Business and Personal.

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

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We 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 a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

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

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

(1) L. H. asks for a good method of waterproofing cloth. A. Saturate the fabric with a strong hot aqueous solution of soap, press out excess, and transfer to a second bath consisting of a strong aqueous solution of sulphate or acetate of alumina or acetate of lead, for several hours. Repeat if necessary, press out excess of liquid, and dry, not too rapidly, in the air.

(2) J. M. asks for a reliable receipt for violin varnish. A. Coarsely powdered copal and glass, each 4 oz.; alcohol, 64 o. p., 1 pint; camphor, ½ oz.; heat the mixture, with frequent stirring in the water bath so that the bubbles may be counted as they rise, until solution is complete, and when cold decant the clear portion. When oil varnish is used it is made as for artists' virgin copal.

(3) E R. J. asks how to make a large number of copies of manuscript in black ink. A. Try the following: Use the gelatine pad made with a large proportion of glue. Soak writing paper in alum water to saturation and dry carefully. Write with any ink on the prepared paper, and use as in the gelatine pad process; the parts of the gelatine surface not protected by the ink will be affected by the alum so as to leave a stencil which can be used by inking with a roller as in the electric pen process.

(4) A. R. T. asks how to proceed to bleach gutta percha. A Dissolve the gutta percha in twenty times its weight of boiling benzole, add to the solution plaster of very good quality, and agitate the mixture from time to time. By reposing for two days the plaster is deposited and carries down with it all the impurities of the gutta percha insoluble in benzole. The clear liquid decanted is introduced by small portions at a time into twice its volume of alcohol of 90 per cent, agitating continually. During this operation the gutta percha is precipitated in the state of a pasty mass, perfectly white. The desiccation of the gutta percha thus purified requires several weeks' exposure to the air, but may be accelerated by trituration in a mortar, which liberate moistures which it tends to retain.

(5) S. G. inquires how to remove grease spots from clothing. A. According to the *Pharmacist*, fatty oils have a greater surface tension than oil of turpentine, benzole, or ether. Hence, if a grease spot on a piece of cloth be moistened on the reverse side with one of these solvents, the tension on the greasy side is larger, and therefore the mixture of benzole and fat or grease will tend to move towards the main grease spot. If we were to moisten the center of this spot with benzole, we should not remove it, but drive the grease upon the clean portion of the cloth. It is, therefore, necessary to distribute the benzole first over a circle surrounding the grease spot, to approach the latter gradually, at the same time having blotting paper in contact with the spot to absorb the fat immediately. Another method, namely, to apply a hot iron on one side while blotting paper is applied to the other, depends upon the fact that the surface tension of a substance diminishes with a rise of temperature. If, therefore, the temperature at different portions or sides of the cloth is different, the fat acquires a tendency to move from the hotter parts toward the cooler.

(6) E. N. B. writes: My main shaft runs 85 revolutions per minute. I want to belt on to a counter shaft and from there to a pulley 12 inches in diameter, which must run 800 revolutions per minute. I want to know the diameter of the pulley on the main shaft, also of those on the countershaft. What is the simplest rule you know of for figuring this? A. Your 12 inch pulley is to make 800 revolutions per minute. You can assume such diameter of the driving pulley on the countershaft as best suited for the work, say 60 inches; this will give the speed of the counter shaft one-fifth, or 160 revolutions per minute. You have now the speed of the countershaft 160 revolutions per minute and the driving shaft 85 revolutions per minute; the two pulleys must have the same proportion. If we assume the countershaft pulley 30 inches diameter, we then have 85: 160 : : 30: diameter of driving pulley—or $\frac{160 \times 30}{85} = 56.5$ inches. So the driving pulley will be 56·5 inches on to 30 inches and 60 inches on countershaft, driving 12 inches.

