

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 This is for our information and not for publication.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. 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 ounce, 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 1/2 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 cautory, 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. Herick'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 (Cu4O3Cl2.4H2O) 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 neces-

sary 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.]

Table listing inventions with patent numbers and names of inventors. Includes items like 'Advertising device for doors', 'Alkali metals, apparatus for electrolysis', 'Anesthetic box', etc.

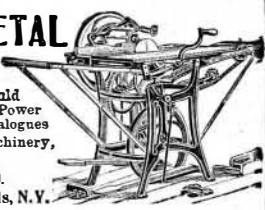
Table listing inventions with patent numbers and names of inventors. Includes items like 'Door check', 'Doors, automatically operating', 'Driving mechanism, friction', etc.

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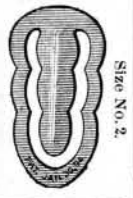


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Table listing various mechanical parts and their prices, including items like Umbrella rib, Valve, compound engine, Valve, cylinder, Valve for multiple expansion engines, etc.

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Table listing various mechanical parts and their prices, including items like Glass, plate, Glass, sheet, Lacing stud blank, Lamp fixture, etc.

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Table listing various mechanical parts and their prices, including items like Logwood extracts, West Indies Chemical Works, Medical compounds, certain named, Lydia E. Pinkham Medicine Co., etc.

Table listing various mechanical parts and their prices, including items like "Barrister," for gin, E. L. Sadler, "Carnie Pure Best Tea," for tea, W. H. Brin, etc.

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