(24) G. F. P. asks: 1. Will steel castings answer for large horseshoe magnets? A. We do not know that steel castings have been tried for this purpose. We think, however, that they would answer. 2. How large a horseshoe magnet shall I use for a magneto call bell engine on a telephone line 1,000 feet long? A. Use an 8 inch. 3. I think of having the permanent magnet to revolve in front of the electro-magnet, instead of the reverse, as is usually done. Will this be attended with any disadvantage? A. Jarring works injury to permanent magnets. 4. In the modified form of Bell telephone with compound magnet ending in a soft iron core, how is the core attached, and how long is it? A. The flattened end of the core is clamped between the magnets. It should be about 2 inches long.

(25) G. F. B. asks for a simple way by which to determine the resistance of the rheostat, described in SCIENTIFIC AMERICAN of November 9, 1878. A. Use a galvanometer.

(26) H. J. R.—The pressure of water is about 0·433 lb. per square inch per foot of depth.

(27) W. L. L. asks: 1. Are not the climatic zones constantly but slowly changing their position on the surface of the earth, and if so, in what direction do they move? A. Has been asserted; evidence insufficient. 2. Can you explain why it is, at least navigators say so, that there is a greater field of ice and more dense at the South pole than that of the North? A. The southern hemisphere does contain more ice; attributed to greater land masses and higher elevations about the South pole. 3. When the earth is nearest the sun in December, what part of the globe's surface receives the most direct solar rays? A. South torrid zone. 4. When and by whom was this planet of ours named earth? A. Earth is an English word from the early Saxon. There is no means of telling how old the word is.

(28) J. B. D. asks: Will a cannon ball shot directly up acquire as great a velocity in falling as is imparted to it by the force of the powder; in other words, that it will strike the ground with the same velocity and force that it leaves the gun? A. If the shot were fired in a vacuum it would have equal velocities of ascension and descension. The resistance of the air impedes the shot.

(29) D. H. E. asks (1) how to proportion gin running gear. The mule track is 30 feet in diameter, cast iron segments 9 feet diameter, pinion 18 inches, and gin pulley 9 iuches in diameter. What size shall the band wheel be to drive the gin 150 revolutions per minute, and let mules travel 3 miles per hour? A. About 6 feet 9 inches. 2. Is there any difference in the power required, speed of gin being the same, to have a large cog wheel and small band wheel or a large band and small cog wheel? A. There is no essential difference, as we understand you.

(30) J. M. asks for the easiest way to magnetize small steel bars. A. Place the steel bar within a helix of copper wire through which passes the current from several Bunsen or bichromate cells for a minute or two; then interrupt the current and remove the magnet. Full directions in SCIENTIFIC AMERICAN SUPPLEMENT No. 142, in "How to make a Telephone."

(31) J. H. K. asks: What kind of metal is best to work in cream with, on churn dashers for example? A. Well tinned iron is good, but wood for many reasons is preferable to metal of any kind.

(32) W. H. S. asks what material to use in making flexible tubes for conveying air which is hot enough to render a room uncomfortable. A. Canvas tubes, saturated with strong aqueous solution of sodium tungstate and dried might fulfill the requirements, as we understand them.

(33) J. H. D. writes: We regulate the pressure of the street gas between the main and meter. Would it not be advantageous to the consumer to have a regulating lock? Just inside of the meter allow full pressure on the meter (a dry one) from the company's gasometer. Is gas compressible? If so, would it not pack slightly in the meter under the gasometer pressure? A. The density of gas is influenced both by pressure and temperature. Little if any advantage would result from the arrangement proposed, under ordinary circumstances.

(34) W. S. W., Jr., and others, who ask how to detect gold in sulphurets, etc. A. See Plattner's "Manual of Qualitative and Quantitative Analysis with the Blowpipe," pp. 318, 320, and 422. In practice, the most satisfactory method of detecting very small quantities of gold in such ores is as follows: Reduce the whole of a sample of several ounces of the ore, by grinding, to an impalpable powder, that will pass readily through an 80 mesh sieve; mix about a drachm of the well mixed powder with ten times its weight of pure lead and one or two fragments of borax glass the size of peas, place in a scorifier and expose in a closed muffle to bright red heat until the lead is all fused and the ore floats on top; then open the muffle and let a current of air pass slowly over the red hot scorifier and its fused contents until the ore has been absorbed and the fused metal has disappeared beneath a covering of litharge; then remove, cool, break, remove and clean the lead button, and place it carefully in a heated cupel weighing somewhat more than the bead; when the lead has melted the muffle is opened and air allowed to pass over the fluid mass until the lead has all been converted into litharge, and the litharge absorbed by the cupel, leaving the gold and silver behind; if the bead is white, silver is present; add about twice the weight of the bead of pure silver, fuse together with the blowpipe flame on a charcoal support, flatten while hot on an anvil, and heat for some time to boiling with pure nitric acid, which dissolves the silver, leaving the gold, if any were present in the ore, as a brownish black mass, which shows the characteristic luster when pressed with a knife blade, and when brought into contact with a drop of aqua regia, and then with a crystal of stannous chloride developes a purplish-red, violet, or brownish-red coloration—purple of Cassius.

