

RECENTLY PATENTED INVENTIONS.

Electrical Devices.

APPARATUS FOR LAYING ELECTRIC CONDUCTORS.—S. P. HATFIELD, New York, N. Y. The object of the invention is to provide an apparatus for laying and burying electric conductors on land and under water simply and inexpensively to prevent the conductors from being fouled by the anchors of marine vessels and to prevent the conductors from being easily detected or grappled and cut in time of war.

WIRELESS TELEPHONY.—A. F. COLLINS, New York, N. Y. The invention relates to the art of transmitting and receiving articulate speech between two or more stations without connecting-wires, but employing the earth or other medium as a means of propagation; and it relates more particularly to transmission of impulses into the earth or other medium by means of a direct or alternating current having a higher voltage and greater amperage than it has been found possible to employ heretofore and the reception of these impulses and their amplification and intensifications at the receiving-station.

Of Interest to Farmers.

LAWN-MOWER.—H. P. TERRY, Elizabeth, N. J. A supporting frame or yoke is provided for the structure, in which is supported a shaft for the main driving-wheels of the structure and combined with which is a rigid or stationary cutter or knife, together with a reciprocating cutter or knife, special means being employed between the aforesaid shaft and cutter or knife by which the latter is operated in the ordinary propulsion of the machine over a lawn or other surface.

BROOM-CORN-CUTTING MACHINE.—C. R. HUCKLEBERRY, Paris, Ill. The design in this case is to provide a machine which may be drawn across a field by a team to rapidly cut the broom-corn, and the machine is so constructed and arranged as to even the varying lengths of the cut-off brush ends and trim off the superfluous butt-ends of the stalks of the longer brush ends, so as to bring them all to the same length before being delivered to the binder, which binds them in bundles.

RAKE.—W. W. IRWIN, Juneau, Alaska. The invention pertains to rakes, and particularly to those mounted upon wheels for operation by draft-animals. Its principal objects are to provide a strong and simple apparatus in which the teeth may be readily operated to release the accumulated material and in which said teeth may be raised bodily to clear the windrows and not drag down the piles when bunching.

Of General Interest.

SHOW DEVICE.—C. E. ISACKE, New York, N. Y. The device is intended to be constructed of paper or cardboard and to be used for advertising and display purposes, the object being to provide a cheap means of representing a box or package of merchandise to be advertised and for furnishing adjacent thereto or as a part thereof a card or surface on which the advertised matter may be produced.

APPARATUS FOR TREATING TEXTILE FABRICS.—O. OBERMAIER, Lambrecht, Germany. This invention refers to an apparatus for treating textile fabrics, as in dyeing, extraction of grease, bleaching, washing, etc., by means of circulating liquids. It produces not only a pressure, but also a powerful vacuum, in such a manner that during passage of liquid through the receptacle for effecting the treatment the vacuum acts by pulling on one side, while on the other side the pressure acts by pushing upon the liquids.

DRILL.—L. W. BANEY, F. E. BANEY, and J. OSTERHOLT, Platteville, Wis. With this improvement the turning of the drill to the right causes an outward movement of the debris, the stroke of the drill assisting this movement, each lug moving the debris outward to a sufficient extent that it may be engaged by the succeeding lug on the next stroke. In its broadest sense the invention comprises a drill-shank having a series of projecting lugs spirally arranged on the shank.

STAYING DEVICE FOR SLIDING DOORS.—F. DAHLUN, Esmond, N. D. The object of the improvement is to provide a device more especially designed for use on heavy sliding-doors, freight-car doors, and the like—and arranged to insure an easy sliding of the door, to prevent rubbing of the door on the wall or door-casing, and to prevent snow or ice from locking or holding the door against movement.

SHOT-FEED FOR DRILLS.—K. BROOKS, New York, N. Y. Automatically feeding shot or grinding material to drills and similar tools is accomplished by this simple and economic device, and it is particularly adapted for feeding shot to rotary drills employed in boring wells. It is automatic in its action and means for regulating the quantity of material delivered by the device, the feed being constant while the invention is in operation.

