Notes & Queries

(1) Detroit asks whether a boat propelled with a force of 3 miles an hour on still water will with the same propelling force run 6 miles an hour in a current running 3 miles an hour? A. We think so.

(2) J. C. R. asks: Which was the first railroad built in the United States? That is, a regular, incorporated road, connecting two points, and conveying passengers, freight, etc. A. We believe that the road now known as the Baltimore and Ohio Railroad was the first in the United States chartered for carrying on a general transportation business.

(3) J. R. E. asks how to make an ordinary sunshade for a telescope when placed, and what kind of glass it is composed of. A. Any very dark glass will answer, providing it is perfectly plane. It should be placed between the eye and eyepiece.

(4) W. H. G. S. writes: I wish to give a blue color to screw heads, wire and steel. What shall I use? A. Heat them in a sand bath, or apply shellac or copal varnish, to which a little Prussian blue has been added.

(5) T. McW. asks (1) for a good recipe for making Babbitt metal. A. By weight, 4 parts copper, 8 parts antimony, 96 parts tin. 2. What is meant by heating surface in boilers, and how is it computed? A. The term heating surface, as ordinarily used, refers to the surface which has water on one side, and flame or the products of combustion on the other. 3. I have a peculiar kind of steel which I cannot harden by fire and water, neither will it caseharden by prussiate of potash. What can I do with it to harden it? A. Assuming your account to be correct, we judge that you cannot harden it.

(6) A. Van B. writes: A correspondent in your last issue asks how to keep rubber belts from slipping. Mine slipped considerably, but I checked it by throwing powdered rosin in between the belt and pulley while running. The pulley soon becomes covered with a tough black coating, very much like leather, and there is no more slip. [This expedient can be used to advantage in certain cases, but it is better to have a belt large enough to drive without using any preparation.—ED.]

(7) E. B. C. asks: 1. Does a more powerful battery produce better results in telephone or microphone? A. A powerful battery is not required for either. 2. Can you give me a short description of the principle and construction of the aerophone? A. We think it has not been perfected.

(8) A. T. L. asks for a recipe for a liquid boot or shoe polish. A. Clausen's ink is made as follows: Nutgalls, 8 parts; logwood extract, 10 parts; boil together in water, q. s., and add Castile soap, 4 parts; glycerin, trace. Crooker's—Logwood extract, 6 ozs.; water, 1 gallon; ivory black, 1·5 oz.; glycerin, 1 oz.; bichromate of potassa, 0·125 oz.; copperas, 0·125 oz.; boil together. Sefton's—Orange shellac, 64 ozs.; alcohol, 4 gallons; pure asphaltum, 60 ozs.; neat's foot oil, 1 pint; lampblack, q. s. Ovington's—Water, 1 gallon; logwood extract, 6 ozs.; water, 1 gallon; borax, 6 ozs.; shellac, 1·5 oz.; water, 0·5 pint; bichromate of potassa, 0·375 oz. Mix the solutions, and add 3 ozs. ammonia. Shaw's—Borax, 3 ozs.; orange shellac, 5 ozs.; water, q. s.; boil and add soluble aniline black or nigrosine, q. s. Rub the spots with strong aqueous solution of ferric chloride, and dry before applying the dressing.

(9) J. S. & R. M. write: 1. We propose putting in a steam engine of 20 horse power, and we are informed there is an engine that weighs 2,700 lbs., that has a balance wheel weighing 500 lbs., cylinder 10 x 10 inches; cutting off at ¾ stroke, running at 180 to 200 revolutions a minute, and they say that it is 20 horse at 70 lbs. steam. Will such an engine develop 20 horse power? A. The engine would develop 20 horse power under the above conditions, if well constructed. 2. How can we calculate the power of an engine? A. To determine the power of an engine, multiply the mean pressure on the piston in lbs., by the piston speed in feet per minute, and divide the product by 33,000.

(10) A. L. G. asks: 1. With a boiler 15 inches in diameter by 30 inches in height, with five 1½ inch tubes 18 inches long, firebox 12 x 12, and all made of iron plates ¼ inch thick. What is the greatest number of pounds of steam to the square inch it will hold, and what fraction of a horse power will it give to an engine having a cylinder 2 x 4 inches, situated 2 feet from the boiler, and connected by 40 inches of steam pipe? A. You can carry 150 lbs. of steam, and might develop 1 horse power. 2. What is meant by the pitch of a wheel in a propeller, and what is the inclination of a cylinder? A. The pitch of a propeller is the distance it would advance in the direction of its axis at each revolution, if it worked without slip. The inclination of a cylinder refers to the angle made by its axis with a horizontal or vertical line.

