Business and Personal.

Chard's Extra Heavy Machinery Oil.

314

Chard's Anti-Corrosive Cylinder Oil.

Chard's Patent Lubricene and Gear Grease.

R. J.Chard, Sole Proprietor, 6 Burling Slip, New York, Loud Speaking Telephones, \$5 a pair. Illus. circulars or stamp. Agentswanted. Wm.R. Brooks, Phelps, N.Y.

Price Focus Gas Burner (50 per cent more light from same amount gas), 30 cts. Mailed everywhere. J. Red ington, 27 l'ark Place, New York.

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 galion can be sent C. O. D. for \$8. A. H. Downer, 17 Peck Slip, New York.

Now is the time to paint your roofs. The genuine Asbestos Roof Paints have proven the best and most economical protective coating for tin roofs, iron work, exposed brick walls, etc. Send for samples. H. W. Johns M'f'g Co., 87 Maiden Lane, sole manufacturers.

Wanted-A First-class, Second-hand Planer, 42' x 42", to plane 16' to 18'. Give full description. Noble & Hall, Erie, Pa.

Wanted-Live Manufacturing Company to Manufac ture my Patent Thread Case in the United States on Royalty. Address E. L. Fitch, 1417 Locust St., Des Moines, Iowa.

Wood Working Machinery of Improved Design and Workmanship, Cordesman, Egan & Co., Cincinnati, O. The great advantage of the genuine Asbestos Cover-

ings for Steam Pipes, Boilers, etc., over any other forms of non-conducting coverings, aside from their superior effectiveness and fireproof qualities, is that they are manufactured in convenient form, ready for use, and can be easily applied without the ald of skilled labor. The H. W. Johns M'f'g $C_{0.,87}$ Maiden Lane, New York, are the patentees and sole manufacturers.

Allinfringements will be prosecuted to the full extent of the law.

We unhesitatingly pronounce Messrs. Boomer & Boschert's Cider Press the best one in daily use at Am. Inst. Fair. New York Office, 15 Park Row.

Rubber Hose and Linen Hose; all sizes in stock and to order. Greene, Tweed & Co., 113 Chambers St., N. Y.

Pays well on small investments.-Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions and parlor entertainments. Send stamp for 116 page catalogue to Mc-Allister, M'f'g.Optician, 49 Nassau St., New York. Contractors Supplies Co. Firsthands. 8 Liberty St., N.Y.

Metal Pattern Letters for Foundrymen., at reduced rates, manuf'd by H. W. Knight, Seneca Falls, N. Y.

Jenkins' Patent Gauge Lock; best in use. Illustrated circular free. A. W. Cadman & Co., Pittsburg, Pa.

Mr. Ely, of Afton, N. J., cut thirteen acres of heavy Brass & Copper in sheets, wire & blanks. See ad. p. 300. grass in five hours, July 2, with the Eureka Mowing Machine. It is the best mower made. Farmers send for illustrated circular to Eureka Mower Co., Towanda, Pa.

Parties desirous of contracting for the construction Wells of extra large capacity, may address P. O. Box 1150, New Haven, Conn.

For Sale, on account of increase of power, one 20 x 48 Corliss Engine, with three boilers and equipment complete. Now in use, but deliverable in November next. For particulars address Natchez Cotton Mills Company, Natchez, Miss.

The E. Stebbins Manuf'g Co. (Brightwood, P. O.), Springfield, Mass. are prepared to furnish all kinds of Brass and Composition Castings at short notice; also Babbit Metal. The quality of the work is what has given this foundry its high reputation. All work guaranteed.

Saw Mill Machinery. Stears Mfg. Co. See p. 269. Nickel Anodes, Nickel Salts, Pumice Stone, Rouge,

& Composition for Polishers. Greene, Tweed & Co., N.Y. 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.

Improved Rock Drills and Air Compressors. Illus trated catalogues and information gladly furnished, Address Ingersoll Rock Drill Co., 1% Park Place, N. Y.

Collection of Ornaments.-- A book containing over 1,000 different designs, such as crests, coats of arms, vignettes, scrolls, corners, borders, etc., sent on receipt of \$2. Palm & Fechteler, 403 Broadway, New York city.

Park Benjamin's Expert Office, 50 Astor House, N. Y. For the best Stave, Barrel, Keg, and Hogshead Machinery, address H. A. Crossley, Cleveland, Ohio.

able, durable. Chalmers-Spence Co., 40 John St., N. Y. The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg, Mass.

For Sale, ready for instant delivery, 16" x 42" Corliss Beam Engine, 16' x 2' wheel, thorough repair. Price, f. o. b. at tide water, in New England, \$1,250. S. C. Forsaith & Co., Manchester, N. H.

Avenue, Philadelphia, Pa. Light and Fine Machinery to order. Foot Lathe cata-

logue for stamp. Chase & Woodman, Newark, N. J.

Best Oak Tanned Leather Belting. Win. F. Forepaugh, Jr., & Bros., 531 Jefferson St., Philadelphia, Pa. Stave, Barrel, Keg, and Hogshead Machinery a spe

cialty, by E. & B. Holmes. Buffalo, 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. For Patent Shapers and Planers, see ills. adv. p. 284. Nickel Plating .--- Sole manufacturers cast nickel an-

odes, pure nickel salts, importers Vienna lune, crocus etc. Condit. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York. Presses. Dies. and Tools for working Sheet Metal. etc.

Fruit & other can tools. Bliss & Williams, B'klyn. N. Y.

Buffing Machinery. Patent Punches, Shears, etc. E. Lyon & Co., 470Grand St., Ngw York. Sheet Metal Presses, Ferracute Co., Bridgeton, N. J.

Wright's Patent Steam Engine, with automatic cut Wright, Manufacturer, Newburgh, N. Y.

H. A. Lee's Moulding Machines, Worcester, Mass.

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.

Reed's Sectional Covering for steam surfaces; any one can apply it; can be removed and replaced without injury. J. A. Locke, Agt., 32 Cortlandt St., N. Y.

For Pat. Safety Elevators, Hoisting Engines. Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 284. For Mill Mach'y & Mill Furnishing, see illus. adv. p.284. C. B. Rogers & Co., Norwich, Conn., Wood Working

Machinery of every kind. See adv., page 284. Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p.284.