CORNET.—Z. A. MEREDITH, Tahlequah, Ind. Ter. This invention is an improvement in cornets and similar valve instruments, and has for an object to provide construction and arrangement of the tubing and air-passages whereby to avoid short bends or angles; also, to dispense with the usual second slide and introduce in lieu thereof a second bell through which the tone is emitted in all instances when the second valve is depressed.

Machines and Mechanical Devices.

ROTARY CUTTING DEVICE.—T. B. WILLIAMS, Orange, Mass. The invention has reference more especially to hand-operated devices—such, for instance, as ordinarily employed for dressing or resurfacing the seats of valves, faucets, and the like. The principal object is to provide an extensible bearing-support for a rotatable spindle, located exteriorly to the structure and capable of being lengthened or shortened in proportion to the different longitudinal adjustments of the spindle found necessary to be made under varying conditions of use of the structure.

MOLDING-MACHINE.—C. REED, Portland, Ind. This inventor provides efficient and rapid adjustment of the machine's working parts; provides for pressing the molding materials from two opposite directions, so as to make the article solid and material completely fill corners and spaces around the cores; provides an entirely automatic arrangement, so that neither product nor any part of the machine will have to be lifted before molded article is completed; provides for delivery of article to a truck by which it can be taken away from the machine, and provides for making all kinds of articles movable by machinery and especially all kinds of building-blocks.

PIANO-ACTION.—F. B. LONG, Los Angeles, Cal. The object of the invention is to provide such new and useful improvements in piano-actions whereby the flanges for the hammer's, dampers, or other parts of the action are not liable to become loose and rattle on playing the instrument or by reason of the climatic changes.

PULLING-MACHINE FOR STEAMBOATS, ETC.—F. W. HAYES and C. A. BILLINGS, Wendling, Cal. The invention is an attachment for steamboats and other water-craft for use as an aid or accessory for propelling them up swift streams or rapids, where the usual means of propulsion are insufficient. The invention is also adapted for use as the sole means of propulsion of boats or scows in canals or sluggish and shallow streams.

STAMP-AFFIXING DEVICE.—M. R. BURNOWS, Sarina, Canada. The object in this invention is to produce a device which will operate to moisten the parts and apply the stamp with great rapidity and in a certain sense automatically. It comprises a magazine in which stamps or labels are contained and beneath which the envelop or other article may be thrust. As the envelop passes beneath the stamp-magazine it is moistened automatically by the moistening device, and the mechanism is then operated to affix a stamp in required position.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

Business and Personal Wants.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. In every case it is necessary to give the number of the inquiry.

MUNN & CO.

Marine Iron Works. Chicago. Catalogue free.

Inquiry No. 7994.—Wanted, mantled alcohol lamps for lighting.

"U. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 7995.—Wanted, the name and address of the maker of "Gardner's Army and Navy Liniment."

Handle & Spoke Mchry. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Inquiry No. 7996.—Wanted, the name and address of the manufacturer of the glass tombstone or monument.

Manufacturers' Agent is open for a few good lines. Highest references. E. H. Peace, Vancouver, B. C.

Inquiry No. 7997.—Wanted, galvanized tanks to stand 125 pounds test, cold water, with manhole on side 11 x 7 inches; oval, 25 inches long, by 15 inches.

I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 7998.—Wanted, electrical novelties run by dry batteries, such as electric railway locomotives, dynamos, motors and tops.

Fine Lithographed Letter Heads, Bill Heads, Envelopes and Checks, gives standing. Stillwell, 709 Pine St., St. Louis.

Inquiry No. 7999.—Wanted, makers of malleable iron thumb screws, with ball and cap ends.

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

Inquiry No. 8000.—Wanted, apparatus for removing the overburden or covering when from 5 to 35 feet in thickness, overlaying a mineral deposit.

Metal Novelty Works Co., manufacturers of all kinds of light Metal Goods. Dies and Metal Stampings our Specialty. 43-47 S. Canal Street, Chicago.

Inquiry No. 8001.—Wanted, makers of balloons, kites, aerial toys, machines and aerial novelties of utility.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery tools, and wood fiber products. Quadriga Manufacturing Company, 18 South Canal St., Chicago.