(11) J. H. asks: 1. Has steel been used for portable boilers? A. Yes. 2. What size boiler is required for an engine having a 3 x 4 inch cylinder? A. Diameter, 24 inches; height, 45 inches; heating surface, 65 to 70 square feet.

(12) J. A. M. asks: How large must an air pump be for an engine steam cylinder 8 x 8, making 100 revolutions per minute with 90 lbs. of steam, allowing the pump to be 4 inches stroke, double acting, to be attached to surface condenser? A. Diameter, 3½ inches.

(13) J. A. F. asks: 1. What shall I paint my boiler and smoke stack with, and where can I get the paint? My engine is a thrashing engine, and of course is out of doors during the fall of the year. A. Get some black varnish made from petroleum, from a dealer in machinists' supplies. 2. How shall I care for the boiler inside? A. Leave the boiler perfectly dry, unless you can coat the interior with oil. 3. What shall I do for the engine. Is it necessary to take the piston out of cylinder and oil it? A. If the engine is to stand for some time, remove the piston, coat it and the cylinder with tallow; the same for the journals. Cover all finished parts of the engine with a mixture of white lead and tallow. 4. I find my steam gauge does not indicate less than 10 lbs. when boiler is cold. What is the trouble and how can it be repaired? A. In such a case it is best to send the gauge to a maker for repairs.

(14) "Zebra" wishes to know the best test of the genuineness of white lead; also the simplest way to try the comparative value of two samples of ground white lead. Also the name of the best work to consult upon the manufacture of Portland cement. A. See answer No. 29, p. 283, current volume, SCIENTIFIC AMERICAN. Also pp. 102–105 Normandy and Noad's "Commercial Analysis." The relative value of different samples of white lead in oil is roughly judged from the weight of a given measured quantity, the covering properties when compared on glass with a sample of finest white lead, and the color and general appearance of the sample. You may consult Reid's "Manufacture of Portland Cement."

(15) J. B. B. asks: Can I arrange an electric battery so as to heat a platinum wire for the purpose of cutting wood? Is it practicable? A. Two or three Bunsen cells will do it. It is impracticable save as an experiment.

(16) D. S. M. asks how to color butter to make it yellow, without injuring it in any way. A. A little annotto is often used. If pure, it is not injurious.

(17) H. C. M. asks: What substances are there that will absorb light during the day when exposed to light, and give it out again at night? A. 1. Heat strontium the osulphate for fifteen minutes over a good Bunsen gas lamp and then for 5 minutes over a blast lamp. 2. Heat equal parts of strontium carbonate and lac sulphuris gently for 5 minutes, then strongly for 25 minutes over a Bunsen lamp, and finally 5 minutes over a blast lamp. 3. Precipitate strong aqueous solution of strontium chloride by means of sulphuric acid, dry the precipitate, and heat it to redness for some time in a current of hydrogen, then over a Bunsen lamp for 10 minutes, and for 20 minutes over a blast lamp. Mix any of these with pure melted paraffin for use as a paint, and expose for a time to sunlight. The two former yield a greenish phosphorescence in the dark, the latter a bluish light.

(18) Z. asks: Is the Great African Desert below the level of the sea, and if so, could it be made into an inland sea by flooding from the ocean? A. A considerable, though relatively small, portion of the Sahara is below the sea level, and the flooding of the lowest portion has been proposed. The greater part of North Africa lies at a higher level, the exception being a chain of old lake beds or chotts on the border of Algeria.

(19) J. P. L. asks: How can I make a filter to cleanse rain water from smoke as it passes from the roof to the cistern? The coal which is burned here (bituminous) gives us a great deal of trouble in this regard. A. The carbonaceous matters may be removed by passing the water through a large barrel half filled with fine gravel and pounded, freshly-burnt charcoal (free from dust), distributed in alternate layers, each several inches deep. Over this spread a clean piece of bagging, and fill in with fine gravel or coarse clean quartz sand for 12 inches or more. The inlet pipe should discharge at the bottom of the barrel—the filtered water flowing from the top.

(20) F. E. H. asks: Can percussion caps be so composed as to explode when pierced by a sharp pointed needle? If so, of what should they be composed? A. Such an arrangement is employed in the needle gun. The composition may be of mercuric fulminate.

(21) C. A. N. asks: What is the horse power of an engine 30 inches stroke, 14 inches cylinder, 51 revolutions per minute, 60 lbs. mean pressure in cylinder? A. Piston area = 153·94 square inches. Piston speed = 255 feet per minute. Indicated horse power = $\frac{153{\cdot}94 \times 60 \times 255}{33{,}000} = 71{\cdot}4$.

