boat has been carried down so d ep in the ocean by a har- can be given for prospecting for mica. The mineral There are no books on this subject. pooned whale that when the whale rose to the surface and mica is found in very irregular veins of what is often a as captured, the boat had to be hauled up by the line, and was found to be so thoroughly water-logged and compressed by its few minutes' dive that the wood had ecome heavier than water. Fishes having live elastic tissue are compressed to the same extent, but recover in rising by their own exertion. It has also been stated that whales that have received a death shot and dived have not come to the surface, although watched for during several days.

(3684) L. N. writes for an effective exterminator for fleas, etc., on domestic animals, and for bed bugs and all other pests of the kind. A. A little of the essence of pennyroyal sprinkled about is said to be effectual in driving away fleas; Persian insect powder is also used for the same purpose, and we doubt if any- i filled with oil and water in about equal parts, to be rathing is more efficient than fresh Persian powder of pidly rotated on an axis, will the oil hug the equator good quality for the destruction of bed bugs and other sts of a similar character. Buhach or pyrethrum (see SUPPLEMENT, Nos. 247 and 299) is highly recommended.

(3685) F. M. S. asks: How many times will I have to carbonize my plater and rods, as de- mosphere be outside or inside of the water ring ? A. scribed in "Experimental Science," for carbons to use Centrifugal force acts inversely as gravity. 'The heaviin batteries? A. They will answer very well without est element goes to the outer side in a centrifugal apparecarbonization; but two or three repetitions of the process will improve them.

(3686) W. G. R.-We favor the Staten Island stone, which is a fine grained trap rock. It takes a fine finish.

(3687) W. H. L. asks: 1. Will a dental lamp of one-half candle power, requiring from 3 to 4 rubbed with equal force against a dissimilar substance ? volts and 120 amperes, work successfully from a For illustration, two pieces of iron, or of wood, of the injurious, or the lime, or both ? Will you suggest medical battery composed of two bichromate cells and an induction coil? And whether it should be attached to the primary or secondary wires? A. Two bichromate cells should easily run a one-half candle lamp. The lamp should be run directly from the batteries, the induction coil being disconnected, 2. What is the E. M. F. and amperage of the Roberts storage battery? A. The E. M. F. of all storage batteries with which we are acquainted is about two volts. As we do not know the constants of the battery referred to, we cannot state the amperage. 3. What is the principle of the governor of the speed in motor of Edison's phonograph? A. The governor of the Edison motor used in the phonograph a centrifugal governor, which operates by shunting the current through resistance. 4. Can a rheostat of 16 candie power lamps be used successfully with current supplied by an Edison 120 volt incandescent circuit, to do electro-plating? If so, how must the lamps be arranged for silver, gold, copper and nickel plating ? A. You may put a lamp in series with your pitch of heavy thunder ? A. The pitch of ordinary bath. This will give you in the neighborhood of onehalf ampere of current. The voltage of the bath terminals will depend on its resistance. For more current put more lamps in parallel, and carry one lead joint to one terminal of the bath, and a single lead from the other terminal to the other main wire. 5. What is the best kind of watch demagnetizer to use with my rheostat? What is the principle of it? And how could I make it? I have a commutator or alternator which is turned by a crank. A. A good way to demagnetize a watch is to at great heights. attach it to a twisted string and twirl it in front of an electro-magnet, at the same time withdrawing it from the magnet as it rapidly revolves. See query 3275.

(3688) H. R. B. asks: What is the composition used in making rollers for printing presses? I have some pieces of copper tubing of the proper size and wish to make some rollers. How shall I proceed? How long should they be left in the moulds? How shall I get them out? A. Printers' rollers are made by soaking good white glue until it swells to a jelly, drain off all excess of water and mix with an equal portion of glycerine, heat with care so as not to scorch and evaporate the water until the proper consistency is obtained for the required work; which must be done by taking out a small portion, say a tablespoonful, and pour into the bottom of a small tin pan and set the pan in cold water to cool it to the proper temperature. This may require several trials. When the mass becomes of the right temper, pour into the mould, which should be very smooth inside and greased; with the spindle set exactly in the center. Let the mould stand for a day to get thoroughly cold and set, when the roll can be slowly pulled or pushed out by the gudgeon.