For Separators, Farm & Vertical Engines, see adv.p.220. Steam Engines, Boilers, Portable Railroads, Sugar Mills. Atlantic Steam Engine Works, Brooklyn, N. V.

Apply to J. H. Blaisdell for all kinds of Wood and Iron Working Machinery. 107 Liberty St., New York. Send for illustrated catalogue.

Air Compressors. Clayton Stm. PumpW'ks, Bk'lyn, N.Y. 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.

The Improved Hydraulic Jacks. Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York. For Superior Steam Heat. Appar., see adv., page 301.

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 Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 301. The best Truss ever used. Send for descriptive circularto N. Y. Elastic Truss Co., 683 Broadway, New York. Houston's Four-Sided Moulder. See adv., page 301. Steam Engiues; Eclipse Safety Sectional Boiler. Lambertville Iron Works. Lambertville, N. J. See ad. p. 141. New Economizer Portable Engine. See illus. adv. p. 301. For Shafts. Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N. Y. Wm. Sellers & Co.

Wm. Sellers & Co., Phila, have introduced a new injector, worked by a single motion of a lever.

Ore Breaker, Crusher, and Pulverizer. Smaller size run by horse power. See p. 301. Totten & Co., Pittsburg. Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Soloman's Parallel Vise, Taylor, Stiles & Co., Riegelsville, N.J.

Vacuum Cylinder Oils. See adv., page 301.

NEW BOOKS AND PUBLICATIONS.

ANALES DEL MINISTERIO DE FOMEN'IO DE LA REPUBLICA MEXICANA. Tomo iii. Mexico, 1880.

The beautifully printed, large octavo volume of 500 Packing once tried always used. Phœnix Packing pages before us, forms the second part of the third from 1-16 up in spools or on colls. Phœnix Packing volume of the Annals of the Minister of Public Works, Company, 108 Liberty st., N. Y. officials in charge of different departments of national scientific work. About one-third of the volume is devoted to reports of the scientists who were appointed to co-operate with Captain Shufeldt IL S. N. in his reconnoissance of the Isthmus of Tehuantepec to ascertain the feasibility of constructing across it an interoceanic canal, and gives a narrative of the expedition. an account of the geology and flora of the Isthmus, the astronomical and topographical operations, and a discussion of the probabilities as to the construction of the canal there; the reports being illustrated with numerous topographical and geological maps and sketches. The other papers are: A report of the Engineer of Minesonan alleged deposit of tin in the State of Guerrero; an exhaustive report of the same official THE AMERICAN SYSTEM—LATIN CHARTS on the mines of Guadalesgar, in the State of San Luis A WITH TEXT. By C. C. Schaeffer. Phi-ladelphia: Charles Brothers & Co. Potosi; a voluminous memoir by the Director of the

National Astronomical Observatory of Chapultepec

showing the scientific work accomplished in that insti-

tution from its inception in 1878 up to December. 1879;

and a report of the Engineer of Mines on the results of

Recipes and Information on all Industrial Processes. siderable scientific interest, and is in every way highly creditable to the government officials of our neighbor ing republic, who are encouraging and vigorously pushing forward these valuable researches.

National Steel Tube Cleaner for boiler tubes. Adjust- MANUAL OF CATTLE-FEEDING. By Henry P. Armsoy, Wiley & Co. Armsby, Ph.D. New York: John

A treatise on animal nutrition and the chemistry of food-stuffs in their application to the feeding of farm animals. The work is based on the researches of Wolff Kiihn. and other recent German investigators; and is intended oot only to give such practical information as to economical stock feeding as may be of value to Gun Powder Pile Drivers. Thos. Shaw, 915 Ridge American farmers, but also such scientific instruction as shall enable the intelligent student to make good use of the results of new investigations.

> THE PRINCIPLES OF THERMODYNAMICS, WITH SPECIAL APPLICATIONS TO HOT AIR, GAS, AND STEAM ENGINES. By Robert Röntgen. Translated and enlarged by A. Jay Du Bois, Ph.D. New York: John Wiley & Son.

In using the work of Röntgen iu his classes in the Sheffield Scientific School of Yale College, Professor Du Bois has had occasion to supplement it with matter drawn from other sources. Among these additions, which appear in this volume, are two lectures by Professor E. Verdetupon the Mechanical Theory of Heat, an abstract of Pernolet's work on Air Compressors and Compressed Air Engines, and Zeuner's Theory of Superheated Steam.

Hydraulic Jacks, Presses and Pumps. Polishing and HYGIENE AND TREATMENT OF CATARRH. Buffing Machinery. Patent Punches, Shears, etc. E. By Thomas F. Rumbold, M.D. St.

Louis: Geo. O. Rumbold & Co. Sets forth in a plain and practical way such hygienic and sanative measures for the prevention and cure of The best engine made. For prices, address William chronic catarrhal inflammation of the nose, throat, and ears as the author's professional experience has proved to be beneficial to his patients. Much space is given to the influence of tobacco in predisposing to catarrhal diseases and preventing the cure of such complaints.

THE AUTHORSHIP OF THE FOURTH GOSPEL: EXTERNAL EVIDENCES. By Ezra Abbot,

D.D., LL.D. Boston: Geo. H. Ellis. Reproduces in convenient form the series of articles

on this subject in the Unitarian Review of February, March, and June, 1880.

AMERICAN NEWSPAPER DIRECTORY, 1880. New York. George P. Rowell & Co.

From this directory it appears that there are pub. lished in the United States and British America, 10,287 periodicals, divided as follows: Daily, 904; tri-weekly, 69; semi-weekly, 147; weekly, 7,997; bi-weekly, 46; semi-monthly, 129; monthly, 921; bi-monthly, 17; quarterly, 57.

the Transactions of the Medical Society • of New Jersey.

Describes the physiological conditions which should govern the construction of mechanical devices for the treatments of weak ankles, inverted feet, and the common forms of club foot.

LIGHT AND HEAT. THE MANIFESTATIONS IN NATURE. By Captain W. Sedgwick, R.E. London: C. F. Hodgson & Co.

On the basis of two or three simple observations, the duced by the internal reflection of the planet in the body meaning of which he misunderstands, Captain Sedg- or the glass. wick tries to make out that light and heat are the two all-controlling opposite forces in nature.

CIRCULAR NO. 3. BUREAU OF EDUCATION, Washington: Government Print-1880. ing Office.

A valuable summary of the legal rights of children; the first part treating the rights of children in general; the second part giving a comparative view of the system of education in the different States.