(22) P. O. asks: If I admit steam 100 lbs. pressure in a cylinder 15 x 24 inches, and cut the steam off when piston has traveled 6 inches, what will be the pressure at 6 inches, 12 inches, 18 inches, and 24 inches, or just before it exhausts? A. The pressure will vary about in the inverse ratio of the volume, so that, approximately,

$$\frac{\text{vol. of cylinder up to point of cut-off} + \text{clearance vol.}}{\text{vol. of cylinder at any point of expansion} + \text{clearance vol.}} = \frac{\text{pressure above zero, at the given point.}}{\text{pressure above zero, at point of cut-off.}}$$

(23) H. T. S. asks: What size should I make the holes in the side of a fan wheel, 20 inches in diameter? Also what size should the nozzle be? A. Allow an opening of from 17 to 20 square inches at inlet and discharge.

(24) E. M. D. writes: I am constructing a telephone according to directions in SCIENTIFIC AMERICAN SUPPLEMENT No. 142, using a bar magnet in place of horseshoe magnet and soft iron core. 1. Would it reduce the strength of bar magnet to cut a thread on one end of it? A. No. 2. Will a bar magnet, used in Bell telephone, lose its power to such a degree as not to work? A. Not readily. 3. Is No. 22 copper wire of sufficient size for a telephone line of 1,000 feet? A. Yes; but larger would be better.

(25) S. & Y. write: We have a pair of burrs on which we grind plaster. The burrs are about 4 feet in diameter and 1½ foot thick. We are running them as an over runner at this time, but wish to change them and make the lower burr run instead of the upper. Can a pair of burrs of the above size be run in that way, and if so, what is the maximum speed at which they can be run? A. If properly arranged, you can run them, after the change, as fast as is allowable for over-running stones.

(26) J. J. asks: Which tire makes a wheel the strongest, 1·25 x 0·50 inch iron, or 1·25 x $\frac{5}{8}$ steel tire? A. The steel tire will be the strongest, comparing good qualities of steel and iron.

(27) E. L. W. asks: Is a ton (2,000 lbs.) of first class coke equal in heat giving power to a ton (2,000 lbs.) of coal? If not, please give me the relative value of coke and coal in heat giving power? A. Calling the evaporative power of good anthracite coal 1, good bituminous coal rates at about 0·92, and coke from 0·89 to 0·95.

(28) J. W. S. asks what to impregnate paper with to give it an agreeable smell while burning. A. You may try a strong ethereal or alcoholic solution of benzoin, tolu, storax, olibanum or labdanum. To burn well the paper should first be impregnated with an aqueous solution of niter and dried.

(29) M. G. asks whether hydrogen and oxygen can be produced as rapidly and copiously in the decomposition of water by the galvanic battery as by the action of sulphuric acid on zinc or lead in the one case, and by heating chlorate of potassa in the other. A. Yes, with a very powerful current.

(30) T. G. H. asks for names of useful treatises on mechanical movements. A. "Scientific American Reference Book," and "507 Mechanical Movements."

(31) R. B. T. writes: We have just set up a new engine; the cylinder is 8 x 12, has a common slide valve. We think the valve is too short; it is set 0·125 inch open when on center, takes steam 10 inches before cutting off; the exhaust is very free. The engine runs about 110 revolutions per minute. We think we could save steam by using a longer valve, and cut-off about ⅚ stroke, and make the exhaust space in the valve shorter, so that it will shut in a portion of the exhaust and form a cushion for the piston. About how much of the exhaust can we shut in without overdoing it? A. You can obtain a good action by making the ratio of compression equal to the ratio of expansion, with the proviso that the final cushion pressure must not exceed the initial pressure.

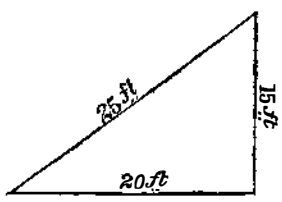
(32) D. B. L. writes: Our boiler after being repaired was tested at 110 lbs. cold water pressure. Three days after it gave out where it was repaired at 58 lbs. steam pressure. To find the leak we put on 80 lbs. cold water pressure, and could not find it. We then put steam pressure at 40 lbs., which made the leak very great, whereas with cold water pressure we could find none. Can you explain it? A. The phenomenon is probably due to the change of shape in the boiler when heated.

(33) F. C. writes: Our engine is a plain slide valve engine, 24 x 9, steam following almost to end of stroke. How shall I make a valve to cut off at ¾? Our exhaust now is 1 inch, steam ports 0·75, bridges 0·75. Length of valve 4½ inches, cavity 2¾, travel of valve 2 inches. Will I have to enlarge the steam chest; the valve uses the whole length of it now? A. As the length and travel of valve must be increased, it will be necessary to lengthen the steam chest, unless you can apply an independent cut-off valve.

