

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 next issue.

A Practical Gass Maker, having ten years' experience, desires a situation. Address Glass Maker, Box 773, N. Y. Safety Linen Hose; a protection from fire for factories and stores. Greene, Tweed & Co., 118 Chambers St., N. Y. Eureka Vegetable Boiler Scale Eradicator, strictly vegetable, and perfectly harmless to iron. Warranted to remove scale of any thickness, and to prevent scaling from either fresh or salt water use. Circulars and particulars of G. E. Brinckerhoff, 107 Liberty St., N. Y. Machinists' Tools and Special Mach'y. See adv. p. 12. Toope's Patent Felt and Asbestos Non-conducting Removable Covering for Hot or Cold Surfaces; also Toope's Patent Grate Bar. Charles Toope, Mfg Agent, 353 E. 78th St., New York.

The Sweetland Clutch. See illus. adv., p. 12. Hotchkiss' Mechanical Boiler Cleaner, 84 John St., N. Y., operates by circulation, trapping mud constantly, keeping water purified. No cost save first. Engineers make ten per cent selling other parties than employers. Moulding Machines for Foundry Use. 33 per cent saved in labor. See adv. of Reynolds & Co., page 12. Engines repaired without loss of time. L. B. Flanders Machine Works, Philadelphia, Pa. Soapstone and Empire Gum Core Packing. Special rates to large buyers. Greene, Tweed & Co., New York. The I. B. Davis Patent Feed Pump. See adv., p. 12. No one using steam can afford the loss of fuel and power consequent upon the use of inferior non-conducting steam pipe and boiler coverings. Asbestos has proven the most effective and economical material for the purpose, and is employed in the form of a cement and a fireproof felt for a lining or insulator under hair, felt, etc. The genuine Asbestos Coverings are manufactured only by the H. W. Johns Mfg Co., 87 Maiden Lane, New York. For Sale.—Yacht, 5' x 35', without machinery. Address Box 160, Owego, Tioga Co., N. Y. The Best Device to Communicate Power to Sewing Machines in Factories, is made by J. A. Sawyer & Son, Worcester, Mass. Wanted—Second-hand Woodworking Machines; and to sell, two Iron Lathes. R. K. Teller, Unadilla, N. Y. Jenkins' Patent Valves and Packing "The Standard." Jenkins Bros., Proprietors, 11 Dey St., New York. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. A perfect Mowing Machine is an absolute necessity to a farmer. The best made is the Eureka. It has the lightest draught, and will cut at least one-third more grass per hour than any other mower. Simple in construction and durable. Prices reasonable. Send for illustrated catalogue to Eureka Mower Co., Towanda, Pa. Wren's Patent Grate Bar. See adv. page 397. Exporters of Machinery for Plantations. Sugar Machinery, Coffee Huller and Cleaners. Information and estimates on all classes of American machinery and patented devices. Agricultural Implements and Hardware. Jos. H. Adams & Son., 233 Pearl St., New York. The Mackinnon Pen or Fluid Pencil. The commercial pen of the age. The only successful reservoir pen in the market. The only pen in the world with a diamond circle around the point. The only reservoir pen supplied with a gravitating valve; others substitute a spring, which soon gets out of order. The only pen accompanied by a written guarantee from the manufacturers. The only pen that will stand the test of time. A history of the Mackinnon Pen; its uses, prices, etc., free. Mackinnon Pen Co. 200 Broadway, New York. Superior Malleable Castings at moderate rates of Richard P. Pim, Wilmington, Del. Wood Working Machinery of Improved Design and Workmanship. Cordesman, Egan & Co., Cincinnati, O. The "1880" Lace Cutter by mail for 50 cts.; discount to the trade. Sterling Elliott, 262 Dover St., Boston, Mass. The Tools, Fixtures, and Patterns of the Taunton Foundry and Machine Company for sale, by the George Place Machinery Agency, 121 Chambers St., New York. Experts in Patent Causes and Mechanical Counsel. Park Benjamin & Bro., 50 Astor House, New York. Corrugated Wrought Iron for Tires on Tractor Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsbg, Pa. Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa. Power, Foot, and Hand Presses for Metal Workers. Lowest prices. Peerless Punch & Shear Co. 52 Dey St., N. Y., 4 to 40 H. P. Steam Engines. See adv. p. 381. Recipes and Information on all Industrial Processes. Park Benjamin's Expert Office, 50 Astor House, N. Y. For the best Stave, Barrel, Keg, and Hoghead Machinery, address H. A. Crossley, Cleveland, Ohio. National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 40 John St., N. Y. Saw Mill Machinery. Stearns Mfg. Co. See p. 397. The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg, Mass. Gun Powder Pile Drivers. Thos. Shaw, 915 Ridge Avenue, Philadelphia, Pa. Best Oak Tanned Leather Belting Wm. F. Forepaugh, Jr. & Bros., 531 Jefferson St., Philadelphia, Pa. Stave, Barrel, Keg, and Hoghead Machinery a specialty, by E. & B. Holmes, Buffalo, N. Y. Downer's Cleaning and Polishing Oil for bright metals, is the oldest and best in the market. Highly recommended by the New York, Boston, and other Fire Departments throughout the country. For quickness of cleaning and luster produced it has no equal. Sample five gallon can sent C. O. D. for \$3. A. H. Downer, 17 Peck Slip, New York. Peck's Patent Drop Press. See adv., page 413. Wright's Patent Steam Engine, with automatic cut off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y. Blake "Lion and Eagle" Imp'd Crusher. See p. 397. For Pat. Safety Elevators, Hoisting Engines. Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 412. For Separators, Farm & Vertical Engines, see adv. p. 413.

