#### ENGINEERING INVENTIONS

A coal washing machine has been patented by Mr. Samuel Nevins, of Summit Hill, Pa. It comprises an automatic shaking screen, water circulating apparatus, endless coal rake, and endless slate elevator in a water tank for separating slate, fine dust, etc., from coal, and for washing the coal.

A well drilling machine has been patented by Mr. Lycurgus Nelson, of Florence. Tenn. It consists of a specially devised frame; mounted on low wheels for convenience of transportation, with a rock drill in combination with a driving shaft, wa king beam, and sheave, with several special features to promote economy and efficiency.

#### MECHANICAL INVENTIONS.

A pulley has been patented by Mr. John D. H. Cleavland, of Smithfield, Minn. It has dovetail or locking recesses in which are wooden keys to facilitate the securing of leather or other material on or around the pulley by nailing it to the keys, thus making a metal pulley covered on its periphery.

A motor has been patented by Mr. Cesar Huet, of New Orleans, La. It cousists of a novel contrivance for multiplying and transmitting the motion, an improvement in the contrivance of open coupling for applying power to a fan and other devices, with an improved regulator and brake device.

A sand belt attachment for spoke lathes has been patented by Mr. Ephraim Case, of Owensborough, The sand belts are contrived with the cutter head Ky. carriage, for following the cutter heads along the spokes to smooth them automatically after the spokes, and thus save the time and labor of subsequently smoothing them separately.

#### AGRICULTURAL INVENTIONS.

A stubble cutter has been patented by Mr. Joseph P. Gueno, of Terre Bonne Parish, La. Iu combination with specially devised side bars, and knives attached thereto, is a chisel edged tooth and colter, so that as the implement is drawn forward the colters cut and break the roots of the stalks, the knives cutting such as may be left standing.

#### ----MISCELLANEOUS INVENTIONS.

A draught vehicle has been patented by Mr. Thomas Hill, of Jersey City, N. J. The mud shields are at tached to the boxes containing the springs by which the vehicle body is supported, and arranged to overhang and partly inclose the inner end portions of the arms or journals of the axle.

A buggy spring has been patented by Mr. Carlos J. Miller, of Mount Kisco, N. Y. The invention consists in a special construction of spring adapted for buckboard buggies, causing the vehicle to ride easily and prevent rumbling noises, and also preventing the buckboard from sagging in the middle.

A wick trimmer has been patented by Mr. Robert Hoffman, of Cohoes, N.Y. In combination with a pair of shears is a clamp for pressing the wick against one of the blades, and a lever for acting on the clamp to pressits inner edge piece from the edge of the blade to permit passing the wick in between the edge of the blade and the clamp.

A calcimining and wall brush has been patented by Mr. Henry Bintz, of New York city. The object of the invention is to facilitate the manufacture ductivity of the various metals, directions for chargand promote convenience in renewing the bristles, the handle and its body portion for holding the brush head being struck up in halves from sheet metal, the brush head being removable.

A folding table has been patented by Mr. Charles M. Bolles, of Dallas, Texas. When folded the table is triangu ar in shape, so it can be placed in the corner of a room, but will make a square or parallelogram of much larger size when unfolded and set up in the room, by the use of the leaves and specially devised braces.

A calendar attachment for pens and pencils has been patented by Mr. Schuyler C. Lord of East Surry, Me. This invention consists in a tube with a rotating sleeve, the whole made for fitting on the end of a pencil or a penholder for use as a calendar, the days of the week being placed on one tube and of the month on another, so the sleeve can be set for any month.

A log turner has been patented by Mr. Royal E. Park, of Sherman, N. Y. It is for turning logs upon their carriages in saw mills, and the weight of the log causes the device to automatically turn the log upon the carriage and force it to proper position, the device being also simple and strong and not liable to get out of order.

A vacuum pan has been patented by Messrs. James D. Edwards and Leon F. Haubtman, of New a This is no manufacture, and practically embraces a system including two pans ac ing together, a condenser, receivers. tanks, pumps, steam connections, all making a complete practical plant, with many novel features in construction and mode of operating.

A wagon end gate has been patented by Messrs. George Thomas and Harrison H. Thomas, of Waterloo, N.Y. End wings or gates are secured to the gate and have notches and stops, while rods are held on the sides of the box with a hook lug and handle at their opposite ends, so the end gate can be locked in position when raised, lowered, or held at an inclination.

A graining compound has been patented by Messrs, Hezekiah Bailey and William H. Balley, of St. I homas, Ontario, Canada. It consists of a mixture, compounded in a special manner, of apple cider, eggs, sa tpeter, and color. which flows easily from a sponge or brush, and may be worked with coarse or fine combs, the fingers, rags, etc., as paint is worked in graming.

A sheet metal roofing plate has been patented by Mr. Patrick H. Regan, of Nashville, Tenn. The joints are made to easi y lock together and be waterproof, while not liable to be broken or split by pressure or tension, and also providing for contraction and expansion from changes of temperature, the face of the plate is a so made to deflect water away from the joints.

A crane has been patented by Mr. John Wild, of Chester, Pa. This invention covers a special construction, combination, and arrangement of parts to improve the efficiency of that class of cranes where the hoisting block has to travel along the crane beam for shifting the load, and has an ovel clutch mechanism with pulleys for moving the hoisting block backward and forward.

A sash holder has been patented by Mr. Obadiah G. Newton, of Trenton, Mo. 1t is a special combination of an eccentric with an attached handle and a pendent frictiou shoe, both secured on or to the shoe, making a very simple and efficient fastener, which may be applied either to the right or left hand side, and is thin enough to allow one sash to freely pass another.

A macerating machine has been patented by Mr. Frank M. Avery, of Brooklyn, N.Y. It is a grinding or crushing machine, with a revolving drum and concave, more especially intended for obtaining the ibers and juices from vegetable substances, adapted to be easily and quickly adjusted for different materials, and calculated to yield to avoid breakage when hard foreign substances enter the machine.

A box for changing photographic plates has been patented by Mr. Hieronimus Mader, of Isny, Wurtemberg, Germany. The object of the invention is to provide an improved device for facilitating the exchanging of dry plates within or outside of the studio, without necessitating the use of complicated appliances, such as portable dark rooms, etc., and this device enables a photographer to easily carry a large number of plates with him.

The preparation of caseine and of articles made therefrom forms the subject of two patents issued to Mr. Emery E. Childs, of Brooklyn, N. Y. The first patent provides for the production of a cheap and superior quality of caseine from milk curd direct or common cheese, the products to be used for various useful and ornamental articles, while by the other patent the milk curd is taken after it has been separated from the whey, but before the water bas been pressed out, and working or kneading such naturally saturated curd in its own water; the coloring ingredients may be introduced here, the whole worked at a temperature below boiling, and, as a tough, glutinous mass, pressed into sbeets or moulds of any desired form.

## NEW BOOKS AND PUBLICATIONS.

POULTRY FOR PROFIT.

This is a neatly printed little volume, by P. H. Jacobs editor of the Poultry Keeper, and Farm, Field, and Fireside, at which office it is published in Chicago, Ill. The book is intended for beginners in poultry raising; the author c aims to have had a practical experience of thirty years in the pou try yard.

THE ELECTRICIAN'S POCKET BOOK. Cassell & Co., 739 Broadway, New York.

This is an English edition of Hospitalier's Formulaire Pratique de l'Electricien, translated by a member of the Society of Telegraphic Engineers and Electricians, London. The work will be found useful for electricians in all branches of their art. It contains illustrations of the ordinary appliances used in telegraphing, in house alarms, office signals, etc., with tables giving the coning the batteries, etc.

VENTILATION AND HEATING. By John S. \$3.

This work is a revised and enlarged publication in book form of a series of papers formerly published in the Sanitary Engineer, and treats of the principles involved, under the conditions of modern life, and their practical application. The source from which this book emanates is of such established high character that commendation would be superfluous.

AN IMPORTANT QUESTION IN METROLOGY. By Charles A. L. Totten. John Wiley & Sons, New York.

