Business and Lersonal.

The Charge for Insertion under this head is One Dollar α line for each insertion; about eight words to α line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

SAVANNAH, November 18, 1881.

H. W. Johns Mf' Co., New York: GENTS: . . The Savannah Cotton Press Association have four batteries of boilers and three pipe connections covered with your Asbestos Cement. I am fully satisfied we save at least fifteen per cent in fuel cver the old method. Respectfully, SAM'L. J. WHITESIDE, old method. Respectfully, Chief Engineer, Savannah Cotton Press Association.

Send name and address to Cragin & Co., Philadelphia, Pa., for Cook Book free.

The Lehigh Valley Emery Wheel Co., Lehighton, Pa., sell a new Stove Plate Grinder, with transverse motion: and au Automatic Planer Knife Grinder, with a cup wheel. Cuts and descriptions sent upon application.

Blue Process Paper is made by Keuffel & Esser, 127 Fulton St., New York. Send for circular.

Horizontal Engine, 20 in. cyl. by 48 in. stroke, for sale new. Atlantic Steam Engine Works, Brooklyn, N.Y.

mers a specialty. S.C. Forsaith & Co., Manchester. N.H. Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y. given to inquirers.

The Newark Filtering Co., of Newark, N. J, are filling orders from cities and manufacturers for their "Multifold Filters."

To Stop Leaks in Boiler Tubes, use Quinn's Pat. Ferrules. Address S. M. Co., So. Newmarket, N. H.

Malleable and Gray Iron Castings to order, by Capital City Maileable Iron Co., Albany, N. Y.

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

Combination Roll and Rubber Co., 27 Barclay St., N. Y. Wringer Rolls and Moulded Goods Specialties. Send for Pamphlet of Compilation of Tests of Turbine

Water Wheels. Barber, Keiser & Co., Allentown, Pa. Presses & Dies (fruit cans) Ayar Mach. Wks., Salem, N.J. Latest Improved Diamond Drills. Send for circular to M. C. Bullock, 80 to 88 Market St., Chicago, Ili.

Wood-Working Machinery of Improved Design and Workmanship. Cordesman, Egan & Co., Cincinnati, O.

"How to Keep Boilers Clean," and other valuable information for steam users and engineers. Book of John St.. New York, mailed free to any address.

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

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys Yocom & Son's Shafting Works Drinker St., Philadelphia. Pa.

Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited. Erie, l'a

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsb'g, Pa.

List 27.—Description of 3,000 new and second-hand Machines, now ready for distribution. Send stamp for same. S.C.Forsaith & Co., Manchester, N.H., and N.Y.city. Presses, Dies, Tools for working Sheet Metals, etc.

Fruitand other Can Tools. E. W. Bliss. Brooklyn, N. Y. Improved Skinner Portable Engines. Erie, Pa.

Cope & Maxwell M'f'g Co.'s Pump adv., page 108.

The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv., p. 110 For Pat. Safety Elevators, Hoisting Engines. Friction Clutch Pulleys, Cut-off Coupling. see Frisbie's ad. p. 108. Safety Boilers. See Harrison Boiler Works adv., p. 109. Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p.108.

4 to 40 H. P. Steam Engines. See adv. p. 108.

Ajax Metals for Locomotive Boxes, Journal Bearings, Sold in ingots or castings. See adv., p. 125.

Draughtsman's Sensitive Paper.T.H.McCollin, l'hila., l'a For Mill Mach'y & Mill Furnishing. see illus. adv. p.124. Skinner's Chuck. Universal, and Eccentric. See p. 126 For the Garden and Farm.—A great variety of Seeds and Implements. Send for catalogue. Address R. H. Alien & Co., P. O. Box 376, New York city.

See Bentel, Margedant & Co.'s adv., page 140

Steam Hammers, Improved Hydraulic Jacks. and Tube Expanders. R. Dudgeon. 24 Columbia St., New York.

Diamond Saws. J. Dickinson, 64 Nassau St., N. Y. Telegraph, Telephone, Elec. Light Supplies. See p. 141. For Walrus Leather, Bull Neck Emery, Glue, Crocus,

and Composition, write Greene, Tweed & Co., New York. 50,000 Sawyers wanted. Your full address for Emerson's Hand Book of Saws (free). Over 100 illustrations and pages of valuable information. How to straighten saws, etc. Emerson, Smith & Co., Beaver Falls, Pa.

Eagle Anvils, 10 cents per pound. Fully warranted. Peerless Colors for Mortar. French, Richards & Co., 40 Callowhill St., Philadelphia, Pa.

Gear Wheels for Models (list free); Experimental Work, etc. D. Gilbert & Son, 212 Chester St., Phila., Pa. gen upon lime.

Elevators, Freight and Passenger, Shafting, Pulleys and Hangers. I. S. Graves & Son, Rochester, N. Y.

