

Business and Personal.

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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 This is for our information and not for publication.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.

(7611) A. W. S. asks: Which is the best or most economical for a toy motor—four cells of gravity battery or two cells of Sampson battery, now used for electric bells? I have both in use now, one for telegraph and the other for electric bell, and would like to know which will be best to attach motor to. Also say whether it is best to leave a gravity battery on closed circuit or open, when not in use. A. The gravity battery is best for motor work, the Sampson for ringing bells. This is because the gravity is a closed circuit battery and the Sampson an open circuit battery. Neither can be used in place of the other. The liquids of the gravity would soon be mixed if left on open circuit, and on closed circuit the Sampson battery would soon be worthless by polarization.

(7612) W. T. H. asks: Why is it that heavy thunder and lightning strokes are so common in the Western States in winter, even during snow storms, when such are never known in the South Atlantic States, except perhaps during one of those electrical storms that occasionally traverse the continent? I lived thirty years in the State of Georgia, and never knew or heard of lightning striking an object, and rarely ever heard thunder in winter, never when very cold. I have lived in Arkansas thirty-three years, where lightning strokes and heavy thunder are almost as common in winter as in summer. A. Answer by H. E. Williams, Acting Chief United States Weather Bureau, Department of Agriculture: So far as known, thunderstorms and lightning are not as prevalent in winter as in summer in any part of the United States. The statistics that have been collected on the subject show that the States most liable to winter thunder storms are Louisiana, Texas, and portions of Arkansas and Mississippi. In this region, however, winter thunder storms form less than ten per cent of the annual number of such storms. The statistics of thunderstorms reported by the Weather Bureau observers during 1898 in Arkansas and Georgia, respectively, are as follows: Number of days with thunder storms in Arkansas, 178, of which number 21 occurred in the winter months; number of days with thunder storms in Georgia, 158, of which number 20 occurred in the winter months. If your correspondent has access to the Chronicle Fire Tables, he will find that the number of fires caused by lightning in Georgia is about as large as the number in Arkansas. The subject of winter thunder storms has not been closely studied. We are under the impression, however, that the danger of lightning stroke is equally probable in all parts of the country in which such thunder storms occur.

(7613) M. W. asks: How much CO2 gas is required to saturate 31 gallons of water at 2° C. and atmospheric pressure, and 31 gallons of water at 2° C. and 6 pounds extra pressure, and 31 gallons of water at 9° C. and 7.5 pounds extra pressure? Also please state formula, how to figure above problems. A. At atmospheric pressure and at ordinary pressures, water will absorb about its own volume of CO2 gas, forming a solution with a specific gravity of 1.0018. The weight of gas dissolved at other pressures varies nearly in the same proportion as the pressures. The effect of temperature upon the amount of CO2 dissolved is this: The higher the temperature, the less gas is held in solution until, when the boiling point is reached, all the gas is driven off. The volume of CO2 which water will absorb under a pressure of one atmosphere for various temperatures is as follows: At 0° C., 1.7697 volumes; at 2°, 1.6481 volumes; at 8°, 1.2869 volumes; at 10°, 1.1847 volumes. These results are from experiments, and no formula is required. At 2° C. and 1 atmosphere 1.7697x31 gallons will be dissolved. At 9° C. and one-half atmosphere, 1/2x1.2868x31 gallons will be dissolved.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

MARCH 7, 1899,

AND EACH BEARING THAT DATE.

