

Business and Personal.

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The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co. publishers, 361 Broadway, N. Y.

Mr. G. S. Jeffries desires to interest capital in his invention, recently patented here and abroad, whereby signals can be made to the engineer of a train by means of an obstruction placed on the track. This is fully described on page 326 of this edition of the SCIENTIFIC AMERICAN. Address G. S. Jeffries, Reading, Pa.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

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 This is for our information and not for publication.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.

(7662) J. S. R. asks: When does the 19th century end? A. The 19th century closes with December 31, 1900. The 20th century begins January 1, 1901. Reasons: 1. There never was a year numbered 0 in chronology, though astronomers have called the year before the Christian era the year zero. The reckoning in chronology is B. C. 3, 2, 1, A. D. 1, 2, 3, etc. The year 1 B. C. was followed directly by 1 A. D. in all historical reckoning. See Ency. Brit., under Chronology. In astronomical reckoning the year 0 preceded the Christian era. The first year A. D. was the "year 1." The year 1 was completed on December 31, twelve months after the beginning of our present reckoning. There is much confusion on this point; but it is just as simple as reckoning the years of a baby's life. When is the year 1 of a baby's life finished? Who ever heard of a baby's 0 year? 2. The year 100 belonged to the first Christian century. The reason for this is the same as for putting the 100th article into a package which is to contain 100 articles. The 2d hundred articles begin with No. 201. In counting articles by hundreds we proceed as follows: 1st hundred Nos. 1 to 100 inclusive, 2d " " 101 200 " 19th " " 1801 1900 " 20th " " 1901 2000 "

Dollars, years, or centuries follow the same law. A man is 100 years, a century, old when he has completed a full 100 years. Not when his 100th year begins, but when it ends. Its full twelve months belong to him. The writer remembers very well, though only 9 years old, the discussion of this question in 1850 and the conclusion that 1850 belonged to the first half of the 19th century. It will certainly be premature to write centennial sermons or lectures or articles for 1899. If this is done, it will be found necessary to repeat them in 1900, as not a few did in 1849 and 1850 for the half century. This view accords with the statement of both the Century and Webster's Dictionaries. We quote from the former: "The first century of the Christian era began with the year A. D. 1 and extended to the end of the year 100, the 18th century began with 1701 and ended with 1800, the year completing the hundred year period in each instance giving name to the century. The centuries before Christ are reckoned backward in their order from the Christian era, as the 4th century B. C. from 301 B. C. backward to 400.

(7663) L. S. T. writes: I have ascertained the theoretical horse power of a stream under a given head to be 1000. I wish to transmit that power by means of electricity five miles for use as a motive power in two mills. Will you please inform me how much of the 1,000 horse power may be safely relied on for practical use, from motors at terminus of the line? Will you tell me, also, what is the percentage of loss in practice at the several stages of conversion and transmission of the power: (1) Loss in making the 1000 available by means of turbines, (2) the loss in generating the electricity, (3) the loss under ordinary conditions in transmission, and (4) the loss at the motors? A. We can only give a general answer to these inquiries, since the conditions peculiar to the special case affect results. The efficiency of turbine wheels is from 75 to 87 per cent at full gate. For anything less the figures drop off rapidly. The dynamo will return from 85 to 93 per cent of the power of the

turbine. The loss in transmission depends on the size of the wire used, but may be put down at from 5 to 10 per cent, so that from 90 to 95 per cent of the current delivered by the dynamo will reach the transformers. The transformers will turn about 95 per cent of the current they receive to the motors, which will in turn give 85 to 90 per cent of this to the machinery. As a total then about 60 per cent of the power of the waterfall will be received by the machinery. This is based on the supposition that everything works at full load. Much depends on the machines used, and only an engineer or the spot can give reliable figures.

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 unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business, Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

