

cases are cleaned as thoroughly as possible, and then the insides of the cases are painted over with a brush dipped into a solution of the sublimate. A few pieces of camphor are placed at the bottom of the case, the lid is fixed on, and strips of paper pasted over the crevices. We would recommend you Mr. J. H. Batly's recent work on "Practical Taxidermy and House Decoration," which we can mail for \$1.50.

(8) L. S. asks (1) for a recipe for making an efficient and cheap tooth powder. A.

- Prepared chalk..... 1 ounce.
Powdered borax..... 1/2 "
Powdered myrrh..... 1/4 "
Powdered orris..... 1/4 "
Mix and sift through fine cloth.

2. A recipe for making a good lady's shoe dressing? A. Ivory black in fine powder 1 pound, molasses 1/2 pound, sweet oil 2 ounces, beer and vinegar of each 1 pint. Rub together the first three until the oil be perfectly killed, then add the beer and vinegar. 3. Recipe for making a good roach and vermin destroyer? A. Boil 1 ounce poke root in 1 pint water until the strength is exhausted. Mix the decoction with molasses and spread it on plates in localities infested by vermin. 4. A recipe for making a No. 1 grease eradicator? A. Soft soap and fuller's earth, of each 1/2 pound, beat well together in a mortar, and form into cakes. The spot first moistened with water is rubbed with the cake and allowed to dry, when it is well rubbed with a little warm water and rinsed or rubbed off clean. 5. A recipe for making a good polishing paste for metals, such as gold, silver, copper, brass, etc.? A. See answer to query 20, in SCIENTIFIC AMERICAN for May 2, 1885.

(9) J. E. Y. asks: 1. What can I cement the edges of writing paper together with, to makethem into pads as printers do? A. A quarter of an ounce crude gutta percha dissolved in carbon disulphide to the consistency of mullage. Apply to the edges of the paper where required. 2. What makes a good cement for metal that is used for holding kerosene? A. Boil 3 parts of resin and 1 of caustic soda in 5 of water. This composition forms a soap which, when mixed with half its weight of plaster of Paris, sets firmly in about three-quarters of an hour.

(10) A. G. A., Jr.—The rate of progress of glaciers, dependent upon various conditions, is no more uniform than that of rivers. It can in no case be correctly estimated except by observations extending over many years. Thus, for instance, the progress of the glacier of the Aar was for a certain period of time 250 feet per annum, and during another period 550 feet per annum. De la Beche gives 200 yards a year as the motion of the Mer de Glace; "400 feet and 40 feet are both given as the rate of motion of the Mer de Glace." If you will consult Tyndall's "The Glaciers of the Alps," you will find in that book the explanation of the entire subject. There is probably no information that is reliable on record concerning the glaciers of Alaska. See also the "Causes of the Motion of Glaciers," SCIENTIFIC AMERICAN SUPPLEMENT, No. 398.

(11) L. K.—There are various plans of making mustard, thus: Soyer's is described as follows: Steep mustard seed in twice its bulk of distilled vinegar for 8 days, grind to a paste and put it into pots, thrusting a red hot poker into each. Moutarde a l'Estragon: Gently dry 1 pound black mustard seed, then powder it fine, and mix it with 2 ounces salt and sufficient tarragon vinegar to make a paste. In a similar way are prepared several other mustards, by employing vinegars flavored with the respective substances, or walnut or mushroom catsup or the liquor of the richer pickles in proportions to suit. Suitable mortars or grinding apparatus can be procured through any jobber in hardware utensils or druggists' sundries, provided only the smallest articles are desired, otherwise they will have to be made specially.

(12) W. S. asks: 1. What is the best thing to use to soften paper or pulp board to render it fit for pressing into useful shapes, so as to retain its form when dried? A. The pulp is soaked in water and then put right into the heating engine, and there mixed up with the stock. 2. Can it be rendered waterproof at the same time, or what is the best method of waterproofing? A. There is no process of so treating paper as to make it entirely waterproof. SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 39 and 96, describe processes for this purpose.