National Institute of Steam and Mechanical Engineering, Bridgeport, Conn. Blast Furnace Construction and Management. The metallurgy of iron and steel. Practical Instruction in Steam Engineering, and a good situation when competent. Send for pamphlet. Usa Vacuum Oil Co.'s Cylinder Oil, Rochester, N. Y. Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa. Presses, Dies, and Tools for working Sheet Metal, etc. Fruit & other can tools. Bliss & Williams, B'klyn, N. Y. Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, importers Vienna lime, crocus, etc. Condit. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York. For Yale Mills and Engines, see page 381. Portable Railroads. Sugar Mills. Horizontal & Beam Steam Engines. Atlantic Steam Engine Works, B'klyn, N. Y. Apply to J. H. Blaisdell for all kinds of Wood and Iron Working Machinery. 107 Liberty St., New York. Send for illustrated catalogue. H. A. Lee's Moulding Machines, Worcester, Mass. The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 15,000 Crank Shafts, and 10,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free. Brass & Copper in sheets, wire & blanks. See ad. p. 13. The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York. Eagle Anvils, 10 cents per pound. Fully warranted. Gear Wheels for Models (list free); experimental and model work, dies and punches, metal cutting, manufacturing, etc. D. Gilbert & Son, 212 Chester St., Phila, Pa. Machine Diamonds, J. Dickinson, 64 Nassau St., N. Y. The best Truss ever used. Send for descriptive circular to N. Y. Elastic Truss Co., 688 Broadway, New York. Houston's Sash Dovetailing Machine. See ad., p. 14. Steam Engines; Eclipse Safety Sectional Boiler. Lambertville Iron Works, Lambertville, N. J. See ad. p. 413. For Superior Steam Heat. Appar., see adv., page 12. Magic Lanterns, Stereoscopes, and Views of all kinds and prices for public exhibitions. A profitable business for a person with small capital. Also lanterns for home amusement, etc. Send stamp for 116 page catalogue to McAlister, Mfg Optician, 49 Nassau St., New York. New Economizer Portable Engine. See illus. adv. p. 12. For Shafts, Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N. Y. Wm. Sellers & Co. Skinner & Wood, Erie, Pa., Portable and Stationary Engines, are full of orders, and withdraw their illustrated advertisement. Send for their new circulars. Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 13. Totten & Co., Pittsburg. Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Solomon's Parallel Vise, Taylor, Stiles & Co., Riegelsville, N. J. Green River Drilling Machines. See ad. p. 412. C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 413. For Mill Mach'y & Mill Furnishing, see illus. adv. p. 415. Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 413. For Patent Shapers and Planers, see ills. adv. p. 412.

