, S. N. McClean 678,969
Gun parapet mount, L. L. Driggs..... 679,112
Guns, safety lock for breech mechanism for, L. L. Driggs..... 679,116
Harvester, J. H. Daniel..... 679,255
Harvester cutter mechanism, T. S. Brown.. 679,213
Hat protector, H. C. Dick..... 679,111
High or low water alarm, C. E. Zimmermann 678,925
Hoeing and thinning turnips, machine for flat, P. J. Parmiter..... 679,090
Hoops on round silos, water tanks, barrels, etc., device for tightening, G. Brett... 679,139
Hopper, cinder, M. Laux..... 679,083
Horseshoe, elastic heel, O. W. Siebenhaar. 679,038
Hot air furnace, V. L. Sullivan..... 679,093
Hot water tank, H. A. Buck..... 679,107
Hub, vehicle, W. J. Holland..... 679,230
Hydraulic coupling, T. C. Prouty..... 679,005
Hydrocarbon burner, J. J. Busenbenz..... 679,015
Hydrocarbon burner, V. H. Slinack..... 679,245
Hydrocellulose, obtaining, M. C. L. Althausse 679,203, 679,204
Ice tongs, H. B. McKee..... 679,183
Incubator, G. L. Horrall..... 678,882
Indicator. See Cash indicator.
Injector, C. Prusmann..... 679,127
Iron into lengths, machine for sawing bars of, R. B. Charlton..... 678,940
Ironing edges of collars and cuffs or other starched articles, machine for, F. E. Fay 678,949
Jar cover, W. C. Kern..... 679,077
Knitting machine, W. R. Johns..... 678,883
Knitting machine, E. E. Kilbourn..... 679,281
Knockdown tank, H. W. & T. C. Harry... 679,146
Lace, E. F. Madden..... 678,962
Lamp chimney removing or elevating device, B. C. Caudry..... 678,939
Lamp, electric arc, J. A. Heany, 678,873, 678,951, 678,952
Lamp, electric arc, E. Thomson..... 678,916
Lamp extinguisher, automatic, R. Tattu..... 678,915
Lamp, miner's, C. L. Anton..... 678,852
Lamp, portable gas, G. McGovern..... 679,061
Lamp socket, J. C. Tournier..... 678,920
Lamps, locking socket for incandescent electric, Barrett & Phillips..... 679,206
Lathe screw cutting attachment, L. J. Monahan 679,238
Lid holder for vessels, Koch & Cogswell... 679,125
Liquid dispensing and measuring apparatus, C. W. Cramer..... 679,254
Liquid drawing device, Allison & Keefe.... 679,201
Liquid meter, Duchamp & Philippe..... 679,016
Lock, D. B. Ozment..... 678,899
Lock, O. Katzenberger 678,956
Lock, P. Fehling..... 679,119
Locking device for doors, etc., automatic, A. Heller 679,023
Locomotive, R. M. Bryant..... 679,214
Loom, hand, M. P. & D. Todd..... 679,132
Loom thread parter, weft replenishing, J. Peter 679,034
Lubricator, D. H. Roberts..... 678,980
Lubricator, C. A. Hirth..... 679,149
Lubricator, J. J. Tunney..... 679,246
Measuring and winding machine, cloth, B. Anderson 679,101
Metal article, W. A. Day..... 679,218
Metal working machine, A. Crocker..... 679,278
Meter readings, device for recording, C. D. Haskins 678,871
Milling tool, W. H. Ford..... 679,143
Minerals or ores, apparatus for separating or concentrating, H. P. H. Brumell... 678,860
Molding apparatus, J. C. Reed..... 678,977
Molding flask, J. C. Reed..... 678,976
Mop wringer, L. H. Evans..... 678,867
Motor control, induction, A. H. Armstrong. 678,854
Motor control system, A. H. Armstrong... 678,853
Motor control system, F. E. Case..... 678,861
Movable gate and dredge, O. C. Smith..... 679,163
Mower, lawn, H. Garret..... 679,020
Musical instrument pedal action, W. C. Bosenbury 678,859
Musical instrument tune controlling device, E. de Kleist 679,026
Nail machine, Smith & Hillard..... 679,128
Nut lock, J. W. Fletcher..... 679,223

(Continued on page 78)