(34) T. P. writes: A small basement room 9 feet high is to be heated by a furnace in an adjoining room. By carrying the hot air pipe through the partition midway between the floor and the ceiling it will stand at an angle of about 45°. If carried through at the top of the room it will of course be nearer vertical. In which position of the hot air pipe will the room be most easily heated? A. Place the hot air pipe in the position first described. Take the cold air from a point near the floor through a flue opening above the roof.

(35) G. M. P. asks: What is a good and cheap substitute for salt for raising the temperature of water to 230° Fah.? A. An oil bath is often used instead. Chloride of calcium will answer as well as salt, though not so cheap.

(36) J. D. reminds us of an old and good method of drawing a perpendicular to a straight line for the purpose of squaring foundations, etc. From the corner of the foundation take two lines respectively 15 and 20 feet, and connect them by a line of 25 feet; the angle included between the two shorter lines will be a right angle. The numbers 3, 4, 5, or, as in the present case, their multiples 15, 20, 25, are taken to measure respectively the perpendicular, base, and slant side of the triangle. It is obvious that any scale may be used so long as the ratio of 3, 4, 5, is observed.



(37) J. H. asks what kind of iron to use in making cast iron armatures. A. Soft gray iron.

(38) F. H. C. asks: How can I etch cheaply on glass to imitate ground figures or transparent figures on a ground background? A. For this purpose the sand blast is now generally used; the glass is covered with a film of wax or varnish, through which, with suitable needles or gravers, is etched the design; a fine sharp silicious sand impelled by a current of air is then directed from a suitable jet over the prepared surface, and the etching is accomplished in a few minutes. Glass is etched also by hydrofluoric acid; the plate may be prepared as for the sand blast, and placed face downwards over a shallow leaden tray, containing powdered fluor-spar moistened with strong oil of vitriol and gently warmed; the gaseous hydrofluoric acid given off rapidly etches the portions of the glass not protected by the wax or varnish. Hydrofluoric acid should be used with great care.

(39) L. H. writes: I have seen it asserted that the parasites that infest the Asiatic tiger's paw are an exact miniature image of itself. Is this so? A No

(40) J. G B. asks if there is any way of melting brass in a common sand crucible for castings of a pound or so in weight for a small engine. A. You may melt small quantities of brass in any common stove having a good draught, using a coal fire. You may use borax as a flux.

(41) F. & Co. ask: 1. In making a telephone as described in Figs. 4 and 5, SUPPLEMENT 142, must the diaphragm be entirely free, or can it be punched and the screws which secure the flange pass through it? A. The diaphragm should not be punched. 2. In new form of telephone in No 20, current volume, must there be a battery in the circuit, or is the telephone sufficient to work it? A. A battery is required.

(42) J. M. B. asks: What will prevent the hair from falling out? A. Keep the pores of the skin open by frequent bathing and change of underclothing. Bathe the head with clean soft water, and stimulate the scalp with a moderately stiff brush morning and evening. The head should be occasionally cleansed with a weak solution of glycerin soap in dilute spirit of wine, with care to remove all traces of soap from the hair. Use no pomades or oils of any kind.

(43) B. H. P. asks (1) how to make malleable iron, such as used in wrenches. A. Malleable iron castings are made from mottled iron. They are cleaned by tumbling and then packed in iron boxes with alternating layers of rolling mill scale. The boxes are carefully luted and packed in an annealing furnace, where they are kept at a white heat for a week or more, and then allowed to cool gradually. 2. How is steel or iron made to adhere to the face of the jaws of the wrench? A. By welding.

(44) J. G. E. asks: What is the highest column of water that can be raised from a well by means of a siphon pump with 60 lbs. steam, likewise a 1 inch column of water with 60 lbs. steam? A. Lift, from 26 to 27 feet.

(45) W. H. W. asks: 1. Is there any solution excepting rubber that will make cloth thoroughly waterproof, or at least withstand the attack of water for an hour or so? It should be applied by dipping the cloth in the solution. A. Linseed oil boiled with a little wax and litharge is useful for some purposes. Cloth prepared with paraffin, balata gum, the gum of the asclet pias or milkweed, naphtha solution of the dried pulp of the bamboo berry, anhydrous aluminum soaps (see pp. 149 and 159, "Science Record," 1874), are also employed. 2. Is there any chemical that could be combined with the solution, imparting some property to the same for which rats or mice would have an antipathy so as to prevent their attacks? A. A trace of phenol will generally suffice.

(46) J. L. asks: Is the balata gum softened by animal oils or fat? A. Yes.