(35) L. J. O. and others.—We intend publishing at an early date in the SCIENTIFIC AMERICAN SUPPLEMENT a description of a telephone call.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

G. H.—No. 1 is chiefly quartz and iron sulphide. No. 2. The fragment contains a little gray copper. No. 3 is a variety of bituminous coal. No. 4 is iron sulphide with a little copper. Nos. 5 and 6 are principally iron sulphide. No. 7 contains lead sulphide. Some of this may contain silver.—F. F.—The white pebbles are quartz; the rest are jasper. Of little value.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure the receipt of original papers and contributions on the following subjects:

A Voltaic Pile. By M. G.

HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Many of our correspondents make inquiries which cannot properly be answered in these columns. Such inquiries, if signed by initials only, are liable to be cast into the waste basket.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from $1 to $5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

October 8, 1878,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

Auger bits, manufacture of, J. Swan ... 208,862
Awning, metallic, E. O. Pohl ... 208,692
Axle nut, vehicle, I. B. Boyce ... 208,667
Axles, preventing loss of nuts from, I. B. Boyce 208,669
Barley and malt drier, G. S. Reuter ... 208,849
Basin, catch, B. Kottmann ... 208,827
Bath, portable shower, D. Deshon ... 208,720
Bathing apparatus, medical, J. De Beer ... 208,666
Bed bottom, spring, H. Tucker ... 208,867
Bedstead guard, F. Diescher ... 208,721
Bee hive, W. C. Riffe ... 208,851
Bee hive, D. T. Tripp ... 208,772
Blind slat retainer, T. O'Regan ... 208,691
Boiler, cylindrical steam, W. Tucker ... 208,868
Boilers, removing dirt, etc., from steam, A. Collins 208,794
Book cover, detachable, E. F. Newkirk ... 208,689
Boot and shoe, J. L. Joyce ... 208,740
Boot and shoe, India rubber, G. Watkinson ... 208,776
Bottle, blacking, S. S. Newton ... 208,758
Bottle stopper, S. S. Newton ... 208,690
Brick drying oven, M. P. Smith ... 208,766
Brooch fastening, A. Zierleyn ... 208,875
Broom, J. Lay ... 208,685
Butter package, C. L. Sabin ... 208,695
Button, A. Michelson ... 208,752
Button fastener, A. Michelson ... 208,753
Button hook, J. A. Smith ... 208,858
Car coupling, R. S. Russell ... 208,694
Car, one track railway, D. B. James ... 208,733
Car starter, E. A. Whitaker ... 208,778
Car, stock, H. S. Moody ... 208,839
Card cutter, rotary, E. Morgan ... 208,754
Carriages, top for children's, C. W. F. Dare ... 208,718
Center board, adjustable, D. McColgan ... 208,750
Chair brace, S. P. Sorenson ... 208,768
Chair, folding and tilting, D. E. Teal ... 208,864
Chair, rocking, G. W. Colie ... 208,714
Check cutter, adjustable, C. C. Carter ... 208,713
Check row cords, knot for, G. D. Haworth 208,814, 208,815
Churn, G. W. Blackwill ... 208,707
Churn, rotary, W. F. Baird ... 208,783
Churn, rotary, M. S. Bazemore ... 208,705
Churn, vibrating, S. Mellon ... 208,751
Cigar ends, splitting, Wendes, Vogt & Richter ... 208,871
Clock movements, lock work for, A. L. Atwood ... 208,702
Cock for beer fermenting casks, T. F. Straub ... 208,771
Coffin torpedo, P. K. Clover ... 208,672
Condenser, T. R. Crooks ... 208,717
Cooking utensil, P. J. Toomey ... 208,865
Corn husking implement, M. C. Pearse ... 208,843
Cuff, Hedges, Müller & Graf ... 208,817
Curry comb, C. A. Hotchkiss (suspended) ... 208,879
Desks, folding seat for school, U. Smith (r) ... 8,446
Digging implement, J. P. McCann ... 208,749