being known, the steam used for heating purposes, and thrown into well when condensed; in other words, is there any rule or gauge that will determine what horse power will pass through a pipe of given size, at given pressure, valve full open, and used as above indicated? A. The flow of steam cannot be measured by the horse power, and if so, it would not apply to heating surfaces, as the velocity of flow must depend upon rapidity of condensation; in other words, it will be greatest in coldest weather. (4) C. & S. ask: What size air pump should we use for a vacuum pan of 200 gallons capacity, temperature used 42° C. ? A. Air pump 10 to 12 inches diameter, and 6 or 7 inch stroke, with steam cylinder 7 inches to 8 inches diameter. (5) F. H. B. asks for a recipe for making a good cologne. A. Oils of lemon, cedar, and bergamot, each 3 iij.; oils of lavender, rosemary, and neroli, each 3 iss.; oil of cinnamon, 3 vj.; rectified spirit, 3 gals.; spirit of rosemary, 1 quart; compound spirit of balm (eau de melisse des carmes), 3 pints. Digest for eight days, then distill 3 gals. (6) C. J. H. writes: In making quantitative blow-pipe assays of gold and silver ores, charcoal is recommended for a support in the first fusion of the assay. It is often quite difficult to procure good coals for the purpose, especially when on a prospecting trip. Is there not some kind of material from which small capsules can be made for the purpose, which can be used an indefinite number of times, and which would be equally as good as charcoal? A. We know of no support that will serve as a good substitute for the coal. A small bone ash cupel will answer in some cases. (7) A. H. L. asks: Will you please specify the kinds of pitch and gutta percha to be used in making cement, also the manner of melting them together? A. Burgundy pitch, melt in an iron pot with as little heat as need be, and stir constantly. The addition of a little shellac will harden it somewhat. (8) W. W. F. asks: 1. Can you give me a list of the best practical books on the manufacturing of chemicals and dyestuffs? A. Consult Wagner's "Chemical Technology," Watts and Richardson's "Acids, Alkalies, and Salts," and the U. S. Dispensary and Pharmacoceia. 2. Give the best manner of making an acid solution of bisulphide of soda, with the difference between a bisulphide and a sulphide and a sulphate of soda. A. Acids precipitate the sulphur from the alkaline sulphides. The sulphide may be prepared by boiling together with water for an hour 2 parts of sulphur and 2 3/4 parts carbonate of soda. Concentrate to small bulk by evaporation, cool, and pour off the liquid from the solid bisulphide. The bisulphide differs from the sulphide only in the large proportion of sulphur it contains. A sulphate is a combination of sulphuric acid with a base, while the sulphide is a compound of sulphur with the same. Consult some elementary book on chemistry, such as Fownes'. (9) J. W. W. writes. I have a 20 inch by 28 inch engine, taking steam from steam drum 14 inches in diameter, placed across three flue boilers each 44 inches diameter, 20 feet long. Would I get more power out of a 36 inch steam drum; if so, why? A. No; but you would probably get drier steam, which would be an advantage. (10) G. B. S. asks: In which bearing would a journal run with the least friction, one of one inch in length, or one of three inches in length, other conditions being the same in both cases? A. There would be no difference if the shaft was strictly in line, and the pressure low enough not to approach abrasion of the shorter journal; but the boxes of the longer journal would wear the longest, as the friction would be distributed over a greater surface. (11) J. F. B. asks: 1. What would be the best mortar to lay fire brick in for lining the fireplace, and flue from a large boiler? A. Fire-clay mortar. 2. What is the highest chimney in the United States and what the height? A. There is one in the vicinity of Pittsburg 275 feet high. We cannot say whether this is the highest. 3. In building a horizontal flue of brick, and lining it with an air space left between, is there any sandstone or other stone that will stand heat well enough to use for lining on bottom and top of flue, and if so, where could it be had? A. Stone is not adapted to this purpose. 4. In building chimneys 300 feet high or higher what mortar is it proper to use outside and inside? A. For outside work hydraulic cement; for inside work good lime mortar. 5. What coefficient is the most reliable to use for linear expansion of brick work exposed to great heat? A. Clark gives for stock bricks, not laid up, for each degree 0'0014 of an inch in 100 feet length. 6. Knowing the amount of grate surface feeding a chimney, what rule will best determine the necessary inside diameter and height for the chimney to give best results? A. Consult "Wilson on Boiler and Factory Chimneys."