This book is a "challenge to the metric system." and an "earnest word with the English speaking peoples on their ancient weights and measures," dating their origin back to the builders of the Pyramids and reating them as a product of the knowledge originally imparted to the Hebrews, according to Bible accounts. FORESTRY OF NORWAY, NORTHERN ASIA,

AND THE URAL MOUNTAINS. By John Croumbie Brown, LL.D. Oliver & Boyd, Edinburgh.

The title above given covers three distinct v by the same author, who is also the author of nine other books on forests and forestry, and arboriculture. The author has had longexperience as a practical botanist and lect rer on botany, and his books contain much valuable information on a subject that is of very general interest in this country at the present time.

Lee's Map of the Industries of Western Pennsylvania is a convenient office chart of the Pitts- Province de Rio Janeiro, Brazil. burg Gas Coal Beds and the Connellsvil e Coke Field, with their transportation lines and index to the most important industries.

#### Received.

THE MARITIME CANAL OF SUEZ. FROM ITS INAUGURA-TION, NOV 17. 1809 to 1894. By Professor J. E. Nourse, U S N. Washington, D. C.: Government Printing Office.

A NEW SYSTEM OF LATING OUT RAILWAY TURNOUTS By Jacob M. Clark. D. Van Nostrand, New York. A New METHOD OF RECORDING THE MOTIONS OF THE SOFT PALATE. By Harrison Allen, M.D. P. Blak-iston, Son & Co., Philadelphia,

© 1884 SCIENTIFIC AMERICAN, INC

Special.

#### SPITTING, AND THE MEN WHO SPIT.

The habit of spitting is a peculiarly American one, and growing on the Ame ican public. When Charles Dickens first visited this country, he said some sarcastic things about it, which gave considerable offense, because they were justly merited. Since then the habit has increased a thousandfold. Why do people spit so much is it mere habit, or is there a valid cause for it? It is at best a very unpleasant and untidy habit. With some the habit is from another cause, which is quite as objectionable, namely, the chewing of tobacco, which demoralizes the salivary apparatus as badly as it defiles . With that habit, however, we nents and carpets. having nothing to do just now, for we are about to refer

to a far more deeply-seated cause of the evil practice. The fact is that a very large proportion of the Ameri-can people have catarrh. Catarrh is a disease of many forms. Its seat is chieffy in processes above and in the immediate rear of the nose. 'Ine delicate passages are lined with an exceedingly sensitive membrane, which is often either lightly or severely inflamed. When in-When inflamed it secretes a peculiar liquid or semi-liquid deosit, which must be got rid of in some way. It must either be absorbed, swallowed, or spit out. 'The causes which produce it prevent its absorption. To swallow it is to afflict the stomach with that which is not only indigestible, but also poisonous. To spit it out seems the only way to get rid of it. And so along the street and in public conveyances and in halls, churches, theaters, stores, and even elegant private apartments we hear and see the constant hawk, hawk, hawk, spit, spit, of thousands of people who would like to be free from the unctean habit, but who cannot, because they have catarrh.

Our editor had occasion recently to hold conversation with a gentleman who was formerly in bondage to this habit by reason of grievous catarrh, but who has of late years been thoroughly emancipated from it. He gentleman of culture and education : Mr. Chas. E. Cady, at the head of Cady's Business College, at Fourteenth Street and University Place. New York. In view of his position and the influence he holds over young men, his experience is worth quoting.

Mr. Cady's catarrh was of long standing; probably inherited. He remarked to our correspondent that in his early life he had a few hobbies on the health question; such, for instance, as that he should bathe freely in very cold water all winter, and that he should sleep more cold air in his room than most people consider good for them. As he lived in Ogdensburg, N. Y, he bad all the facilities he wanted for making the most of cold air and cold water in wintry weather.

"By the time I was twenty years old," said Mr. Cady, 'I had catarrh, deep seated and firmly fixed. It came on so slowly that I hardly knew it was catarh. I had to use my handkerchief constantly. I was continually hawking and spitting. The habit grew upon me. It be came a great nuisance to myself, as I know it other people. There was a constant dripping into my throat. I always had a weak stomach. and this made it weaker. I was not prostrated, nor was I such a dyspeptic that I could not eat my food : but I was in slavery to

vantage, I concluded to make an experiment with Compound Oxygen, for which purpose I consulted Dr. Tur ner, at the New York office of Drs. Starkey and Palen I procured & Home Treatment: In about four weeks great improvement was visible. I continued the treatment for nearly six months at intervals; my catarrh, which had been unusually obstinate, was now at an end. The unpleasant secretions disappeared, and also the pain in my head which had accompanied them. The necessity for hawk-ing and spitting ceased, and I was free from that unpleasant bondage. My stomach grew stronger and my diges-tion better, and so continue to the present time. "This was about three years ago. Since then I have had

no return of the catarrin, and I have not needed any more Compound Oxygen. I know my cure must be reasonably permanent, for I have taken several slight colds, which have passed away without leaving any evil effects. During my catarrhal days such colds would have aggravated my disease to a serious extent, and caused me much an noyance.

"With my catarrh gone and my general health greatly Billings, Surgeou U. S. Army. The improved you may quote me as freely as you pleas Sanitary Engineer, New York. Price a firm believer in the virtues of Compound Gxygen.

" I wish for the sake of the thousands who are kept by their catarrh constantly hawking and spitting, that all victims of this unpleasant disease could know of Compound Oxygen and make trial of it. I see no reason why it should not do for them what it has so thoroughly done for me."

A "Treatise on Compound Oxygen," containing a history of the discovery and mode of action of this remarkable curative agent, and a large record of surprising cures in Consumption, Catarrh, Neuralgia, Bronchitis, Asthma, etc., and a wide range of diseases, will be sent free. Address DRS. STARKEY & PALEN, 1109 and 1111 Girard St., Philadelphia.

#### 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 asearly as Thursday morning to uppear in next issue.

Valuable Patent .-- United States Patent allowed. Absolutely perfect and exceedingly simple railroad nut ock. I will sell two-thirds of each foreign patent for the money to pay for the patent. Address James A Campbell, care "Banner," Brenham, Texas.

Wanted.-A competent man as Foreman of Boiler Shop. Must bave best of references. Phoenix Foundry and Machine Co., Syracuse, N. Y.

Wanted.-Responsible parties to manufacture the Fretel Locomotive. Address Gabriel Fretel, Porto Real.

Practical Instruction in Steam Engineering, and situations furnished. Send for pamphlets. National In-stitute, 70 and 72 West 23d St., N. Y.

The Cyclone Steam Flue Cleaner on 30 days' trial to reliable parties. Crescent Mfg. Co., Cleveland, O.

For Steam and Power Pumping Machinery of Single and Duplex Pattern, embracing boiler feed, fire and low pressure pumps, independent condensing outfits, vacuum, hydraulic, artesian, and deep well pumps, air com-pressors. address Geo. F. Blake Mfg. Co.. 44 Washington St., Boston; 97 Liberty St., N Y. Send for Catalogue Quinu's device for stopping leaks in boiler tubes. Address S. M. Co., South Newmarket, N. H.

329

Wanted -Patented articles or machinery to manufacture and introduce. Lexington Mfg. Co., Lexington, Ky. "How to Keep Boilers Clean." Book sent free by

James F. Hotchkiss. 86 John St., New York. Stationary, Marine, Portable, and Locomotive Boilers a specialty. Lake Erie Boiler Works, Buffalo, N. Y.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

For Power & Economy, Alcout's Turbine, Mt.Holly, N. J.

The Hyatt filters and methods guaranteed to render all kinds of turbid water pure and sparkling, at economical cost. The Newark Filtering Co., Newark, N.J.

Steam Boilers, Rotary Bleachers, Wrought Iron Turn Tables, Plate Iron Work, Tippett & Wood, Easton, Pa.

Send for Monthly Machinery List

to the George Place Machinery Company, 121 Chambers and 103 Reade Streets, New York.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn. If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent. \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SOLENTIFIC AMERICAN Patent agency, 361 Broadway, New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every description. Send for catalogue.

Nickel Plating .- Sole manufacturers cast nickel anodes, pure nickel salts, polishingcompositions, etc. Com-plete outfit for plating, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Supplement Catalogue.-Persons in pursuit of information on any special engineering mechanical. or scientific subject, can have catalogue of contents of the Sci-ENTIFIC AMICRICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publisbers, New York,

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y Curtis Pressure Regulator and Steam Trap. See p. 286.

Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 296. C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 270.

Drop Forgings. Billings & Spencer Co., Hartford, Conn. Brass & Copper in sheets.wire & blanks. See ad.p. 222.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 20,000 Crank Shafts and 15,000 Gear Wheels. now in use, the superiority of their Castings overall others. Circular and price list free.

The Improved Hydraulic Jacks. Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Hoisting Engines. D. Frisbie & Co., Philadelphia, Pa. Tight and Slack Barrel Machinery a specia ty. John Greenwood & Co., Rocbester, N. Y. See Illus. adv. p. 222.

Pays well on small investment. -Stereopticons, Magic Lanterns, and Views illustrating every subject for public exhibitions. Lanterns for colleges, Sunday-schools, and home amusement. 136 page illustrated catalogue free. McAllister, Manufacturing Optician, 49 Nassau St., N. Y. Renshaw's Ratchet Drills. No. 1, \$10; No. 3, \$15.

Cash with order. Pratt & Whitney Co., Hartford, Conn. Shipman Steam Engines.-Small power practical engines burning kerosene. Shipman Engine Co., Boston. See page 317.



#### HINTS TO CORRESPONDENTS.

 Name 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, eliber by letter or in this department, each must take his turn.
Special Information requests on matters of personal rather than general interest, and requests for Prompit Answers by Letter, should be personal rather than general interest, and require for Prompt Answers by Letter, shou accompanied with remittance of \$1 to \$5, accompanies of \$1 to \$1, according to the subject. as we cannot be expected to perform such service without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each. **Minerals** sent for examination should be distinctly marked or labeled.

(1) A. G. H. desires to know the process used for deodorizing tallow in the manufacture of imitation butter. A. It is hard to say just what process is used by those who manufacture artificial butter. Admission to the factories is almost impossible, and the details of manipulation are kept very secret. A good article of tallow is generally used, and it is presumed is injected into the fat in such a way a remove the odor and color. See article on this subject on page 6339 of SCIENTIFIC AMERICAN SUPPLEMENT. No. 397. On a small scale, substances rich in oxygen can be used to purify the ta low. thus, by melting the fat and adding to it a small quantity of potassium bichromate dissolved in water; and subsequently a little hydrochloric acid. The mixture is then stirred, and washed with warm water until thoroughly cleaused. when the tallow will be found to be completely deodorized and bleached. Potassium permanganate is likewise used with good results.

(2) S. R. S. asks in what year Kolhe discovered the process of making salicylic acid from carbolic, the price of salicylic acid before the discovery, and what amount of the salicy ic acid could be obtained? A. That salicylic acid may be obtained from phenol was demonstrated by Kolbe and Lautermann in 1860. In 1874, Kolbe modified and simplified his original process, subsequent to which it became prominent as a disinfectant. Prior to 1874 it had no commercial va ue, and of course could not be obtained in quantity.

"After trying sundry catarrh remedies without ad

Scientific American.

(3) A. C. G. asks for a rubber stamp indeli- article is not on the American market. Marion Harble ink for marking clothing, it being necessary that glycerin be used in its manufacture to keep the pads from drying up quick, and the ink from clogging up the letters. A. The following is an indelible stamping ink, and probably will be suitable for your wants: Eosine 1 part, aniline black 4 parts, aniline blue 2 parts, cupric chloride 1 part, ammonium chloride 3 parts, sodium chloride 2 parts, glycerine. lampblack, water, and oil in sufficient quantity to bring the ink to a proper consist-ency for the use to which it is intended. The ingredients are thoroughly incorporated by grinding or stirring, when the composition is ready for use. To preveut moulding a small proportion of salicylic acid may be added.

(4) H. D. S. asks a receipt for making some kind of cement that will stick greasy leather. The trouble is the oil comes out of the leather and mixes with the rubber cement. A Try the following: Soak equal parts common glue and isinglass for ten hours in inst enough water to cover them. Bring gradually to a boiling heat, and add pure tannin until the whole becomes ropy, or appears like the white of eggs. Buff off the surfaces to be joined, apply the cement warm, and clamp firmly.

(5) F. H. asks for the process of making whiting and plaster of Paris. A. Whiting is simply chalk, ground, elutriated, balled, and dried. Grinding mills break up the chalk and mix it with water, which is constautly flowing in. On leaving the mills, themixture passes along a series of wooden troughs, where the sand, which has a greater specific gravity than the chalk, is deposited, the chalk passing on into the set tling pits. On being taken from the pits, the whiting is partially dried on a floor under which hot flues run; then cut up into large rough lumps, and placed in racks on cars which run on tramways into an immense oven. The heat from the flues is greatly increased by an air.blast, which also carries off the moist exhalations from the drying whiting; 12 hours on the heated floor and 12 in the oven thoroughly dries the whiting, and it is ready for packing. Plaster of Paris is gypsum (sulphate of lime) carefully burnt, so that it loses its water of crystallization.

(6) J. P. O'B. writes: I intend to build a line of telephone like that described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 142, and would like to have you give me a little more information upon it. 1. Would a person be liable to prosecution if he built such a line, and is it an infringement upon the Bell or other patents? A. The Bell Telephone Company claim to own patents covering all articulating telephones. 2. How far will such a linework satisfactorily? A Such a line as you refer to will work over a line three or four miles long. 3. Do you have to use magnet bells for a signal? A. You may use magnet bells or a battery call. 4. Would smaller wire than No. 14 do just as well? A. No. 12 iron wire is what is commonly used for this purpose. A smaller wire offers a greater resistance, and does not answer the purpose as well. 5. Of what are the ground counections (what metal), and how large pieces? A. You can ground your line on water pipes or on iron drain pipes, or by connecting your wires with copper plates, having about ten square feet area, and located in earth that is constantly moist.

(7) G. G. asks (1) where he can get a work describing how to make a powerful magnet (not a permanent one). A. Prescott's Telephone, Electric Light, and Other Novelties contains a large number of illustrations of magnets of different forms. You will also find in SUPPLEMENT, No. 182, a description of a large variety of forms of electro-magnets. 2. The best kind of battery to work it with? A. The best battery for securing the greatest amount of power in a large electromagnet for a short time, is the plunging bichromate battery. 3. What magnet and battery would exert a force equal to lifting ten pounds through a space of five inches? A. To lift ten pounds a space of five inches you will need an axial magnet. A magnet formed of abont 200 turns of No. 12 cotton covered wire used in connection with 10 cells of the battery described, having plates about 4 by 8 inches, will probably answer your purpose.

(8) S. P. S. writes: 1. Can you advise me of a good varnish or polish for a flute? One that will be of same, must I use in this boat to get an average speed comparatively unaffected by perspiration, and that can be bought already made up. A. Those who make flutes use simply a mixture of beeswax and linseed oil. This suitably applied and there lies the secret) will produce the most satisfactory kind of a finish. 2. Also not less than 120 feet of fire surface. Propeller 30 can you advise a lasting preparation for silver-washing the keys of a flute? A. Nothing will be as lasting as silver or nickel plating. 3. Recently I have noticed the mercury in a barometer, after assuming a convex form preparatory to rising, throb slightly. Does this denote presence of air? A. We do not think that the action described is due to the presence of air.

(9) B. M.—Plumbago is largely used as a lubricant, both in its dry pure state and pulverized and mixed with tallows and oils. It is used dry on quiring freedom from, oil. It is largely in use combined with tallow and oil as axle grease. Also compounded with cotton as piston packing for engines and pumps and for valves. It is a compound in several patent journal boxes. With tallow or lard it is excellent for all bicycle bearings, as not apt to spread, but not so easily applied as oil.

(10) H. H. writes: I have an electric pen. also a parlor phonograph. I have broken one of my porous cups; is there any way to mend it, and how? A If your porous cup is only cracked, you may stop the leak by allowing it to become perfectly dry and filling the crack with melted paraffine. If it is broken so that the parts are separated, you may repair it by using a cement composed of equal parts of Peet's guita percha and shellac melted together. 2. Where can I procure the light linen paper for copying? I have tried several kinds, but they are not satisfactory. A. Any of our stationers can furnish the paper you require.