(3689) Mrs. Dr. B. asks how to remove iron rust from linen. A. If the ground be white, from the engine above referred to in heating water for soil. 4. Mix 45 parts nitrobenzol, 75 parts sulpharic oxalic acid, employed in the form of a concentrated dyeing purposes. Under these conditions would it pay acid, 1,400 parts water. To kill the eggs, make a paste aqueous solution, will effectually remove fresh iron stains.

hair is at present greatly agitated by the professional count of oil. A. There would be just as much object paste is made of 99 parts prepared chalk and five parts tonsorial artist, claiming that through this process the | tion to the use of the exhaust for heating the dye tubs ; each of white bole and Armenian bole, rubbed topersons with exceedingly thin hair, and especially for pressure what should be the number of pounds of steam allowed to dry, and then rubbed off with cloths. those who possess the misfortune of getting bald. | (in weight) consumed in heating sixty cubic feet of

A substantiating fact is known that a wooden whale- cover where the float came from? A. No general rule largely used in the United States for water supply. coarse granite rock. It occurs in the primitive rocks, such as gneiss and granite. Only general Rules for prospecting can be given. In the Mineral Resources of the United States for 1887, published by the Department of the Interior, Washington, D. C., you will find an interesting and practical article on the subject of mica, We recommend also Anderson's "Prospector's Manual." \$1.50 by mail.

> (3694) C. H. M. says: 1. When matter of different specific gravity, but free to move independently in the same mass, is rapidly rotated, what will be relative position taken up by the heavier and lighter parts ? Example : Suppose a hollow sphere, partially and the water be in a ring inside of the oil, or the reverse? Or, what is somewhat equivalent, suppose the earth's rotary motion to be accelerated until all the water on the globe should be thrown out in a ring a thousand miles from the equator, would the earth's atratus. The condition and disposition of the material of the earth would not come under this condition, because gravity must be the greater force, or the material would not hold together, but would fly off into space. Hence the heaviest or densest material would still gravitate to the center. 2. What is the explanation of a substance rubbed against itself producing more friction than if same kind, rubbed against each other with a force equal to x, will encounter more friction than if a section of the iron is rubbed with the x force against a piece of the wood. Is there a standard of equivalency established in respect to friction of different substances, bearing against each other in motion? A. In regard to friction pound of glue may be added, dissolved separately. of soft or hard substances, so much depends upon iubricants and the smooth and even surfaces that are to advantage. If appearance is no object, coal tar is moving over each other that no general explanation or the best preservative. The whitewashes are not intheory will suit each case. Otherwise, the fact is approximate by bood or wire, parent that soft substances moving upon each other (2000) M C S with pressure do not adjust their surfaces of contact to a perfect plane, and are frictionally retarded according to its minute inequalities; whereas, with surfaces of unequal hardness, the tendency of the hardest surface is to assume a perfectly true surface by wear which is found to have the least friction. 3. What is the pitch of ordinary heavy rumbling thunder ? How long would cient to melt iron ? A. Many amateurs make small a closed organ pipe have to be to produce sound of the rolling thunder varies considerably, ranging through the median notes of the base clef, and would require a pipe from 8 to 12 feet long. 4. As forces act most readily in the direction of least resistance, does a sound (on account of the atmosphere diminishing in density as we go upward) act more effectively upward than horizontally ? A. Sound vibrates more intensely upward than along the surface of the earth. This has been noticed by aeronauts, who hear ordinary sounds from the earth

(3695) H. E. F. says: 1. A Corliss engine has just been erected which has a shaft fifteen inches in diameter and eighteen feet in length between bear ings. The shaft and wheel weigh ninety-six tons, the former deflects 1/6 of an inch in the middle from excessive weight. With the wheel in motion will this condition change and the shaft resume a straight line ? A. The shaft will not assume a straight line, nor approach near to it, unless the speed is so great that a half revolution is equal in time to the natural vibration of the shaft. As the speed of such engines is far below the requirement for synchronal action with the shaft vibration, you will not be able to discover an appreciable amount of relief from the spring of the shaft by its velocity. The shaft is too small. Would like to have more details of the engine. 2. I am running a compound condensing engine which requires four hundred gallons vacuum and produce a small amount of power? The better economy to use a surface condenser ? Water earth. (3690) H. L. N. writes : The singeing of from jet condenser not available for this purpose on ac-

pipeabout 500 feet from a well upon a hill to supply a house and barn with water, to reach house under about 30 feet water pressure, and to be used for culinary and all house purposes, which kind of pipe is best-lead, ordinary wrought iron gas pipe, or the latter galvanized or tarred ? Is the tar coating of the pipe durable? It would seem to avoid the rust of iron pipe, and the possible deleterious effects of the zinc salts from galvanized iron. Would the brass of ordinary globe valves cause salts to be formed, either from the brass or from other metals in contact with it, that would be injurious to : foreign countries may be hadon application, and persons health ? A. Lead and galvanized iron pipe are the best : contemplating the securing of patents, either at homeor for conveying water for household purposes. Both are perfectly safe if the water is kept running, or the contents of the pipe entirely drawn off after standing in the pipe overnight. The tarred pipe flavors the water for some time and the tar is not durable upon the inside of the pipe. Brass valves do not affect the water to any perceptible extent. The most approved management for a house and barn supply is to keep a small stream constantly running into a watering trough at the barn, with an overflow to an underground drain.