(47) P. L. W. asks. What distance would a 100 lb. weight have to fall to run a sewing machine for 5 hours? A. For an ordinary family sewing machine, requiring about one thirtieth of a horse power, the weight would have to fall about 3,300 feet in the 5 hours.

(48) W. G. R. asks: 1. What is the valve yoke of a steam engine? A. We presume you refer to the rectangular yoke that receives the back of the valve in the class of engines having balanced valves. 2. What should be the diameter of the bore of an engine of 1 horse power with 100 lbs. pressure, also the length of stroke? A. Diameter, 2¾ inches; stroke, 4½ inches. 3. How are the back gears of a lathe made so as to be thrown out of gear when it is wished to use the lathe at a high speed? A. Ordinarily by a cam and lever, or tight and loose joint. 4. Would $\frac{1}{32}$ of an inch thickness of sheet steel be strong enough for the boiler of a small model locomotive? How much pressure would it stand to the inch? A. If the diameter does not exceed 3 inches, you can carry a pressure of from 50 to 60 lbs. per square inch.

(49) J. W. W. asks: Which will stand the most pressure, a piece of round iron 1 inch long and 1 inch in diameter, or a piece of gas pipe the same dimensions, both being set upon end? A. The round iron.

(50) W. M. B. writes: 1. I have one eighth inch basswood, cherry, butternut and walnut. Which do you advise for the sounding board of a microphone and Hughes telephone? A. Either will do, but pineor spruce is better. 2. Would a glazed earthen jar do for the outside of battery described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 149? A. Yes. 3. Could I make insulated wire myself? If so, how? A. Wire may be insulated by giving it a coat of shellac varnish and allowing it to become dry and nearly hard before winding.

(51) W. H. S. asks how to satin finish tubing like sample sent. A. The specimen has been electro-plated with silver in the usual manner, and the electric current then reversed for a few moments, thus redissolving a portion of the plate, the remainder presenting the peculiar satin like luster.

(52) S. W. C. asks: Has carbon for telephone purposes ever been made by subjecting the black deposited by a flame to a heavy pressure? A. Yes. Edison's carbons are made in this manner.

(53) "Hardware" asks: 1. Where is best to take hot air in a room, at register near ceiling or in floor? A. At or near the floor. 2. Where is best place to have ventilation, near floor or near ceiling? A. If connected with a flue having a good draught it should be near the floor.

(54) R. W. J. asks: What causes the cracking noise in the pipes of a steam heating apparatus, when a fire has been started to warm up the building? Is it the water in the pipes made by condensed steam, or is it the expansion of the pipes from being heated? A. The noise is due to both causes in some degree, but principally to the water, which produces violent blows.

(55) C. N. A. asks how to temper steel tools for working on stone or similar work. There is some preparation which is put in water which accomplishes the purpose when the steel is heated and plunged in. A. Heat the tools to a cherry red, and plunge in clean, moderately cool water. A little common salt is sometimes added to the water.

(56) G. B. asks: 1. Is the height to which water is raised by a hydraulic ram measured from the ram itself or from the spring from which the supply comes? A. From the ram. 2. Can a hydraulic ram be constructed to discharge 1,000 gallons of water per minute? A. Yes.

(57) L. D. writes that benzine will answer much better to exterminate roaches, moths, etc, than anything else. It will not hurt furniture in the least, will evaporate, and can be easily applied.

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

M. B. W.—No. 1 is a silicious clay—it might be useful in the manufacture of some grades of pottery, etc. No. 2 is a ferruginous shale—contains about 80 per cent of silica and 10 per cent of alumina, besides lime, magnesia, iron oxide, and water.—W. S.—It is fibrous talc—talc of good quality is in considerable demand for paper making and other purposes.—W. G. H.—The sand contains no precious metal—the glittering particles are mica.—S. F.—The specimen you send consists of a mass of the long hairs which have been attached to the seeds of the "milkweed" (*asclepias*), or, as it is sometimes called, from the silky nature of these appendages, "silkweed." We believe that this material is put to no other economic use at present than that of a filling for cushions and pillows. The beauty of this silk like down long ago attracted attention, and many unsuccessful attempts have been made to put it to some practical use in the arts; but, as you have probably noticed, the hairs are both brittle and weak, and an examination with a lens will show that it wants the roughness and angularity necessary to fit it for being spun like other fibers. It has, however, been mixed with cotton and woven into fabrics having a silky luster and capable of taking brilliant dyes, but the manufacture has never been prosecuted. The plants, though widely distributed over the United States, and quite common, are nevertheless not abundant enough in a wild state to afford much of a supply, and we believe no experiments have been made in cultivating them.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure the receipt of original papers and contributions on the following subjects:

Manufacture of Porous Cups for Tyndall Grove Battery. By W. H. S.
Cylinder Condensation. By F. F. H.
Sawdust. By W. H. M.
Keely Motor. By G. R. S.
Firing. By A. P. A.
Steam Launches. By G. F. S.

