



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 This is for our information and not for publication.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 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.

(9157) R. A. N. says: 1. What apparatus is necessary to install telephone apparatus on a telegraph line? We wish to use only transmitters and receivers and such other as is necessary, using the telegraph battery as battery for the telephone. A. To use a telegraph line with a telephone it is only necessary to attach the transmitter and receiver to the line. The telegraph battery will answer for both services. The sounder may

answer for the calling apparatus. 2. There is another telephone line on our poles; why is it that we can hear them talking while the lines are 18 inches apart? A. What you hear from one line to another is called "cross talk." It is due to the electric waves which fill the space around the wire. 3. When the lines get crossed we can hear them talk by putting an ear close to the sounder. Why is it? A. The sounder of a telegraph has long been known to be able to receive a telephone message. It is because the sounder is affected by the waves and vibrates just as the diaphragm of the receiver does. 4. I have read that the electricity flows around the surface of a wire and not through it. A. Electricity of very high voltage, as that of the lightning, does not penetrate a wire, but flows on its surface. This is not the case with the current from a battery. It penetrates the metal and goes through the wire. 5. Will a rusty wire offer more resistance to its passage than a galvanized wire? A. From the answer to the last question you will see that if a wire is rusty upon its surface only, it can conduct electricity as well as if bright; but if the wire is so much rusted that its body is reduced by the rust, it is equivalent to a wire of the size of its unrust portion, and cannot conduct electricity as well as one unrust, of its former full size.

(9158) M. E. C. asks: I wish to put a telephone line from our house to one of our greenhouses a distance of about 320 feet. Will you please tell me the best way of running the wires underground? Are the lead-incased wires durable enough to be buried directly in the ground or should they be run through pipes? A. The lead-incased cables can be run by laying them directly in the earth. They are very durable unless a break occurs in the sheath. To prevent injury from this cause, it is better to use the cable with a core saturated with an insulating substance which repels moisture. These can be obtained with one or more pairs of conductors.

(9159) A. H. F. says: I would like for you to answer these inquiries either by letter or through your Notes and Queries column. I would like to know at what speed a trolley can be run constantly or can it be run at the rate of 60 or 70 miles an hour, with stops at about 35 or 45 miles, without injury to the wires or trolley contacts, such as pulleys. I think it is impossible to run a trolley and keep proper contact at the rate as stated above. Can you tell me what line, and where the highest speed is run and what distance runs are made without stops of about 35 or 45 miles? A. Trolley cars can be run constantly at any speed which they can attain at any time, if the roadway is safe and there is no break-down. There is nothing to prevent this in the trolley wheel or shoe of the contact with the third rail. Forty to fifty miles per hour has often been made for a short time, but cannot be maintained on any road because of stops and grade crossings with highways. An experimental track is in existence in Germany upon which over 100 miles an hour has been made. If there was any need of such a road electrical engineers would undertake to build and operate an express road with 60 miles per hour and stops at any interval desired. But there is no one to put up the capital for such a road, since it is not needed at present.

(9160) J. E. J. says: There are several gasoline engines in this town and the spark or battery gives us more trouble than a little. Will you please answer in Notes and Queries what is the best battery, liquid or dry, for a small (1½ horse power) engine. Have you a SUPPLEMENT that gives full information? A. Dry cells are usually employed for sparking gasoline engines. See Hiscox's "Gas Engines" for a full treatment of the matter; price \$2.50 by mail.

NEW BOOKS, ETC.

CHEMISCH-TECHNISCHES REZEPTEBUCH FUER DIE GESAMTE METALLINDUSTRIE. Von Heinrich Bergmann. Vienna: A. Hartleben. 1903. 12mo. Pp. 327. Price, \$1.50.

Mr. Bergmann has collected a great number of recipes which should be of value to the metallurgist, particularly since the recipes which he has gathered are such as have proven themselves of practical value.

EMERY GRINDING MACHINERY. A Text Book of Workshop Practice in General Tool Grinding and the Design, Construction, and Application of the Machines Employed. By R. B. Hodgson, A.M., I.M.E. London: Charles Griffin & Co., Ltd. Philadelphia: J. B. Lippincott Company. 1903. 12mo. Pp. 180.

An emery grinder is one of the most useful tools a shop can have, especially as a money saver. The present volume is an admirable contribution to the literature of money machine shop work. Unlike many English technical books, American practice is far from being neglected, and many of the best American types are shown.

WOOD. A Manual of the Natural History and Industrial Applications of the Timbers of Commerce. By G. S. Boulger, F.L.S., etc. London: Edward Arnold. New York: Longmans, Green & Co. 1902. 16mo. Pp. 369. 66 illustrations, 3 plates. Price, \$2.60.