SPONS' ENCYCLOPEDIA OF THE INDUSTRIAL ARTS, MANUFACTURES, AND COMMER-CIAL PRODUCTS. London and New

York: E. & F. N. Spon. In 30 parts, 75 cents each.

Parts 12, 13, and 14 of the encyclopedia contain articles on coffee, cork, cotton manufacture, drugs, dyeing, quisite hardness. electro-metallurgy, and explosives.

THE LOCOMOTIVE ENGINEER'S TORCH. By Frank C. Smith. New York: George H. Frost. pp. 59.

A pocket book of practical instruction for engine drivers. The author frankly defines its province as simply to discuss such points of interest to the locomotive engineer as the writer happens to be acquainted with."

MANUAL OF HYDRAULIC MINING. BY T. F KREMER'S GRAPHIC RAILWAY GUIDE FOR GREAT BRITAIN AND THE CONTINENT. Price one shilling. Paris, London, and Nice

[November 13, 1880.

Contains a large number of skeleton tours in Europe, with sketch maps, official time tables of railways, steamboats, etc., and a considerable amount of information of use to travelers.



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 renewour 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 SUPPLE-MENT referred to in these columns may be had at this office. Price 10 cents each.

(1) A. D. T. writes: We are lubricating our engine cylinder with winter strained lard oil. We wish to use the exhaust from engine. Can we, after condensing and cooling the water, floatoff the oil in the condensed water so it will not be tainted to the taste; or will we be compelled to filter the water? A. You can either filter the water, or exhaust through a coil, so that the oil carried over will not mix with the water. We think the latter is the better plan.

(2) C. M. R. asks how to keep moisture and ice in winter from forming and accumulating on plate glass store windows. The size of the glass is about 4x1115 feet. A. The only really successful method of accomplishing this is to place a row of very small gas jets at the base of the window near the glass. (3) D. R. S. writes: 1. I wish a simple practical rule to determine the proper sizes to make foot wheel or band wheel of foot lathe (when the cones of lathe head are given), so that when the belt is changed it will be proper length on all of the sizes. A. THE MECHANICAL TREATMENT OF THE MORE If the two shafts are a good distance apart, it is suffi-COMMON ABNORMAL CONDITIONS OF THE ciently correct to make the sum of the diameters of the FOOT. By C. F. Stillman, M.S., M.D. two opposite pulleys the same or a constant quantity. Svo, paper, pp. 16. Reprinted from For a full explanation of the subject consult 'Goodeve's Elements of Mechanism." 2. What is the best book or books published for a common scholar to complete the science of land surveying, as practiced by our ordinary surveyors? A. Write the industrial publishers who advertise in our columns.

(4) F. W. asks: Why is it that I can plainly see in the reflected image of Jupiter in a look-TO OUR SENSE OF THE TWO OPPOSITE ingglass two of his moons, which I cannot see with FORCES OF ATTRACTION AND REPULSION | the naked eye when looking at the planet without the aid of the looking glass? A. You do not see the moons of Jupiter as you imagine. The extra images are pro-

> (5) R. H. G. asks: Can you give me through your paper a remedy for red ants? I have a house in which they fairly swarm, and cannot find anything that will drive them out. Have tried insect powder, bug poison, etc., without any good result A. Turpentine or benzine used in small quantities is one of the best remedies, we believe. A good way to exterminate these pests is to place a sponge filled with water sweetened with molasses in the infested spot. It will soon become filled with the insects which may be killed with hot water. This operation repeated daily will soon accomplish the desired result.

> (6) F. P. N. asks: What sort of lime is sed in combination with flour for making moulds? A. Usegood quicklime, a sufficient quantity togive the re-

(7) H. A. asks: What is the highest incline a common locomotive can climb? A. A grade of 1 in 10, or 528 feet to the mile, is the heaviest grade ever worked by a locomotive having no artificial "grip" to the rail, but depending upon gravity for adhesion.

(8) H. H. McC. writes: In SCIENTIFIC AMERICAN of April 26, 1879, in an article on faience manufacture, on first page, it is stated Wedgwood was the first to discern that silex was bleached by calcinaon, and that calcined silex bleaches clay. Van Wagenen, E.M. New York: D. Van I want to know is this: If clay bleaches oil, which it will, and silex bleaches clay, why will not silex bleach A useful little handbook for practical miners having oil? Do you know if calcined silex contains any substances on oils is mechanical. They are not under the circumstances, bleaching agents in a chemical sense. 2. Can calcined silex be bought in the market? A. Yes. 3. Is it sometimes called hydrate silica? A. No 4. And if calcined, would it be more costly than animal charcoal? A. Weight for weight calcined silica is much cheaper. 5. How would you calcine it-that is, silex? A. Reduce it to powder and heat to bright redness in contact with air. 6. Sulphate of soda is used in making a soft quality of soap hard. Can you tell me what the proportions are to use it? A. 3 to 5 per cent of the calculated weight of alkali. 7. In the present volume of Scientific American, page 35, you speak of The author holds that from ten to twelve hours' study of ice without freezing for skating rink, by mixture of chemicals. Could you give any instructions for making text of Cæsar and Virgil so as to handle it with under an experimental skating rink? A. Dissolve equal a geological and mineralogical exploration of the Sierra standing." His English style is intensely German, and parts of carbonate and subplate of soda in the smallest possible quantity of boiling water. The solution be comes solid by contact with cold air.

Blake "Lion and Eagle "Imp'd Crusher. See p. 269.

Rubber Packing, Soap Stone Packing, Empire Gum Core l'acking; quantities to suit. Greene, Tweed & Co.

Gas Machines.-Be sure that you never buy one until you have circulars from Terril's Underground Meter Gas Machine, 39 Dev St., New York.

Experts in Patent Causes and Mechanical Counsel Park Benjamin & Bro., 50 Astor House, New York.

Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsb'g, Pa. Peck's Patent Drop Press. See adv., page 268. Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa.

Skinner & Wood, Erie, Pa. Portable and Stationary Engines, are full of orders, and withdraw their illustrated advertisement. Send for their new oirculars Eagle Anvils, 10 cents per pound. Fully warranted,

Sweetland & Co., 126 Union St., New Haven, Conn., manufacture the Sweetland Combination Chuck

Power, Foot, and Hand Presses for Metal Workers. Lowestprices. Peerless Punch & Shear Co. 52 Dey St., N.Y. Wiley & Russell M'f'g Co. See adv., p. 269.