Inquiry No. 8002.—Wanted, the makers of the Butcher motor.

Inquiry No. 8003.—Wanted, manufacturers of water stills and compressed air apparatus for aerating water.

Inquiry No. 8004.—Wanted, makers of automatic cam cutting machines for cutting large cams up to 20 inches in diameter.

Inquiry No. 8005.—Wanted, manufacturers of pillow ventilators.

The Development of House Painting.

The art of painting for decorative purposes is as old as civilization. In the fragments of Babylonian, Assyrian, and Egyptian literature that have come down to us there are frequent allusions to this form of decorative art, and the writings of Theophrastus, Pliny, Vitruvius, and others contain many interesting details regarding the nature of the colors so employed. In the ancient Egyptian monuments we still find the remnants of decorative coloring, especially on mummy cases which have been preserved from the air. There are remnants of flat color on the friezes of the Pantheon, etc.; buried statues from the antique world show traces of tinting, and the walls of the exhumed buildings at Pompeii are notably rich in wall paintings.

These colors have been examined by several chemists, notably Sir Humphry Davy, and the results lead to the conclusion that the pigments at the command of the ancient artists and artisans were chiefly natural products, such as gypsum, chalk, bitumen, ochers, siennas, iron oxides, carbon blacks, manganese oxide, lead oxides, arsenic and mercury sulphides, the copper carbonates and silicates, etc., with a few simple animal and vegetable dye colors.

It is remarkable that while both Pliny and Vitruvius describe the production and use of white lead, no trace of such use has been found in these analyses, though red lead (which occurs as a natural color) has been encountered frequently.

During the first sixteen or seventeen centuries of the Christian era also the use of paint was predominantly for decorative and artistic purposes, and the development of the technical side of paint and color making up to the eighteenth century was largely along these lines. Part of the stock in trade of the great painters, even down to the days of Sir Joshua Reynolds, Vanduyck, Rubens, Velasquez, and the rest was their secret formulas and processes for preparing colors, oils, and varnishes.

The reason for the slow emergence of the idea that paint could be used for protective as well as for decorative purposes is not far to seek: Mediæval, Renaissance, and in England, even, Georgian architecture was the art of designing and construction in stone or its equivalent, bricks and mortar. In early times every man's house was literally his castle—his stronghold—and he whose position in life would not maintain a defensible stronghold was not a man but a villain, subject to the commands and dependent for protection upon his more fortunate lord.

The houses of the better classes were therefore stone fortresses; those of the lower classes, flimsy hovels, huts, or cabins. The castle needed no paint; the peasant's shelter was not worth it.

With the rise of the common people into the stature and privileges of human beings, however, wood became gradually a recognized building material, the preservation as well as the decoration of the wooden house became important, and the demand rapidly stimulated the development of paint, making it a commercial industry.

The earlier industrial paint makers naturally looked to the artists for their knowledge of paint; consequently we find the original house paints to be merely adaptations of artists' colors, gradually modified to permit of production on a commercial scale. Thus, the early process for producing white lead, for example—the old Dutch process—was merely an expansion of the artists' method of making "flake-white," a trench in the earth, charged with manure, being substituted for the hole in the artist's backyard. So, also, the older paint chemists—Scheele, Diesbach, Chaptal, Davy, Girardin, Vauquelin, and others—concerned themselves largely with investigation of the pigments then in use and the simplification of the methods and materials used in producing them. This fact can be verified by a glance at the pages

of a comprehensive book published less than fifty years ago—the celebrated "Practical Treatise on the Manufacture of Colors for Painting" by the French authorities, Riffault, Vergnaud, and Tous-saint. Large space is given therein to the production of Prussian blue from animal offal, of lakes from vegetable dyes, of Turner's yellow, orpiment yellow, and uranium yellow, of quicksilver vermilion, of the arsenical and copper greens, etc. The chromate yellows and greens were then comparatively new pigments, as was French process zinc; much space is devoted to weird processes for making white lead, which have long passed out of memory; the coal-tar pigments and lakes were still far in the future; there was no American process zinc, no sublimed lead, no "zinc-lead," no "quick-process lead." And this book was the latest word on the subject by the leading European authorities at about the close of our civil war.