(7) J. M. writes: 1. I have four cells, one gallon each, of Fuller's battery, as described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 157, Fig. 33, and I want to magnetize some compass needles. Please tell me the size of magnet required to correspond with the battery. A. Use soft iron cores, five-eighths of an inch in diameter 3 inches long, and wind with six to eight layers of No. 18 wire. 2. How is the magnetizing of compass needles done? A. By placing them against the poles of the electromagnet or by rubbing them on a permanent magnet. 3. Is my battery large enough for such work? A. Yes. 4. Is there any difference in lifting power of two magnets, both of the same size of core, same size of wire, and both having the same number of layers, one magnet being made like the letter U, the other being made in three pieces with a yoke? A. No, providing the yoke in the latter case is well fitted to the cores. 5. Which is the best, to dissolve the bichromate of potash in warm water before putting it in the cell, or to put in the crystals? A. It is best to make a good solution and pour it into the cell. 6. Is there any objection to mixing a solution of bichromate of potash with sulphuric acid, if mixed when the solution is warm? A. The acid should not be added until the solution cools. 7. Is it unhealthy to sleep in a room where Fuller's batteries are used? A. There is no special danger if the room is well ventilated; it is better, however, to not have them in the bedroom. 8. How long will carbons last in the Fuller battery? A. If they are properly prepared they should last indefinitely. 9. Will my battery work on board of a vessel at sea as well as on shore? A. Yes, providing you can keep the solutions from spilling or mixing. 10. In winding a magnet does it make any difference if I wind the core with a separate piece of wire and connect the inner ends after winding, or wind the two cores with one piece of wire? A. It makes no difference. 11. Do compass needles lose their power in course of time? A. Not generally; they may, however, under certain conditions.

(8) A. B. P. asks: What book will I want for instructions and what materials will I want to make assays for gold and silver, as I am going to New Mexico, and expect to mine, prospect, and assay? A. See article on assaying in No. 22, current volume. Consult Rickett's "Assaying and Assay Schemes."

(9) W. McK. B. asks: 1. Which is better for cemetery purposes, American or Italian marble? A. Some of the hard (slaty) Pennsylvania stones last much longer than Italian marble. 2. Is there machinery made for washing sand to make glass? What is the cheapest and best method of screening sand for above purposes? A. Yes. See "Glass" and "Screens," Knight's "Mechanical Dictionary."

(10) W. E. J. asks: 1. How is vulcanized rubber acted on by sulphuric, nitric, and muriatic acids? Does it lose its properties? A. The dilute acids scarcely affect hard rubber or vulcanite; the undiluted acids, especially nitric and sulphuric, attack and decompose it. 2. Is there any metal or other substance suitable for making pens that is not destroyed by these acids? A. Gold pens are not affected by these acids (pure) when used singly.

(11) C. E. R. writes: 1. I have one pound of No. 36 naked copper wire, and wish to construct as large an induction coil as the wire will permit. What size of spool shall I use, and what size of primary wire? Can I construct the coil on the plan of the one described in SUPPLEMENT, No. 160? A. Yes. Follow directions given in SUPPLEMENT, No. 160. 2. How large a condenser shall I use? Also how many quart cells Grenet? A. About 25 square feet of condenser surface and three to four cells of battery. 3 Will a two-quart cell, Grenet, containing three zinc and four carbon plates 4x6 inches, heat ⅛ inch of platinum wire, 36 size, hot enough to explode gunpowder? A. Yes.

(12) W. C. asks: What is used to hold together the edges of paper composing writing pads? A. It is a mixture of glue and thick starch paste with a trace of glycerine, and aniline red to color.

(13) S. H. B. asks as to the dynamo-electric machine of No. 161, SCIENTIFIC AMERICAN SUPPLEMENT. 1. Should the change from one spring to the other on the commutator occur when the armature stands with its poles within the hollows of the field magnet, or when it is at right angles to a line joining the poles of the field magnet, or in neither? A. If the machine runs slowly it should happen when the poles are at right angles to a line drawn across the poles of the field magnet; if it runs rapidly it should happen a little earlier. 2. I have made one which I think ought to work, but does not give such results as I expected. I used, as in original direction, seven layers of No. 16 on field magnet and No. 18 in armature. I intend soon to measure the resistance of each and also its current. Should the wire of the field magnet be wound in separate layers so as to join up in series or not as required? A. Yes. 3. I made the armature of cast iron, but propose to make one of soft wrought iron. A. You will probably get better results with wrought iron.