Nostrand.

no knowledge of hydraulic engineering, describing the bleaching or decolorizing properties similar to animal conditions and methods of placer mining, the properties charcoal? A. Try it. The bleaching action of such of water, construction of water ways, finmes, ditches, piping, sluices, etc.

SILVER AND GOLD TABLES. New York: Mathey, Kustel & Riotte.

A series of tables showing the value of silver and gold per ounce troy at any degree of fineness. Alsotablesof weight, and tables for the calculation of assay values, as used by the New York metallurgical works.

The first part of a series of text books on languages these charts will enable the student to "take up the Mojada, illustrated with maps and with plates of the his work is as uniutelligible as anything that has ever fossils observed. The volume as a whole is of con- come to our table,

Scientific American.

¦ Iı

(9) H. S. asks: 1. Please let me know through the SCIENTIFIC AMERICAN what mineral wax is usedforand what is it worth? A. It is chiefly valued for the paraffine which it yields, and its value depends upon the percent of this substance which it contains Refined parafilme is quoted at 20 cents per lb. 2 and 3. And what does a machine for making pins cost? How many different sizes of machines arethere in a pin factory? A. Address dealers in such machinery who advertise in the SCIENTIFIC AMERICAN. See Knight's New Mechanical Dictionary for descriptions, etc.

(10) A. P. R. asks: What is the horse power of a boiler of the following dimensions: fire box 4 feet long, 31/2 feet wide, and 31/2 feet high, with 113 tubes, 13% hole, and 11 feet 10 inches long? A. Your boiler is out of proportion, except for forced combustion; too little grate for the tube surface. It would be about 50 horse power.

(11) R. W. asks: 1. In making a cistern, is it necessary that the coat of cement should be permitted to get perfectly hard and dry before fitting the cistern? A. No, if the cement be a hydraulic cement. 2. If water be permitted to fill a cistern, with the cement still moist, will the water be pressed through the coat of cement, and thus spoil it; or will the cement grow hard and made a good cistern, notwithstanding the pressure of the water? A. Not if properly cemented. It will grow hard, but it is better to let it harden before the water is put in, 3. Can you give us the title of a book from which we could derive the necessary knowledge for building good cisterns? A. We know of no book which treats on the subject specially; "Beckwith's Hydraulic Lime and Teil " will give you general information respecting the use of hydraulic limes.

(12) C. O. S. asks how to soften sheet cork so as to make it pliable and easily shaped in an oval shape. A. Steam it thoroughly, or boil it in water for an hour or so.

(13) F. N. asks how to make a gas that will inflate smallballoons in country towns where there is no ordinary burning gas. A. Place a quantity of zinc scraps in a bottle, pour over them a mixture of sulphuric acid and water, and hydrogen gas will be rapidly evolved. Convey this gas through a wash bottle to your balloon. This experiment should not be performed in the vicinity of a light or fire.

(14) G. A. H. asks: 1. What is the most constantgalvanic battery now made; how long will it remain active by one charging; and how many cells are required of such to produce the electric light (moderately powerful)? A. The gravity or Daniell. They remain in order from 6 to 9 months. It would require 100 cells to produce a small light. 2. Why is graphite not suitable for the carbons? A. Because of New York city. We also furnish copies of patents L its inferior conductivity. 3. Can mica be colored like stained glass, and if so, by what process? A. Apply lacquer tinted with aniline or other transparent colors.

(15) W. S. D. says: This morning, as engine 265 on the B. & O. R. R. was about five miles from here, the fireman went out on the front to put the head light out; but when he opened the door of the head light the wind seemed to fan the flame, and in an instant the whole thing was afire. He returned to the car for water, which seemed to have no effect on the burning oil. The engineer was compelled to stop his train and Open his cocks on it after they had taken it down. A. The body of the oil in some way, doubtless, became heated above the inflaming point.

(16) E. S. asks: 1. What is the difference between a cape and a chipping chisel in shape and average width of cutting edge? A. A cape chisel is a narrow edged chisel, the cutting edge being from oneeighth inch to three-eighths inch wide. A chipping chisel is for work on surfaces, and is generally from three-quarters of an inch to one and a quarter inch wide. 2. Are cold chisels and chipping chisels the same, or is there a difference ? A. Same thing. 3. What is a good width for the cutting edge of a scraper ? A. Depends upon the kind of work. 4. Is ten or eleven feet per minute a proper speed for drilling wrought and cast iron, both of good quality ? A. Ten to fifteen feet, depending upon the kind of drill and character of the metal.

(17) C. D. A. asks: 1. Is it of any advantage to an engine to reverse it every six months or year; that is, let it run six months in one direction, then six months in the other? A. It would equalize the wear. 2. How do you tell the condition of boiler iron with a hammer, or by giving it what is called the hammer test? A. By the sound. 3. Where, in Michigan, can an engineeer be examined to obtain a license? A. At Detroit, and, we believe, at Port Huron

(18) "Student" asks: 1. If three pine logs, twenty-five feet long, fifteen inches diameter at small end, would have buoyant capacity enough toholda boat's crew weighing about 700 lb.? A. Yes, if white pine. 2. the pressure in said vessel per square inch when raised H to 1,000° ? A. Yes; it will increase in pressure about $\frac{1}{480}$ for every degree of increased temperature; in other words, an increase of 480 degrees would double the pres-

(22) C. W. S. writes: I have a telephone line 1.200 feet long, and have for alarm vibrating bells to be worked by six cells of Leclanche battery. What are the proper connections and switches? I wish to use one wire, with ground connections & each end. A. To use a single wire for your purpose you will have to divideyour battery and place three cells at each end of the line. For calling use at each end of the line a key that grounds the line when raised, and connects the line with the battery when depressed. Now, your bells being in the ground wireoutside of the keys, pressing the key at one end of the line will ring the bell at the other end of the line, and vice versa. Connect your telephone with the ground wire, and arrange a switch that will cut the battery and bell out of the line, and at the same time direct the battery current to the transmitter, and the secondary current of the induction coil to the line. The receiving telephone should be connected with the secondary wire of the induction coil, between the latter and the switch which connects it with the line.

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

J. S.-Galena-lead sulphide.-G. W. K.-Sulphide ofiron.

COMMUNICATIONS RECEIVED. On Science and Revelation. By P. S. H. On Cause of Diseases. By L. H. K.