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

MAY 9, 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 items like Adjustable stand or chair for artisans, Advertising device, Air compressor, Air mattress or cushion, Alloy, Amalgamator, Ammunition hoist, Animal trap, Animals' noses, machine for tarring, Antifriction roller, Antiseptic cabinet, Artillery shield, Axle spindle, Back pedaling brake, Bag closure, Bag frame, Bag machine, Ball, See Bowling alley ball, Balls, rivets, etc., machine adapted for making, Battery, See Galvanic battery. Storage or secondary battery, Bed bottom, spring, R. J. Everitt, Bed, folding metal, A. Holm, Bed, sofa, T. G. Weyer, Belt coupling, J. O. Adams, Belt fastener, H. G. Heyden, Bicycle, J. H. Hentz, Bicycle, chainless, W. K. Kennard, Bicycle construction, H. H. Baker, Jr., Bicycle crank hanger, W. H. Fauber, Bicycle handle bar, L. B. Gaylor, Bicycle handle bar, Jones & Harvey, Bicycle lamp bracket, J. A. Mosher, Bicycle luggage carrier, V. L. Moore, Bicycle pump, H. Lelneweber, Bicycle pump hose attachment, H. Leineweber, Bicycle support, J. F. Williams, Billiard cue tip, W. G. Herz, Binder, temporary, O. W. Bachman, Bit, See Expansion bit, Board, See Bread or pastry board. Teeter board. Boiler designer, W. Clark, Boiler furnace, E. Germer, Bolt head, W. W. Corey, Jr., Bone black kiln, E. Lister, Bookcase, detachable or knockdown, G. F. Flashman, Boot or shoe jack, Fredman & Hallas, Boring and drilling machine, Person, Bottle nipple, nursing, J. Pfeiffer, Bottle, non-refillable, E. A. Foster, Bottle stopper, C. de Quillfeldt, Bowling alley ball, W. H. Howard, Bowling alley pin, W. H. Howard, Bracket, See Letter box. Miter box. Paper box, Bracket, T. V. Allen, Bracket, See Bicycle lamp bracket. Lumber bracket, Brake, See Back pedaling brake. Car brake. Sled brake. Vehicle pneumatic brake, Bread or pastry board, W. Harter, Brick, block, or slab for buildings, masonry vaults, etc., C. Myers, Bridge, W. S. Brelfoard, Brush, P. E. Erickson, Brush, shaving, E. S. Rooney, Brushes, reversible handle mounting for, H. Triesel, Buckle, belt, L. Sanders, Buckle, harness, Saup & Hauenstein, Buggy top support, W. W. Miller, Jr., Burner, See Gas burner. Kerosene burner. Oil burner, Butting liquid fuel, apparatus and system for, F. M. Ashley, Butter, compound for removing taint of onions or weeds from, S. S. Bately, Button, cuff, J. E. Hills, Cable making machine, E. H. Johnson, Calculating device, J. E. Brown, Calculating machine, H. Goldman, Camera, panoramic, C. H. Shaw, Camera, photographic, B. D. Sheffield, Can crimping machine, C. W. Sleeper, Car brake, Goetz & Huston, Car brake, L. Logan, Car coupling, J. Timms, Car illuminated sign, street, W. R. Evans, Car roof, double, C. H. Hutchins, Car street indicator, railway, Green & O'Sullivan, Carbons for electric lamps, composition for, A. O. Singer, Carding engine flat stripping mechanism, W. Phillipson, Carpet stretcher, C. H. Sapper, Case, See Bookcase. Egg or fruit case. Eye-glass or spectacle case, Cash register, F. Parer, Cash register and indicator, G. H. Gledhill, Cement, C. Myers, Cement, plaster, etc., mixing, A. Sackett, Chain, drive, E. G. Hoffmann, Chair, G. Hunzinger, Chopper, See Cotton chopper, Circuit breaker, automatic magnetic, W. M. Scott, Cleaner, See Boiler cleaner. Window cleaner, Elevator, plow, B. F. Russell, Clipping horses, shearing sheep, etc., machine for, W. W. & A. T. Barton, Cloth cutting machine, W. Tharand, Clothes rack, S. Owen, Coat and hat rack, G. W. McCausland, Coffee pot attachment, F. Washington, Collapsible tube, W. S. Scales, Commutator brush holder, G. H. Jantz et al, Condensing attachment, exhaust pipe, R. P. Bolton, Connecting rod, E. W. Wizzell, Controller, T. von Zweibergk, Cork extractor, M. D. Converse, Corn header, kafir, J. L. Hart, Corn shaker and carrier, J. D. Groves, Cotton chopper and cultivator, W. H. Ledbetter, Coupling, See Belt coupling. Car coupling. Thill coupling, Cover boiler, pot or kettle, S. Baker, Cow tail holder, F. A. Crocker, Cream separator, centrifugal, N. G. Williams, Crusher plate, H. J. Wessinger, Crushing or grinding mill, R. E. Hill, Cultivator, W. L. Beall, Current motor, alternating, A. Heyland, Curtain fixture, H. E. Phillips, Curtain fixture, L. Strickler

