

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

Marine Iron Works. Chicago. Catalogue free. "U. S." Metal Polish. Indianapolis. Samples free. Gasoline Brazing Forge, Turner Brass Works, Chicago. Yankee Notions. Waterbury Button Co., Waterbury, Ct. For bridge erecting engines. J. S. Mundy, Newark, N. J. Handle & Spoke Mch'y. Ober Lathe Co., Chagrin Falls, O. "Criterion" Acetylene Generators, Magic Lanterns & accessories. J. B. Colt & Co., Dept. N.3-7 W. 29th St., N. Y. Ferracite Machine Co., Bridgeton, N. J., U. S. A. Full line of Presses, Dies, and other Sheet Metal Machinery. Special and Automatic Machines built to drawings on contract. The Garvin Machine Co., 141 Varick St., N. Y.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

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.

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 This is for our information and not for publication.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.

(7686) J. A. M. says: Will you give me a formula for the prevention of mildewing of cloth exposed to the weather? A. Dissolve 1 pound zinc sulphate in 40 gallons water, and then add 1 pound sal soda. When dissolved, 2 ounces tartaric acid are added. This holds the partially separated zinc carbonate without neutralizing the excess of alkali used. The cloth should be soaked in this solution for twenty-four hours and then dried without wringing.

(7687) E. C. L. M. asks: 1. What are the phenomena of the so-called "cloud burst"? A. A cloud burst is a thunder shower with so excessive a fall of rain that it seems as if the cloud itself was falling to the earth. They are thought to be due to the overturning of a mass of air which is in unstable equilibrium. They are very limited in extent, and last for a short time only. Little streams are swollen to rivers, and rush down the valleys, carrying soil, trees and even large bowlders with them and leaving desolation behind them in their track. The term originated in the Western United States, but its use has extended to the East, and is now used to describe any storm of more than usual severity. 2. Why does one perspire more when sleeping in a hot room (as we have here) than when sitting awake? A. We cannot answer this inquiry with any positiveness; but would suggest as a possible cause of the difference that when awake we are continually in motion, and therefore changing the air which is in contact with the surface of the body. The effect of this is like fanning or the use of the pinna. But when asleep, the air lies motionless upon us, and is soon saturated with moisture, thus adding to our discomfort.

(7688) I. A. McC. writes: I would be glad if you would answer through Notes and Queries the question of what the pressure is in the modern gas engine at the instant of explosion under the most favorable circumstances. I asked the question of a manufacturer of gas engines who is rapidly coming into prominence in this portion of the country, and his answer was that under the most favorable circumstances the pressure was very close to 300 pounds per square inch. This is much more than I had ever heard it stated before, some parties giving it as low as 60 pounds. I have read no authorities on this question, but consider that 300 is rather extravagant and do not know whether the smaller figure is as extravagant as the other or not, but would think it a little too small. Another question I would like to understand is: What is the expansion of 74 degree gasoline measured in volumes when converted into gas at a pressure of one ounce per square inch? Also what is considered the best proportion of such gas and air for the most effective explosion? A. The explosive force in gas and gasoline engines varies with the charge compression. This may be from 30 to 80 pounds according to the volume of the combustion chamber or clearance adopted by the builder in the design of the engine. A low compression charge may give an explosive pressure of from 80 to 125 pounds per square inch; while a high compression charge may raise the explosive pressure to from 150 to 250 pounds and possibly 300 pounds. Thousands of explosive motors are running at from 150 to 175 pounds maximum pressure. The vapor of gasoline is equal to 130 volumes of the liquid without admixture of air. The vapor and air mixture for highest explosive effect is one part of vapor to ten parts air with economical effect.

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 unequalled 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, 631 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending JULY 4, 1899. AND EACH BEARING THAT DATE.