[OFFICIAL.]

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were

Granted in the Week Ending October 12, 1880, AND EACH BEARING THAT DATE. [Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued [K since 1866, will be furnished from this office for one do_lar. In ordering please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

	Air cooling apparatus, J. Chellew	233,072	L
	Air engine, J. Ericsson (r)	9,414	
i	Air engine, E Thuemmler		L
l	Alarm lock, C. W. Ziegler	233.172	L
	Album clasp, Vorpahl & Pohl		L
-	Amusement and instruction, device for, F.Becker		L
į	Animal trap, Stevens & Hampton	233,123	м
1	Annunciator, hotel, J. H. Giles	233.087	м
ĺ	Axle bearing, C. E. Candee		M
1	Axle box, car, G. J. Holton		м
1	Axle box ends, machine for trimming vebicle, J.	200,-0	
Ì	L. Haven	233,150	
	Axle, carriage, D. Wentworth		м
į	Barber's chair, H. A. Candrian		м
	Barrel cover and sample case, combined, T. W.		
ļ	Lacock	233,258	М
į	Barrel filler, J. P. Holt.		M
	Bathing apparatus, H. D. Ward		
	Bobbin winding machine, A. Paul		м
ì	Boiler furnace, G. S. Bosworth		
	Boot and shoe, Gemmell & Boyd	233.148	М
	Boot and shoe finishing machinery, J. G. Buzzell,	233.067	N
	Boot and shoe soles, polishing wheel for, W. W.		01
	Crocker		O
	Boot treeing machine, J. E. Crisp		O1
	Bottle filler, G. D. Barr.		Ŏ
	Bottle stopper, A. Walker	253,303	
:	Box. W. Livingstone	233.265	Pa
ļ	Box fastener, W. Jones.		Pa
ļ	Bracelet, W. Ballou	233.186	P٤
l	Bridle bit, E. E. w beeler	233,309	Pa
İ	Bucket, dinner, W. E. Jones	233,253	
ļ	Bullet, J. C. Petmecky	233,114	P٤
	Butter package, G. W. Bradley	233,195	Pe
	Butter trier, A. O. Cheney	233.202	Pe
	Button, sleeve and cuff. L. H. Thomas	233,299	Pi
ì	Cans, machine for placing heads in, Dillon &		Pi
	Cleary	233,079	Pi
	Car coupling, S. Haltom	233,092	
ĺ	Car coupling. W. Tucker	233,302	Pi
	Car, stock, L. Woodruff	283,129	Pi
ĺ	Car wheel, J. Findlay.	233,222	Pl
1	Card screen, W. J. English	233,221	Po
	Carding machine, F. M. Cole	233.206	Рг
I	Carpet sweeper, M. R. Bissell	233.137	Р
•	a b b b b b c b c c c c c c c c c c		

Carriage curtain fastening, W. Kimble

Ejector, liquid, T. J. Holmes		Sho
Electric light, A. G. Holcombe	233.096	Sho
Electricalswitch board, P. A. Dowd		Sin
Elevator, H. C. Goodrich End gate, wagon, M. Reichert		Ska Skij
Envelope opener, M. R. Mucklé	233,161	Slat
Evaporating furnace, G. W. Russell	233.117	Slei
Feed water regulator, automatic, J. E. Bott		Smo
Fence post, McLean & Henry Ferrule for awl handles, J. Steinmeyer		Spa Spa
Fifth wheels, die for swaging blanks for. D.		Spit
Wilcox	233,128	'
Firearm, breech-loading, D. Kirkwood Firearm, breech-loading, I. M. Milbank (r)		Spo Spo
Firearm lock, A. Johnson		Spri
Fire extinguisher, A. M. Granger		ī
Fire shield, M. V. Smith		Star
Form, adjustable dress. J. Hall		Star Stea
Form for garmeuts, adjustable, H. G. Ufford		Stea
Fruit and vegetable drier, L. Marvin	233.157	Stea
Fruit drier, J. W. Clark	233,078	Stea
Fruit drier, J. B. Sweetland Gas orvaporburner, C. F. Burnap	233,298	Stea Stea
Gem setting, H. G. Mackinney		Stor
Governor, engine, Waterhouse & Brewer	233,175	Sto
Grain binder, M. L. Gorbam	233,089	Sto
Grain binder, P. F. Hodges Grain binder, E. W. Jenkins	233,151	Sto Syri
Grain drier floor, W. & F. Toepfer	233,901	Tab
Grain drill, W. H. Nauman	233,109	Tax
Grain grading and scouring apparatus, L. O. Stevens	922 007	Tele Tele
Grain register, O. J. Dimmick		1010
Graining machine, R. A. Adams		Tele
Grinder grain, J. & R. Bean		Tele
Grinding mill, J. kae Hame fastener, T. L. Wiswell	233,278	Tele Tele
Hay rake, borse, W. S. Bates	233,191	The
Hedge, plashed. D. M. Kirkbride (r)	9,415	1
Heel trimmer, F. Moulton	233,108	The
Hinge blanks, die for making sheet metal, J. W. A. Beers	283.195	Thi
Hog cholera remedy, W. H. Emerick	233,083	Thr
Hoisting apparatus, differential pulley, B. Hinsley		
Horse blanket, F. M. Osborn Horse power for gins, etc., W. H. Harvey	233,275	Tim Tim
Horse rake, J. H. Barley		Tin
Horseshoe, H. W. Grage:	233.234	1
Hotairand steam engine, C. A. Marrder		Tob
Hydraulic elevator, J. W. See Hydrocarbon burner, J. W. Culmer		Toy
Hydrocarbon burner for steam boilers, etc., liquid,	100,10	Tra
W. H. Weeks		Tru
Injector, Sellers & Bancroft (r) Ironing machine, J. A. Bowden.		Tru Tru
Kettle, steam jacket, W. N. Barrows.		Typ
Kiln for burning pottery ware and other articles,		Тур
W. French	233,230	Vac
Knitting machine, straight, W. Aiken		I Valv
Lamp, electric, J. H. Guest	233,284	Val
Lamp, electric, C. W. Siemens	233,289	Valu
Lamp extinguisher, J. W. Donovan		Val
Lantern, C. F. Moeller Laps, arrangement of apparatus for and process	233,107	Veh Veh
of forming, J. Batty (r)	9,413	Vul
Lasting jack, G. W. Willey	233,177	Wag
Log canter. R. Weir Loom for weaving tufted fabrics, Skinner &	233,306	Wal Wat
Tymeson,	283 290 :	Wat
Loom let-off mechanism, J. D. Cottrell	233.077	1
Loom, needle, Skinner & Tymeson		Wat
Lounge and bath, combined, J. H. Lea Mond Lubricating composition, C. F. Broadbent		Wes Wes
Magneto-electric machine, C. F. Brush (r)	9,410	Wel
Measure and register, grain, C. S. Bell		Whi
Medicinal compound, H. J. Boughton	233,063	Win
celluloid, rubber, horn, etc., producing, O.Von	-	Win
Corvin		Win
Millstone dress, T. H. Bale Millstones on their spindles, device for balancing,	233,132	Wir
J. Comerford	233.207	Wir
Mining machine, coal, J. W. Harrison (r)	9,408	_ J
Mower and reaper knives, machine for grinding,	000 1 00	Woo
C. Askew	233,182	1
J. W. Elliot	233,082	
Musical instrument, mechanical, I. M. Furbish	233,147	D -
Nursery chair, J. C. Klett Ordnance, breech-loading, S. M. Richardson		Fou: Glm
Ordnance lock. J. B. Davis.		Knit
Ordnance primer, J. B. Davis		Тур
Ore crusher and pulverizer, combined, G. F. E.	909 100	
Brinckmann Paint. distempor, C. G. Dodge, Jr. (r)	233,189 9 411	
Paper cutting machine, C. Spring	233,121	Blui
Paper, manufacture of wood pulp for, J. Chase	233,070	Ciga
Paper pulp from wood, machine for making, R. B. Lane	233 105	Ciga
Paper waxing machine, G. H. Rich	233.282	Ciga
Pen, stylographic, A. W. Lozier	233,155	b Ciga
Pen. stylographic fountain, A. W. Lozier Pianocase, G. Woods (r)		b
Pianocase, G. woods (r) Pianoforte action, Kranich & Bach	9,412 233,103	Coffe
Pipes, securing certain parts of subterranean S.		Flou