(14) A. W. S. asks: Can you tell me of any simple method by which I may determine whether water is hard or soft? A. Dissolve half an ounce of good white soap in a pint of hot rain water, let it cool and settle, and mix about an ounce of this with a pint of the water to be tested and let it stand a few minutes. If the water is soft it will remain clear, if hard it will become opalescent. 2. Is there any way to render rain water wholesome for cooking purposes without the use of a water filter? A. Put a few bushels of coarsely granular, well burned charcoal, free from dust, into the reservoir. 3. Where can I obtain a water filter? A. See column of Business and Personal.

(15) O. S. asks: 1. Will not a cylinder made of heavy sheet brass, three-sixteenths of an inch thick, brazed together with the two end pieces, brazed in and turned up true and the thread cut on it, do as well if left hollow as a solid iron cylinder? A. The hollow cylinder will answer quite as well, providing you apply a fly wheel to the cylinder shaft to render the motion equable. To get the best effects from the phonograph the cylinder must be turned with great regularity. 2. Has any improvements been made on the phonograph since you published the above direction, July 20, 1878, and if so, what is it? A. No essential changes. You might with advantage substitute a piece of stout watch spring for the wooden spring carrying the needle, and you might put a damping spring against the front of the diaphragm with a piece of rubber or felt under it. These changes will improve the articulation somewhat.

(16) J. A. S. asks how to vulcanize rubber to iron. A. In vulcanizing rubber in contact with iron so that the vulcanized rubber and metal will cohere, it is customary to coat the iron all over with a melted mixture of equal parts of genuine asphaltum and gutta percha. Soft rubber containing six per cent of sulphur when firmly pressed into contact with this coating and then vulcanized by steam heat adheres very strongly to the metal after cooling.

(17) G. W. T. asks: Will you, for the benefit of several readers in this city, please give your opinion of gasoline in the household as used in the so-called gas stoves? A. Experience has shown that it is not safe to use gasoline in the house, for gas stoves or otherwise, under any conditions.

(18) C. A. asks: 1. Can you tell me the process of etching on glass by fluorine? A. Heat the glass and coat it with an even film of beeswax or paraffine. Through this to the surface of the glass etch the characters or design with a sharp point or graver. Put into a shallow lead tray a quantity of fluoride of calcium (fluorspar) in fine powder, mix it into a thin paste with strong oil of vitriol, and set the tray on a warm sand bath. Place the glass tightly over the tray so that the hydrofluoric acid (gas) may come into contact with the prepared surface. In ten minutes the parts of the glass not covered with wax or paraffine will be properly etched. The etched lines will be translucent—if it is desired to make the etching opaque (white), the plate should be wet before exposing it. A little benzole will remove the wax or paraffine. 2. Can the materials be procured in New York? A. Yes, see our advertising columns for dealers in chemicals.

(19) J. B. E. asks: What is the cost of graphite and where obtainable? A. From seven to fourteen cents a pound. See our advertising columns for addresses of dealers. Also Hints to Correspondents.

(20) C. F. writes: 1. On a vehicle of three wheels, weighing from 1,100 to 1,200 lb., with two cylinders 2 inches bore by 4 inches stroke, wheels to be 4 feet high, with engines connected to cranks in back axle: what size boiler is required, thickness of iron, etc.? A. The boiler should be a vertical coil tube boiler, having about 70 square feet of heating surface. 2. Is there any way to make a piece of wood more durable than seasoned lumber for chisel handles, etc.? A. Yes, by impregnating the timber with some of the chemical prepartions used for preserving timber. 3. I see in the SCIENTIFIC AMERICAN a description of a canal canoe, in vol. xliii., No. 7. What we wish to know is how long, wide, and deep it should be to hold two persons of 160 lb. each? A. About 9 or 10 feet long by 3 feet wide by 16 inches or 18 inches deep to be safe. 4. Shot for guns used to be made by dropping it only four inches. Please describe how it was done. A. Lead shot are made by dropping the melted lead through a series of perforations from a height into a tank of water.