(3698) M. O. R. says: I am building nearly two miles of fence. Oak pickets  $\frac{1}{2} \times 2$  inches 4 feet long, woven in five pairs of wire, Washburn & Moen galvanizing process, in which the zinc is fairly AND EACH BEARING THAT DATE, soaked through the iron. Having some doubts as to durability of the oak pickets, I wish to apply some preservative which will not injure the wire, but preserve the wood. Would the Bordeaux mixture (sulphate of copper in a whitewash of lime) do? Is the copper salt something superior ? A. There is no objection to the Bordeaux wash. Another way is to use 2 pounds sulphate of zinc and 1 pound salt to 30 pounds dry lime. and color if desired with yellow ocher, or any cheap mineral paint. To give the above a strong body a half You may also add a little glue to the Bordeaux mixture

(3699) M. C. S. asks: Will it besafe for one who has not had any experience to undertake to make a boiler to run a 2 horse power high pressure engine? What will be the easiest and safest type of a boiler to make? Have you issued any paper, explaining how to construct a small furnace that will be suffiboilers and very good ones, but they require some shop privileges. If there is a good pipe fitter in your city, you may with his help make a safe and good boiler for any pressure up 100 pounds or more. You will find illustrations to scale and description of pipe boilers of one to threehorse power in SCIENTIFIC AMERICAN SUPPLE-MENT, No. 702; you will find a portable furnace for melting 100 to 140 pounds of metal in SCIENTIFIC AMERICAN SUPPLEMENT, No. 180; and for a regular cupola consult West's "Foundry Practice," \$2.50 mailed.

(3700) E. S. asks: What acid or solution can I use to rot or destroy stumps in ground after trees are cut down, mostly oak? How long will it take to rot them? A. There is no quick way of rotting stumps. The cheapest way to get rid of them, if you have no suitable means of pulling, is to bore a 11/4 inch auger hole down the center of the stump about 18 i inches deep, and put in 1% ounces of saltpeter, fill the hole with water and plug it tight. In the spring take out the plug, pour into the hole a half pint of crude petroleum oil, and set it on fire. The stump will burn and and smoulder to the ends of the roots, leaving nothing but ashes

(3701) H. W. W. says: How can the phylloxera be destroyed? A. Numberless remedies have been suggested and tried-sulphur, carbon bisulphide, coal tar, lime, soap, caustic soda and many others. The following are among the best receipts: See the SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 167, of water per minute. Could that water be passed 205, 464, 471, 478. 1. Try sulpho-carbonate of potassium through a motor or small wheel as it flows into the and sand. 2. London purple, a by-product in the manufacture of rosaniline, mixed with water. 3. Forty-five source of supply is on a level with condenser. Vacuum pounds sodium phosphate, 15 pounds ammonium phos-27-28 inches. A. A small motor could be run in the phate, 60 pounds ammonium chloride, 45 pounds pocondenser water pipe, but it would be of doubtful tassium sulphate, 75 pounds of soda, 2,800 pounds iron utility. 3. We could utilize all of the exhaust steam sulphate, 90 pounds flowers of sulphur. Mix with the to run compound non-condensing? Or would it be of 4 ounces benzol, 8 pounds lime, and 360 pounds of

(3702) R. J. F. - Window polishing hair will become more vigorous and prevent its falling out. This naturally would be a great benefit for still have all of the oil in the tubs. 4. At eighty pounds parts alcohol. The paste is to be rubbed on the window,

> (3703) H. T. R. asks how to lag pulleve control of the best tough glue that you can get stimp. Cu Cu glue a half ounce of a strong solution tannic acid, oak Cy De Di bark, or gall nuts, as convenient to obtain, to a quart of thick glue, stir quickly while hot and apply to the paper or pulley as convenient, and draw the paper as tightly as possible to the pulley, overlapping as many folds as may be required. By a little management and moistening of the paper, it will bind very hard on the pulley when dry, and will not come off or get loose until it is worn out. Use strong hardware wrapping paper.