About 750 woods are enumerated in this excellent book, including most of those which are practically known in general commerce. The information is of a very practical nature, dealing with the weights of wood, their hardness and color, odors and resonance, the defects of wood, seasoning of wood, the uses of wood, and a complete catalogue and an excellent bibliography.

INDEX OF INVENTIONS

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

August 11, 1903,

AND EACH BEARING THAT DATE.

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

Brush-back drilling and filing machine, C. E. Flemming	735,737	Feet, device for preventing flat, C. L. Darby	735,860
Brush, electric, C. T. Richmond	736,154	Fence, D. F. Beard	735,195
Building block, H. E. Goodwin	736,154	Fence feeder and crimper, wire, M. D. Taylor	735,842
Buildings, construction of hospitals, sanatoriums, or other, D. Sarason	736,158	Fence post, J. & W. H. Beazley	736,058
Burglar alarm and sash lock, Handy & Hosford	735,872	Fence post, F. J. Peterson	736,147
Burial receptacle, J. C. F. McGriff	735,998	Fence stretcher, wire, I. M. Warner	736,322
Camera back, reversible, F. B. Case	736,212	Fencing, wire, W. Grattan	736,088
Camera feeding device, magazine, Fyfe & Odquist	735,746	File, account, E. T. Randle	735,907
Camera focusing hood, La May & Whitlock	736,271	File cabinet, C. Kline	736,268
Camera photographic, F. B. Case	736,211	File, paper, S. Chiger	735,710
Camera sketching, Beebe & McFarland	735,697	Filter, L. B. Skinner	735,835
Cam gas, connection for the swinging elements of, F. B. Case	736,213	Filter, G. W. Johnston	736,107
Can bodies, manufacture of key-opening tongued tearing strip, B. H. Larkin	735,783	Fire escape, E. Banhagel	736,056
Cans, manufacture of key-opening tongued tearing strip, G. W. Weber	735,850	Fire ladder and escape means, combined, W. Hubart	736,104
Candle, ornamental multiple, W. S. De Woody	735,724	Fires, automatic sprinkler for extinguishing, J. G. Grimsley	735,756
Candy, pulling, C. Thibodeau	736,313	Firearm sight, C. Huber	735,771
Cap or cartridge receptacle, J. W. Grubbs	735,757	Fish opening and cleaning machine, T. Morris	735,914
Car coupling, W. S. Lee	735,885	Floor construction, J. Trunzer	736,316
Car coupling, J. C. Yeler	736,330	Flooring, boarded ceiling, etc., separable, P. B. Guilhou	735,969
Car loader, D. H. Clouston	735,858	Flue scraper, P. F. Vogt	735,846
Car sign, removable street, Coleman & Harner	735,946	Fluid pressure engine, M. N. Forney	735,741
Car wheels, molding, A. F. Howe	736,102	Fluid transfer switch, E. A. July	735,881
Carbon tetrachloride, C. Combes	735,948	Folding box or crate, J. W. Prasky	735,906
Card holder, S. H. Owens	735,802	Folding chair, T. W. Washburn	736,180
Carriage top operating device, J. H. King	735,779	Freezing the ground, C. Sooysmith	736,308
Cartons, or the like, machine for setting up and filling, W. H. Doble	736,237	Fruit gatherer, L. Scarbrough	736,028
Cast steel wheel, T. B. Zell	736,190	Fuel, manufacturing artificial, H. C. B. Forester	736,083
Caster, C. Stengel	735,838	Furnace distributor, blast, J. Cook	736,074
Centering, hanger for temporary, G. B. Waite	736,040	Furnaces, apparatus for feeding pulverized fuel to, J. E. Baldwin	735,932
Cetyl-glycyl and making same, M. W. Beylik	736,061	Furnaces, etc., attachment for, A. G. Ingalls	735,772
Chain and sprocket wheel therefor, drive, F. V. Hetzel	736,256	Furniture fixture, C. Franck	735,981
Change making apparatus, J. W. Munson	736,133	Fuse apparatus, protective, W. L. Richards	736,019
Check and sales slip holder, W. Morton	736,288	Fuse box, electric, J. J. Wood	736,049
Chocolate manufacturing machine, E. P. F. Magniez	735,890	Fused substances, apparatus for the electrolysis of, C. W. Roeper	736,020
Circuit breaker, E. P. Warner	736,041	Gage. See Track gage	