(21) F. P. asks: 1. Will adding clay to quicklime mortar improve it? If so, will I use the raw clay or must it be calcined, and how much to be used? A. The addition of any considerable quantity of raw clay to lime mortar does not improve it materially. A certain quantity of fine silicious clay, when ground with lime and strongly calcined, makes hydraulic cement. See Gillmore's "Cements and Mortars." 2. How can I make a good whitewash for outdoor wood work? A. Well burned quicklime, ½ bushel; salt, 1 quart; rice, flour, and glue, ½ lb. each; water glass (sirupy solution), 1½ pints; water, q. s. Soften the glue over night in cold water, then dissolve it in a small quantity of boiling water. Make the flour into a paste with a little hot water and add it to the glue solution. Dilute the water glass with boiling water and add the salt. Slake the lime with boiling water, then stir in the other materials with enough hot water to reduce the whole to the proper consistence for use. Stir well together, cover, and let it stand several hours before using. Use hot.

(22) C. L. W. writes: I am making a small Marie-Davy quicksilver battery, to be used in a medical machine, and I would like to know if well varnished wood would not answer in place of vulcanite in making the cells? A. Wood, well varnished with shellac or saturated with melted paraffine, will answer very well.

(23) M. R. G. asks how to make a water glass to enable one to see the bottom of a lake, depth from 50 to 100 feet, water clear as crystal. I notice in "Scribner" mention made of a water glass in use for such purposes on the eastern coast and islands, but does not state how made. A. Any small telescope with a large objective and an eyepiece of very low magnifying power will answer very well for this purpose, provided the joint of the object glass is watertight.

(24) L. D. W. asks: In throwing water through 200 feet of hose with fire engine is the pressure on first length of hose greater than of any others? If so, why? A. When discharging, yes; because the friction of the additional length of hose expends a portion of the pressure in the first length.

(25) J. P. S. asks whether in dies used for cutting sheet iron blanks both dies must be tempered, or whether it will suffice to temper the female die only and let the male die be soft so it can be peaned up when dull. The sheet iron to be cut is 27 and 28. A. Both dies should be tempered.

(26) I. H. B. asks: 1. What is the best lubricant for the main journals of large engines? I use clean cotton waste with lubricant on top of it; the waste serves to catch the grit if any and mitigate the flow of hot oil. Is there anything better? A. Some of the special mineral oils are used as you describe. 2. Should cylinder cocks be left open in running when they are made to work automatically and the engine works equally well with them shut? A. No. 3. Whose work best treats of heat and power as applied to mechanical forces? A. "Cotterill on the Steam Engine as a Heat Engine." 4. Which is the most economical in practice, a single cylinder expanding the steam down to the atmospheric line, or a compound engine of the same initial capacity—steam pressure and vacuums of each being equal and making the same number of revolutions per minute? A. Theoretically there should be no difference, but practice favors the compound engine.

(27) J. H. A. writes: I notice that nearly all force and lift pumps have an air chamber through which the water is forced. Is the chamber any advantage except to deliver the water in a continuous stream, and perhaps make the force a little easier; and does it make the lift more effective? A. The use of an air chamber is to prevent shocks, or "water hammer," in the pipes, and render the delivery more uniform. It does not make the pump more effective.

(28) F. A. B. asks: Would it be possible to carry steam 300 feet through 2½ inch pipe well covered, with 100 lb. pressure to drive engine? What lineal expansion would there be, and what loss by condensing, etc.? A. Yes; the pressure at the engine would probably be 3 lb. to 5 lb. less than at the boiler when the engine is running. Expansion 6½ to 7 inches. Condensation depends upon covering, it may be from 0·08 to 0·3 lb. water per square foot of surface per hour.