Gould & Eberhardt's Machinists' Tools. See adv., p. 141, For Rubber Packing, Soapstone Packing, Empire Packing and all kinds. write Greene, Tweed & Co., N. Y.

The Medart Pat. Wrought Rim Pulley. See adv., p. 141. For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 140.

Centrifugal Pumps, 100to 35,000 gals. permin. Seep. 141. stained. Light porous woods are most easily stained. Barrel, Key, Hogshead, Stave Mach'y. See adv. p. 141. Drop Hammers, Power Shears, Punching Presses, Die Sinkers. The Pratt & Whitney Co., Hartford, Conn.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 140.

For best low price Planer and Matcher, and latest improved Sash, Door, and Blini Machinery, Send for catalogue to Rowley & Hermance, Williamsport, Pa.

Theonly economical and practical Gas Engine in the market is the new "Otto" Silent built by Schleicher. Schumm & Co., Philadelphia, Pa. Send for circular.

The Porter-Allen High Speed Steam Engine. Southwork Foundry & Mach. Co.,430 Washington Ave., Phila.P. Portable Power Drills. See Stow Shaft adv., p. 140,

The Sweetland Chuck. See illus. adv., p. 142.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 141. Totten & Co., Pittsburg. Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills Also manufacturers of Soloman's Parallel Vise, Taylor. Stiles & Co., Riegelsville, N.J.

Electric Lights.-Thomson Houston System of the Arc type. Estimates given and contracts made. 631 Arch, Phil.



HINTS TO CORRESPONDENTS

No attention will be paid to communications unless Abbe Bolt Forging Machines and Palmer Power Hamacompanied with the full name and address of the

Names and addresses of correspondents will not be

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the Scientific American Supple-MENT referred to in these columns may be had at this office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identi- surfaces to be drilled. 2. How can scraps of sperm

- pump water into a stationary boiler, locomotive build? We now pump into side of back end from fire-boxdoor. but would like to change to the bottom of the front or fire-box part behind, where the ash pit is. but outside, of course. Would it not answer as well? A. It is not well to feed against any part of the fire-box. Feed near the bottom of the cylinder part of the boiler furthest from the fire, and where there is a large water space in the boiler. 2. What pressure should a small upright boiler stand, 24x60, used quite a while, but apparently in good condition? What size safety valve should it have? A. We cannot say what pressure, without knowing the thickness of the iron and its condition.
- (2) G. S. asks: What is a surface blow-off valve with a scum pipe inside of boiler; how made A. It is an ordinary blow-off valve or cock, with a connecting pipe to a long narrow pan inside the boiler, the upper part of the pan open, the pan fixed so that its upper edges is about or just above the surface of the water; the floating scum collects in this pan and when the valve is opened is blown out.
- (3) E. S. asks: Which of the two balance wheels will give the most power and run the steadiest for afoot lathe: a 14 inch wheel, weight 25 pounds geared to run three times faster than the crank shaft oran 18 inch wheel, weight 50 pounds on the crank shaft? A. The small wheel at three times velocity of crank
- (4) W. M. S. asks: Where is the largest chimney in the world, and what is its height? A. We believe at Port Dundas, near Glasgow, 454 feet above ground. The St. Rollox chimney (near Glasgow) is 4351/2 feet above ground.
- (5) H. S. N. asks: 1. What is the best thing to kill water bugs? I have tried brax—it doesn't work very well. A. Use plenty of finely powdered dry borax injecting it, by means of a small bellows, into all cracks and crevices. We have found this to be a sure remedy. 2. Is there anything better than lime for a oxyhydrogen light? A. We believe there has been no good substitute for lime in this connection yet discovered. 3. What proportioned boiler would be used for an engine with two inch stroke, diameter of cylinder one inch? A. A boiler having 11/4 to 11/2 square feet heating surface.
- (6) J. B. M. asks: Are pearls out of mussel A Yes; II line.
- (7) W. P. asks: Will you please inform me which gives the most po werful light, the oxyhydrogen or oxycalcium? A. The oxyhydrogen, so called-if by oxycalcium a light wherein alcohol or oil is made to take the place of hydrogen in connection with oxy
- (8) A. E. B. asks: Will you please give us a process for ebonizing wood, and what wood is the best? A. Digest the wood for an hour or more in a strong hot solution of extract of logwood; then in a strong cold solution of iron sulphate (green copperas) The baths may be prepared by dissolving three-quarters of a pound of logwood extract in 2 gallons hot water and 1 pound copperas in 11/2 gallons water. Repeat the digestions if necessary until the wood is properly but any variety of wood may be blackened by this pro-
- (9) G. W. B. asks: 1. Has pure nickel any physical or chemical properties that would make a

very much harder than silver and will wear longer. It took some brick off the top and he could see the steam is also much less malleable and stiffer, and of a lower specific gravity. 2. Is there a company in the United States making such cases of solid pure nickel? A. Yes, there are several.