(11) L. P. askshow\_the rhubarb is prepared that is sold in England as preserved ginger? A. The Mass, or by purchasing the necessary books you can The leaks are no doubt caused by a faulty construction is hingplateglass and removing slight scratches. A.

Scientific American.

land, who is an excellent authority, gives the following receipt for preserving ginger. She says: " Pare the roots of green ginger, and lay in cold water fifteen minutes. Boil in three waters, changing the hot for cold every time, until very tender; drain, and lay in ice water. For the sirup allow a pound and a quarter of sugar for every pound of ginger, and a cupful of water for each pound of sugar. Boil and skim until the scum ceases to rise. When the sirup is cold, wipe the ginger dry and drop it in. Let it stand twenty-four hours. Drain off and reheat the sirup. This time put the ginger in when blood warm. Do not look at it again for two days. Then reboil the sirup, and pour over the ginger scalding hot. In a week drain off once, boil, and add again while hot to the ginger; cover closely. It will be fit for use in a fortnight. The rhubarb lozenges are made with four pounds of sugar and ten ounces best Turkey rhubarb in powder with a little gum solution, say 1 ounce dissolved gum arabic to 12 ounces of sugar.

cast lead figures (or type in one piece) from a plaster of Paris mould, but have failed three times. The mould came off good and clean, and after warming it  ${\bf I}$  poured in lead, then took off after cooling, but the figures were all run together like so many bubbles. What was wrong? A. You cannot cast sharp lead figures or type in a plaster mould; you should use type metal. A common way of making stereotypes is to form the mould as you have done, then dry it perfectly, then dip it, face upward, in melted type metal, allowing it to remain below the metal until all of the steam and gases have escaped, when the mould maybe raised out of the melted metal and placed in a level position and allowed to cool.

(13) T. B. B. writes: 1. I have a china tea set decorated with gold bands. Is there any method by which I can remove those gilt bands without injury to the ware? I want to hand paint the set, but cannot do so satisfactorily unless the gilt work is removed. A. Try removing the gold leaf by means of tripoli or rotten stone. 2. How is this gilt decoration put on table ware? A. It is deposited from a gold solution.

(14) W. T. B. writes: 1. I have had the tops or carbon heads of several Leclanche batteries become soft and run out; what causes this and what will remedy it? A. The carbon in the Leclanche battery is cemented in the cell with pitch. 2. What glue can I use to patch a boat with below the water line; patches of canvas? A. Apply the canvas patches to your boat with thick white lead paint, allowing it to become dry before placing the boat in the water.

(15) C. B. D. writes: I have constructed a dynamo five-fourths the size of your drawings in your SUPPLEMENT, No. 161, with the exception that I have made two field magnets instead of one, have wound field magnets with five layers No. 14, and armature with 6 layers No. 16 wire. I run it at 1,600 revolutions perminute. I can get plenty of sparks at the commutator brushes when connected by itself, but when I insert a Maxim 16 candle incandescent lamp in circuit all sparks cease. The lamp is perfect, as I have had it tested. Is the dynamo not powerful enough, or where is my trouble? A. The current produced by your dy. namo-electric machine is a quantity current, and incapable of overcoming the resistance of the 16 candle power lamp. Probably the lamp has a resistance of 100 obms or more, whereas your dynamo would be in capable of working through a resistance of more than 25 or 30 ohms.

(16) C. V. S. asks if a box  $1\frac{1}{2}$  feet square and 3 inches high can be heated to 104° Fah. by means of electricity. Can it be done by means of coils? And if so, what kind of a battery would be best, and would it be very expensive? A. You can beat a box of the size given by means of electricity, but it would be a very expensive method of generating heat. The coils should be made of platinum, and you would require a large battery. The size of the battery and the proportion of the coil would be entirely a matter of experiment

(17) O. G. H. writes: I have a boat 25x5x4 feet, drawing 18 inches of water. Will you kindly inform me what horse power boiler and what size cylinder, also what size screw, pitch and number of blades of 12 miles an hour? Also please inform me of the dimensions of the boiler. A. Engine 4 inches or 41/2 inches diameter and 6 inches stroke. Vertical ubular boiler 34 inches diameter and 50 or 52 inches high, with inches diameter and 42 to 44 inches pitch, 3 blades. It will be very difficult to get a speed of 12 miles per hour from a boat of these dimensions, but you may get 10 miles with boat of good, easy model.

(18) J. D. McR. writes: I have a hoat 18 feet keel and 41/2 feet beam, which draws 3 inches of am building for it an engine 21/2x21/2. The wheel is two ents while cooling. bladed, about 17x26; what size boiler would you recommend, and what is the greatest speed that can be had wood for the slides in organs and other movements resufficient size, also with any other size engine which von think best suited for this boat? Do you think this boat can be made to run 10 miles perhour? Would you put on a larger wheel with less pitch? Please advise me what is necessary to do to get the greatest speed out of the boat. A. You should have a vertical tubular boiler 24 inches diameter and 42 inches to 46 inches high. The pitch of your propeller should be such as to let the engine run at a high speed, say 350 to 400 revolutions per minute, then with your engine you may get a speed of 7 or 712 miles. If you increase the engine to 3 inches diameter and 4 inches stroke, and the boiler and propeller in proportion, you would probably get a speed of 81% miles per hour.

> (19) C. B. L. asks how he can learn to he an electrical engineer or electrician. A. You can study electrical engineering at some of our technical schools, the Stevens Institute of Technology at Hoboken, N. J., Correct University at Ithaca, N. Y., the Rensselaer Polytechnic School at Troy, N. Y., or the Worcester Polytechnic School at Worcester,

pursue the study alone. If you desire to make it a profession, we advise yon to first become an adept in mechanical engineering, afterward take a course in electrical engineering, and then apprentice yourself to some manufacturing electrician or electrical engineer. 2. Is there any difference between an electrical engineer and an electrician? A. An electrical engineer is supposed to combine the qualities of a mechanical engineer and an electrician, whereas an electrician simply deals with the theoretical part of the business.

(20) F. E. W. writes: 1. Please inform me, to settle a dispute between myself and a school superintendent, whether Robert Fulton's steamboat was the first steamboat in actualuse. Did not John Fitch of Pernsylvania have a steamboat that worked on the Delaware River in 1790? A. M. Perrier navigated a small steamboat on the Seine in France in 1775. Jouffroy built and ran a small steamboat on the Soane in France in 1781. James Rumsey exhibited an experimental steamboat 80 feet long, on the Potomac in 1782. (12) G. D. C. writes: I have been trying to In 1788 Jobn Fitch launched at Philadelphia his steam paddle boat, making a passage to Burlington. 20 miles. where she unfortunately burst her boiler, from whence she floated back to the city, and being repaired made several trips. About this date Symington. Oliver Evans. and others built experimental steamboats. Iu 1793 Fitch exhibited his propeller, a boat about 15 feet long, on the "Collect" pond in New York Robert Fulton built an experimental steamboat that ran on the Seine in France, in 1803, and soon after ordered the engine for the Clermont, of Boulton & Watt, in England. In 1804 John Stevens built a small steam propeller that made excursions on the waters around New York; but no practical results were reached until Robert Fulton started the Clermont in August, 1807, running as a re gular passenger boat to Albany. Soon after, in 1807, John Stevens finished the Phœnix, but was prevented from running upon the Hudson by a legislative grant to Fulton. The Phœnix was run a short time upon the New York and New Brunswick route, and in 1808 went to Philadelphia by sea, being the first steamer sailing upon the ocean. Thus, while Fitch and Fulton were not the first to build or run a steamboat by name, the practical triumph of steam navigation belongs to Robert Fulton and John Stevens.

(21) J. H. writes: I am a student of Lehigh University and am taking the course in civil engineering. Having a well equipped library at hand, and determining to learn all I can of mineralogy, I wish you would let me know what books pertaining to that subject I shall read, and in what order I shall read them. A. Obtaiu the latest edition of Dana's Mineralogy, as a descriptive text-book. Begin at once to gather specimens, and learn to recognize them by their descriptions in the book. A visit to cabinets of named minerals will greatly aid you. It would also be very profitable to visit the Museum of Natural History in Philadelphia or in New York. The study of geology will largely increase your interest in nature's methods and the localization of minerals.