233.169 Piston spring. W. Lockwood 233.262 English Patents Issued to Americans. Preserving fruits and other articles, M. F. Derby. 233,217 From October 5 to October 12, 1880, inclusive upler, W. S. Sampson, New York

show case, R. B. Dando	233,213
Show case, J. C. Wharton	233,505
Sink trap, J. H. Langschmidt Skate fastener, heel, E. S. Coon	233,204
Skipping rope, Flynt & Young	233,224
Blate cleaner, L. J. Halbert	233,238
Bleigh, T. Buckingham Broke consuming furnace, D. Sinton	233,200
Spark arrester, R. F. Swan.	233,100
Spark arrester, locomotive, A. Berney (r)	9,40
Spittoon and table or tray holder, adjustable, E.	
T. Starr	233,1
spool support, w. S. Auchineloss	233,131
prings, apparatus for tempering coiled, W. P.	200,200
Hansell	233,242
tamp, hand, L. K. Scotford	233,285
itarching machine, N. Taylor	283,124
steam boiler, I. R. Kern	233,208
team generator, N. Will	233,31
team generator, sectional, H. Heine	233,091
teamboat staging, J. B. Mooney	233,160
tone dressing machine, M. Greer	233 090
tove board, H. Rendtorff	233,165
tove, gas, A. L. Rossetti	233,283
tovepipe thimble, G. E. Palmer	232,113
yringe, double acting pump, J. Ramsey, Jr Pablet, writing, J. I. Carr	283,279
axidermy, ichthyological, H. E. Davidson	233.078
'axidermy, ichthyological, H. E. Davidson 'elegraph, fire alarm, G. R. Floyd	253,223
elegraph lines, terminal for underground, W. R.	
Patterson Velegraph relay and sounder, W. E. Davis	233,162
elegraphy, W. S. Brewer	233 128
'elephone, J. H. Irwin	
Pelephone, acoustic, J. S. Davis	
heatrical and gymnastic performances, appa-	
ratus for use in G. Oliver	233,274
G. Oliver	233.273
hill coupling, D. W. Shoudy	
In coupling, Dr or Buouuj monther the	~00,110
hreads, machine for cleaning and smoothing	
Threads, machine for cleaning and smoothing silk and other, Martin & Taylor	233.156
'hreads, machine for cleaning and smoothing silk and other, Martin & Taylor 'ime piece. railway, D. P. Hoyle	233.156 233,243
hreads, machine for cleaning and smoothing silk and other, Martin & Taylor 'ime piece, railway, D. P. Hoyle 'ime ajenal. J. Johnson	233.156 233,243
Threads, machine for cleaning and smoothing silk and other, Martin & Taylor Time piece, railway, D. P. Hoyle Time signal, J. Johnson Sinned plates by heat and pressure, machine for	233.156 233,243 233,101
'hreads, machine for cleaning and smoothing silk and other, Martin & Taylor 'ime piece, railway, D. P. Hoyle 'ime signal, J. Johnson 'inned plates by heat and pressure, machine for uniting, G. H. Perkins (r) 'obacco cutting machine, W. H. Emery	233.156 233,249 233,101 9,406 238.220
'hreads, machine for cleaning and smoothing silk and other, Martin & Taylor 'ime piece. railway, D. P. Hoyle 'ime signal, J. Johnson 'inned plates by heat and pressure, machine for uniting, G. H. Perkins (r)	233.156 233,243 233,101 9,406 238.220 233,163
 "hreads, machine for cleaning and smoothing silk and other, Martin & Taylor	233.156 233,243 233,101 9,406 238.220 233,163 233,166
'hreads, machine for cleaning and smoothing silk and other, Martin & Taylor 'ime piece. railway, D. P. Hoyle 'ime signal, J. Johnson 'inned plates by heat and pressure, machine for uniting, G. H. Perkins (r)	233.156 233,243 233,101 9,406 238.220 233,163 233,166 233,154
 hreads, machine for cleaning and smoothing silk and other, Martin & Taylor	233.156 233,243 233,101 9,406 238.220 233,166 233,154 233,154 233,276
 "hreads, machine for cleaning and smoothing silk and other, Martin & Taylor	233.156 233,249 233,101 9,406 238.220 283,163 233,166 233,154 233,259 233,276 233,229
 'hreads, machine for cleaning and smoothing silk and other, Martin & Tavior	233.156 233,249 233,101 9,406 238.220 283,163 233,166 233,154 233,276 233,276 233,229 233,229
 "hreads, machine for cleaning and smoothing silk and other, Martin & Taylor	233.156 233,249 233,101 9,406 238.220 233,163 233,166 233,154 233,276 233,276 233,276 233,229 233,264 233,196
 'hreads, machine for cleaning and smoothing silk and other, Martin & Tavior	233.156 233,243 233,101 9,406 238.220 233,163 233,166 233,154 233,229 233,261 233,264 233,291 233,264 233,264 233,263
 'hreads, machine for cleaning and smoothing silk and other, Martin & Tavior	233.156 233,243 233,101 9,406 238.220 233,163 233,166 233,154 233,229 233,261 233,264 233,291 233,264 233,264 233,263
 Threads, machine for cleaning and smoothing silk and other, Martin & Taylor	233,156 233,249 233,101 9,406 238,220 233,163 233,166 233,154 233,276 233,229 233,229 233,264 233,190 233,263 233,180 233,180
 "hreads, machine for cleaning and smoothing silk and other, Martin & Taylor	233,156 233,249 233,101 9,406 238,220 233,163 233,164 233,229 233,264 233,229 233,264 233,289 233,284 233,180 233,288 233,180