It is not overstating the facts to say that the introduction of ready-prepared paint making as a separate industry marked the first real impetus in the technical study of paints and the popularization of paint-using for protective as well as for decorative purposes. It began in this country about 1860, and has since developed so rapidly that a competent authority has estimated the consumption in 1900 at 60,000,000 gallons. A natural sequence of the American tendency to simplify, to systematize and to economize time and labor, it placed protective and decorative paints within the reach of all and made this country pre-eminently the paint-using country of the world.

There are now in this country something like two hundred and fifty paint-manufacturing concerns, properly so called, ranging in size from a small plant with an output of a few thousand gallons per year to single concerns operating a dozen or more plants, with their annual output running into the millions.

The demands of these factories have stimulated the production and diversification of pigments, until the list is almost endless; and the study of the paint chemists employed by them has thrown a flood of light upon the properties of paints undreamed of by the older color chemists. The result has been a rapid diversification and specialization of products, until at the present time we can obtain from any paint factory, ready for use, a paint for almost any purpose; exterior and interior tints and colors, floor paints, roof paints, barn paints, porch paints, carriage and wagon paints, enamel paints, car paints, locomotive paints, bridge paints, etc., in limitless variety.

Every manufacturer is constantly pushed by each of his competitors to produce something better and cheaper, and the result is that to-day's formula is displaced by to-morrow's discovery. In the pigments used there is much diversity and constant improvement; but after temporary experiments along other lines the entire trade has apparently come to an agreement that for the present, at least, there is no satisfactory substitute for pure linseed oil; consequently, he who examines these paints of the better grades will find, outside of the volatile thinners and the liquid "dryers" used, practically the entire liquid contents to be simply linseed oil.

Columns could be devoted to this unique vegetable oil; but it is enough to say that the United States annually consumes about 20,000,000 bushels of flaxseed in producing it, and that nothing has yet been discovered that so satisfactorily fulfills the requirements of house painting.

A great deal has been said and written against prepared paints—chiefly in the interests of painters, who cling to their ancient tradition and perquisites of hand mixing, or by those who cater to this trade; but the incontrovertible fact remains that the consumption of these products after a half century's experience is increasing steadily. This fact alone is sufficient answer to all objectors; nothing

that does not serve a useful purpose can permanently succeed. Frauds may flourish for a time, but their season is brief.

G. B. HECKEL.



HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication. References to former articles or answers should give date of paper and page or number of question.

(9934) A. C. A. says: Please inform me through the Notes and Queries column, how the number of lines of force in a magnet are calculated. A. To calculate the number of lines of force in air through a given coil of wire, multiply the amperes by the number of turns of wire and this by .4 or by 1.257.

(9935) B. F. B. asks: I wish to procure the best method for drilling glass. A. For drilling glass make a solution of 1 ounce gum camphor, 1 1/2 ounces spirits of turpentine, and 3 drachms of ether. Keep the end of the drilling tool wet with this fluid. The sharp corner of a freshly broken point of a file is one of the best drilling tools for this purpose.

(9936) L. E. B. asks: Does the space occupied by the spokes in a carriage appear to be filled with black dots when the moving carriage is seen through a lace curtain? I did not notice it when the carriage moved rather slowly, but when it was moving at a brisk rate. A. The phenomenon of the moving wheel viewed through a mesh of lace is due to the persistence of vision. Through the openings in the lace we see only a part of the spokes, and then this part disappears. We thus get a discontinuous view, broken more rapidly as the carriage moves more rapidly.

(9937) W. W. G. says: We would consider it a great favor if you will have the kindness to advise regarding driftwood fire powder. This is a powder which, as we understand it, is thrown on the fire and produces the same lights as driftwood does. Kindly advise if possible where same can be obtained. A. We do not know the composition of the driftwood powder. You can, however, make driftwood for yourself, which will give a color equal to any, by dissolving chloride of copper in water. Use a wooden pail for this, since it will corrode a metal pail. Place pieces of wood endwise in the solution, and allow them to soak till they are well saturated. Then dry them, and throw some pieces upon a bright fire. They will show the colors of the burning copper. A pound of copper chloride will make a great deal of driftwood.