Scientific American.

- (10) B. B. B. writes: I am about getting a small steam yacht, and a friend of mine has an iron hull. 34 feet long, 8 feet heam, but I think she has beam enough for the length. I want to run it on the Delaware River. What size and shaped boiler and what size of engine do I require to get the best results? A. The boat has beam enough for her length. The usual inverted direct acting engine, 6 inches diameter of cylinder by 6 to 8 inches stroke. A horizontal return tubular boiler, or a vertical one, to be of a size suitable for the engine. The horizontal will be best, as it will six lower in the boat,
- (11) R. C. B. asks: Can power be conveyed by a rope (not a wire rope) to a good purpose? I wish to convey power about 150 feet, for the purpose of driving a wood lathe and a circular saw for ripping inch lumber. The rope would be under cover. What size rope would I want? A. Yes; but a hemp rope would wear rapidly. The size would depend on the velocity; but we think a rope three-quarters inch or seven-eighths inch diameter sufficient. Use a good hem's rope--not manila-and keep it well protected from the weather.
- (12) W. H. P. asks: Will you please in form me through Scientific American the cheapest and best way of making nitrous oxide gas for dental pur poses? A. Heat a quantity of pure ammonium nitrate in a glass or iron retort over a sand bath until the gas begins to be evolved therefrom. This consists chiefly of nitrous oxide (so-called) and steam. It is purified by passing it slowly through a strong aqueous solution of sulphate of iron igreen copperas) which absorbs any ni-tric oxide present. It is then ready for inhalation.
- (13) B. W. S. J. asks: 1. How can holes be drilled in china or glassware? A. Use an ordinary machine drill (of hard tempered steel), and moisten the parts with turpentine. If the holes are to be "hand bored" use a bow with hempen string twisted once about the drill, held in and directed by a loose clutch awl handle, the motion of the bow backward and forward causing the drill to rotate rapidly against the candles be restored to their original white color after having been melted and remoulded? A. Pass the melted material through a warm sand or clear charcoal (1) A. G. M. asks: 1. Where is it best to filter, which will retain the particles of carbonaceous matter, to which the color is due.
 - (14) N. P. asks: How much face will be required to give an overshot waterwheel sufficient power to run a fifty inch circular saw, and also the number of square inches vent under a two-foot head of water, and the number of revolutions the wheel should make per minute and the revolutions of the saw? The wheel is a nine foot over shot. A. The power required depends upon the amount of work to be executed; but we suppose you require at least 20 horse power. Three times this, or 60 horse power, can be readily applied to a saw 50 inches diameter; but for 20 horse power you will want 14 feet face, or, better, 15 feet. Makeabout 10 revolutions per minute, and the vent about 650 square inches.
 - (15) H. A. R. asks: Can you give us a receipt for the white plating seen on cheap table ware, etc. It is neither silvernor nickel, but in some respects resembles both, though the color is closer to a white alloy of tin and zinc. One man says it is done by dipping into hot metal; another by boiling in a liquid for fifteen or twenty minutes. A. You will find practical directions for plating of all kinds in Supplement,
 - (16) G. F. K. asks: 1. What is the right temperature of a drying room for evaporating apples? A. About 100° Fah. 2. How many square feet of heating surface steam pipe should I have (using live steam) for a room containing 400 cubic feet of air? A. About 130 square feet.
 - (17) C. W. W. asks: What is the lifting power of one cubic yard of coal gas? A. It varies considerably according to the method of manufacture usually something less than one pound per cubic yard (27 cubic feet).
 - (18) R. & B. ask: 1. Is sugar maple wood good forpaper making? A. Yes, but it is not commonly used, as there are better and cheaper woods obtainable. 2. Would it pay to make paper pulp, where shavings of said wood are to be had in large quantities for pothing, and good soft water abundant, also water power? A. Very probably, if the pulp could be manufactured near at hand and on a sufficiently large scale, 3. Is the machinery to convert shavings into pulp very costly? Which would be lowest estimate of the same? A. Not necessarily; a small plant could probably be procured at a cost of a few hundred dollars. 4. Where can information about this matter be obtained in particulars? A. Address machine builders who advertise in our columns.
 - (19) Mrs. M. J. D., referring to our reply to B. C B., respecting the removal of lime incrustation choking the pipes of a water-back, calls our attention to the fact that petroleum (or refined coal oil) may and has been used to advantage in softening such lime incrustations so that they may be readily detached (as a whole or in pieces) from the metal. In the case in point it should be noted that the question is not how to loosen, but how to remove the incrustation without disconnecting all the pipes or taking out the water-backan operation which obviously involves solution or some similar process, not within the power of petroleum or any similar oils to accomplish. A. A practical solution of the question would be of much interest to many householders as well as to engineers and plumbers.
- (20) R. O. K. writes: We have a planing mill in this town, and last week the engineer discovered that the boiler used in the establishment leaked steam watch case superior to one of silver? A. Nickel is somewhere at the back end. One of the men in the mill employed by watch and clock makers and repairers.