(3705) G. D. asks how to make a thick rubber cement. A. Rubber cement is made by discolv-(3697) G. D. says: In running an inch ing masticated rubber in benzole or solvent naphtha. We refer you to "Rubber Hand Stamps and the Manipulation of Rubber." \$1.00 by mail.

## TO INVENTORS,

An experience of forty years, and the preparation of more than one hundred thousand applications for pa tents at home and abroad, enable us to understand the 'laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all abroad, are invited to write to this office, for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

## INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

## November 24, 1891,

[See note at end of list about copies of these patents,]

| Agricultural machine, J. E. Reed   | 463 <b>,96</b> 6              |
|--|-------------------------------|
| Thomson<br>Assay furnace, Ricketts & Busb  | 463,671<br>463,712            |
| Axle, W. H. Curtis<br>Axle, H. C. Shultz   | 463,621<br>463,797            |
| Axle lubricator, vehicle, J. L. House<br>Axle, wagon, S. E. Oviatt<br>Baling press C. F. Whitman                             | 463,682<br>463,668<br>463,929 |
| Baling press, A. Wickey  | 463,873<br>463,953            |
| Barber's indicator, C. Van Dusen<br>Basket, C. E. Gates  | 463,672<br>463,964            |
| Baskets, apparatus for making, B. F. Bobbitt<br>Batteries, separator for the plates of secondary,                            | 463,714                       |
| C. F. Waldron.<br>Bearing, ball, H. Howard   | 463,879                       |
| Bearing lox adjuster, automatic, H. L. Hopkins<br>Bearing, colter and wheel, H. R. Howe<br>Red bottom woven wire W. B. Noves | 463,899<br>463,730            |
| Bed, hanging, W. M. Buell.<br>Bed, wardrobe or folding, F. B. Williams   | 463,657<br>463,655            |
| Bedstead, invalid, W. Coughlin<br>Beehive, P. H. Ackley  | 463,944<br>463,674            |
| Belt fastener, Hanee & Redick<br>Belt guide and tightener, P. W. Minor   | 463,664                       |
| Bicycle, J. H. Mathews<br>Bicycle, H. B. Murdock   | 463,703                       |
| Boiler. See Steam boiler.<br>Boiler furnace S. Eggenberger   | 463.829                       |
| Bolster standard, J.T. Livingston<br>Boot or shoe, machine for trimming the edge of  | 463,803                       |
| the upper at the toe of a, G. W. Day<br>Boots or shoes, crimping machine for, W. E.  | 463,948                       |
| Frost.<br>Boots or shoes, manufacture of, G. W. Day  | 463,970<br>463,947            |
| Box making machine, J. F. Gilliand<br>Box es or similar articles, machine for making   | 463,861                       |
| plaited, M. Vierengel<br>Brake. See Car brake.   | 463,849                       |
| Brakes, automatic adjuster for, E. D. Eames<br>Bridge gate, H. F. Barndt.  | 463,718<br>463,677            |
| Bridle, O. Von Briesen<br>Buckle, harness, W. R. Bruner  | 483,962<br>463,774            |
| Building material, J. O. Rollins.<br>Bullet, patched, L. Marble.   | 463,649<br>463,840            |
| Petroleum burner. Hydrocarbon burner,<br>Calcing light annaratus G R Prowse  | 463 870                       |
| Calendar, perpetual, D. A. Fisher<br>Camera. See Fnlarging camera.   | 463,678                       |
| Car brake, W. W. Allen<br>Car brake adjuster, Manchester & Miller  | 463,695<br>163,907            |
| Car brake, railway. M. G. Hubbard, Jr<br>Car coupling, J. W. McGill  | 463.683<br>463,687            |
| Car coupling, E. S. Meals  | 463,875                       |
| Car coupling, W. P. Simpson.   | 463,925<br>463,782            |