(9938) F. S. J. asks: 1. Can you tell me what a wattless current is? How is it caused? A. The so-called "wattless current" is the component of the total current which is in quadrature with the energy current. It may be found explained in Sloane's "Electricians' Handy Book," which we send for \$3.50. 2. Why do telephone companies always ground on a cold-water pipe? I know of a case where a lineman carried the ground wire past a hot-water pipe to a cold-water pipe. Why not ground on a gas or steam pipe? They are all connected to the ground. A. We cannot tell why telephone companies "always ground on a cold-water pipe," since we have just examined ours and find it grounded on the hot-water pipe. It is not proper to infer that a thing is always done in a certain way because we have never happened to notice it done in any other way. There is no reason for grounding on one pipe rather than the other. Gas pipes should not be used because of risk of setting fire, if a break occurs. 3. Is there any point on the American coast where there is no eb or flow of tide? If so, where is it? A. We do not know any place where there is no tide. There are places so situated that a tide flowing one way meets a different phase of a tide from another direction and a very small change of tide results.

(9939) T. W. B. asks: As it is an accepted fact that an electric current can be caused to flow between the poles in a circuit connecting two metals such as bismuth and antimony when the point of juncture is heated, I should like to know what voltage and amperage can be produced or caused to flow if the ends of two rods 1/4 inch in diameter, one of bismuth and the other of antimony, be joined together and heated in say 500 deg. of

heat. I have the electric library published by Munn & Co., but do not seem to be able to get this information from same. In one place they state that a combination of this kind will generate "1 microvolt," but nowhere in the book can I find a statement as to what constitutes a microvolt. I have an apparatus in which a large amount of heat is radiated or wasted, and thought possibly that I would be able to generate a current of about six volts, twenty amperes. If this is possible will you kindly give me some information as to how to go about the work of assembling the apparatus? A. A microvolt is one millionth of a volt. Probably any dictionary would contain the word, or else the prefix "micro," which is used as meaning a millionth part. Webster's Dictionary contains it. A treatise on electricity would assume that the reader had a dictionary and would not stop to define such a term. You cannot maintain a bismuth-antimony junction at 500 deg. F., since bismuth melts at 514 deg. F. Nor has anybody yet succeeded in making a thermo-electric generator which would produce six volts. One which gave about half this was on the market a few years ago, but cannot now be had. This one gave perhaps 1.5 amperes. We cannot encourage you to expect to invent a generator which would give 20 amperes.

(9940) H. E. E. asks: As a reader of your most valued publication, I am taking on myself the privilege of asking you where it would be possible to secure information regarding the latest or the best system of wireless telegraphy. I am seeking to build a system between two stations, about three hundred yards apart. Have been unable to secure anything satisfactory on the subject except from the columns of the AMERICAN, and that is all so condensed that it doesn't help much in putting in a system. I ask you, then, where I may secure a clear, concise treatise on the subject, which would enable an amateur to build his own system and at a nominal cost. A. Maver's "Wireless Telegraphy," price \$2, is a very good book upon the subject, although Collins is somewhat more recent and is reliable. Its price is \$3. We can send either or both upon your order. We have published in our SUPPLEMENT No. 1363, price ten cents, a very complete description of a set of instruments which will transmit much farther than you propose to send messages. We would advise you to get this, if you have not already done so, and to follow the instructions given therein. A large number of people have built sets from these instructions. We would say, however, that no one can build the instruments at a nominal cost. The coherer, the relay, and the induction coil must be well made or else they are worthless.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending March 27, 1906. AND EACH BEARING THAT DATE [See note at end of list about copies of these patents]