coming out of the boiler in a jet about as large as a pin. He put a cold chisel to the place and struck it a light blow, and the chisel bedded itself in the head. They sent for me to look at it, but it was too hot to go inside to examine it. I gave it a few blows with my hammer, and the head gave way at everyblow for about 18 inches along the head just above where the upper braces were riveted on. When the boiler was cool I went inside and examined t, and found that the head was rusted nearly all away. In some places the iron was not one thirty-second of an inch thick, and they had had 65 pounds of steam that morning, but at the time when they discovered the leak they had only 25 pounds. The boiler is 10 feet long, 40 inches diameter, and 36 3-inch flues, and has been in use about eight years. It has not been running much more than half the time. Now, could you tell me the reason of the corrosion, and why it did not explode? A. As to the cause of the corrosion we could not say without examination of the iron and the water. It is fortunate that the weakness was discovered in time to prevent an explosion. It would have soon blown out, and the destruction would have depended on the character of the initial break. A boiler not in use will deteriorate more rapidly, as a rule, than if constantly worked. So far as we can judge the head was not braced sufficiently, and there has been a constant springing or movement of the head, thus favoring rapid oxidation by constantly presenting new surface.

(21) P. R. asks: 1. Can a bar of steel six inches by one and a half inches be strongly magnetized by a Holtz electric machine that gives a spark six inches long? A. No. 2. How many cells (if any) of the secondary battery described in Scientific American, June 25, 1831, page 406, can be charged by the same machine? A. The secondary battery is only very slightly affected by the current from a Holtz machine. 3. In what proportion does the spark increase from a single to a double Holtz electric machine? A. There is no increase in length of spark. Increasing the number of plates makes the spark larger. 4. How can I make it self charging? A. By applying to it a small frictional machine to be worked by the same handle that is used to turn the Holtz plates. 5. How should it be arranged for medical purposes? If your space does not allow a full answer to this question, please refer me to some work on that subject, as I should need a good deal of information on this point. A. See Supplements 278, 279, 282. 6. Does it in any way interfere if points, conductors, and discharging rods are varnished? Also, would it be well to varnish the plates and inductors? A Varnishing the brass work does no harm, and you will derive no benefit from varnishing plates. 7. Suppose the electrical condensers to be eight by two inches diameter and covered half way, and the electrical tension sufficient to overcome the distance: would not the spark discharge from the external coating to the chain that connects the inside coating with the conductors of the machine (distance five inches only) instead of going down the jar to the inside coating (distance eight inches), if not why? A. It might discharge both ways. The surface of the jar offers a partially conducting surface over which the electricity would pass rather than leap the space between the side of the jar and the chain. 8. Will increase of surface in the condensers increase the spark? A. It will make the spark "fatter," but the discharges will be less frequent. 9. How can I polish the glasses in a pair of spectacles that is very dull? A. This is impossible without proper tools. Better buy new glasses

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

L. J. R.-It is a variety of pyrrhotine-a native magnetic sulphide of iron. It contains a little antimony and copper and probably a trace of nickel. A quantitative analysis would be necessary to ascertain its

COMMUNICATIONS RECEIVED.

How to Raise Early Corn. By S. E. T. A Simple and Cheap Barometer. By G. H.

NEW BOOKS AND PUBLICATIONS.

U. S. Commission of Fish and Fisheries. SPECIAL BULLETIN. A MONOGRAPH OF THE SEAL ISLANDS OF ALASKA. By Henry W. Elliott. Washington. Government Printing Office. Quarto, pp.

This valuable monograph, embodying the personal observations of the author during four seasons, 1872. 1873, 1874, and 1876, gives the first minute scientific account of the life and habits of the North Pacific fur seals and sea lions that has been written. Indeed the minuteness of Mr. Elliott's observations prevented the use of the work as a portion of the report of the tenth census, for which it was intended. Thanks, however, to the enterprise of Professor Baird, an edition was secured for the Smithsonian Institution and issued under its auspices. The report is illustrated by maps and numerous engravings.

Marriage and Parentage and the Sani-TARY AND PHYSIOLOGICAL LAWS FOR THE PRODUCTION OF CHILDREN OF FINER HEALTH AND GREATER ABILITY. By a Physician and Sanitarian. New York: M. L. Holbrook & Co.