Ditching machine, J. W. Humphreys ... 208,682
Door pull, sliding, A. H. Elwell ... 208,725
Drill feed, grain, Mast & Gardiner ... 208,834
Engine, wind, F. Heavener ... 208,816
Engine, wind, J. T. Miller ... 208,837
Engine, wind, C. E. Myers ... 208,841
Engine, wind, P. C. Perkins (r) ... 8,443
Fan, automatic, F. K. Collins ... 208,715
Feather renovator, G. H. Crum ... 208,673
Feed cutter, Borneman & Shephard ... 208,786
Feed water heater, G. H. Zschech ... 208,701
Fence, J. S. Lenox ... 208,745
Fence barb and staple, P. Miles ... 208,688
Fence, iron, J. H. Van Dorn ... 208,699
Fence, plashed, Kirkbride & Neil ... 208,742
Fence, plashed, Neil & Young ... 208,755, 208,756, 208,757
Fence post, J. F. Snyder ... 208,860
Fence post, iron, Comstock & Wallace ... 208,795
Fertilizer distributer, J. H. B. Rea ... 208,848
Fire arm, magazine, J. H. Salter ... 208,696
Fire arms, attachment for, C. Slotterbek ... 208,765
Fire escape, M. C. S. Flanigan ... 208,729
Food, apparatus for preserving, P. P. E. M. Koch 208,743
Fruit, box for dried, D. Snedeker ... 208,698
Fruit, process for ripening, M. Lane ... 208,744
Furnace, annealing, E. H. Hill ... 208,734
Furnace draught regulator, E. D. Norcross ... 208,759
Furnace for distilling wood, etc., J. A. Mathieu. 208,835
Furnace grate bar, A. Godillot ... 208,730
Furnace, hot air, C. M. Baxter ... 208,784
Furnace, pigment, H. Krum ... 208,828
Gas meter, A. Levy ... 208,686
Gas retort, W. F. Browne ... 208,710
Gate, P. Listeman ... 208,746
Glove fastening, F. G. Farnham (r) ... 8,445
Grain binder, I. Karel ... 208,741
Grain gleaner and binder, M. G. Hubbard ... 208,736
Grain gleaner, etc., Hubbard & Heebner ... 208,737
Grain separator, J. Essig ... 208,726
Gun, spring, W. H. Graves ... 208,810
Hammer, power, M. Deering ... 208,719
Hand protector, H. C. & C. W. Davis ... 208,799
Harvester, W. H. Foye ... 208,804
Harvester guard finger, W. H. Wright ... 208,874
Hat bodies, felting, C. Froggatt ... 208,806
Hay meal, machine for making, J. S. Kirk ... 208,826
Head light, Dressel & E. H. & J. G. Voth (r) ... 8,447
Heating apparatus for buildings, M. Hulings ... 208,822
Hinge, spring, J. Spruce ... 208,770
Hog and sheep catcher, A. Pitcher ... 208,845
Horses, device for cleaning, J. H. Fenton ... 208,803
Horseshoe, T. Penrose ... 208,844
Horseshoe nail finishing machine, J. B. Husted ... 208,693
Hub, vehicle wheel, D. May ... 208,748
Indicator, car, J. C. Winder ... 208,780
Indicator for steam boilers, C. F. Kurz ... 208,829
Indicator, station, H. Landis ... 208,830
Lamp burner, W. W. Eastman ... 208,801
Lamp burner, B. Hempstead ... 208,818
Land marker, R. Spelman ... 208,769
Lantern, G. A. Beidler ... 208,785
Latch, W. Bohannan ... 208,708
Liquid measure, E. M. Whyler ... 208,779
Lock, W. H. Taylor ... 208,863
Loom, W. P. Derby ... 208,675
Loom shuttle motion, W. B. Willard ... 208,873
Lubricant, Smith & Osborn ... 208,697
Meat cutter, J. E. Smith ... 208,859
Meats, preserving, C. N. Armstrong ... 208,782
Metals, coating, etc., A. P. G. Daumesnil ... 208,674
Milk, separating cream from, S. L. Plumb ... 208,846
Mill, chopping and grinding, D. Gartman ... 208,678
Mill, cider, R. Eason ... 208,723
Mill spindle step, D. Harrington ... 208,733
Millstone dress, E. S. Cox ... 208,716
Mining, washer, etc., for hydraulic, B. Tyson ... 208,773
Mower, Lawn, J. Braun ... 208,788
Needle blanks, turner for, E. Brown ... 208,712
Needle case, T. Fletcher ... 208,676
Oatmeal machine, Kremer & Williams ... 208,684
Organ, reed, Warren & Coolidge ... 208,775