(22) F. P. asks: Is it necessary that poultry running at large upon the farm should have oyster sbells or bones, or both? Why are they fed to poultry? Should they be burned or fed raw? A. Anything that will furnish phospborus and lime to the poultry will answer. If you provide them with oyster shells, they should be hurned to form lime.

(23) S. McI. asks: Which is the greatest power, and what are the proportions of water or steam, the pressure on each volume beingthe same, in a water wheel and steam engine? A. Steam will yield the greatest power, on account of its expansive force, its slight inertia, and the rapidity with which it may be passed through the engine.

(24) W. asks what the general mode of testingglue is; how to find out by testing in cups how much water different glues will take, so as to determine their relative value. A. We do not know that the value of glue can be best tested by the quantity of water it will absorb, although the best glues will absorb the most water, and will also swell up in cold water without dissolving or becoming slimy. A good test is to try the prepared glue by gluing pieces or blocks of maple together; after drying, break the blocks apart. The best glue will take splinters from the solid wood. Another way, when buying glue, is to decide by the smell, color, and breaking with the band. Good glue will spring and splinter, while poor glue will break square like glass. Avoid glue that has a burned or fetid smell.

(25) C. P. K. asks how to make campbor ice

A

© 1884 SCIENTIFIC AMERICAN, INC

e.	
A. Almond oil	1 pound.
Rose water	
Paraffine	1 ounce.
Camphor gam	2 ounces.
Otto of rosemary	

water at bow and 18 inches at stern when loaded. I Melt the paraffine, and stir in the oil and other ingredi-

(26) T. B. E. writes: I am suffering greatly with a frosthitten foot. Can you give me aremedy? a permanent cure. Many are advertised, but it is folly to spend money for them. Present relief can be obtained by the use of suitable liniments. One made of:

incluic of opium (indudatium)i ou	DOC.
Tincture of arnica3	41
Chloroform	**

Camphor	"
Glycerine1	f4

gives commonly prompt ease, and after a few applications makes a temporary cure. Of course the foot should be guarded as perfectly as possible from exposure

(27) J. D. McC. asks how and of what ingredients tailor's chalk is made, such as used in marking cloth when cutting out garments. Α. The substance used is a variety of talc or steatite (sometimes called soapstone) known as talcose slate. It is a mineral, and is a hydrated silicate of magnesia.

(28) V. B. M.-No cement will make your boiler tight that leaks around the base of the dome. tion. The shell is possibly cut out too large at the dome junction, which causes a movement of the seam by the great pressure. It should be examined by a competent boiler maker and stayed crosswise, then calked.

(29) J. M. H. asks how to cure a tea kettle from rusting. A. Get the best quality of tin, or make the kettle of tin lined copper.

(30) W. K. M. - Cast iron cannot be practicably hardened. It is not reliable. Malleable iron can be casehardened in the usual way.

(31) J. A. H. asks how to proportion plumber's solder for wipingjoints in lead pipe. A. Tin pound, lead 2 pounds; melt together and cast in bars.

(32) T. & M.-White japanning upon cast iron is done in the same manner as for colors. The articles are cleaned free from grease and sand, or smoothed iu any mechanical manner. The first coat is laidon with a brush quite thin (with turpentine), then baked in an oven at 250° until dry. Then a second coat thicker than the first, or as thick as it can be spread, if you wish to finish with two coals; bake as before. If the surface is not as smooth as desirable, the first coat can be smoothed down with sand paper after baking, and a second and third coat appled. The white japan varnish can be obtained from any of our varnish makers.

(33) A. S. R. asks what are automatic momentum breakers as before mentioned in the SCIENTIFIC AMERICAN. A. Any stone breaker with a heavy fly wheel that by its momentum carries the breaking jav the hardest part of Itheir work, recovering its power during the back motion of the jaws.

(34) O. O. asks the greatest distance a cannon ball or shell has ever been thrown, and when and where. Also what gun? A. About 7 miles, by a gun called the "Swamp Angel," shelling the city of Charleson during the war of the Rebellion.

(35) N. H. writes: I have a small engine 246x6, for which I wish to make a boiler according to directions in the SCIENTIFIC AMERICAN SUPPLEMENT, No. 182. Would one made of 10 flasks in the fire and 2 for dry steam furnish enough steam for it, and what powerwould it be? If not, how many would I need? A. With 10 flasks for heating surface and 2 for steam chamber, you might realize a half horse power at 40 pounds pressure.

(36) N. H. asks: Does the center of a shaft urn? A. A theoretical axis or center is supposed not to turn; but all parts of a solid body moving around or upon an interior axis or center turn. The trouble comes from confounding an imaginary line or axis with the material body movingupou it.

(37) E. J. asks for a material or composition which in a soft state is plastic, and can be hand worked like clay into ornamental figures, which when dried becomes hard and strong, without firing. thing not too expensive would be preferable. A. Take the finest plaster of Paris and sprinkle it into the water, stirring it till the mixture becomes of the consistence of thick cream. Perhaps, however, Portland cement would do, as plaster of Paris hardens so quickly, and you can keep the cement in working condition several hours.

(38) C. F. L. asks: How many feet of one inch pipe would it take to condense the steam from a 3 horse power engine doing ordinary labor? Would coils of pipe put in a common barrel and kept covered with cold water be a good condenser for such an engine? A. A coil of 1 inch pipe of 100 feet in a barrel or trough at medium pressure (40 pounds). If high pressure, 60 to 80 pounds, 150 feet of pipe. If you can make it in two sections, so as to give a larger area to the exhaust, it will do better service.

(39) G. D.-Ink stains can be removed by various reagents, such as a cold aqueous solution or an acetic acid solution of calcium hypochlorite, bleaching powder, or javelle water. Dilute nitric or muriatic acid is sometimes used. The following is from our back files: Take of muriate of tin, 2 parts; water, 4 parts. To be applied with a soft brusb, after which the paper must be passed through cold water.

(40) E. B. R. criticises our answer to S. L. W. (40), vol. li., No. 15, on bow to make a cheap rheostat, but E. B. R. proceeds upon the supposition that any dealer in wire will " measure off an ohm," and that all wire of the same nominal size is of the same resistance for a given length. We do not think that any dealer would "measure off an ohm" ex ept by the foot rule, and this would be a very rough measurement indeed. But if the dealer were to supply a length of wire measuring exactly 1 ohm, its resistance would be varied by coiling or stretching, and no accurate results could be arrived at. Allowing that an obm of a certain kind of wire were procurable, an accurate resistance box could be made by comparing the resistance of other lengths of wire with that of the standard: but foot rule messurements in electricity will hardly answer. Our friend has made another mistake in the matter of winding. The spools of a resistance box should be wound in parallel layers, so that the current may pass through the colls in magnetic and inductive effects which in a coil "wound exactly like a sounder magnet " would be the source of much trouble. When only a very rough approximate to a given resistance is required, a box made on our correspondent's plan might do. Our former reply was correct. A standard resistance must be had for comparison. It is not an easy task to make au accurate rheostat

(41) H. R. C. writes: I have a letter from Abraham Lincoln on which I had the misfortune to drop a large blot of ink. Is there anything I can use, without destroying the glaze, to take it off, as the letter is in splendid condition? A. Ink stains should first be treated with a solution of tin protochloride to deoxidize the iron, and then it can be removed with dilute oxalic acid. An acetic acid solution of calcium hypochlorite is likewise an excellent substance with which to remove the ink. First try it on a piece of paper before attempting to use it on your letter.