(29) G. W. G. writes: I am making a Holtz electric machine, from directions in SUPPLEMENT, No. 279, with a 12-inch revolving plate. 1. On which side of the apertured glass are the paper inductors pasted. Also, are the gilt papers on the same side as the inductors? A. The inductors and gilt paper are on both sides of the glass. 2. Is it necessary that the spindle holding the revolving plate be perfectly insulated? A. No. 3. Can anything else but vulcanite be used to excite the mechine? A. Anything that will generate enough electricity will answer but vulcanite is probably the best.

(30) M. S. asks: Can wrought iron anvils plated on the face with steel be retempered? If so, what is the best way to temper them? A. You can try the experiment by filling a vessel (large enough to contain the anvil) with water; place bricks or other support for the anvil, so that the top of the anvil will be about one inch below the top of the vessel; have a hogshead or tank filled with water and elevated 5 to 10 feet above, with a pipe from it so arranged as to discharge water on the face of the anvil. When the anvil is properly heated lower it into the first tank face upward, then open the pipe from the higher tank to discharge the water on the face of the anvil till it is cooled. When you open this pipe, keep away from the anvil, as if any portion of the steel is not welded, it may crack and fly off with considerable force.

NEW BOOKS AND PUBLICATIONS.

OPHTHALMIC OPERATIONS, WITH REMARKS ON AFTER-TREATMENT: THE OPHTHALMIC USE OF QUININE AND ITS THERAPEUTIC ACTION. By A. Sibley Campbell, M.D., Augusta, Ga. 8vo pamphlet, pp. 35.

The first of these papers consists of a description of several cases of diseases of the eye which came under the author's treatment, and which form the basis of certain remarks which he subsequently makes in regard to the after-treatment in cataract extraction and other surgical operations on the eye, together with a consideration of the therapeutical action of quinine in such cases. Among the manifold applications of quinine in diseased conditions of the system it is found especially applicable in abnormal conditions of the eye, whether these have resulted from disease or from surgical procedures. Nowhere in the text books on therapeutics is there given or attempted a *generalization* of the action of this valuable remedy. In the paper before us, the author attempts to supply this wide-felt deficiency by enunciating the following views, which are essentially those published by Dr. Robert Campbell in 1858–9. The prominent and specific action of quinine is due to its direct influence on the vascular system through its power of contracting the blood vessels, acting thus on their middle or muscular coat, and hence on the unstriped, assisted, possibly, by the elastic fibers constituting that structure. This action is *primarily* on the blood vessels, especially on the small arteries, where muscular fiber predominates, and without the intermediary action of the vasomotor system. Possibly the vasomotor system afterwards aids in the process of contraction; but if so, only secondarily, by the same general influence now exerted, with the rest, on its own circulation. Hence the action of quinine on the vascular system is that of a *constringent*, and its effects may be termed *syntonic*. Such being the action of the remedy on the vascular system at large, the explanation of its therapeutic influence in abnormal conditions of the eye follows as a corollary.

LATHE WORK. By Paul N. Hasluck. London: Crosby, Lockwood & Co.

Amateur turners will find in this well made book a handy treatise on turning tools, appliances, and processes. The author has evidently wrought out his knowledge of the lathe at the lathe, while his experience as editor of a journal largely devoted to mechanics has taught him both the popular need of the information he gives and the art of conveying practical instruction directly and clearly.

ILLUSTRATED RECORD OF BRITISH PATENTS. January to March 1, 1881. London: Office of the *Engineer*.

For many years the *Engineer* has printed from week to week abstracts of all the patent specifications filed in the British Patent Office. It has now with commendable enterprise, begun to reprint periodically these specifications with illustrations, indexes, reports of patent decisions, and related matters, after the manner of the official United States *Patent Gazette*. There can be no question of the public utility of such a periodical, and it does not speak well for the British authorities that such a work is left to be done by private enterprise.

A MEMORIAL OF JOSEPH HENRY. Published by order of Congress. Washington: Government Printing Office.