Paper fastener, metallic, G. W. McGill ... 208,836
Paper folding machine, G. Lauder ... 208,831
Paper, wrapping and packing for, J. F. Rodgers ... 208,853
Piano stool, J. Jennings ... 208,823
Picture frame, A. W. Hale ... 208,681
Pipes, etc., covering for steam, H. Burgess ... 208,791
Pitcher, ice, H. B. Beach (r) ... 8,444
Planter, corn, Berghold & Forstner ... 208,668
Planter, cultivator, etc., S. J. Keim ... 208,824
Planter, seed, W. M. Rape ... 208,847
Pliers, Allen & Lane ... 208,878
Plow, C. S. Haven ... 208,680
Post hole digger, C. Patterson ... 208,760
Potato digger, S. Love ... 208,747
Power, support for transmitter, C. H. Reynolds ... 208,850
Printing machines, deliverer for, C. B. Cottrell ... 208,796
Projectile for throwing lines, Eggers & Pierce ... 208,724
Pump, S. N. Jones ... 208,739
Pump, direct acting steam, W. Craig ... 208,797
Pump, oil well, F. Bowen ... 208,709
Pump spouts, etc., discharge pipe, T. Dowling ... 208,722
Pumping system, hydraulic, etc., W. P. Barclay ... 208,701
Railway switch, H. Elliot ... 208,802
Rake, horse hay, W. H. Field ... 208,728
Razor strop, A. V. Brokhahne ... 208,670
Rein holder, L. Trudeau ... 208,866
Revenue recorder, H. C. Aldrich ... 208,877
Roof tile, J. Hilgers ... 208,819
Sash fastener, B. B. Hughes ... 208,821
Scaffold, R. T. Roadell ... 208,852
Screen, window, H. E. Wookey ... 208,700
Screw cutting die and holder, J. H. Vinton ... 208,870
Seaming machine, W. A. Wheeler ... 208,872
Seed dropper, Allen & Chandler ... 208,781
Seed dropper, S. J. Keim ... 208,825
Sewer inlet valve, J. J. Gorman ... 208,809
Sewing machine, Miller & Diehl ... 208,838
Sewing machine waxing device, W. S. Hadaway ... 208,679
Shade roller, B. Handforth ... 208,811
Shafts, vehicle, W. S. Boyd, 3d ... 208,787
Spool and bobbin, O. E. Wait ... 208,774
Spoon holder, H. B. Beach ... 208,706
Stables, inserter and clincher for, W. J. Brown, Jr. 208,789
Steam generator, W. F. Browne ... 208,711, 208,790
Steering apparatus, steam, J. P. Manton ... 208,833
Stove and furnace grate, S. Smyth ... 208,767
Stove base, J. M. Harper ... 208,812
Stovepipe, J. Harrison ... 208,813
Stovepipe damper, G. C. Dunklee ... 208,800
Stove plate, ornamental, F. P. Nicholson ... 208,842
Sugar train, D. Pray ... 208,693
Surveying instruments, tripod head, W. Gurley ... 208,732
Swingstile recorder, V. I. Feeny ... 208,727
Thill coupling, J. Carr ... 208,671
Thill coupling, A. Proseus ... 208,762
Tin scrap, utilizing, Holliday & Lambert ... 208,735
Toilet articles, etc., case for, H. Gringmuth ... 208,731
Tool, combination garden, J. D. Royse ... 208,854
Toy, J. Gallot ... 208,677
Transplanter, H. Avery ... 208,703
Traveling bag handle, R. W. Chapman ... 208,793
Tray, child's table, C. Gillard ... 208,807
Truck, car, W. H. H. Sisum ... 208,857
Truss, G. France ... 208,805
Truss, W. L. Tucker ... 208,869
Tube, collapsible pile, E. R. Post ... 208,761
Tubes of plastic materials, making, H. Burgess ... 208,792
Umbrella rib tip, Morrison & Hubbard ... 208,840
Valve, slide, Ludlow & Ward ... 208,687
Valve, stop, J. S. Glenn ... 208,808
Vehicle seat, A. Y. Hubbell ... 208,820
Velocipede, R. Steel ... 208,861
Velocipede propeller, J. A. Zoebl ... 208,876
Ventilator, Schleicher & J. & J. Mackert ... 208,855
Washer, clothes, G. A. Crooker ... 208,798
Washing machine, J. Wells ... 208,777
Well polish rod clamp, J. H. Luther ... 208,832
Winding textile fabrics, W. R. Schurmann ... 208,856
Wort cooling vat, J. Raiber ... 208,764
Wort during fermentation, cooling, J. Raiber ... 208,763