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer. Names and addresses of correspondents will not be given to inquirers. 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. Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. 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. Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

(1) T. S. & S. ask: How can we make a brass solution that will plate a fox gold color. to be plated on roughest iron? A. Water (soft), 14 pints; bisulphite of soda, 7 oz.; potassium cyanide, No. 2, 17 oz.; carbonate of soda, 34 oz.; add water, 3 1/2 pints; acetate of copper, 4 1/2 oz.; neutral zinc chloride, 3 1/2 oz. If the deposit is too red use more battery; if too white, less; if earthy or ocherous, add more cyanide; if dull and unequal, add a little arsenious acid in cyanide. They both usually need more or less correction when fresh, it improves on working. Use brass anodes and a pretty strong battery. 2. How to make an electrotyping solution? A. Use a nearly saturated solution of sulphate of copper in soft water. The following gives better results when manipulated by a skilled plater: Bisulphite of soda and pure cyanide of potassium, each 18 oz.; carbonate of soda, 36 oz.; acetate of copper, 17 oz.; aqua-ammonia, 12 1/2 oz.; water, 5 1/2 gals. (2) D. D. writes: I have a lot of waste hard rubber. Can you tell me how to utilize it? Can I make any preparation that will dissolve it so that it will harden afterwards? A. We know of no solvent for the rubber. It is of little use except to the rubber manufacturer, who utilizes it, when ground, to mix with fresh stock.

(3) C. W. D. asks if there is any method of determining how many horse power of steam is passing through a pipe of certain size, the steam pressure