A special edition, on tinted paper with wide margins, of the Henry memorial volume. It contains the proceedings in Congress with respect to the commemoration of Professor Henry's life and services: obsequies; memorial exercises at the capitol; memorial proceedings of societies, and the proceedings in Congress regarding the erection upon the grounds of the Smithsonian Institution of a bronze statue of the late Secretary of the Institution.

HISTORY OF WOMAN SUFFRAGE. Edited by Elizabeth Cady Stanton, Susan B. Anthony, and Matilda Joslyn Gage. In two vols. Vol. I. 1848—1861. New York: Fowler & Wells.

The editors have aimed to put into permanent shape the scattered reports of the woman suffrage movement still to be found, and to gather an arsenal of facts and arguments for the furtherance of the movement—"the first organized protest against the injustice which has brooded over the character and destiny of one half the human race." The work is illustrated by finely engraved steelplate likenesses of Frances Wright, Ernestine L. Rose, F. D. Gage, Clarinda I. Howard Nichols, Paulina W. Davis, Lucretia Mott, Amelia Bloomer, Susan B. Anthony, M. C. Wright, Elizabeth Cady Stanton, and Matilda Joslyn Gage.

THE DETECTION AND CORRECTION OF VISUAL IMPERFECTIONS WITH TEST TYPE. By Dr. C. A. Bucklin. New York: Spencer Optical Manufacturing Company. $1.

Although specially intended for the guidance of dealers in eyeglasses and similar aids to imperfect vision, this little manual may be of use to any one who wishes to inform himself as to the nature of the more common eye troubles and the character of the glasses best suited to delay, relieve, obviate, or cure such disabilities. The book is practical, clear, and reasonably free from technicalities.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

May 17, 1881,

AND EACH BEARING THAT DATE

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, 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. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