Table listing various inventions and their patent numbers, including Account cabinet, B. C. Maxwell; Adding machine, Kosama & Gancher; Adjustable seat and desk, J. T. Brent, Jr.; Air purifier, H. Platz; Amusement apparatus, W. H. Morgan; Amusement apparatus, C. C. Dean; Amusement apparatus, O. M. Connelly; Animal chase, Elder & Turner; Animal trap, J. D. Kittler; Animal trap, C. C. Spuhng; Animal trap, J. J. Swint; Armor plate, making, J. Strauss; Asphalt screen and storage bin, F. A. Hetherington; Automatic carrier, S. H. Libby; Bale tie machine, G. A. Rumbel; Ballast trimmer, J. H. Drinkwater; Battery, E. W. Schneider; Bearing for electric meters, frictionless, T. J. Johnston; Bed, invalid, J. W. Summers; Bed, sofa, Strand & Haugen; Bias cutting implement, N. B. Burt; Bicycle attachment, G. W. Pulliam; Binder frame and leaf therefor, loose leaf, H. J. Moore; Binder, loose leaf, J. B. Barlow; Blackboard trestle with adjustable map displayer and roll support, M. Nacken; Bleaching and sterilizing apparatus, S. Leatham; Blind fastener, Burn & Anderson; Blind slot clipper, S. C. Smith; Block. See Pulley block; Block molding machine, G. Wilhelm; Bobbin holder, A. E. Rhoades; Boiler water feeding device, steam, J. T. Innes; Bolt threading machine, J. H. Haskins; Book support, F. E. Ruger; Book support, E. Smering; Boot and shoe tree, S. French; Boot or shoe polishing machine, Biladeau & Chapdelaine; Bottle, W. W. McLaren; Bottle, J. C. Anderson; Bottle cap and brush, J. Lane; Bottle clip, J. J. McGarry; Bottle, corkless non-refillable, R. I. Maxwell; Bottle holder and opener, combined, Mulvaney & Keller; Bottle holder, nursing, E. S. Lewis; Bottle, non-refillable, Perry & Pierpoint; Bottle, siphon, J. G. Henrich; Bottle stopper, H. K. Gilbert; Bottle stopper, H. E. Payne; Bottles, etc., stopper for, J. P. Crane; Bracket, A. R. Berg; Brake hanger, G. M. Brill; Brake shoe, J. F. Powers; Brick making machine, C. W. Pratt; Bucket and trap, combined minnow, E. Petmecky; Bucket or conveyor, W. F. Jones; Building construction, O. Price, reissue; Bur, loop unifying and cast-off, E. Tempkins;

"Star" Lathe advertisement featuring an illustration of the lathe and text: "FOR FINE, ACCURATE WORK. SENeca FALLS MFG. CO. 695 Water Street, Seneca Falls, N. Y., U. S. A."

Engine and Foot Lathes advertisement: "MACHINE SHOP OUTFITS, TOOLS AND SUPPLIES. BEST MATERIALS. BEST WORKMANSHIP. CATALOGUE FREE. SEBASTIAN LATHÉ CO., 120 Culvert St., Cincinnati, O."

Foot and Power and Turret Lathes advertisement: "SHEPARD LATHÉ CO., 133 W. 2d St., Cincinnati, O."

GIANT STEAM SHOVELS advertisement: "Toledo Ohio, USA. The Vulcan Iron Works Co. 125 Vulcan Place."

1 1/2 H. P. MARINE ENGINE advertisement: "\$33.50 Engine Only. For your Row Boat, Sail Boat or Launch. DETROIT ENGINE WORKS, 1425 JEFFERSON AVE. DETROIT, MICH."

A. M. Faber advertisement: "Manufactory Established 1761. Lead-Colored & Slate Pencils, Rubber Bands, Erasers, Inks, Penholders, Rulers, Water Colors, Improved Calculating Rules. 44-60 East 23d Street, New York, N. Y."

ORIGINAL BARNES Upright Drills advertisement: "Positive Feed. 10 to 30-inch Swing. W. F. & JNO. BARNES CO. (Established 1872) 1999 Ruby St., Rockford, Ill."