HINTS TO CORRESPONDENTS.

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.

Many of our correspondents make inquiries which cannot properly be answered in these columns. Such inquiries, if signed by initials only, are liable to be cast into the waste basket.

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.

English Patents Issued to Americans.

From November 8 to November 12, inclusive.

Electric light.—T. A. Edison, Menlo Park, N. J.
Feed water apparatus.—S. J. Hayes *et al.*, ——.
Pipe, manufacture of.—W. Radde, N. Y. city.
Potato digger.—L. A. Aspinwall, Albany, N. Y.
Refrigerator.—J. A. Whitney, N. Y. city.
Screw cutting machinery.—C. D. Rogers, Providence, R.I.
Sewing machine.—Wilson Sewing Machine Company, Chicago, Ill.
Wire machinery.—C. D. Rogers, Providence, R. I.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

October 15, 1878,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

Animal trap, B. H. Noeltiug 209,068
Axle box, car, J. N. Smith 208,993
Axle skein, vehicle, L. A. Winchester 209,096
Ballot box, W. L. Barnes 208,951
Bed bottom, F. W. Mitchell 208,917
Bed bottom, spring, H. Pitcher 208,987
Bed lounge, H. S. Carter 209,019
Bed, spring, A. J. Lattin 208,979
Bedstead fastening, L. P. Clark 209,022
Boilers, low water alarm for steam, G. H. Crosby. 208,962
Boot and shoe counter support, etc., J. Wissen ... 208,943
Boot jack, C. Tyson 209,091
Brake, vacuum, F. W. Eames 208,895
Bran scourer, R. Tyson 209,092
Broom, M. T. Boult 209,017
Brush, A. C. Estabrook 208,898
Camera, J. W. T. Cadett 208,956
Can, E. Norton 209,070
Can, metallic, J. Broughton 209,009
Can, oil, A. E. Gardner 209,037
Can, sheet metal, A. N. Lapierre 209,060
Car bumper, S. M. Cummings (r) 8,448
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Car draw bar attachment, railway, J. H. Smitt ... 208,994
Car journal box, F. M. Alexander 208,947
Car running gear, railway, J. C. Weaver 209,093
Cars, dust deflector for, Morgan & Gilleland 209,066
Carbureter, air, G. Reznor 209,076
Carriage, C. H. Palmer, Jr. 208,923
Carriage seats, corner iron for, L. Emerson 208,971
Carriage top standard, F. W. Whitney 209,097
Cartridge loading machine, G. S. Slocum 208,935
Cartridges, machine for gauging, J. H. Gill 208,903
Casting andirons, mould for, S. E. Jones 209,054
Casting temple rollers, mould for, J. B. Stamour. 208,997
Chair for children, high, J. Nichols (r) 8,454
Chair, reclining, N. N. Horton 208,907
Chalk, sharpener for tailor's, J. Butcher 208,955
Churn, J. H. Folliott 209,033
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Clasp, T. P. Taylor 208,998
Clock striking attachment, D. C. Wolf 209,098
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Coin holder, C. H. Carpenter 208,958
Coin holder, B. McGovern 208,984
Coin measure, C. H. Fuller 208,902
Coke oven, W. H. Rosewarne 208,930
Combing machine, Rushton & Macqueen 208,991
Cooler and filter, water, J. C. Jewett 208,909
Cooler, water, G. W. Malpass 208,913
Cotton gin, J. B. Hull 209,049
Crucible machine, J. C. Clime 208,960
Cultivator, J. C. Bean 209,005
Cultivator, B. H. Cross 208,964
Cultivator, C. Nash 208,921
Dental foil package, R. S. Williams 209,002
Dental plugger, W. G. A. Bonwill 209,006
Desk, H. E. Moon 208,919
Doffer combs, operator for, E. Wright 208,946
Draught equalizer, L. O. Brekke 209,007
Dredging machine, J. B. Eads 208,894
Drill cleaner, grain, J. W. Lucas 208,982
Dummy, H. H. Baker 208,881
Ear ring, W. P. Dolloff 208,968
Electric machine, dynamo, E. Weston 209,094
Elevator, windlass water, J. Knipscheer 209,057
End gate fastening, F. Rock 208,928
Evaporator, fruit and vegetable, J. W. Powers 208,925