Champ, J. Turck	736,174	Gage, F. T. Cable	736,067
Clipper, hair, M. S. Black	736,198	Game and toy, W. Maxwell	735,789
Cloth cutting machine, E. M. Waring	735,848	Game apparatus, C. M. Mumford	735,995
Clothing hanger, T. D. Sugrue	736,171	Garment hanger, I. Scott	736,030
Clutch, friction, R. M. Phillips	735,811	Garment hanger, M. E. Pike	736,150
Coal hoist, G. Gillroy	736,965	Gas battery, J. H. Reid	736,017
Coal or other materials, classifying apparatus for, F. Blanc	735,855	Gas engine, H. H. Mulherin	736,122
Coffee concentrate and making same, S. Kato	735,777	Gas engine, E. B. & L. S. Cushman	736,224
Coil spring, V. Meyer	736,333	Gas fixture, Smith & Warhurst	735,837
Coin detective, G. W. Brown	736,702	Gas generator, acetylene, J. McLean	735,800
Coin holder, F. C. Fish	736,080	Gas generator, acetylene, W. F. Bolly	735,937
Coin conveyor, E. G. B. Karting	736,115	Gas heated comb, R. D. O. Johnson	736,268
Coke oven door, G. D. Macdougall	736,281	Gas heater, J. C. Goodwin	735,751
Collar shield, horse, B. F. George	735,747	Glass making, wire, Swearer & Toyne	736,310
Collar throat brace, horse, J. H. Miller	736,128	Glass ornamenting machine, J. M. Conroy	735,949
Combining machine, wool, Jackson & Thompson	735,980	Glass working, O. A. Mygatt	735,796
Commutator brush, C. Wirt	736,048	Glassware, apparatus for making, M. H. Hart	735,764
Concentrator, I. Sutton	736,309	Gold crowns, apparatus for swaging, Brewer & Burfeld, release	12,143
Concrete building blocks, machine for manufacturing hollow, Borst & Groskop	735,938	Golf ball, C. Davis	736,223
Concrete construction, steel, W. W. Guest	735,755	Governor, N. Lombard	736,276
Concrete mixer, L. G. Haase	735,970	Governor, centrifugal, N. Lombard	736,277
Conveyor, A. J. Webster	735,921	Governor, engine, W. O. Worth	735,930
Conveyer apron, S. G. Touchstone	736,315	Grain cleaning and scouring machine, H. C. Jeffers	736,264
Cooker, steam, E. C. Peters	735,808	Grinding or polishing cone, L. G. Koenig	736,114
Copy holder, W. H. Peak	735,005	Grinding tracers and tools for engraving machines, machine for, M. Barr	736,193
Cork retainer, W. E. Brown	736,202	Gripping device, B. W. Truscott	736,173
Corn fodder shredder, W. H. Beidler	736,196	Gums from trees, collecting, J. G. Gardner	735,869
Corset, N. Temple	735,843	Halter and hitching rope, combined, J. M. Little	736,275
Corset, T. Schottlander	736,029	Hammer, Jinks & Davis	736,285
Cotton gin, A. M. Dastur	736,227	Hand, artificial, H. Patton	736,144
Cover, cornfry vessel, J. Stone	736,169	Harmonium stop key mechanism, C. Hesse	736,255
Crate, folding, B. K. Boyd	736,939	Harvester binding mechanism, grain, S. K. Dennis	735,721
Crossing and double slip switch with movable center point, combination, Lee & Moore	736,119	Harvester, broom corn, I. O. Baxter	735,696
Crusher. See Ore crusher		Harvester, broom corn, J. W. Peifer	735,806
Crutch arm rest, H. S. Cole	736,072	Hat or the like, S. H. Meerza	735,790
Cultivator, S. P. Kimball	735,886	Hatch fastener, T. B. Armstrong	736,053
Cultivator, W. R. Knauf	736,113	Header, E. A. Johnston	735,983
Cultivator, vineyard or orchard, I. B. Killgore	735,986	Heat, device for effecting the radiation of, F. T. Clark	735,945
Current motor, alternating, F. L. O'Bryan	735,986	Heater, G. W. Brunner	736,203
Cutters, mechanism for driving and adjusting rotary, C. R. Gabriel	736,243	Heating apparatus, D. M. Horton	736,099
Demonstration and instruction strip, combined, F. A. Glidden	735,749	Hemoglobin preparations, making, F. Hanssen	736,250
Dental mixing tablet, J. N. Wolverton	735,929	Hide fleshing machine, Lombard & Luce	736,278
Dental mouth prop mirror, and tongue protector, W. H. Hare	735,762	Holisting machine, L. W. Delp	736,234
Dental tool, G. B. Hough	736,101	Hopple, J. Fenstermaker	735,866
Desk, portable, J. B. Elliott	735,885	Horses	