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

Table listing inventions with their respective inventors and dates. Includes items like Addressing machine, Alarm, Amalgamating machine, Atomizer, Axle lubricator, Back pedaling brake, Bale tie, Baling press, Bandage, Battery, Bearing, Beer dispensing and pipe cleaning apparatus, Bell, Bicycle alarm, Belt fastener, Bicycle, Bicycle chain, Bicycle chain cleaner, Bicycle driving mechanism, Bicycle gear, Bicycle luggage carrier, Bicycle pump, Bicycle support and locking device, Bidet, Binder, Binding, Blowpipe, Boat life, Boiler, Boiler cleaner, Book, Boot strap, Box, Box, Box making machine, Bracket, Brake, Bridle bit, Brush, Buckets, Buggy or carriage body, Bung, Bunting machine, Burglar alarm, Burner, Burner for heating purposes, Burnishing tool, Button, Button drilling machine, Cabinet, Calcing furnace, Calculating machine, Camera, Camera, Candle extinguisher, Car coupling, Car coupling, Car coupling, Car draught rigging, Car fender, Car fender, Car fender, Car fender, Carbon contact, Carbonator, Carding ending, Carriage, Carriage, Cash register, Castings, Castings, Cattle guard, Cement or concrete work, Centering support, Chain, Chain, Chair, Chair, Chart, Checkring fastener, Cigar branding machine, Circuit breaker, Circuit closer, Clasp, Cleaner, Clock system, Cloth pressing machine, Clothes drier, Clothes pound, Clutch, Clutch, Clutch and handle, Clutch, Clutch, Coffee roaster, Coin controlled apparatus, Combination chair, Compressing powdered substances, Confidential register, Conveyor, Conveyor, Corset, Corset, Cerset closure, Counting apparatus, Coupling, Coupling, Cover, Covering machine, Crate, Crib or cradle, Cross tie, Cultivator, Cultivator, Currents, Currents, Curtain rod bracket, Cut out plug, Cutter, Cutting tool, Cycle gear, Cyclometer, Dental chair, Desk, Diamonds and their mountings, Dish cleaner, Dish washer, Door hanger, Door holding device, Door storm strip, Dough mixer, Dough mixer, Drain, Drawer centering device, Drier.

Advertisements.

ORDINARY RATES.

Inside Page, each insertion, - 75 cents a line Back Page, each insertion, - \$1.00 a line For some classes of Advertisements, Special and Higher rates are required. The above are charges per agate line—about eight words per line. This notice shows the width of the line, and is set in agate type. Engravings may be had advertisements at the same rate per agate line, by measurement, as the letter press. Advertisements must be received at Publication Office as early as Thursday morning to appear in the following week's issue.

Star Foot power Screw-cutting Lathes Automatic Cross feed 9 and 11-inch Swing. New and Original Features. Send for Catalogue B. Seneca Falls Mfg. Company, 695 Water St., Seneca Falls, N. Y.

MATCH FACTORY.—DESCRIPTION of an English factory. SCIENTIFIC AMERICAN SUPPLEMENT 1113. Price 10 cents. For sale by Munn & Co. and all newsdealers.

POWER & FOOT SHAPERS, PLANERS, DRILLS MACHINE SHOP OUTFITS, TOOLS AND SUPPLIES. CATALOGUE FREE. SEBASTIAN LATHE CO., 120 CULVERT ST., CINCINNATI, O.

Foot Power and TURRET LATHES, Planers, Shapers, and Drill Presses. SHEPARD LATHE CO., 133 W. 2d St., Cincinnati, O.

THE HALL BRASS PIPE WRENCH. A PERFECT TOOL WITH FRICTION GRIP. Bushings for all sizes and shapes. Highly polished pipes made up without scar or injury. For Circulars and Prices WALWORTH MFG. CO., 16 Oliver St., BOSTON, MASS.

Water Emery Tool Grinder Has no pumps, no valves. No piping required to supply it with water. Always ready for use. Simplest in construction, most efficient in operation. Send for catalogue and prices. W. F. & JNO. BARNES CO. 1999 Ruby St., Rockford, Ill.

Presses for Sub-Press Work. Five sizes. Sub-Presses and Tools to order. Send for Circulars. BLAKE & JOHNSON, P. O. Box 7, WATERBURY, CONN.

HIGH GRADE WOOD WORKING MACHINERY Single Machines or Complete Equipments for Any Class of Work. Your Correspondence is Solicited. Illustrated Matter and Prices on application. J. A. FAY & CO. 10-30 John St., CINCINNATI, OHIO

CHRISTIANA MACHINE COMPANY, Established 1862. Christiansa, Pa., U. S. A. Engineers, Founders and Machinists. Manufacturers of Turbine Water Wheels, adapted to all duties. Power Transmitting Machinery, Gearing, Rope Wheels, Friction Clutches, Shafting, Pulleys, Hangers, etc. Catalogues on application.

NEW BINOCULAR. (The Tri-er.) Small as an opera glass. More powerful than the largest field glass. Send for Circulars. QUEEN & CO. Optical and Scientific Instrument Works, 1010 Chestnut Street, NEW YORK: 69 Fifth Ave. PHILADELPHIA, PA.