Books on this subject are too commonly written by "cranks," some vicious, some merely ignorant and carried away with fanciful theories volume is radically different; it is scientific, sober, clean, and worthy of conscientious consideration by every possible parent, particularly by the young.

THE WATCH AND CLOCKMAKER'S HAND BOOK, By F. J. Britten, London: W. Kent &

A fourth edition of Mr. Britten's pamphlet substantially bound. It describes in a simple practical way the mechanism of timepieces, and the tools and processes THE COMPLETE PRACTICAL CONFECTIONER By J. T. Gill. Chicago: Confectioner and Baker Publishing Company. 12mo

Though intended primarily for the trade this practi cal hand book will be found handy and useful to th better sort of housekeepers and cooks. Its eight part comprise a large number of receipts, processes, etc with relation to iced confections, compotes, jellies, preserves, etc.; the canning and bottling of fruits, etc sirups, aerated and other beverages; machinery an materials for candy making; candy making processes fruits, nuts, etc. The author offers no informatio with respect to the adulteration of candies further tha to condemn in very plain language certain well know practices.

ANALYTICAL AND TOPICAL INDEX TO THE REPORTS OF THE CHIEF OF ENGINEER AND THE OFFICERS OF THE CORPS OF ENGINEERS, U. S. A., UPON WORKS AND SURVEYS FOR RIVER AND HARBOR IM PROVEMENT, 1866 to 1879. Compiler under the direction of Major Henry M Robert, Corps of Engineers. Washing ton: Government Printing Office. 1881

The value of this index is not confined to its obvious convenience to officers of the engineer corps. Its pla makes it a ready guide to a vast amount of local in formation concerning the botanical, geological, geo graphical, and other features of our rivers, valleys, an harbors; and also to a vast amount of professional ex perience in operations for river and harbor improve ments, canal construction, the construction of dam diking, dredging, rock cutting, mining, and so on.

WESTWARD Ho! By Charles Kingsley. 12mo cloth. pp. 591. \$1.

HYPATIA. By Charles Kingsley. 12mo cloth. pp. 487. \$1. New York: Mac millan & Co.

These two novels of Mr Kingsley, which have won a enduring place in English literature, are here presente in substantial library style, at a price which make them as commendable specimens of cheap book make

THE CARPENTER AND JOINER'S HAND BOOKS By W. H. Holly. New 10.... Wiley & Sons. 32mo, cloth. 75 cents

A revised and enlarged edition of Mr. Holly's little hand book. The directions are plain and amply illus trated with cuts.

Familiar Science Studies. By Richard A Proctor. New York: R. Worthington 12mo, cloth. pp. 442. \$2.25.

Mr. Proctor has brought together in this book a num ber of his later contributions to English and America periodicals. They cover a wide range of subjects, from "infinity" to the "fifteen puzzle." The book include the chapter on the "menacing comet" just now attrac ing attention in certain quarters.

LECTURES IN A WORK SHOP. By T. P. Pemberton. New York: The Industrial Publication Company.

The writer has the moral, social, and industrial we fare and improvement of mechanics very much at hear and talks to working men in a sensible, kindly, and en couraging way, which cannot fail to be inspiring an helpful. The appendix contains the more notable an not easily accessible papers of the eminent mechanicia and inventor, Sir Joseph Whitworth.

SEAMANSHIP. By Captain Sir George S Nares, R.N. Revised and enlarged, by Lieutenant A. C. B. Bromley, R.N. 8vo pp. 291. 21 shillings. Portsmouth pp. 251. Griffin & Co.

The additions to this, the sixth edition of Captain Nares' thorough and comprehensive treatise on practi cal seamanship, are many and important. They includ the use of steel and flexible steel wire in ships' fittings torpedo boats and the handling of them; the construc tion of broadside and turret ships; life boats and the management; night and fog signals; rocket apparatus the Walker and the Thomson sounding machines Walker's patent log; Sir William Thomson's compass and other recent developments in marine methods an appliances. The work is abundantly illustrated; and though specially designed as a hand book for Britis officers, it is well calculated to be of use to youn American officers in the mercantile as well as the nava service.

[OFFICIAL.]

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INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States wer Granted in the Week Ending February 14, 1882,

AND EACH BEARING THAT DATE

['Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of an patent in the annexed list, also of any patent issue since 1866, will be furnished from this office for 25 cents In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broad way, corner of Warren Street, New York city. W also furnish copies of patents granted prior to 1866 but at increased cost as the specifications not bein printed, must be copied by hand.