'hreads, machine for cleaning and smoothing silk and other, Martin & Taylor	233,156 233,240 233,240 238,220 233,163 233,166 233,154 233,292 233,276 233,276 233,276 233,289 233,291 233,283 233,283 233,180 233,188 233,201 233,283 233,293
 'hreads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,249 233,101 238,220 238,220 233,166 233,154 233,154 233,289 233,289 233,281 233,188 233,188 233,201 233,223 233,221 233,221 233,223 233,219
 Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,240 233,101 233,263 233,163 233,166 233,154 233,229 233,264 233,216 233,285 233,180 233,180 233,188 233,218 233,203 233,223 233,221 233,223
'hreads, machine for cleaning and smoothing silk and other, Martin & Taylor	233.156 233,249 233,249 233,101 233,166 238,220 233,164 233,276 233,276 233,229 233,276 233,276 233,283 233,180 233,180 233,180 233,180 233,180 233,219 233,225 233,225 233,225 233,225 233,225
'hreads, machine for cleaning and smoothing silk and other, Martin & Tavior	233.156 233,249 233,101 9,406 238.220 233,163 233,164 233,276 233,276 233,276 233,276 233,276 233,283 233,190 233,283 233,180 233,283 233,180 233,205 233,05 233,05 233,05
 Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233.156 233,249 233,101 9,406 238.220 233,163 233,164 233,292 233,276 233,229 233,229 233,229 233,229 233,283 233,180 233,180 233,183 233,293 233,293 233,293 233,293 233,293 233,219 233,217 233,145
 Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,249 233,101 9,406 238,220 233,163 233,164 233,282 233,276 233,276 233,276 233,276 233,276 233,283 233,180 233,283 233,180 233,205 233,075 233,077 233,145 233,270
'hreads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,243 233,101 9,406 238,220 233,163 233,163 233,164 233,222 233,276 233,276 233,284 233,284 233,180 233,283 233,180 233,283 233,283 233,283 233,293 233,293 233,205 233,075 233,075 233,075 233,145 233,270 233,228
Threads, machine for cleaning and smoothing silk and other, Martin & Taylor	233.156 233,249 233,249 233,101 233,166 238,220 233,164 233,166 233,229 233,276 233,229 233,276 233,293 233,180 233,180 233,210 233,228 233,201 233,205 233,075 233,145 233,270 233,228 233,277 233,277
'hreads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,243 233,101 9,406 238,220 233,163 233,163 233,164 233,229 233,276 233,276 233,284 233,284 233,283 233,180 233,180 233,180 233,283 233,293 233,293 233,293 233,205 233,075 233,075 233,075 233,270 233,228 233,277 233,227 233,227
Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,249 233,101 9,406 238,220 233,163 233,164 233,229 233,276 233,276 233,284 233,291 233,284 233,180 233,182 233,293 233,293 233,293 233,293 233,293 233,145 233,216 233,145 233,217 233,247 233,287 233,287 233,287 233,287 233,287
 Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,249 233,101 9,406 238,220 233,163 233,164 233,292 233,276 233,229 233,276 233,229 233,276 233,283 233,180 233,180 233,180 233,183 233,201 233,265 233,075 233,167 233,145 233,270 233,287 233,287 233,287 233,287 233,287 233,287 233,287 233,287 233,287 233,287 233,287 233,287 233,287 233,287 233,287
Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,249 233,101 9,406 238,220 233,163 233,164 233,229 233,276 233,276 233,284 233,291 233,284 233,180 233,182 233,283 233,293 233,293 233,293 233,293 233,2167 233,2167 233,2167 233,2167 233,2167 233,217 233,227
Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,249 233,101 9,406 238,220 233,163 233,164 233,229 233,276 233,276 233,284 233,291 233,284 233,180 233,182 233,283 233,293 233,293 233,293 233,293 233,2167 233,2167 233,2167 233,2167 233,2167 233,217 233,227
Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,249 233,101 9,406 238,220 233,163 233,164 233,264 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,277 233,145 233,270 233,281 233,277 233,174 233,281 233,277 233,174 233,281 233,277 233,174 233,281 233,277 233,174 233,281 233,277
Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,249 233,101 9,406 238,220 233,163 233,164 233,264 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,277 233,145 233,270 233,281 233,277 233,174 233,281 233,277 233,174 233,281 233,277 233,174 233,281 233,277 233,174 233,281 233,277
Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,249 233,101 9,406 238,220 233,163 233,164 233,264 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,276 233,277 233,145 233,270 233,281 233,277 233,174 233,281 233,277 233,174 233,281 233,277 233,174 233,281 233,277 233,174 233,281 233,277
Threads, machine for cleaning and smoothing silk and other, Martin & Tavior	233,156 233,243 233,101 9,406 238,220 233,163 233,163 233,164 233,229 233,276 233,276 233,284 233,284 233,180 233,283 233,180 233,283 233,293 233,293 233,205 233,075 233,205 233,075 233,207 233,228 233,277 233,267 233,267 233,281 233,277 233,287 233,281 233,178 233,281 233,287 233,281 233,287 233,281 233,287 233,281 233,287 233,281 233,287 233,281 233,287

DESIGNS.