being known, the steam used for heating purposes, and thrown into well when condensed; in other words, is there any rule or gauge that will determine what horse power will pass through a pipe of given size, at given pressure, valve full open, and used as above indicated? A. The flow of steam cannot be measured by the horse power, and if so, it would not apply to heating surfaces, as the velocity of flow must depend upon rapidity of condensation; in other words, it will be greatest in coldest weather. (4) C. & S. ask: What size air pump should we use for a vacuum pan of 200 gallons capacity, temperature used 42° C. ? A. Air pump 10 to 12 inches diameter, and 6 or 7 inch stroke, with steam cylinder 7 inches to 8 inches diameter. (5) F. H. B. asks for a recipe for making a good cologne. A. Oils of lemon, cedar, and bergamot, each 3 iij.; oils of lavender, rosemary, and neroli, each 3 iss.; oil of cinnamon, 3 vj.; rectified spirit, 3 gals.; spirit of rosemary, 1 quart; compound spirit of balm (eau de melisse des carmes), 3 pints. Digest for eight days, then distill 3 gals. (6) C. J. H. writes: In making quantitative blow-pipe assays of gold and silver ores, charcoal is recommended for a support in the first fusion of the assay. It is often quite difficult to procure good coals for the purpose, especially when on a prospecting trip. Is there not some kind of material from which small capsules can be made for the purpose, which can be used an indefinite number of times, and which would be equally as good as charcoal? A. We know of no support that will serve as a good substitute for the coal. A small bone ash cupel will answer in some cases. (7) A. H. L. asks: Will you please specify the kinds of pitch and gutta percha to be used in making cement, also the manner of melting them together? A. Burgundy pitch, melt in an iron pot with as little heat as need be, and stir constantly. The addition of a little shellac will harden it somewhat. (8) W. W. F. asks: 1. Can you give me a list of the best practical books on the manufacturing of chemicals and dyestuffs? A. Consult Wagner's "Chemical Technology," Watts and Richardson's "Acids, Alkalies, and Salts," and the U. S. Dispensary and Pharmacoceia. 2. Give the best manner of making an acid solution of bisulphide of soda, with the difference between a bisulphide and a sulphide and a sulphate of soda. A. Acids precipitate the sulphur from the alkaline sulphides. The sulphide may be prepared by boiling together with water for an hour 2 parts of sulphur and 2 3/4 parts carbonate of soda. Concentrate to small bulk by evaporation, cool, and pour off the liquid from the solid bisulphide. The bisulphide differs from the sulphide only in the large proportion of sulphur it contains. A sulphate is a combination of sulphuric acid with a base, while the sulphide is a compound of sulphur with the same. Consult some elementary book on chemistry, such as Fownes'. (9) J. W. W. writes. I have a 20 inch by 28 inch engine, taking steam from steam drum 14 inches in diameter, placed across three flue boilers each 44 inches diameter, 20 feet long. Would I get more power out of a 36 inch steam drum; if so, why? A. No; but you would probably get drier steam, which would be an advantage. (10) G. B. S. asks: In which bearing would a journal run with the least friction, one of one inch in length, or one of three inches in length, other conditions being the same in both cases? A. There would be no difference if the shaft was strictly in line, and the pressure low enough not to approach abrasion of the shorter journal; but the boxes of the longer journal would wear the longest, as the friction would be distributed over a greater surface. (11) J. F. B. asks: 1. What would be the best mortar to lay fire brick in for lining the fireplace, and flue from a large boiler? A. Fire-clay mortar. 2. What is the highest chimney in the United States and what the height? A. There is one in the vicinity of Pittsburg 275 feet high. We cannot say whether this is the highest. 3. In building a horizontal flue of brick, and lining it with an air space left between, is there any sandstone or other stone that will stand heat well enough to use for lining on bottom and top of flue, and if so, where could it be had? A. Stone is not adapted to this purpose. 4. In building chimneys 300 feet high or higher what mortar is it proper to use outside and inside? A. For outside work hydraulic cement; for inside work good lime mortar. 5. What coefficient is the most reliable to use for linear expansion of brick work exposed to great heat? A. Clark gives for stock bricks, not laid up, for each degree 0'0014 of an inch in 100 feet length. 6. Knowing the amount of grate surface feeding a chimney, what rule will best determine the necessary inside diameter and height for the chimney to give best results? A. Consult "Wilson on Boiler and Factory Chimneys."

(12) E. B. V. writes: 1. To R. L. J. (2), December 18, 1880, you give ink recipe same as in SUPPLEMENT No. 157. Can you translate the first into a cold process recipe? A. Heat is necessary to properly extract the tannin from the galls. One-seventh the weight of the galls in commercial tannic acid will make a similar ink not requiring heat. 2. After digesting the galls by either the hot or cold process, and a clear solution obtained, which product will retain longest its original excellence in the bottle and black color on the written page, a suspended ink with gum arabic, or a solution with sulphuric acid? A. The fluid or true solution under ordinary circumstances. 3. In recipe above mentioned, would a little blue or purple aniline, soluble in water, replace the extract of logwood equally well as to quality? It would give a pleasing color. A. If you can make it stay in solution, yes. 4. Does the permanganate or any other disinfectant absolutely prevent or only hinder mould; that is, does the dissolved disinfectant remain such, and continue to act while there is fluid about it, or does it evaporate change, or otherwise become neutral with age? A. The permanganate is not used as a disinfectant in this connection; it serves to oxidize the iron salt and render the ink darker when first written with. It suffers decomposition in the reaction.