(42) T. G. C. asks for a preparation for pol-

# Scientific American.

## INDEX OF INVENTIONS For which Letters Patent of the United

### States were Granted November 4, 1884,

Aerated beverages, apparatus for dispensing, J.	
Mattbews	307,562
Air brake, railway, H. Flad	307,536
Air brakes, brake valve for, C. E. Mark	307,561
Air compressor, M. Cullen	307,442
Alarm. See Burglar alarm.	1
Asphalt, concrete, etc., mixing machine for, W.	Í
II. H. Knight	307,471
Auger, earth, F. E. Wren	307,697
Automatic gate, J. D. Shrock	
Axle box, carriage, F. L. Snow	
Axle boxes, dust guard for car. F. J. Roberts	
Axle, tubular wagon. N. L. Holmes	
Axle, wagon, N. L. Holmes	
Bag fastening, J. M. Fultz	
Bag holder, W. J. Yengling	
Baking powder, C. Blacking	
Bale band, L. T'.Newell	307,489
Bar. See Clawbar.	
Bed bottom, F. Garland	
Bed, spring, F. H. Willis	
Bedstead, C. Günold	
Belt fastener, A. K. Norris	
Bench dog, T. Crispin	
Bicycle saddle, W. H. Hale	
Binder, music sbeet, L. P. Keech	307,468
Block. See Chopping block.	
Board. See Bosom board.	:
Boiler. See Locomotive boiler.	
Boiler attachment, range, G. M. Anson	
Bolt, C. E. Hart	
Book, blank, Nagle & Chalifoux	307,488
Boot or shoe uppers, clamp for covers of, O.	
Phillips	307,589
Boot straps, machine for covering webbing for, G.	
F. Newell	
Boring machine G. A. Jackson	307,550
Design and the straight Design	008 (100

Rub the surface gently first with a clean pad of fine		
cotton wool, and afterward with a similar pad covered over with cotton velvet which has been charged with	Bottle stopper, A. F. Borden	8 1
fine rouge. The surface will under this treatment ac- quire a polish of great brilliancy, quite free from any	ox. See Folding box. Hat box. Lunch box.	I
scratches. (43) S. W. F.—The best that can be done	Box for caustic lys.sifting. P. C. Tomson 307,50 Brake. See Air brake. Carbrake. Carand loco-	I
withrusty planished iron (we suppose that you mean	Broom receiver and match holder, combined	
Russia iron) is to carefully scrape the rusty spots and polish the sheet with plumbago wet with a little sour	Brush, O. Fish 307,71	1   J
beer or vinegar in the same manner as you would pol- ish a stove. Any treatment with acid will take off all	Brush cleaning and cutting machine, w. waither-	
the planished surface. (44) F. E. P. asks: What would be the pro-	Buckle and trace support, combined, J. R.	
bable result of the explosion of a cartridge sunk in	5 1 1) IT (II) 007 00	6   1
clay or stiff soil 31/2 feet below the surface—the probable depth and size at the top of the excavation? A. Dyna-	Button [ A Flomondolt 90771	2 I
mite acts in clay much in the same manner as in rock that is uniformly compact ornot stratified. It blows	Can ending machine, Norton & Hodgson	1 ¦ I
out a pot shaped hole when well tamped. It is not co- nomical in shallow holes. as it is apt to blow out a	Canister, G. S. Church	9 I
conical hole, taking out less material than in stone blasting. We have but little experience with clay	Car brake, H. Flad 2007,53	4
blasting, but have heard that deep holes 5 or 6 feet are	Car coupling, W. C. Beal	4 1
the most economical in effect. We would advice trying gun powder.	Car coupling, R. T. Payne	31 I
(45) Z. B. F.—Laps are not always thicker than other parts of belting, but they are stiffer, and to-	Car coupling, J. D. Vance	s I
gether with the copper rivets cause quick running belts over small pulleys to produce uneven motion where the	Car, street, F. O. Deschamps	
running parts are light, as spindles in cotton and silk machinery; but in wood and iron working ma-		5 D
chinery the difference is scarcely noticed.	Carriage umbrella attachment, C. H. Butlin 307,52 Carrier. See Hay carrier.	2 N
(46) A. C. D. writes: We often see small statues, etc., in store windows that are bronzed, and the	('asting ingots mould for. J. Pedder 307.58 Castings to other parts, securing cored, M. Gar-	8
cavities of them filled with a green, blue, black, black- sh red, etc. Can you tell me how this is done? Is it	side	D
possible to lacquer over this work without spoiling it with the lacquer brush? A. In order to accomplish	Chair seat frame, J. Nicholson	8 ¦ 1
your desires, it will be necessary to purchase the so-	Cheese knife. G. T. Moran	N
called gold paint. It is best to buy it rather than at- tempt to make it. As generally sold in the market, the	Chopping block, L. Rowe	1
preparation consists of a solid metallic powder, which can be procured of some sixteen different tints or	Clamp. P. F. Corbett 307,433 Clasp. See Necktie clasp.	N
colors. It is mixed, according to the directions sold with the package, with the liquid preparation, and ap-	Claw bar, J. L. Hardwick	
plied with a brush. The article coated or painted can on drying be finished by further application of a coat	Cloth from animal and vegetable fibers, manu- facturing, F. Fremerey	
of furniture varnish. (47) N. G. asks where the amjanthus or	Cloth stretching machine, O. E. Drown	4 ¦ U
asbestos is found in the United States. A. Asbestos is an	Coal washing machine, S. Nevins	
exceedingly commonmineral. It is mined in Rabun and Fulton Counties, Ga., in Northern Georgia, West-	Connecting rod, J. P. Hovey	i P
ern N. C. and S. C., Staten Island, Long Island, various localities in New York State, Maryland, Norhern New	Corn borer, seed, G. Meyer	2 P
Jersey, Pennsylvania. and Virginia. It is also found in Colorado and in California. There are several hun-	Coupling. See Car coupling. Pipe coupling. Vehicle spring coupling.	P
dred localities from which it can be obtained. (48) G. W. C., of Selma, Ala., writes, re-	Coupling expander, J. Nuttall	
ferring to former inquiry of B. J B., that it is as safe There to cement cisterns right on the clay as any	Crane, J. Wild	
foundation which could be made, saying: "Our fire	Crusher. See Ore crusher. Crutch, F. C. Brightman	
department here is supplied by cisterns entirely, the majority of them being cemented directly on to the clay	Cultivator, A. B. Reeves	1 i P
sides, and in one case where there was no clay, nothing but sand, directly on to this. We have one cemented	Cultivator, walking. J. Goodnough	
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not	Cut-off governor, automatic, J. B. Stanwood 307,501 Cutter. See Ice cutter. Stubble cutter.	1 : P · P
on to clay which is 100 feet long, 10 feet wide, by 9 feet	Cut-off governor, automatic, J. B. Stanwood 307,507 Cutter. See Ice cutter. Stubble cutter. Cutting and printing machine, C. W. Hobbs 307,647 Dental capsicum bag, W. C. F'oulks 307,537	1 : P • P 7   P 7   P
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of	Cut-off governor, automatic, J. B. Stanwood 307,507 Cutter. See Ice cutter. Stubble cutter. Cutting and printing machine, C. W. Hobbs 307,647 Dental capsicum bag, W. C. Foulks	1 : P · P 7   P 7   P 7   P 8   P 9   P
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of wood; it is good for as many more years. The sides of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A	Cut-off governor, automatic, J. B. Stanwood	1 : P 7   P 7   P 7   P 8   P 9   P 8 : P
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs excepta new cover, which is of wood; it is good for as many more years. The sides of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing.	Cut-off governor, automatic, J. B. Stanwood 307,507 Cutter. See Ice cutter. Stubble cutter. Cutting and printing machine, C. W. Hobbs 307,644 Dental capsicum bag, W. C. Foulks	1 P 7 P 7 P 3 P 9 P 9 P 5 P 5 P
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame-	Cut-off governor, automatic, J. B. Stanwood	1 P 7
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen	Cut-off governor, automatic, J. B. Stanwood	1 P 7
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of wood; it is good for as many more years. The sides of these cisterns are dug sloping, which always causes an outward Pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice.	Cut-off governor, automatic, J. B. Stanwood	1 : P 7   P 7   P 3   P 9   P 9   P 1   P 4   P 1   P
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of wood; it is good for as many more years. The sides of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen clasterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern	Cut-off governor, automatic, J. B. Stanwood	1: P 7 P 7 P 7 P 7 P 7 P 7 P 9 P 9 P 9 P 9 P 1 P 1 P 1 P 1 P 1 P 1 P 1 P 1
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice.	Cut-off governor, automatic, J. B. Stanwood	1 : P 7   P 7   P 7   P 3   P 9   P 9   P 1   P 1
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice.	Cut-off governor, automatic, J. B. Stanwood	1 : P 7   P 7   P 7   P 7   P 7   P 9   P 9   P 9   P 9   P 9   P 1   R 1   R 1   R 1   R 1   P 1   R 1   R 1   P 1   R 1   R 1   P 1   R 1   R 1   P 1   R 1   P 1   R 1   R 1   P 1   R 1   P 1   R 1   R 1   P 1   R 1   R 1   P 1   R 1   R 1   P 1   R 1   P 1   R 1   R 1   P 1   R 1   R 1   P 1   R 1   R 1
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATE.	Cut-off governor, automatic, J. B. Stanwood	1 P 7 P 7 P 7 P 7 P 7 P 7 P 7 P 7
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884,	Cut-off governor, automatic, J. B. Stanwood	1 P 7 P 7 P 7 P 7 P 7 P 7 P 7 P 7
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.]	Cut-off governor, automatic, J. B. Stanwood	1 P P P P P P P P P P P P P P P P P P P
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dag sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 P P 7 P P P 7 P P P 7 P P P 7 P P P P
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 FP 7 7 PP 7 7 PP PP PP PP PP PP PP PP PP PP
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. <b>INDEX OF INVENTIONS</b> For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1   FPF     7   FPF     7   FPF     8   FPF     9   FRR     10   FRR     11   FRR     12   FRR     13   FRR     14   FRR     15   FRR     16   FRR     17   FRR     18   FRR     19   FRR     10   FRR     11   FRR     12   FRR     13   FRR     14   FRR     15   FRR     16   FRR     17   FRR     18   FRR     19   FRR     10   FRR     10   FRR     11   FRR     12   FRR     14
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dag sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 7739 35 0444 ) PPPP PRRH.R.R.R.R.R.R.R.R.R.R.R.R.R.R.R.R.R.R
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATK. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 PPFPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dag sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. Mutbews. More al alarm. Maphalt, concrete, etc., mixing machine for, W. II. H. Knight. Mutbews. Mut	Cut-off governor, automatic, J. B. Stanwood	1 7739 35 044 ) PPPP PRRRHRR R R RRRRR RRRRR RRRRR RRRRR RRRRR RRRR
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of wood; it is good for as many more years. The sides of these cisterns are dag sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen claterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 PPFPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nse daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 7739 35 0044 0) PPPP PRRHAR R R R R R R R R R R R R R R R R R
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of wood; it is good for as many more years. The sides of these cisterns are dag sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen claterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 77 3 9 3 5 9 P P P P P R R R R R R R R R R R R R R
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATR. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of wood; it is good for as many more years. The sides of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 7739 35 0444 0 PRRHHRR R R RRARR RRARRARRARRARRARRARRARRARRA
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these clasterns are dug sloping, which always causes an outward pressure. These clasterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut clasterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen clasterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where clatern water is their only choice. INDEX OF INVENTIONS For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1   7
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these clasterns are dug sloping, which always causes an outward Pressure. These claterns are not theoretical, on paper, but are in practical nee daily with us." A ti is perfectly safe to cut claterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen claterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where clatern water is their only choice. <b>INDEX OF INVENTIONS</b> For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 7739 35 044 0 PPPP PRRHAR R R RRAR R RRAR R RRAR R R R R R R
on to clay which is 100 feet long, 10 feet wide, by 9 feet deep, which has been in use for 6 years, and has not cost one cent for repairs except a new cover, which is of these cisterns are dug sloping, which always causes an outward pressure. These cisterns are not theoretical, on paper, but are in practical nee daily with us." A It is perfectly safe to cut cisterns in the indurated clays of the Tertiary in Alabama, even without cementing. These clays are nearly as hard as rock. We have seen cisterns from 30 to 40 feet deep, and as many in diame- ter, on the clay ridge west from Selma, where cistern water is their only choice. <b>INDEX OF INVENTIONS</b> For which Letters Patent of the United States were Granted November 4, 1884, AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.] Advertising device for show cases, automatic, C. E. Akins	Cut-off governor, automatic, J. B. Stanwood	1 77 3 9 3 5 0 4 4 0 P P P P R R R R R R R R R R R R R R R