Alarm lock, J. E. Wells	Furnaces, apparatus for utilizing the waste pro-
Alarm signal, H. A. Eaton 253,687	ducts of combustion in, T. S. Speakman 253,780
Awl. T. H. Logan	Gauge. See Axle box gauge. Shingling gauge.
Awning, J. Willie	Galvanic battery. A. M. G. Sébillot 253.769
Ax'e box, car, C. E. Candee	Game ring, sportsman's, E. Bourne 253,501
Axle box, car. J. H. Elward 253,688	Garment, G. W. Parker 253,755
Axle box gauge, J. A. Myers 253,823	Garment supporter, M. Marcus 253,615

	Scienti	tic	'
R.	Bag or satchel, L. Lowenherz	253,614	[
ner 10.	Bale tie, T. F. McNair		i (
cti- the	Basin. wash, F. A. Palmer Bath tub and heater, portable combined, W. Q.	253,551	į Į
rts tc.,	Battery. See Galvanic battery.	253,763	
re tc.;	Bearing, anti-friction roller, H. Büssing Bed and lounge, sofa, A. S. I. Gabbs Bed bottom, A. S. Burnham	253.596	Ĺ
nd es,	Bcd, cot, I. S. Pear	253.552	Ì
ion ıan	Bedstead, wardrobe, T. Saxton	253,768	į١
wn	Bell, door, J. J. Johnston	253.6 10 253,5 48	
не	Bicycle saddle, F. G. Burley	253.544	ŀ
RS OF	Billiard table pocket. P. H. Barry Boiler. See Cooking boller. Boiler attachment, domestic, S. Letchford		
M-	Boiler tubes, metallic stopper for, J. W. Fowler Bolt cutter, stay, N. Thomas	253,691	
ed M.	Bookbinders and others, gauge for, J. J. Geiger Boot or shoe, W. Comey	253,526 253,586	1
ıg- 31.	Boring bar, L. R. Faught. Bottle cooler, P. M. Wenther	253,796	į.
ous lan	Bottle stopper, C. A. Warfield		ļ
in- eo-	nal box. Brace. See Machine brace.		
ex-	Bracelet, W. A. Johnson. Brake. See Steering wheel friction brake.		
ve- ns,	Brush supporter, A. Rittmeyer	253,65 8	
10,	Burner. See Vapor burner.		
10, 10,	Butter, treating, Kendall & Roberts	253,573	
ic-	Button fastening, G. W. Prentice. Button fastening, F. A. Smith, Jr.	253.627	
an	Can. See Oil can. Candle for electric lighting, J. B. J. Mignon	253,822	
ted res	Cane mill sugar, J. Stubbs Car, coal, J. B. Collin	253,535	:
ak-	Car coupling, M. A. Bessette	253,723	į.
rs. hn	Car coupling, D. P. Prescott. Car coupling, Williams & Knight	253.554	
ts.	Car coupling, M. Winter, Sr		
us-	Alker	253,804	
Α.	man Cars, gripe for propelling, R. F. Bridewell	253.521	j
n.	Carburetors. oil distributing mechanism for, W. M. Jackson	253,713	
m- an	Carriage, child's, J. N. Hazelip		j
om les	Case See Sterengone view case		13
ict-	Chair. See Dentist's chair. Chandelier, extension, J. T. Bruen		[]
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el-	A. Woodman	253,896	
rt, en-	Collar, R. S. Norton.	253,750]
nd	Coloring matters, manufacture of yellow, F. Graessler Colors or dyestuffs, manufacture of, H. Koechlin.	253,598	
ian	Comb. See Currycomb. Commode and slop pail combined, portable, J. W.]
S.	Drew Conductor pipe, E. Van Noorden	253,564	1
by 70, h:	Continuous recorder, J. B. Moscrop Cooking boiler, J. A. Wood Cooler. See Bottle cooler.	253,745 253,805	נ¦ ן
i	Cooling and ventilating houses, T. McGrory Cooling dwellings, device for, J. A. B. King]
tin i	Corn sheller, Ricker & Lewis	253,629 253,717	; []
ide gs;	Cotton press feeder, R. I. Kirkpatrick Coupling. See Car coupling.	253,719	1
eir us;	Cradle, W. H. Earnest (r)		1
es; ss,	Crusher. See Stone and ore crusher. Cuff holder and adjuster, H. E. Deacon		1
nd nd,	Currycomb. C. C. Egerton		1
ish ng	Door, adjustable ventilating. J. S. Du Bois Door and window guard, J. L. MacDonald	253,5 20	:
val	Drier. See Clothes drier. Fruit drier. Eggs, apparatus for bolding and carrying, Halley]
	& Barr Electric light. A. L. Arey Electric lights, etc., apparatus for elevating poles	25 3,826	1
	for, J. D. A. Mensing. Electric lighting apparatus, M. G. Farmer	253,743	
•	Electrical conducting wires with metallic armor, machine for covering, W. Halkyard		1
re	Elevator. See Hydraulic elevator. Engine. See Gas engine. Pumping engine. Steam engine.		1
	Excavator, earth, W. A. Nutt	253,751 253,649	1
	Extracts from vegetable substances, apparatus for making, M. Wise	253,802	
E.	Fastening device, R. II. Wadlow	253,632	
_	Fence wire barbing machine, J. Brotberton Fence wire barbing machine, 11. W. Putnam	253,675	
ny ied	Fencing, machine for making barbed wire S. M. Stevens	253,781 j	1
ts. the	Fire alarm box, non-interfering, J. W. Stover Firearm, breech-loading, W. Mason Firearm, magazine W. Trabue	253,736	E
ad- We	Firearm, magazine, W. Trabue		,
66;	fork. Fruit drier, J. J. Johnston	253.609	1
ing	Furnace for chemical purposes, J. Mactear Furnace lining and bricks therefor, W. Nehring	25 3,748	F
795 687	Furnace sheet for steam boilers, H. C. Darby Furnaces, apparatus for utilizing the waste products of combustion in, T. S. Speakman		I
729 568	Gauge. See Axle box gauge. Shingling gauge. Galvanic battery, A. M. G. Sébillot	253.769	I
582 688	Gamering, sportsman's, E. Bourne	253,501 253,755	