| Car door, grain, D. D. Miles.<br>Car, dumping, M. O'Connor.  | 463,857                       |
| Car, dumping, C. D. Page<br>Car, nursery and lawn, J. A. Elliott   | 463,869<br>463,891            |
| Card, sample, J. W. Schloss.   | 463,940                       |
| Carpet stretcher and tacker, Keogh & Lockman.  | 403.004<br>463,740            |
| Carving machine, wood, J. Hunzinger<br>Case. See Opera glass case. Show case.  | 463,836                       |
| Cash carrying apparatus, H. L. Lovejoy<br>Cash indicator and recorder, J. F. Pfeffer   | 463,694<br>463,706            |
| Catamenial sack and supporter, A. Willoughby<br>Centrifugal separator, C.G. P. De Laval                                      | 463,819<br>463,794            |
| Chair. See Swinging Chair.<br>Chaik holder, C. W. Lurtey   | 463,972                       |
| Chromates and bichromates, manufacture of,<br>Massignon & Watel  | 463.841                       |
| Churn, J. H. Brownfield<br>Churn, J. P. Wilson   | 463,800<br>463,656            |
| Churn power, R. Reese<br>Cigar lighter, electric, G. N. Engert   | 463,872                       |
| Clasp. See Rope end clasp.<br>Clasp. See Rope end clasp.   | 403,033                       |
| Clock. electric programme, J. L. McCaskey<br>Cloth stretching machine, C. A. Cayanagh  | 4(13,843<br>4(13,658          |
| Clutch, W. Goldsworthy<br>Clutch, A. Lesperance  | 463,895<br>463,812            |
| Clutch, Worrall & Lesperance<br>Clutch, friction, W. Goldsworthy   | 463,820<br>463,894            |
| Coffin handle, W. H. Lawson.   | 463,865                       |
| Collar for flannel shirts, A. H. Anderson  | 463,884                       |
| Compasses, pencil, R. H. Ingersoll.  | 463,901                       |
| 463,809,<br>Conduit for buildings, surface, R. W. Gibson   | 463,810<br>463,830            |
| Corn popping machine, J. C. Tutt   | 463,878<br>463,709            |
| Coupling, See Car coupling, Thill coupling.<br>Cradle, J. K. Potter.   | 463.707                       |
| Cultivator, S. L. Allen<br>Cultivator attachment, C. A. Armstong   | 463,610<br>463,933            |
| Cultivator attachment, E. Children<br>Cultivator tooth, S. L. Allen.   | 463,941<br>463,612            |
| Curring froms, frame for supporting, G. L. Flomp-<br>800   | 463,999                       |
| Cut-out, multiple fuse, G. K. Wheeler  | 463,764                       |
| Dental engine, J. T. Calvert.<br>Diamonds and excessively hard substances, ap-   | 463,855                       |
| paratus for drilling, D. D. Palmer<br>Digger. See Potato digger.   | 463,973                       |
| Door check, G. W. Wright.  | 463,821                       |
| Dovetailing machine, C. E. Parks<br>Draught equalizer, H. E. Pridmore  | 463,814 463,776               |
| Draught equalizer, R. Wickham<br>Draining and aerating land and apparatus there-   | 463,772                       |
| for, system of, W. Reading<br>Drier, E. Reynolds.  | 463,871 408,920               |
| Drining machine, E. D. Quint<br>Drilling machine, A. D. Quint  | 463,790<br>463,690            |
| Dye, blue, A. Herrmann<br>Dynamos, carbon brush clamp for. S. Morse  | 463,898<br>463,748            |
| Egg beater, Whitney & Kirby<br>Electric arc interrupter, E. Thomson  | 463,818<br>463,762            |
| Electric battery, therapeutic, J. A. Crisp<br>Electric cut-out, E. W. Rice, Jr.  | 463,945                       |
| Electric meter, A. Reckenzaun.   | 463,711<br>463 704            |
| Electric motor mechanism S. F. Mower   | 463,693                       |
| Electric motors, brusb holder for, J. E. Lyons   | 463,655                       |