Tools for Fine or Rough Work. Tools that are common and Tools that are rare, costly and cheap Tools, and every other kind of Tool used in any trade you will find described and illustrated in MONTGOMERY'S TOOL CATALOGUE FOR 1898. A handsome book containing 510 pages and copious index. Pocket size 6 1/2 x 9 1/2 inches, with rounded edges and stitched covers. Every workshop and factory in the country should have one. Sent by mail for 25 cents by MONTGOMERY & CO. 105 Fulton Street, New York.

WELL DRILLING Machines. Over 70 sizes and styles, for drilling either deep or shallow wells in any kind of soil or rock. Mounted on wheels or on sills. With engines or horse powers. Strong, simple and durable. Any mechanic can operate them easily. Send for catalog. WILLIAMS BROS., Ithaca, N. Y.

THE HARRINGTON & KING PERFORATING SHEET METALS MILLING & MINING MACHINERY. WE SUPPLY WHAT YOU WANT ANY THICKNESS OF METAL, SIZE & SHAPE OF HOLE. 225 NORTH UNION ST. CHICAGO, ILL. U.S.A.

Table listing various mechanical and scientific items with their prices. Includes items like Drill, Dye and making same, Dye and making same, Dye, green acid, Herrmann, Bar drum, G. F. Way, Electric machine, dynamo, Hutin & Leblanc, Electric meter, T. Duncan, Electric motor attachment, C. R. Meston, Electrode for therapeutic purposes, vacuum, H. G. O'Neill, Electrotherapeutic apparatus, H. G. O'Neill, Elevator safety device, U. S. A., Elevator safety device, J. D. Griffen, End gate, wagon, H. Wittich, Engine, G. De Camp, Engine, De Camp & Roth, Engine lubricating device, W. M. Musgrave, Envelop, W. Wolfe, Eyelet, D. C. See, Eyeletting machine, P. R. Glass, Eyeletting machine, W. L. Whittemore, Eyeletting machine, Whittemore & Glass, Eyeletting machine, W. Whittemore & Glass, Fastener for envelopes, etc., metal, H. C. Holcombe et al., Fastener stud member, detachable, E. Pringle, Fastener stud member, separable, G. E. Adams, Fastening device, A. Leblanc, Faucet, N. J. Faucet, Feed water heater, J. W. Casey, Feed water heater, H. A. Millar, Fence, A. E. Lyeon, Fence, L. A. Short, Fence machine, wire, J. Bennington, Fence making machine, Fendras & Whidden, Fence post, E. E. Newquist, Fertilizer distributor, E. J. Corser, Fertilizer distributor, L. V. Labelle, File, newspaper, Bireley & Simms, Filter, C. T. Giles, Filter press, J. Williamson, Firearm, G. Testa, Firearm stock, adjustable, S. Scripture, Fire extinguisher, portable, R. D. Wirt, Fireproof partition, O. W. Norcross, Fireproofing composition, G. X. Dime, Flaming mangle, F. J. K. Sawyer, Folding box, Cunard & Hannold, Foot rest and child's seat, combined, J. R. John, Footwarmer, A. & W. C. Meyer, Fountain, See Watering fountain, Fruit drier, E. F. Schneider, Furnace, J. K. Ottobauer, Furnace air feeding apparatus, J. S. Newlin, Furnace lining, metallurgical, B. Talbot, Gage, See eyeletting machine gage, Galvanic battery, J. von der Poppenburg, Garment forming apparatus, I. B. Kleinert, Gas apparatus, J. M. Hadden, Gas burner, J. S. Barker, Gas burner, incandescent, E. Bauweraerts, Gas engine, W. S. Sharpneck, Gas generating gas fixture, J. F. Snyder, Gas generator, acetylene, R. J. Dull, Gas generator, acetylene, S. Hanford, Gas generator, acetylene, G. Miller, Gasoline or gas engine, J. A. Harp, Gate, See End gate, Railway gate, Gate, S. W. Martin, Gear, driving, J. K. Starley, Gearing, W. W. Kenfield, Generator, gas, J. J. Johnson, Glass articles, making, M. J. Owens, Glass articles, perforating, E. A. Parker, Glass bottles, machine for manufacturing, L. Grote, Glass, making rough plate, P. Sommer, Glass, making rough plate, G. E. Cleveland, Glassware, decorating, H. Thuemler, Glove, D. H. Murphy, Golf practicing