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Westerland, Extractor, See Cork extractor, Eyeglass nose guard, C. K. Pevey, Eyeglass or spectacle case, W. Zoerb, Eyeglass or spectacle case, Zoerb & Becker, Feed water regulator for boilers, E. W. Marsh, Fence machine, J. A. Park, Fence machine, wire, G. L. Miller, Fence post, L. V. Alter, Fence tool, wire, J. W. Howland, Fence wire tension device, J. C. Barnes, File, paper, G. H. Rogers, Filing hand flange, A. Herman, Filter, J. F. Theurer, Filter bed, L. K. Davis, Filter, slime, C. H. Peard, Filter, water, W. G. Toussay, Filters, supply regulator for water, A. V. Fausek, Firearm, H. E. Brown, Fire extinguisher, Frank & Genovese, Fire extinguisher, automatic, W. H. Banks, Fire pump, W. S. Lackey, Fireproofing material, A. Lantze, Fishing net sinker, J. C. Robinson, Flooring, etc., tongue and grooved, J. W. Piver, Flour bolt, J. Charles, Fishing net sinker, J. C. Robinson, E. C. Stover, Fruit dreser, W. Northrop, Fruit gathering device, J. H. Crumb, Fruit jar, F. Lessing, Jr., Fuel and making same, composite, C. O. P. Howell, Fuel, peat, A. A. Dickson, Furnace, See Boiler furnace, Gage, See Surface gage, Galvanic battery, J. Sully, Garment supporter, J. A. Backus, Gas apparatus, acetylene, J. J. Faulkner, Gas burner, W. C. Homan, Gas engine, W. H. & J. Butterworth, Gas generator, acetylene, J. J. Faulkner, Gas generator, acetylene, J. J. Moussette, Gas, time apparatus for extinguishing, P. Barnikel, Gate, See End gate. Tail gate, Gate, R. M. Teague, Gear cutting machine, E. H. Parks, Gear, differential, C. H. Metz, Gear, driving, J. Jarvis, Gear teeth, machine for generating bevel, Leland & Ferris, Gearing, worm, J. H. Barr, Generator, See Gas generator. Steam generator, Germ extract, making, A. M. Parker, Glass apparatus for manufacturing window, Hale, Glasses, combination, G. W. Bennum, Glycolphenol ester and making same, A. Einborn, Grade delineator, J. Riddell, Grain drier, J. A. Moore et al, Gram valve, L. M. 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Hearst, Horseshoe, soft tread, H. Paer, Hose supporter, H. C. Krause, Hot blast box, E. E. Bretbrant, Hydrant, W. F. Koper, Ice, apparatus for planing cake of, J. N. Briggs (reissue), Ice box lid retainer, E. L. Evans, Ice leaf, W. N. Winfield, Indicator, See Cat street indicator, Insecticide, E. F. Bradock, Iron, See Puffing iron, Ironing machine, E. C. Cress, Jack, See Boot or shoe jack, Jacket stretcher, A. Wyman, Jail, H. C. E. Stewart, Jar, See Fruit jar, Kerosene burner, atomizing, Ransom & Frueh, Kiln, See Bone black kiln, Knife, See Excelsior knife, Knife with connected blades, G. Bay, Label holder, L. R. Stevenson, Lamp burner, W. S. Hamer, Lamp, electric arc, C. Tepel, Lamp, incandescent, E. F. Dwyer, Lamps, mica chimney for gas, A. P. Storrs, Lamps, time cutoff for electric, J. H. Boardman, Lathes, device for raising and positioning tools of slide rest, H. W. H. Powell, Lease rod, H. Kelly, Letter box, J. Carr, Level, A. Thompson, Linotype machine, Chapman & Gelatt, Lock, See Winch lock, Lock, J. Babcock, Loom woft fork mechanism, W. G. Eaton, Lubricators, automatic choke feed device for, J. Casey, Lumber bracket, C. E. Strifler, Lustering machine, B. Welsh, Magnetic coils, adjustable vibrator for, C. A. Keller, Mail bag catcher, T. O. P. & W. G. Bailey, Mailer, Horton & Wing, Marble, granite, etc., die for cutting, A. Travaglini, Measuring device, H. Becker, Measuring device, T. S. Crum, Mechanical figure, A. Hauels, Mercerizing machine, E. Heberlein, Mill, See Crushing and grinding mill, Miter box, T. Bootsman, Mixer, See Taint mixer, Moulding press, Malcomb & Marble, Motive power mechanism, M. L. Wilkinson, Motor, See Current motor, Mower, lawn, J. A. Burr, Mower, lawn, J. Gomes, Musical instrument, A. H. Jacot, Net, fy, J. Wittman, Nipple wrench, J. C. Nicol, Nut lock, T. & J. Broadbent, Nut lock, axle skein, Brockschmidt & Stuckey, Oil burner, A. J. Blackford, Oil, car wheel, S. B. 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