(13) C. O. M. writes: I wish to take a copper plate, and either print or mark upon it, then apply some acid that will eat away the copper except where I have marked, so that I can print with it. A. Digest coarsely powdered resin with about twice its volume of spirit of turpentine in a bottle immersed in hot water for twelve hours or so; cork very loosely, and shake occasionally; color with lamp black or printer's ink. Apply with a camel's hair brush or pencil, and let stand overnight to dry and harden. Use nitric acid diluted with about three parts of water. 2. How can I take an electroplate of a form after it is set up? A. Take a wax or plaster cast of the form, coat it evenly with pure graphite or plumbago, connect by a copper wire with the zinc pole of a battery, and suspend in a strong solution of sulphate of copper in water, facing a plate of copper also suspended in the liquid and connected with the copper or carbon pole of the same battery. The connection between the wire and the film of graphite must be very perfect and secure. When the operation is properly conducted copper deposits over the film of graphite, copying the impression perfectly. When the film of copper is thick enough, it is dried, backed up with a fusible alloy or solder, removed from the mould, trimmed, and mounted on a block.

NEW BOOKS AND PUBLICATIONS.

VENNOR'S ALMANAC FOR 1881. Twenty-five cents sent to the American News Company, New York City, will insure the receipt of a copy of the Prophet's almanac, containing his weather predictions for the entire year. THE MAGAZINE OF ART. Monthly. \$3.50 a year. Cassel, Petter, & Galpin, New York. The December number of this superbly illustrated art journal contains engravings of a variety of artistic subjects, consisting of bronzes, armor, celebrated oil paintings, and remarkable architectural structures. THE ART INTERCHANGE. Fortnightly. \$2 a year. Arthur B. Turnure & William Whitlock, editors and publishers, 140 Nassau street, New York. This publication is devoted to household art and indoor decorations in all its branches. The subjects are illustrated to a generous extent, and the hints and directions the editors give for producing a great variety of ornamental and useful articles renders it a desirable fireside magazine. The Christmas issue just out is an attractive number. Sent by mail for 25 cents.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending December 7, 1880.

Table listing inventions with names and dates. Includes: Air compressor, E. A. Rix; Auger, R. E. Hardisty; Axle box, car, R. & J. M. L. Macdonald; Axle boxes, sand guard for car, H. Roth; Axle clip, carriage, S. H. Carpenter; Axles of vehicles, etc., safety nut for, H. Anderson; Bag and twine holder, F. P. Sherman; Bale band fastening, L. Miller; Bale ejector for presses, H. Riesel; Bale tie, J. M. Van Derzee; Bedstead spring, folding, H. A. J. Rieckert; Beer cooler, A. Reiser; Belt, electric call, Frankle & Kelley; Belt, galvanic, E. J. Fraser; Blind, window, P. Jansen; Boiler furnace, W. M. Fisher; Bookbinder's gold brushing machine, Zimmerman & Waterston; Boot and shoe heel, J. Leyeucas; Bran, etc., machine for packing, W. L. Williams; Brine agitator, J. M. Laing; Buckle, R. H. Bishop; Buckle, T. L. Wiswell; Burglar alarm, A. F. R. Arndt; Button, composition, A. H. Noble; Can, E. Norton; Can cover, sheet metal, E. Norton; Car attachment, street, F. L. Tripp; Car brake, A. Johnson; Car brake, G. Marshall; Car replacer, J. Parker; Car, safety railway, J. Dénéchaud; Car starter, A. R. Witmer; Car step, folding, J. W. Radebaugh; Car, tram, J. Stephenson; Cars, heating and ventilating, A. K. Mansfield; Carriage, child's, J. C. Richardson; Casting air chambers, mould for, W. Smith; Casting machines, melting pot for type, J. White-law; Centrifugal machine, E. Langen; Chuck, C. J. Olin; Churn, G. W. Du Puy; Cider mill and wine press, A. C. Bell; Clevis, W. A. Jennings; Clothes pounder, D. E. Taylor; Coal, etc., drill, W. H. Phelps; Coek cylinder, J. Ryan; Cop tube, A. Ball; Corn cutter, green, W. H. Kanne; Corset, A. Feltheimer; Corset, C. A. McGee; Corset, C. Young; Corset clasp, D. Essex; Cotton gin, W. O. Watson; Cotton press, E. Mercer; Cultivator, S. C. Hunter.