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

Table listing inventions with names and patent numbers. Includes: Advertising apparatus, L. W. Yaggy; Air compressor, H. E. Anderson; Amido malonic ester and making same, R. Blank; Animal trap, T. H. Doulon; Annunciator, S. B. Fowler; Axle box, roller, Robinson, Jr.; Back pedaling brake, H. L. Bailey; Battery, See Electric battery; Bedstead fastening, Reigart & Boll; Beehive outer case, J. N. Taylor; Bell door knob, Kinnaman & Flowers; Belt fastener, R. Fraser; Bicycle dress guard, G. T. Heineke; Bicycle driving gear, N. K. Peoples; Bicycle frame joint, Belcher & Eason; Bicycle handle bar, adjustable, M. H. Vanevera; Bicycle holder, C. Mees; Bicycle lock, M. F. Cunningham; Bicycle rack, H. L. Wilcox; Bicycle saddle, W. S. Upton; Bicycles, convertible breast and back rest for, J. Wood; Bog cutter, A. Anderson; Boiler, See Steam boiler; Boiler, K. Park; Boiler flue cleaner, J. C. Ogletree; Boiler flue cleaner, D. Raso; Bolt, See King bolt; Book back lettering machine, A. Von Auw; Boring machine, Rockwell & Gerlach; Bottle or jar stopper, F. McCarty; Bottles, protecting cover for, W. A. Mauran; Box, See Bait box; Folding box, Meter box; Bracket, See Gas bracket; Brake, See Back pedaling brake; Vehicle brake; Brake mechanism, H. Tesseyman; Bran duster, J. Warrington; Brick press, S. Taylor; Building partition, E. Ketchum; Burner, See Hydrocarbon burner; Oil burner; Vapor burner; Bushing and stopper, faucet, R. Piotrowski; Butt adjuster, D. Sincow; Cabinet, manuscript, A. A. Hoskin; Cables, splice joint, wire, P. T. Christensen; Can heading machine, R. D. Hume; Cans, double rim for paint, M. F. Hartnett; Cap, C. J. Holzhenthaler; Car coupling and train pipe coupling mechanism, combined air operated, J. S. Bubb; Car fender, G. W. Downing; Car fender, J. B. Baker; Car, railway, W. F. Richards; Car step, S. Oliver; Carbureter, W. S. Filley; Carbureter, J. Henderson; Carborer, E. N. Lippitt; Carpet fastener, J. Kern; Carrier, C. J. Chadwick; Chuck, drill, H. M. Reynolds; Cleaner, See Boiler flue cleaner; Pen cleaner; Clipper, hair, A. M. Sims; Clock, electric, Bulcher; Combing machine for textile materials, E. Delette; Cooking utensil, J. A. Dion; Corn compressor or binder, H. A. Horton; Coupling, See Hose coupling; Shaft coupling; Bill coupling; Crate, knockdown, G. T. McLaughlin; Cream separator, centrifugal, D. T. Sharples; Cultivator shovel, J. T. Smith; Cultivator spring trip, J. P. Moore; Curtain hanging apparatus, P. G. Goldsmith; Cutter, See Box cutter; Cutter setting gage, S. S. Farney; Cycle driving wheel, W. H. Chapman; Cycle frame, J. MacKenzie; Cycle, water, J. J. McClimont; Derrick, crane, O. Crosby; Desk, school, F. B. B. B. B.; Dish washer and drier, R. E. Swartz; Disk meter, H. & P. Meinecke; Display forms, hand for, H. Lyons; Displaying form, goods, L. H. Balwick; Door check, automatic, H. H. Fassett; Door, screen or storm, C. R. Moore; Dredging machine, J. J. Batman; Drier, See Fruit drier; Drill, See Rock drill; Dye, black trisazo, Elbel & Oppermann; Dyeing, J. Fries; Dyeing textile fabrics, machine for, W. Fries; Elastic band, L. Nissim; Electric battery, thermochemical, M. L. Severy; Electric circuits, means for impressing semi-cycles of electromotive force on, Crehore & Squier; Electric heater; Electric switch, Bernardini & Ely; Electrical conductor connector, P. Minich; Electrical regulator, W. H. K. King.

(Continued on page 174)

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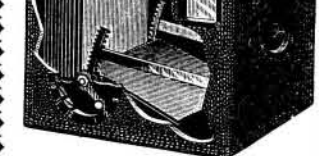
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