Presses for Sub-Press Work advertisement: "Five sizes. Sub-Presses and Tools to order. BLAKE & JOHNSON, P. O. Box 1054, WATERBURY, CONN"

THE B. F. BARNES 14-INCH DRILL advertisement: "is adapted for work from 1-16 inch to 3/4 inch. A strong, substantial, well built drill. B. F. BARNES COMPANY, Rockford, Ill."

Mustard & Company advertisement: "GENERAL IMPORTERS AND COMMISSION AGENTS. Plumbing Supplies, Safes and Scales. The largest Hardware Machinery and Tool House in China. 9a NANKING ROAD SHANGHAI CHINA"

RELIABLE MARINE ENGINES advertisement: "Reliability under all conditions is the characteristic of the 'Lamb' Engines. Sizes from 1/2 to 100 H. P. in stock. Write for catalogue. TERRY & CO. Managers Eastern and Foreign Branches. 92 Chambers St., New York. Everything for Boat & Engine"

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

KEROSENE OIL ENGINES advertisement: "Marine Stationary Portable. NO DANGER, Maximum Power, Lightest Weight, Simple, Reliable, Economical. No Batteries, Self Ignition by Compression. Fully Guaranteed. Write for Catalogue P. M. No charge for packing. International Oil Engine Co. 253 Broadway, N. Y., U. S. A."

Watch Tacoma Grow! advertisement: "Leading manufacturing city of Pacific Northwest. Best steamship and railway terminals on Pacific Coast. Six additional transcontinental railroads entering Tacoma. Send ten cents in postage for illustrated literature to SECRETARY, CHAMBER OF COMMERCE AND BOARD OF TRADE, Tacoma, Wash. POPULATION 1900, 37,714. 1906, 85,000."