•		
Holder. See Bag holder. Sa holder. Spool holder.	ck holder. Sash	
Hook. See Safety hook. Hook and eye, H. W. R. Strong ce cutter and snow sweeper,		7
Drake indicator. See Valve indicator		
nduction coil, J. Allen ngot, compound, J. Pedder fron oxides, treatment of, J. Ma	307,58	2
Joint. See Rail joint. Journal bearings, device i	for cooling, H.	ľ
Borchardt Knife. See Cheese knife. Lactoseor milk sugar, making, .		-! (
Ladder, extension, A. Todd Lamp attachments, making, W.	A. Hull	<b>4</b> 3
Lamp burner, J. G. Hallas Lamp chimney, G. Dorfmuller Lamp, electric arc, J. M. Pendle		
Lamp. electric arc, R. J. Sheehy Jampfixture, W. A. Hull	·	3 ' 2 '
Lantern, bicycle, J. H. Wilkins. Levulose, etc., transforming Jen juice into, E. L. J. Boniface	rusalem artichoke	: · 4
Locomotive, H. A. Luttgens Locomotive and other engine Cowles	s, piston for, E. P.	9   1
Locomotive boiler, G. H. Griggs Locomotive boiler, H. A. Luttg	ens	5   0 -
Log turner, R. E. Park Lunch box, folding, Brown & L Macerating macbine, F. M. Ave	ightner 307.42	<b>)</b>
Malt liquors, manufacturing fer Masonry, etc., bedding strip	rrated, L. Becker. 307,62 for stone, G. R.	ו
Phillips	eparing them for putting, M. H. De-	
ment Measure, lumber, E. C. Newton Meter. See Piston meter.		5
Mill. See Sawmill. Mining machine, B. Yoch		
Motion, mechanism for control Motor, C. Huet Nail extractor, W. E. Lawrence.	307.548	3
Necktie clasp, 1. Noar Nest, T. J. Streck Nut lock, E. H. & J. H. Klemrot	307 67	2
Nut lock, E. H. & J. H. Klemrot Nut lock, W. J. McTigbe Nut lock washer, J. W. Morgan	307,671	۱ŀ
Dil and other substances from means of solvents, extraction	n seeds, etc., by g, F.X. Byerley 307,707	,
dil tank, R. Thayer Mer, car axle, Johnson & Hans Dre concentrator, G. H. Malter,	en 307,467	r   ·
Precrusher, J. C. Wiswell Packing, composition for steam.	J. H. Cheever 307,518	3 ! . 5 ! .
acking, stuffing box, J. D. Rich adlock. I. W. Moore aint, mixed, W. D. Folger		11.
Pan. See Vacuum pan. Pantaloons, device for shaping, Paperbox machine, I. T. Brown	C. Hatton 307,460	j.
aper pulp, apparatus for tre Wheelwright & Marshall	ating wood for,	,   ,
Paper pulp digester, C. S. Whee Paper, etc., sizing, C. Weygang Patterns for dresses, method		
for cutting, J. w. Livingston en, fountain L. E. Waterman.		١ŀ
en, stylographic fountain, M. H encil sharpener, J. Williamson photographic plates, box for cl		1
er Pile, metallic, Gray & Abbott Pipe coupling. Holland & Toner		1
iston meter, G. Holliday	307,655	
lanter, corn, W. M. Graze lanter. potato, J. L. Ullathorne lanter. vine, J. D. Enas		1
low, J. O. Beek		
neumatic dispatch tube, H. Cla otato digger, K. Ohrlein ulley, J. D. H. Cleavland		
ulley, expanding, W. G. Finlay ulpbarrel, W. Mears		
ulp digesters, lining for, G. R. 1 ump, G. Reed umps, pawl and ratchet mech		
A. Lyon umping engine, J. D. Davies tack. See Fred rack.		I
adiator, J. W. Shaw	307.645	
ailway, J. Lockhart ailway or carrying system, e Berger	levated, A. J. B.	i C F
ailway signal, detonating and v plegate ailway spikes, machine fo	307,517	
Acheson ailway track or switch, C. D. Ch	307,420 amberlin 307,523	I C
atchet drill, C. E. Tunellus efrigerating apparatus, P. J. M efrigerating cbest, portable, J.	IcDonald 307,484	Ē
efrigerator and refrigerator bu raban egulator. See Electric machin	307,459	N
iveting machine, J. F. Allen ock drill, G. M. Githens		C P
ock drill clamp, steam, G. M. G ock drill, hand, H. Swain ock drill tripod. G. M. Githens	307,733	P
ocking chair, folding, H. Ladev od. See Connecting rod.	wig 307,556	F P F
oller. See Field roller. olling mill hooking macbine, D oofing plate, sheet metal, P. H.	Regan	s
ack holder, I. L. Hagerman addle, Adams & Shero		<sup>5</sup>
afety hook, H. C. Smith usb holder, O. G. Newton aw, H. Alley		T
lw, drag, W. (`ole lw guide. W. Kirby		Т 
w hanging, G. A. Long wmill, circular, W. F. Parish wing machine, circular, J. R. J	homas307 600, 307,678	18
raper and grader. wheeled, M. aming sheet metal, machine Burritt	B. Eckerson 307,530 for cross, O. W.	C O B
condary battery, A. S. Hickley condury battery, Hickley & Hil		g sl h
ed drill tooth, J. B. Johnson et, eding machine, force (eed, J. 1 wwing machine embroidery at	. Riter	ir
Johnson aftinghanger, J. R. & W. E. B	897,657 ssett	g a