Excavating machine, J. T. Dougine 208,893
Exercising machine, W. J. O. Bryon, Jr 208,954
Exhaust nozzle, N. J. White 208,939
Fabric cutter, Muehling & Davis 208,920
Feathers for dusters, G. M. Richmond 209,030
Fence, J. Williams 209,095
Fence, picket, Terry & W. W. Green, Jr 209,089
Firearm, breech-loading, H. C. Bull 209,010
Firearm, breech-loading, J. D. Coon 208,889
Fire escape, V. Wohlmann 208,944
Fire kindler, T. M. Benner 208,882
Fire kindler, E. J. Norris 209,069
Fluting machine, C. G. Cabell (r) 8,453
Fork, W. H. Kretsinger 209,058
Fuel compressor, W. H. Rosewarne 208,929
Gasburner, pressure governing, J. N. Chamberlain 209,021
Gas burners, apparatus for, A. L. Bogart 209,016
Gate, C. D. & I. Haldeman 209,040
Gate, J. S. Henshaw 208,976
Gate, Nason & Wilson (r) 8,456
Grain binder, M. A. Keller 209,059
Grain separator, G. W. Earhart 208,896
Gun, air, B. T. Babbitt 209,014
Harness, neck yoke attachment for, J. S. Nelson. 208,922
Harrow, sulky, S. C. Dix 209,028
Harvester rake, J. Barnes 208,950
Harvester reel, Hodges & Mohler 209,047
Head light, locomotive, E. L. Hall 209,041
Heels, turner for wooden, Prenot & Marchal 208,989
Hide and skin dresser, C Molinier 208,918
Hitching post, Thomas & Knox 209,090
Hoe, T. Weiss 209,000
Hog cholera compound, M. Hemmingway 208,975
Horse collar, J. J. Crowley 209,025
Horse power, C. H. Baker 208,948
Horsepower, A. B. Farquhar 209,032
Horse toe weight, J. W. Ropp 208,927
Ice, manufacturing, A. Albertson (r) 8,455
Indicator, water level, E. Jerome 209,052
Journal, R. Macdonald 208,983
Journal bearing, W. W. Smalley 209,084
Knife, chopping, W. Millspaugh 209,065
Knob attachment, door, J. F. Peacock 208,924
Lamp holder, A. A. Noyes 209,071
Lamp bowl, F. Rhind 209,077
Lamp chimney, nursery, E. Mecier 208,916
Lamp, miner's, W. Roberts 209,082
Lamp, self-extinguishing, F. Rhind 209,078
Lantern, J. H. Irwin 209,051
Lantern, signal, H. E. Pond (r) 8,457
Latch, B. W. Foster 209,034
Lathe for turning regular forms, E. A. Marsh 209,064
Lead, refining impure, N. S. Keith 209,056
Leather skiving machine, M. M. Clough 208,959
Leather splitting machine, A. E. Whitney 209,001
Loom temple, J. B. Stamour 209,101
Lubricator, N. Seibert 208,932
Lubricator, steam cylinder, N. Seibert 208,931
Marble, slate, etc., ornamenting, W. K. Lorenz 209,062
Match dipping machine, A. R. Sprout 208,996
Meter, steam diaphragm, C. Holly 209,048
Middlings bolt, M. Inskeep 209,050
Middlings separator, G. T. Smith 208,936
Musical instrument, E. P. Needham (r) 8,451
Musical string instruments, key for, F. Z. Nicolier 208,985
Needle, J. Burrows 209,018
Oatmeal machine, Eberhard & Turner 208,970
Ordnance, operating heavy, H. C. Bull 209,011
Ore separator, P. Plant 209,074
Oven, hot blast, Miles & Burghardt 208,915
Package wrapper, G. V. Hecker 209,044
Packing for piston rods, metallic, M. H. Gerry ... 208,973
Pan cover, milk, C. C. Fairlamb 208,900
Paper feeding apparatus, F. H. Lauten 208,980
Paper making machines, box for, C. Young 209,003
Paper pulp, reducing wood to, Cornell & Tollner. 208,890
Peach parer, W. S. Plummer 208,988
Pen, puncturing, J. M. Griest 208,905
Pessary, medicated, T. N. Berlin 208,883
Pipe, smoking, W. H. Caddy 208,886
Planter, corn, Brigham & Flenniken 208,885
Planter, grain, C. E. McBonn 208,914
Planter, seed, G. A. Woods 208,945
Plaster bandages, making, C. G. Hill 209,045
Plow, C. Myers 209,067
Plow and harrow attachment, shovel, A. Heartsill 209,043
Plow and harrow, W. G. Himrod 209,046
Plow clevis, H. Estes 208,899
Plow, hillside, shovel, and subsoil, E. Tate 209,088
Plow, sulky, F. H. Isaacs 208,978