Table listing various inventions and their patent numbers, including Burglar alarm, J. A. Dillen; Bushings, machine for forming hollow split, P. Kohlbrener; Button making machines, gripping device, carrier for, J. Iloriby; Calculating machine, H. Hanson; Calculating machine and typewriter attachment, H. Hanson; Can opener, W. T. Seerup; Can top, powder, J. H. Goss; Cans, handled head for sheet metal, C. Sherman; Cans or boxes, hinged cover for square or rectangular sheet metal, E. H. Larkin; Candy machine, W. J. Morrison; Car body bolster, railway, C. S. Shallenberger, reissue; Car construction, R. L. Ettenger; Car coupling, W. Kelso; Car coupling, Keller & Bowers; Car, dump, S. Otis; Car, hopper bottom, T. R. Brown; Car, sleeping, H. M. Pfleger; Car wheel, H. C. Odenkirk; Car window, H. F. Dietz; Carbureter, G. W. Kellogg; Carbureting apparatus, M. Steel; Cards, playing, J. H. Noonan; Carpet cleaning and disinfecting machine, E. A. Deas; Carrier, O. Johnson; Carton making machine attachment, R. Sunderman; Cash register, Beckhoff & von Pein; Caster, G. E. Neuberth; Caster, F. F. Bischoff; Caster, C. Stengel; Castings, metal mold for making brass, F. Haggenjos; Cement and making the same, slag, J. A. Shinn; Cement block machine, C. F. Davis; Cement block molding machine, F. F. Martin; Centrifugal machine, W. E. Andree; Chain, H. A. House; Chain link, F. V. Hietzel; Chain securing device, logging, F. Peikard; Chair, A. E. Beall; Chair lounge, J. Flindall; Channeling machine, L. F. & A. J. Uthe; Cheese cutter, J. Halliday; Chime ringing apparatus, A. E. Adriance; Churn, F. E. Krenquest; Churn motor, J. M. McBride; Cigar press, B. Wittmer; Cigarmeister, J. S. Winget; Cigarette making device, A. E. Buckingham; Circuit controlling apparatus, R. D. Mershon; Circuits, making and breaking high potential, E. M. Hewlett; Circuits, transfer switch for testing, Whitaker & Wood; Clamp. See Woodworking clamp; Clamping jaws, means for preventing differential movement of, F. Van Amber; Coal crusher, J. W. Dalrymple; Coal and other granular material, apparatus for handling, A. Smith; Cock, self-closing basin, J. A. Johnston; Coffee and cereal reaster, K. H. Remmel; Collapsible table, C. R. Sheldon; Collar pad, horse, W. F. Sachse; Column cap and base, combined, J. Lally; Composite construction, tension member for, J. Kahn; Concrete, apparatus for lining tunnels with, J. W. Rene; Concrete building blocks or veneer blocks, machine for manufacturing solid, R. Edmondson; Condenser, L. Schutte; Conveying apparatus, C. H. Lecher; Conveying apparatus, pneumatic, A. C. Lynch; Cooler, cream ripener, and pasteurizer, combined, D. W. Payne; Coop, folding chicken, C. J. Laidig; Copying press, letter, G. H. Taylor; Cord fastening device, D. A. Wedmore; Coupling, H. C. Clay; Coupling device, A. E. Sauten; Crate, folding, F. J. Hipp; Cream separator, centrifugal, F. A. West; Culinary vessel, H. McConnell; Cultivator, T. Mulally; Cultivator, F. E. Schaal; Cultivator, road machine, and farm wagon, disk land, A. L. Foote; Current generator, alternating, C. P. Steinmetz; Curtain and counterbalance for book and other cases, A. McKenzie; Curtain holder, G. W. Barnett; Curtain pole, J. A. Mills; Decorticating machine, M. Castellon; Dental tool holder or clutch, B. S. Brown; Desk, school, W. H. Stockman; Diaper, Peters & Mason; Disappearing seat, S. M. Curwen; Display apparatus, illuminated, F. M. Arsi; Display can or box, sheet metal, E. M. Hallbauer; Display can, sheet metal, Rudolphi & Geiger; Display can, floral, L. Wittbold; Door, F. K. A. M. Eastman; Door controller, sliding, A. M. Easton; Door, grain, E. A. Hill; Door locking mechanism, E. F. Tripp; Door securer, E. M. Hoagland; Dressing apparatus, J. Hamilton; Drill shanks, equalizing weight feed for, K. Brooks; Drilling machinery feeding mechanism, C. F. Preslar; Driving mechanism, variable speed, W. L. Schellenbach; Drapper, G. Spencer; Drum screen, revolving, Brew & Suiter; Dry closet, T. Macfarlane; Duplicating machine, H. C. Gammeter; Dust collector and like apparatus, A. C. Lynch; Dust collector and separator, A. C. Lynch; Dynamic trap or drain valve, J. F. McElroy; Easel, J. B. Thompson; Edge trimmer, J. A. Gates; Egg boiler, time, H. H. Chesbrough; Electric cable, H. W. Buck; Electric heater, Morse & Frazer; Electric light socket and key, O. C. Cover; Electric light wires, rosette for, J. H. Parker; Electric machine, dynamic, C. P. Steinmetz; Electric meter, W. H. Pratt; Electric pressure indicator, J. E. Wertz; Electric road crossings, safety system for, A. H. Johnson; Electric switch, M. H. Johnson; Electric switch, Everest & Barker; Electrical device and circuit, W. H. Lane; Electrical generator, W. Stanley; Electrical regulation system, W. L. R. Emmet; Electrical switch, J. F. McElroy; Elevator. See Grain elevator; Elevator safety device, S. Kacso; Engine, W. Heckert; Engine and car coupling, railway, E. Pesson; Engines, current controller for igniting devices for hydrocarbon, F. O. Farwell; Engines, drill bit rotating mechanism for rock drilling, J. G. Leyner; Engraving machine, W. S. Eaton; Excavator shovel, T. Alexander; Explosive engine, T. J. Lutz, Jr.; Flyglass cleaner, H. C. Fosberg; Fabrics, adjustable guiding mechanism for sewing, bridge threaded, E. T. & E. H. Marble; Fastening device, headed, E. T. House; Faucet, W. A. Speakman; Faucet, E. A. Dunham; Faucet and filter, combined, A. P. Whalen; Feeding device, D. Collins; Fence making machine, wire, J. M. Benning; Fencing tie, wire, F. H. Benedict;