	Shoe last. B. Bemis	307.423
	Shoe, seamless. A. Graff	307,540
_	Signal. See Railway signal.	
37	Skate, roller, C. W. Gooch	307.643
	Skate, roller, G. W. Keyser	307,553
54	Skins, machine for clipping seal and other, G. &	
	F. F. Cimiotti	
9	Slates, machine for dotting, C. M. Hyatt	307.549
Z	Sled, H. R. Proctor	307,730
57	Soldering machine, Norton & Hodgson.	307,720
	Sower, broadcast seed, H. L. Whitman	307,010
5	Spark arrester G. D. Hunter Spectacle cask, W. H. Thomas Spoke lathes, sand belt attachment for, E. Case	507,900 907 B04
G	Spectacle cask, w. H. Thomas	007 600
4	Spoke lathes, sand belt attachment for, L. Case	007,020
4	Spool holder, C. Von Wallemenich	201,091
3	Spring. See Buggy spring. Carriage spring.	
11 11	Stairs, P. H. Jackson	SU1,051
8	Steam holior C Steele	007 500
4	Steam boiler, G. Steele Steam boiler, sectional, J. E. Lewis	007 ATE
3	Steam engines, inertiarecording mechanism for,	
2	E. F. Williams .	
1	Stopper Ose Dettle stopper	
1	Stopper. See Bottlescopper. Stove boards, machine for covering, I. Van Hagen	
4	Hagen	307.605
19	Stove grate.	307.703
Ĩ	Stove leg. J. M. Bennett	307.622
<b>)9</b>	Stubble cutter. J. P. Gueno	307.542
6		307.679
0	Table. See Folding table.	
0	Talbet, information, E. S. Boynton	307,705
9	Tank. See Oil tank.	
2	Telegraph, printing, A. & E. Wirsching	307,696
0	Telephone, electric battery, T. D. Lockwood	307.478
	Telephone transmitter, speaking, T. J. Perrin Tension line holder, automatic, M. Randolph	307,728
6	Tension line holder, automatic, M. Randolph	307,589
	Thermoscope, electro-magnetic, H. J. Haight	307,543
	Thrashing machine hoisting apparatus, J. H.	
6	Carlile	307,435
5	Tie loop, R. Crocker	307,441
	Trimmer. See Wick trimmer.	
	Tube. See Pneumatic dispatch tube.	
4	Tuck marker, A. Johnston	307.721
3∷ 8	Type writing machine, Dement & Granville	
2	Urn or percolator, individual coffee, T. D.	
	Mowlds	307,571
7 2 ;	Vacuum pan, Edwards & Haubtman	307,635
2	Valve, T. Clancey	007,525
1	Valve, balanced, M. J. McGinn	307,485
0	Valve indicator, slide, T. E. Gleason	307,538
"	Vat. See Dye vat.	907 -
7	Vehicle, T. Hill Vehicle running gear, E. Whitmore	907 610
9	Vehicle spring coupling, C. R. & J. C. Wilson	907 614
7	Vehicle, two-wheeled, B. Burr	907 499
o	Vessel navigable R B Condon	907 199
8	Vessel, navigable. R. B. Condon Vise jaw attachment, E. A. Galbraith	907 459
<b>6</b> !	Wagon brake, L. L. James	907 656
2		907.587
71	Washer. See Nut lock washer.	0011001
1,		807 590
1	Water closet, W. H. McAndrews	307.669
0	Water closet, W. H. McAndrews Water closet ventilating attachment, M. S. Clark	907.526
0	Well drilling apparatus for oil, gas, or water, G.	
ł	Westinghouse, Jr.	307.606
9	Westinghouse, Jr. Well drilling machine, L. Nelson	307,572
8 ¦	Wheel. See Car wheel.	
7	Wheel. See (ar wheel. Wheelbarrow, J. Graves	307,455
	Wheelbarrow, F. A. Rich	307,591
ŧ ;	Wick trimmer, R. Hoffman	307,547
5 I.	The start is the start of	000 000

Yoke, neck, Letteer & Barlow...... 307,474

DESIGNS.	
Carpet, J. B. Campbell	15,50
Carpet, J. L. Folsom	15,500
Carpet, A. L. Halliday	15.51
Carpet, M. R. Loudon	15,51
Carpet, H. North	15,52
Carpet, F. E. Smith	15,518
Carpet, L. W. Valentine	15,52
Match safe, Lockwood & Bryant	15,518
Oil cloth, C. T. & V. E. Meyer 15,519 to	15,52
Spoon or fork, A. F. Jackson	15 51
Upholstery fabric, J. Hartley	15,509
Upholstery fabric, D. B. Kerr 15,512,	15,51
Wall ornamentation, R. J. Chapman	15,510

#### TRADE MARKS.

0	Bitters, P. Lotz	11,612
j	Castor oil, Allen & Hanburys	11,598
Б.	Castor oil, Allen & Hanburys Cements, J. B. White & Brothers	11,623
0.	Cod liver oil. Alien & Hanburys	11,596
۰.	Coffee. roasted, C. Breun	11,601
e İ	Facecream I. Hubert	11,610
5	Face cream 1. Hubert Gloves and mittens and glove or mitten leather,	-
7		

& W. N. Eisendrath...... Grinding and polishing implements of corundum .. 11,624 or emery, Grant Corundum Wheel Company... 11,607 Hat and bonnet linings, S. Friedman & Co ...... 11,605 Hollands and prepared muslins, H. B. Wiggin's

1	Homands and prepared musines, H. B. wiggins	
2	Sons	11,622
1	Medicinal tinctures, extracts and fluid prepara-	
	tions, L. Brown	11,599
,	Medicinal topic bitters, F. W. Goodwin	11,608
.	Ointment, W. Jones	11,621
	Pharmaceutical preparations, certain, Allen &	
	Hanburys	11.597
5	Pharmaceutical sirup and lozenge, E. Fournier	11,604
	Pills. L. Brown	11,600
	Preservative of the complexion, Candes & Co	11,602
,	Publication, periodical, G. W. Turner	11,620
:	Renovating powder for horses and cattle, B. J.	
	Kendall Company	11,611
	Salve, Schmidt & Barnitz	11,625
, i	Sirup of hypophosphites with lactates and pepsin,	
1	J. W. Goodwyn	11,609
	Thread, linen, Marshall & Co11,613,	11,614
	Thread, shoe, Marshall & Co11,615 to	11.619

Foilet articles, certain, R. Farres & Co..... 11,608 A printed copy of the specification and drawing of any, patent in the foregoing list, also of any patent ssued since 1866, will be furnished from this office for 25 ents. In ordering please state the number and date

of the patent desired, and remit to Munn & Co. 361 Broadway, New York. We also furnish copies of patents granted prior to 1866; but at increased cost. as the pecifications, not being printed, must be copied by and.

hirt bosom protector, W. A. Nichols...... 307,576 foreign patents may also be obtained.