5	Fountain, W. Tweeddale Glmp, W. V. Oothout Knit fabric, C. E. Bean Type, font of printing, J. K. Rogers	11,975 11,977
3	Type, font of printing, J. K. Rogers,	11,978

TRADE MARKS.

Ľ	Bluing, liquid, S. S. Newton & Co	8,062
,	Cigars, Gumpert Brothers	8,060
	Cigars, H. Huckfeld	8.061
,	Cigars, cigarettes, and chewing and smoking to-	
1	bacco, N. Kuhnen	8,057
<u>'</u>	Cigars, cigarettes, and smoking and chewing to-	
:	bacco, Lozano, Pendas & Co	8,065
	Coffee, roasted, Arbuckle Brothers	8,058
'	Flour, B. R. Pegram, Jr8,063,	8.064
	Medicinal preparation, G. G. Green	
ľ	Piano. J. Estey & Co	8.056
	Soap, J. H. Van Dyke	
1		

Would one inch iron holts be heavy enough to hold		Through addition of the second states in the second s	Carcoupier, w. S. Sampson, New York city.
them together if helted to heavy enough to hold	Carriage wheel, A. M. Williamson	Propeller for boats, vibrating, T. J. Coulter 233,209	Carpet lining. J. F. Rodgers et al., Philadelphia, Pa.
them together, if bolted to heavy cross pieces? A. Yes.	Calificity shells, apparatus for annealing, E. R.	Propelling vessels, J. Trent 233.127	Caster, J. M. Harper, El Paso, 108.
(19) P. J. M. asks: 1. What power is re-	Hunt	Pulley, friction, A. 1'. Arnold 233,181	Conveying materials, W. Winterhalter, San Fran., Cal.
discharge pipe situated in a mine the sheft of which	Cartridge shells. machine for feeding, M.V.B.Hill 233,095	Pump. lift. C. B. Putnam	Electric signaling apparatus, F. Blake, Weston, Mass.
discharge pipe, situated in a mile the shart of which	Chain, drive, D. Schustek 233.118	Pump, oil, Gaskill & Benton 233,231	Firearm, B. Burton, Brooklyn. N. Y.
is 70 feet deep ? A. If the pump makes 12 strokes per	Chromotrope, transparent, Erwin & Van Altena. 233,084	Railway draw bar, D. S. Beals (r)	Hat band, J. Peters et al., Philadelphia, Pa.
minute, o norse power, and for any other speed in pro-	Chuck, watchmaker's lattle, C. Hopkins 233,097	Railway switch, W. P. Dodson 233,146	Horseshoe, J. N. Navin, Indianapolis, Ind.
portion. 2. What power is requisite to hoist 800 lb.	Churn power, C. S. Casterlin 233.141	Reaper. F. J. Lampton	Horseshoe nail machinery, J. M. Laughlin, Boston, Mass.
70 feet per minute, that is from the same shaft? A.		Refrigerator. J. M. Harrop 233,243	Neck yoke, J. L. Babb, Greenland, W. Va.
17 horse power. To these powers should be added at	Clasp, D. A. Johnson	Rein holder, automatic, P. W. Nelson	Ore smelting apparatus, T. G. Hall et al., Buffalo, N. Y.
least 25 percent for friction 3 What size engine and	Clothesdrier, J. E. White 233,176	Roofing, thatched, C. McClelland 233,269	Printers' metal furniture, J. L. Chapin, New York city.
boiler would be required to perform both these duties		Rotary engine, A. C. Lewis	Pump, P. E. Jay, New York city.
	Collar stay fastening, breast, C. A. Harmstead 233.093	Rubber cloth, enameled, E. M. Stevens 233,296	Rope machinery, C. E. Barnes et al., Lowell, Mass.
at the same time ? A. An engine of 30 horse power.	Cooker, steam, J. Lidstone 233,961	Rubber with metal. Coating, J. A. Daly	Screwthreading machine, S. L. Worsley, Buffalo, N. Y.
(20) D. H. writes: 1. I have a hull, 35	Corn machine for making food from hulled, W.S.	Ruler and pencil case, combined, H. T. Cushman, 233,203	Sewing machine, J. Keith, Rhode Island.
feet long, 10 feet beam, draws 36 inches. Now, what size	Fickett	Sand band. L. R. Lupton 233,266	Steam engine G. H. Corliss Providence R. I.
engine do I need? A. Engine 8 inches diameter by 8		Sash cord guide, W. H. H. Kesler. 233 254	Steering apparatus for vessels J F Guild and A E
	(ofton gin cording attachment I Wright 000 010)	Sawing machine, Thomas & Mills 233,126	Knight, Shanghai, China.
inch stroke. 2. What size propeller? A. Propeller 42	Cracker packing machine, W. S. Havward 283,245	Scraper, chopper, and dirter, combined, Hall &	Stone dressing machinery. J. A. McKean, Mt. Morris, Ills.
inches diameter.	Cultivator shovels, steel blank for repointing, H.	Milton	
(21) G. H. C. asks: If a vessel is filled with			Velocipede, G. W. Pressey, Hammonton, N. J.
	Cuttonbood (I Chimon (-)	Seeding machine A N & D. C. Norrig 233 111	Water annaratus for supplying I. W Green N V city
steam at 60 lb. pressure per square mch, then placed in	Dertal anging E T Store 900.001	Sewing machine, C. H. Thurston 233,300	Water, checking waste of. E. E. Furney, St. Louis, Mo.
a furnace of 1,000° temperature; supposing that the	Desk, cabinet, J. A. Moore (r).	Shaft coupling H S. Fontaine 233,225	Wire process for seving the ges generated in cleaning
vessel is absolutely steam tight, will the pressure in	Distilling apparatus, fresh water, G. W. Baird 233,184	Sheet metal vessel. T. G. F. Dolhy 333 000	R. N. R. Phelps, New York city.
vessel rise as the temperature rises, and what will be	Egg beater, G. A. Schmidt	Shin huovant propeller P M Fryer	Wood processes of A E Porthal Detroit Mich
		200,000 properior, 10, 21, 21, 21, 01,	wood, proservation ou z. D. Dartner, Detroit, Mich.