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Gas engine, R. HutchinsonGate. See Swinging gate.	253,709	Planters, check line guide for corn, G. D. Ha- worth	
Gem settings, manufacturing, J. R. Feeley Generator. See Steam generator. Telephone sig-		Planting and fertilizing machine, potato, C. L. Woodward	253,569
nal generator. Glass casks, barrels, etc., manufacture of, C. W. McLean		Plow, J. J. Adcock et al	253,761
Glass coffin, C. W. McLean	253,545	Potato digging machine, H. D. Herrington	253,602
W. McLean		power. Precious stones, coating real and imitation, F. E.	
facture of, C. W. McLean	253,542	Meyer (r)	
ened, C. W. McLean	253,541	Printing fabrics, machinery or apparatus for, Kerr & Haworth	
Gold separating and amalgamating apparatus, C. Taylor	253,785	Puiley, loose, E. D. Weyburn. Pulley, sash cord, T. Breen	253,797
Governor attachment for elevators, A. Hafner Grain binder, H. J. Case	253,507	Pulp engines, roll bar for, J. H. Horne	253,760
Grain separator, C. E. McNeal	253,550	Pump, steam, Eaton & Tufts	253,604
Grinding mill, T. & C. D. Ross	253,496	Rack. See Map rack. Towel rack. Railway signaling apparatus, F. L. Pope	
Grindstone treadle power, J. M. Neison		Railway switch, P. Nolan	253.792
Gun, magazine spring, A. L. Rich	253,594	Raiiway vehicle, A. Estrade	
Hanger. See Hat and coat hanger. Harvester, C. Young		Recording gauge, E. A. Thissell	253,786
Harvesting machine, J. W. Hull	253,705 253,737	Rein, driving, A. T. Peirce	•
Hat brims, apparatus for shaping, L. H. Hoyt Hay fork, horse, W. Andrews	253.657	Rivet, E. L. Babcock. Rolling mill, J. Ostrander.	253,754
Hay press, P. Lord		Rolling mill. iron, Foster & Weaver	
ner	253,724	Root and vegetable washer, L. R. Raoul	253,590
Heel machine, F. Pease	253,557	Sail hank, T. Haggerty	25 3,53 t
Hoisting and winding drum. F. A. Gardner Hoisting machine, V. C. Jarboe Holder. See Cuff holder. Lead and crayon hol-	253,714	Sash fastener, Tyler & Atwood	25 3, 67 1
der. Mop holder. Horse detacher, H. Fleischhauer		Saw set, N. J. Webb	253,794
House. See Ice house. Hydraulic elevator, C. T. Widstrand	253,799	Sawing machine, scroll and circular, A. Showalter Scale, weighing, J. B. Atwater	253,659
Ice house, Von Krause & Kuhnen Insect destroyer, F. T. Pinter		Screw, jack, S. C. Megill Seal, metallic, E. J. Brooks.	253.674
Jack. See Lifting jack. Jars and other receptacles, cover for pickle, T. Leach		Seesaw, L. J. Adams Separator. See Grain separator. Settee, folding, C. B. Demarest	
Jars of pickle casters and other receptacles, cover for, T. Leach	Ė	Sewing flat buttons to fabrics, machine for, J. H. Morley	
Jeweler's braided metallicstock, A. S. Crane Kilnfor burning articles manufactured from clay,		Sewing machine, J. B. Secor	
J. Dawson	253,652	D. Sheplie	253,731
Knitting machine, H. W. Harley	253,752	Sewing machine hemmer, C. E. Rice	253,621
Knob attachment, H. R. Towne Lacing stud for shoes, J. L. Joyce	253,789 253.717	Sheller. See Corn sheller. Shinglinggauge, G. B. Clark	253,816
Lamp, electric, A. L. Arey Lamp, electric, A. M. G. Sébillot	253,770	Short, A. Baxter	253,764
Lamp, electric, H. B. Sheridan	253,645	Show stand, revolving, Pearce & Jones	•
Lamp fixture, etc., W. A. Hull	253,707	Isaacson	253,712
Lead and crayon holder, automatic, R. Wittmann Leather boarding and graining machine, J. H.		Skate, roller, C. E. Marshall	253.784
HoveyLeather box, A. & H. Hoffe		Slate attachment, drawing, D. S. Cooke	253,694