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Grain cleaner, brush, L. Gathmann 241,487
Grain meter, J. W. Hill 241,659
Grate bar, W. U. Fairbairn 241,639
Grate, shaking, J. R. Murphy 241,696
Gun, machine, M. P. Key 241,671
Hame, J. B. Law 241,676
Hame fastening, Barsaloux & Freeman 241,591
Hammer, C. J. Grellner 241,647
Harrow or cultivator, spring tooth, Springer & Ives 241,744
Harrow, spring tooth, H. Cobb 241,528
Harvester, C. W. Levalley 241,498
Harvester reel, C. F. Keller 241,669
Hat or bonnet frame, E. Whitehouse 241,766
Head rest, folding, H. Strauss 241,748
Heating apparatus, steam, E. F. Osborne 241,507
Hinge, C. D. Sigsbee 241,736
Hinge hooks, manufacture of, W. J. Lewis (r) 9,713
Horseshoe, J. A. Maguire 241,681
Horseshoe calk, H. Snyder 241,516
Horseshoe nails, machine for making, E. E. Pierce 241,562
Hub, wheel, M. L. Smith 241,567
Hydrocarbon burner, J. W. & J. R. Houchin 241,662
Hydrocarbon burner, R. Lighthall 241,773
Ice house door fastener, F. Keil 241,668
Indicator lock, F. W. Mix 241,691
Injector for furnaces, air and steam, H. E. Parson 241,710
Ink and fluid, writing, J. E. Mallory 241,682
Inlaying metallic harness trimmings, etc., with plastic materials, F. Crane 241,622
Insect trap, S. B. Knapp 241,672
Iron, manufacture of sheet, I. E. Craig 241,529
Isinglass, obtaining, I. Stanwood (r) 9,715
Kettles, pots, etc., ear for, L. B. Noble 241,559
Key ring, G. W. Miller 241,582
Knife blades, burnishing, L. Taber 241,750
Knitting machine, circular, J. L. Branson 241,474
Knob, door, W. D. Hughes 241,664
Lactometer, F. Heeren 241,655
Ladder chair, step, D. R. Knight 241,548
Lamp burner, T. Kennedy 241,670
Lamp burner, A. Thurlow 241,755
Lamp, electric, D. W. De Forest 241,628
Lamp globe and chimney combined, P. Schneider 241,730
Lantern, signal, J. J. Robinson 241,723
Last, D. F. Burtt 241,606
Last, Martin & Merrill 241,684
Latch, gate, A. L. Grayson 241,646
Leather scratching machine, T. J. & T. H. Gifford 241,644
Licorice, etc., machine for rolling or spinning into cylindrical form, G. E. & J. H. Grimm 241,536
Lifting jack, J. S. Case 241,615
Loom shuttle box mechanism, L. J. Knowles 241,549
Lozenge, etc., Gardiner & Hodge 241,486
Magnet, electro, P. B. Delany (r) 9,708
Marble, artificial, W. Burnet (r) 9,705
Mashing machine and mixer for brewers' use, A. Pfund 241,715
Meat slicing machine, R. B. Pumphrey 241,564
Mechanical movement, J. Harris, Jr 241,652
Metals with zinc, coating, H. Roberts 241,721
Middlings purifier, M. J. Schott 241,514
Middlings, separator, W. J. Fender (r) 9,706
Mill for pulverizing hard and refractory materials, C. Ross, Jr 241,513
Milling cutter, A. Muir 241,695
Milling tools for grinding, machine for holding, S. Lawton 241,497
Mirror, combined hand and stand, F. W. Ritter, Jr. 241,512
Monument for marking lines and corners of land surveys, etc., J. B. Bausman 241,592
Mower, lawn, E. G. Passmore 241,508
Mowing machine, R. Dutton 241,634
Nailing machine, A. Knowlton 241,550
Neckwear, retaining device for, M. Hellman 241,656
Oil can, J. Skerry 241,737
Oiler, S. B. Parker 241,561
Organ stop action, reed, J. A. Smith 241,740
Organ stop action, reed, J. W. Trainer 241,757
Paint compound, A. M. Fenner 241,640
Paint for ships' bottoms, M. F. Morrison 241,694
Pamphlet, J. W. Wells 241,575
Pants, J. Schuller 241,731
Paper, etc., for reproducing drawings and designs, preparing, H. Pellet 241,713
Paper, manufacture of, P. Ambjörn 241,522
Pavements, etc., mosaic work for, P. Würtz 241,771
Percussion drill, F. H. Ober 241,705
Petroleum and other substances insoluble in water, jellifying, C. T. Du Motay *et al* 241,505
Pipe and casing, shoe for driving, P. Patterson 241,712
Pipe wrench, J. T. Hayden 241,490
Pipe wrench, W. T. Kosinski 241,674
Planing machine, metal, F. A. Pratt 241,563
Planter, hand corn, J. G. Morton 241,504
Poke, animal, D. Brintnall 241,602
Poke, animal, A. & E. Larrowe 241,675
Postal card, W. Armstrong 241,523
Power, device for transmitting, A. Jarolimek 241,494
Preserving organic substances, C. F., A. W., & A. L. Lawton 241,677
Pressure rollers, air cushion compression cylinder for, G. W. Nichols 241,702