Press, cotton and hay, Tappey & Steel 209,087
Printing and painting machine, O. Currier 208,892
Printing, photo-mechanical, M. R. Freeman 209,036
Propelling vessels, P. Boisset 208,952
Pulleys to wheels, engaging, Blake & Davis 208,884
Pump, S. Stucky 209,086
Pump, double acting lift, Dean & Pike 209,027
Rafter, F. M. Covert 209,024
Railway rails, muffling, A. Atwood 208,880
Railway signal, C. E. Hanscom 209,042
Railway signal, electro-magnetic, H. W. Spang 208,995
Railway track, B. F. Card 208,957
Rake, horse hay, W. Adriance 209,004
Rolling mills, bearing for, S. W. Baldwin 208,949
Roofs, attaching slates to, S. Farquhar 209,031
Rope holding reel, C. N. Cass 209,020
Rosettes from wood, making, J. H. Burnshow 209,012
Seal, baggage, E. J. Brooks 208,953
Seal, metallic, E. J. Brooks 209,008
Seeding machine, S. O. Campbell 208,887
Sewing machine, C. S. Cushman 209,026
Sewing machine, J. A. Davis 208,967
Sewing machine, L. Evans 209,030
Sewing machine, book, J. S. Lever 209,061
Sewing machine, hem stitching, J. A. Lakin 208,911
Sewing machine tuck marker, G. Rehfuss 209,075
Shaft and pulley coupling, H. C. Crowell 208,965
Shears, metal, W. G. Collins 208,888
Ships, unloading grain from, W. Stanton (r) 8,452
Shoe, J. F. Emerson 208,897
Shutter bower, T. Thorn 208,987
Shutter worker, W. Jones 209,055
Sign, W. Gulden 208,974
Sinks, measuring and weighing, D. T. Winter 208,942
Sled, stone and log, W. Gregg 209,039
Sleigh, propeller, R. Schluter 209,083
Spittoon, T. Loughran 208,981
Spring, car, G. F. Godley 208,904
Spring, vehicle, E. Chamberlin (r) 8,449, 8,450
Spring, vehicle, C. W. Fillmore 208,901
Spring, vehicle, H. R. Huie 208,977
Steamer, feed, Machamer & McCulloch 209,063
Stirrup, saddle, J. M. Freeman 208,972
Stove board, A. C. Stoessiger 209,085
Stove cover and check damper, H. Ritter 209,081
Stove pipe shelf, L. W. Turner 208,938
Stoves, foot bar and rail for, J. Jewett 209,053
Stoves, hood for cooking, S. Cromer 208,891
Stump puller, W. A. Webb 208,999
Sugar, manufacture of hard, J. O. Donner 209,029
Switch cords, tip for, T. B. Doolittle 208,969
Table folding, R. M. Lambie 208,912
Tablet, writing, W. O. Davis 208,966
Target, W. Kuhn 208,910
Ticket, passenger, A. C. Sheldon 208,933
Ticket reel, T. D. Haehnlen 208,906
Toy money box, J. Gerard 209,038
Treadle power, I. M. Rhodes 209,079
Turbines, steam and other, P. C. Humblot 208,908
Valve, J. Patterson 208,986
Valve, feed water regulating, E. C. Da Silva 208,892
Valve gear, steam engine, J. Butcher 209,013
Ventilator, T. Owens 209,072
Wagon jack, W. B. Bartram 209,015
Wagon jack, Williams & Dodge 208,940
Washing machine, D. Coman 209,023
Washing machine, A. R. Fowler 209,035
Washing machine, F. F. Reynolds 208,990
Water gauge, G. H. Crosby 208,963
Weighing apparatus, J. H. Wright 209,099
Window A. K. Phillips 209,073
Window frame, C. Rebhun 208,926
Wreaths, machine for twining, G. B. Shepard 209,100

TRADE MARKS.

Cigars, cigarettes, etc., E. Hilson 6,726
Cigars, etc., Engelbrecht Fox & Co 6,724, 6,725
Disinfecting compound, Hance Bros. & White 6,718
Gin, Hoffheimer Brothers 6,729
Lamp chimneys, Norcross, Mellen & Co 6,730
Liquid cements, W. H. Sanger 6,731
Malt extract, Tarrant & Co 6,722
Matches, J. Eaton & Son 6,727
Mustard and spices, H. B. Sherman 6,720, 6,721
Perfumery, J. T. Lanman 6,719
Playing cards, The N. Y. Consolidated Card Co 6,723
Smoking tobacco, H. W. Meyer 6,728
Wash blue, F. Damcke 6,717

DESIGNS.

Carpet, C. Magee 10,870
Cigar boxes, Weller & Repetti 10,871
Font of printing types, J. M. Conner 10,868
Group of statuary, J. Rogers 10,869
Handkerchiefs, J. Grimshaw 10,866, 10,867