apparatus, J. G. Warren, Gong, alarm, E. W. Vanduzen, Grain, etc., apparatus for separating or sorting, A. Bogner, Grain binder cord knotting and holding device, W. Butterfield, Graphophones, etc., case or holder for records of, Pzazno & Bisler, Grate, basket, F. H. Fielder, Grinding mill, J. H. Fielder, Gun, cane, E. H. Ericson, Hair cutting apparatus, C. Hasch, Hame and trace connector, A. E. Hall, Hammock, R. C. Funke, Handout, J. F. Cumming, Harrow, L. P. Down, Hat fastener for boxes or cases, G. H. Schoenberger, Hay rack loader or unloader, W. N. Simpkins, Heater, See Feed water heater, Water heater, Heel, J. W. Cross, Heel protector, H. G. Gauson, Hinge joint for flat articles, G. Cohn, Hinged case, A. L. Mariner, Hoe and cultivator, horse, F. Bateman, Hockback attachment, vehicle, H. H. Brown, Hook, See Singletree hook, Hook and eye, W. W. Groves, Hoses, H. Broers, Hose gate, E. S. Clarke, Hose safety device, hydraulic, J. Muskett, Hydrocarbon lighting apparatus, R. L. Doran, Ice and production of cold, etc., manufacture of, C. Pelier, Ice creper, detachable, S. Sacher & Saxton, Index, card, E. J. Bein, Indicating and registering distances, etc., apparatus for, J. Ridge et al., Indicator, See Liquid level indicator, Ink well, L. G. Merrill, Insole, slipper, L. Lenon, Insulators for carrying electric line wires, fixing of, W. Menzel, Iodin compound and making same, A. Classen, Iodin derivatives of aromatic amines and making same, A. Classen, Iron, See End gate, Ironing table, A. Josephs, Irrigating system for sprinkling farm lands, roads, or streets, surface, W. H. Shinn, Joint, See Hinge joint, Railway rail joint, Journal bearing, L. P. Delano, Key guard, L. P. Down, Kinetoscopic apparatus, McMillan & Roebuck, Knife, E. O. Wheeler, Knife polishing machine, C. W. Model, Labeling bottles, etc., machine for, S. Fyfe, Labeling tins, jars, bottles, etc., machine, for, J. E. Bradley, Lamp, alternating current arc, G. L. Moyer, Lamp burner, F. T. Williams, Lamp, hydrocarbon incandescent, W. S. Proskyer, Lantern holder and foot warmer, W. M. Wilmarth, Last, W. B. Aronson, Lasting machine, Keats & Clark, Lemon squeezer, G. E. Savage, Letter press, Hardy & Maple, Level and plumb, combined, Keyser & Roche, Liquid level indicator, H. Rasmussen, Liquid level indicator, G. F. Parker, Lock, See Sash lock, Seal lock, Loom, W. J. Lutton, Loom, E. P. Mason, Loom, J. Northrop, Loom, circular, J. & C. Herold, Loom, hand loom, E. P. Parker et al., Loom shedding mechanism, A. Arienta, Lubricating plug, McAlexander & Thomas, Lubricator, See Axle lubricator, Machinery, electrical slow starting device for, I. Stone, Magnetic separator, D. Sigsbee, Mashing apparatus, O. Selig, Mattress stuffing machine, R. K. Thompson, Measuring machine, cloth, J. H. Vanderburgh, Mechanical elements, device for securing, H. Zorn, Mechanical movement, R. L. Crossman, Mercantile minimum compound and making same, C. F. M. Schaerger, Mercury soluble in water and manufacturing same, product of, A. Lottemoser, Metal tube, compound, G. H. Everson, Metal working machine counter mechanism, N. Sperber, Metals by electricity, heating, E. M. Bentley, Metals, ornamenting, P. C. McIlhenny, Meter, See Electric meter, Liquid meter, Milking apparatus, W. H. Lawrence, Mill, See Rotary mill, Windmill, Mine shafts, etc., means for raising water from, E. E. Browne, Mineral lode tracer, Heyland & Gray, Mining and dredging ejector, W. Muir (reissue), Mining machine, coal, C. M. Johnson, Mixer, See Dough mixer, Mould and weight gage, A. C. Gillette, Mould for composition rollers, E. Stough, Moulding, picture, G. F. Drew, Money holder and changer, G. T. Farnell, Monorailway system, L. Beecher.

(Continued on page 46)