Printing press feed gauge, E. L. Megill 241,556
Pulley, belt, P. Medart 241,555
Pulley block, J. W. Norcross 241,703
Pump, B. C. Vanduzen 241,572, 241,573
Pump, pressure fountain, M. Cooper 241,621
Pump, steam, R. J. Pettibone 241,714
Pumps and compressors, attachment for, J. Clayton 241,527
Pyrites, furnace for burning, J. Mason 241,685
Railway sleeper and chair, J. C. Rupp 241,724
Railway time tables, machine for constructing, G. W. Turner 241,519
Razor guard, L. C. Allin 241,583
Reciprocating cleaner for nuts, etc., J. Johnson 241,667
Reflector, lamp, H. E. Haley 241,649
Refrigerator chest, movable, F. E. Higgins 241,491
Roofing slates, metallic fastening for, S. Farquhar (r) 9,710
Rotative furnace, C. W. Siemens 241,515
Rule and printing form, column, G. Trimble 241,759
Sash fastener, W. P. Chamberlin 241,616
Sash fastener, F. J. Grodavent 241,648
Sash fastener, J. R. Terry 241,753
Saw for cutting snags, drag, J. W. Swales 241,749
Saw mill, gang, G. W. Nichols 241,699
Saw set, W. Dunn 241,633
Saws, air cushion compression cylinder for gang, G. W. Nichols 241,701
Saws, mechanism for oscillating the slides of gang, G. W. Nichols 241,700
School seat and back, A. Moore 241,693
Seal lock for freight cars, Dewe & Bailey 241,630
Seal trap for water closets, sewers, etc., O. W. Spratt 241,568
Seat fastener, H. P. Colby 241,620
Seed meal, machine for separating and cleaning cotton, O'Brien & Franck 241,560
Seed, etc., treatment of flax, H. T. Yaryan 241,772
Sewing machine, D. H. Campbell ..... 241,608 to 241,613
Sewing machine, W. G. Wilson *et al* 241,770
Sewing machine clutch device, J. H. Bullard 241,526
Sewing machine needle, J. W. Packard 241,708
Sewing machine, rotary shuttle, A. M. Leslie 241,553
Sewing machine, ruffling attachment, W. T. Johnston (r) 9,712
Sewing machine take up and tension device, J. Hoefler 241,660
Shade, window, P. Michel 241,689
Shaft and axle, crank, T. Turton 241,760
Ship, steam, J. E. Mouland 241,558
Siphon, Lathe & Cross 241,551
Skate, combined runner and roller, W. H. Rushforth 241,726
Sleigh or sled runner, H. B. Huntington 241,543
Snow and earth excavator, W. H. Knight 241,673
Soldering machine, can, R. R. Williams 241,769
Spark arrester, J. Abell 241,579
Spikes, machine for making, H. W. Fowler 241,641
Spindle and bolster therefor, Duffy & Whorwell 241,632
Stamp protector, J. L. Lilienthal 241,678
Starch from Indian corn and other grain, obtaining, T. A. & W. T. Jebb 241,666
Starching machine, S. Marden 241,554
Steam brake, locomotive, D. S. Randolph 241,511
Steam engine and boiler for tramways, A. Arson 241,586
Steam engine, direct acting, J. I. Eavenson 241,636
Steam engine, oscillating, J. C. Miller 241,503
Steam trap, N. P. Aldrich 241,581
Steamer and drier, wheat, C. T. Hanna (r) 9,711
Steel articles and apparatus for the same, hardening hollow, W. Lorenz 241,680
Stew pan, G. Hill 241,658
Stove, gasoline, G. L. McMillan 241,501
Strainer for the outlets of tubs and basins, W. Slow 241,739
Surgical dilator or tent, Stohlmann & Pfarre 241,569
Telegraphs, etc., sectional wire for, L. D. Hamilton 241,650
Telephone, magneto, C. Ader 241,580
Telephone signal, G. H. Bliss 241,598
Thill lug, metallic, H. L. Norris 241,704
Ticket register, E. De Jong 241,479
Time table and advertiser, E. L. Birch 241,595
Tobacco, manufacturing plug, J. H. Wight 241,768
Toe weight, G. C. Sherman 241,735
Tool, combination, W. H. Bickelhaupt 241,594
Trunk, F. H. Ransom 241,565
Twisting and spooling machine, D. C. Stover 241,747
Valve, automatic air, J. H. Blessing 241,596
Valve, combined air and check, J. H. Blessing 241,597
Valve gear, steam engine, W. Johnson 241,495
Valve stem, reversing, S. L. Hawks 241,654
Vehicle bows, slat iron for, C. Wright 241,578
Vehicle seat, A. Gundelfinger 241,537
Vehicle spring, J. S. Corban 241,477
Velocipede, G. W. Marble (r) 9,707
Velocipede, marine, Newsam & Hayes 241,698
Vise and cutter, portable pipe, G. W. Glazier 241,534
Vulcanizing apparatus, time and pressure regulator for, T. Shaw 241,734
Washing machine, Ruppert & Müllerweiss, Sr 241,725