Please inform me of your opinion on this subject. A. The remedy appears to be worse than the disease.

(3691) F. M. asks what the influence of heat the amount from 150° to 2120. a powerful current of electricity would be on the felting of furs? A. As fur is a non-conductor, we think a powerful current would have no effect on it. Possibly static electricity might be of some service. An experiment would determine this.

(3692) J. L. L. asks: Is there any cement that will fasten stereotype plates to wood bases ? I bave some plates difficult to nail, as the cut takes all the space. A. We cannot recommend any cement for the purpose. There are cements that would answer for a short time; but the wood is apt to swell and shrink under use, and this, together with the heavy pressure of the press, would be likely to loosen the plate and do injury to the type forms.

(3693) B. T. writes: I found mica float on the surface of the ground scattered for some distance but cloudy, etc. Does the mica lie in veins or deposits

from 50° to 212° Fah. ? Also from 150° to 212°? A. It will require 525 pounds of steam to heat the water as stated from 50° to 212° and 207 pounds of steam to

(3696) S. R. T. says: Suppose a lead pipe 2 inches in diameter. laid from a spring, descends 19 feet into a ravine, then up 32 feet to the top of a ridge thence down 70 feet to the base of a building three stories high. Can this pipe be made to siphon the water and raise it to the top of the building, 32 feet high ? If so, what is the best way to fill the sinhon. By a pump at the spring or an air pump at the house? What is the limit of useful employment of siphons this way? What is a good practical work on this class of subjects, and do you furnish it, and the price ? I should have mentioned that the pipe will be a half mile

long. A. The pipe can be made to siphon the water to way to prepare the canvas covering on a cance to be the house, and should flow about 18 gallons per minute used along the Florida coast ? A. Fora canvas canoe. at top of house, if free from air. Place the air pump at rubber cement or varnish is the safest and easiest to apthe house for convenience. See SCIENTIFIC AMERICAN ply. Usethekind obtained through the rubber trade and in detached chunks, 10 by 14 inches in width and from SUFFLEMENT, No. 793, on sipbons. The principle of thin it with naphtha. After a painted coat of the thin i 4 to 10 inch in thickness. The float is not transparent, siphonage is perfectly practicable wherever desirable rubber has dried, the thick paste rubber may be apwithin the limit of atmospheric pressure as applicable plied all overthe outside with a spatula, and if carefully like other minerals? Please state what formation is to pump suction, say 25 feet lift, and any height required done will make a smooth waterproof b at. Paraffin mica found in. How would a person go about to dis. in an invert siphon. In this way the siphon has been wax melted in with a hot iron is excellent.

Dr Dr Dr (3704) L. K. asks: What is the best 

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|--|--|--|--|
| Elevator, E. Landis.<br>Elevators, electric controller for, W. Baxter,<br>Jr.  | 463,632<br>463,615   | for electric, E. Thomson<br>Rake. See Hay rake.<br>Ratchet device, M. Reisch   | 463,761<br>463,778                                       |
| Engine, See Dental engine, Locomotive engine,<br>Steam engine.<br>Engines, apparatus for controlling the exhaust<br>for condensing, L. I. Sermour                                | 463,874  | Rolling wire rods and strips, machine for, T. V.<br>Allis.<br>Roofing, metal, W. L. & H. Heberling.  | 463,697<br>463.831                                       |
| Enlarging camera, C. R. Jonne<br>Envelope making and printing machine, J. Ball<br>Envelope, safety, J. Malone  | 463,630<br>463,981<br>463,906  | Rope end clasp, J. B. Clerget<br>Rough rounding and channeling machine, H.<br>Briggs   | 463,807<br>463,982                                       |
| Explosive and making the same, J. M. Pollard<br>Fabric turfing implement, M. F. Connett<br>Fabrics, machine for brushing, S. G. Hall   | 463,769<br>463,753<br>463,896  | Saddle, harness, O. Taber.<br>Safe, burglar proof, M. Mosler (r).<br>Safe, doors, mechanism for closing and opening,                               | 463,651<br>463,998<br>11,204                             |
| Farmers use on hilly land, instrument for, W. S.<br>Standifer<br>Feeding cattle and hogs, portable crib for, W.  | 463,771<br>463,857   | W. Corry   | 463,698<br>463,722<br>463,759<br>463,984                 |
| Fence, L. James<br>Fence, portable, Freeman & Haley<br>Fence posts, shearing roll for cutting blanks for,  | 463,951<br>463,893   | Saw jointing and setting device, R. N. Magee<br>Sawmill, band, A. Cunningham (r)<br>Scows, ventilator for lighterage, T. Price                     | 463,735<br>11,203<br>463,816                             |
| C. A. Peterson.<br>Fence wire, barbed, J. Haish.<br>Filter, O. H. Jewell   | 463,916<br>463,742<br>463,757<br>463,832   | Scraper, dirt, D. F. Oliver<br>Screen. See Sand screen.<br>Screw machine, automatic, W. W. Hastings<br>Separator. See Centrifugal separator        | 463,795<br>463,626                                       |
| Fire escape, A. R. Shannon.<br>Fire estinguisher, G. E. Davis.<br>Fly poison support, M. Mandel.   | 463,670<br>463,725<br>463,636  | Sewing machine motor, F. W. Kremer.<br>Sewing machines, thread unwinding device for,<br>H. A. Bates.   | 463,721<br>463.822                                       |
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