TRADE MARKS.

Beer, Thomas Grimes ... 6,711
Boiler felt, Squires Radcliffe ... 6,686
Cartridges, Union Metallic Cartridge Company ... 6,708
Cigars, Rafael Vega ... 6,688
Cigars, J. R. Angulo ... 6,690
Cigars, Bondy & Lederer ... 6,692, 6,693, 6,694
Cigars and cigarettes, Straiton & Storm ... 6,706
Cigars and cigarettes, Adolph Moonelis ... 6,698
Cigars, cigarettes, etc., Rath & Ferris ... 6,676
Cigars, cigarettes, etc., J. R. Sutton ... 6,677
Cigars, cigarettes, etc., Kerb & Spiess ... 6,678
Cigars, cigarettes, etc., Hall Blair & Co ... 6,680
Cigars, cigarettes, etc., C. H. Klemm ... 6,713
Chewing and smoking tobacco, T. C. Williams & Co. 6,703
Fertilizers, Chemical Company of Canton ... 6,695
Ginger tonic, Hiscox & Co ... 6,696
Hat sweats for hats and caps, John Bigelow ... 6,709
Jewelry, Sturdy Bros. & Co ... 6,679
Lager beer, J. Winkelmeyer & Co ... 6,701
Lager beer, Baur & Betz ... 6,691
Lubricating oils, J. W. Bartlett ... 6,716
Medical compound, Indian Cordial Compound ... 6,712
Medical compound, D. D. Perraud ... 6,714
Medicinal preparation, W. M. Caterson ... 6,669
Medicinal preparations, M. E. Mead ... 6,681
Mouth harmonicas, German Harmonica Company. 6,684
Paper, S. B. Massa ... 6,675
Peanuts, K. B. Elliott ... 6,683
Perfumery, etc., J. T. Saunders ... 6,687
Phosphorus, Albright & Wilson ... 6,682
Pile drops, W. Rockwell & Co ... 6,699
Pickles, Yarnell Brothers ... 6,702
Plug tobacco, Allen & Ellis ... 6,689
Plug chewing tobacco, Lovell & Gedge ... 6,674
Prepared clams, C. H. Jackson ... 6,671
Preparation for complexion and skin, P. B. Bradlee 6,668
Salve, L. E. Shipman ... 6,700
Smoking tobacco, S. M. Johnson & Bro ... 6,672
Soda waters, etc., W. H. Hutchinson & Son ... 6,670
Steamed and dried grain, W. H. Lewis ... 6,685
Tools, etc., for ringing hogs, H. W. Hill & Co. ... 6,704
Washing blue, Henry Sawyer ... 6,678
Well buckets, Prewitt, Spurr & Co ... 6,705
Whisky, Gregory, Stagg & Co ... 6,707
Whisky, Ellison & Harvey ... 6,710
Whisky, E. H. Taylor, Jr ... 6,715
Wire cloth of all kinds, D. R. Morse ... 6,697

DESIGNS.

Cigar box, Adolph Moonelis ... 10,863
Font of printing types, Andrew Little ... 10,862
Hinges, C. B. Clark ... 10,864
Spoons, J. M. Culver ... 10,859, 10,860
Spoons, Herman Vasseur ... 10,861
Watch chain bar, F. S. Draper ... 10,865

English Patents Issued to Americans.

From November 1 to November 5, inclusive.

Book, manufacture of.—R. Grimshaw, Phila., Pa.
Electric light.—S. F. Van Choate, N. Y. city.
Governor, engine.—B. Brazelle, St. Louis, Mo.
Knitting machine.—W. H. McNary, Brooklyn, N. Y.
Packing, elastic.—J. C. Horton *et al.*, N. Y. city.
Telephone.—F. L. Pope, Elizabeth, N. J.
Wood planing machine.—W. H. Doane, Cincinnati, O.