Lifter. See Water lifter. Lifting jack, G. A. Ohl Light. See Electric light.	253,753	Sleigh, R. J. Talbot	253,512
Lock. See Alarm lock. Lock escutcheon, J. H. Barnes		Spinning machine spindles, support for, J. E. At-wood	
Locket, W. II. Blaney Locomotive ballast crushing machine, A. B. Aus-	·	Spittoon, O. Mossberger	
tin Loom weft fork, J. C. Burke Looms, picking shoe for, H. B. Murlless	253,813	Stand. See Show stand. Stay busk, H. & B. G. Simpson Steam engine, M. W. Hall	
Lumber, process of and apparatus for drying, J. Randall	253.556	Steam generator, T. McGregor. Steam heater, E. E. Gold	253, 738
Machine brace, M. Beal	253,577	Steam trap, G. B. Boomer	253.644
Magneto-electric machine, M. A. Hardy Mangle, J. F. Baldwin	253,661	Stereoscope view case, A. J. Clare	
Marking cloth, etc. device for, A. W. Allen Match box, J. Woodward	253,490	Store service carrier, H. H. Hayden Stove, gas, C. Rupert	
Measure and funnel, combined, O. Schorse Meat slicer, A. & A. Iske	253,633 253,819	Stove, gas cook, J. H. Bean	253,499
Mechanical movement, P. T. Coffield		Stove, oil, J. H. Irwin	253,744
Metal rods, machine for straightening and polish- ing iron, steel, and other, J. Illingworth Mill. See Cane mill. Grinding mill. Rolling mill.	253,710	Stove plates or tablets, device for attaching, R. Ham	253,680
Windmill. Millstone dressingmachine, W. W. Cleaveland		Supporter. See Brush supporter. Garment supporter.	200,010
Millstone driver, A. Callahan	253,747	Swinging gate, J. M. Evans. Swinging gate, J. W. Zentmyer.	
Mop holder, R. T. Davis	į	Switch. See Railway switch. Table. See Billiard table. Talc and coating articles there with, preparing, H.	
Motive power, N. A. Penland	253,623	McCormick	253,616
Mower, weed and lawn. Pike & Loy	253,562	Phelps	
Nail box, Smith & Doig	253,638	Telephone receiver, G. L. Anders Telephone receiver, Bartlett & Waite	253,812
Oil cake, manufacture of, J. McDougall Oil can, tilting, H. C. Smith Oil from vegetable substances, apparatus for the		Telephone relay, H. E. Waite	253,597
separation or extraction of, M. Lancaster Diler, locomotive, Brooks & Bowen	253,579	Thrasher band cutting and feeding attachment, Caldwell & Burgess	
Ore concentrator, A. M. G. Sébillot Organ lid, cabinet, J. Hessler	253,771	Thrasher band cutting attachment, J. C. Dupee Tie. See Bale tie.	
Paper, apparatus for reducing wood, etc., to pulp for, S. M. Allen	253,654	Tobacco, method of and apparatus for treating, G. Clark	
Inman	253,711	Tongue for agricultural implements, J. I. Hoke Top, spinning, J. Hill Towel rack, T. C. Clapp	253.702
prints, preparation of photographic, Hutinet & Lamy		Trap. See Steam trap. Trimmer. See Hedge trimmer.	,,,,,,,,
Paper, manufacture of, D. R. Burns	253,655	Tub. See Bath tub. Turrets, device for operating tool holding, J. B.	ore
Paper pulp, etc., manufacture of, S. M. Allen. Pearls on finger rings, etc., setting, J. Bergfels. Photographs, producing colored, J. B. Germeuil-	253,656 253,667	Secor Tuyere for furnaces, F. W. Gordon Valve, pop safety. W. E. Pearson	253,527
BonnaudPicture exhibitor, A. Lueckel	253,730	Vapor burner, J. H. Bean	
Piles, heating, J. Haldeman		J. J. Johnston	253,611
Smoking pipe, Pitcher, L. C. Hiller Planter, corn, G. W. Brown		Vase for window gardening flower, J. J. Johnston Velocipede, T. McGregor.	253,739
Carried County of Traditional County	, U OU]	Vise, C. L. Butler	TRe ^{cens}