(13) J. W. B. asks the most approved—tested—method of bottling extract of herbs, by hand, so as to prevent it becoming sour after a few weeks or months, without using alcohol. The addition of 25 per cent of glycerine can be employed with safety. Otherwise heat the bottles after they are filled by placing them in boiling water and cook; as they cool a vacuum will be formed, so that the air will not come in contact with the herbs at all.

(14) L. S.—You cannot make a good journal box without tin; 2 ounces tin, 1 ounce zinc, to 1 pound of copper makes an excellent box for wear. Antimony and lead make a poor alloy; antimony and tin make a good soft box.

(15) F. K. asks: Why is it that a heavier float, raft, or coal barge will float faster, or farther in a day, or any length of time, than a lighter one, neither being aided by any motive power or sail? A. It is well known that the swiftest part of the current of a river is not at the top, but somewhere between the top and bottom. The deep laden barge catches the swift undercurrent, and floats faster than a shallow barge.

(16) W. B. H. asks for a plating to apply to the reflector of a dark lantern (tin) without removing the reflector from the lantern. A. Apply the following paste with a rag to the tin; it will form a silver coating: Silver nitrate 1 part, cyanide of potassium (poisonous) 3 parts, with water sufficient to form a paste.

(17) F. P. L. R. desires a good prescription to be taken for internal piles, where they are high up; also a good injection to keep in over night, and the amount to be used of the injection. A. Pulverize in a mortar, and mix thoroughly, 1 ounce each of cream of tartar, jalap, senna, flowers of sulphur, and golden seal,

and 1/2 ounce saltpeter. Dose, a teaspoonful three times a day. For external use: Boil some of the inner bark of white oak in water, and strain; evaporate to a thick extract. To 1/2 pint of this extract add 1/2 pint of oil rendered from old strong bacon. Simmer together till mixed, and let cool. Apply with the finger inside the rectum every night and until cured.

(18) R. O. E. L.—Iron pipe is universally used for conveying the brine in cold cellars and for producing cold in brine vats. If kept free from atmospheric influence, it is the best material available. If a machine is to be laid up for a few months, leave the brine in or on the pipes.

(19) U. D. asks: What is the best treatment for catarrh in the throat (post-nasal catarrh)? A. You will find in SCIENTIFIC AMERICAN SUPPLEMENT, No. 262, an article on "Nasal Catarrh," by Dr. F. H. Bosworth, to which we refer you. Dr. Dudley Reynolds, in SCIENTIFIC AMERICAN SUPPLEMENT, No. 84, writes very fully on the character and treatment of catarrh. See also "A Cure for Catarrh," in SCIENTIFIC AMERICAN SUPPLEMENT, No. 216. The best thing to do, however, is to consult some competent physician.

(20) D. C. H.—If a lightning rod has a good ground, the more numerous its connections with the building the better. Insulators are a positive detriment. A lightning rod should be connected with the tin roof, if the building has one, the gutter, the leaders, and all the metal pipes in the house.

(21) W. W. Q. asks: 1. What is the composition used in the porous cups of the Leclanche battery? A. Granulated black oxide of manganese. In some batteries of this class granulated carbon is mixed with the manganese. 2. What is the best battery for silver and gold plating? A. For plating on a small scale use Smee's; for large work use the Bunsen bichromate.

(22) G. L. C. writes: We wish to get a clockwork motor, to pump an organ. Can such a motor be procured? A. We know of no clockwork motor that would be likely to meet your wants. Spring or weight motors are not much used, as it takes more labor to wind the machine than is required to do the work by the direct application of the power. One would have to be specially made for your purpose, which a good mechanic could do according to the situation.

(23) D. A. F. writes: With a center gas light, 6 feet from large mirror, will room be any lighter on account of reflection of light in mirror? A. The light reflected by the mirror will add something to the light of the room, as, if the mirror were not there, more or less of the light would be absorbed by the wall.

(24) S. T. W. writes: I have built a canvas canoe, and I want to cover it with two thicknesses of Manila paper. I want to find a waterproof glue or a composition of pitch and something else to stick the paper to the canvas. A. Use the following: Fuse together equal parts of pitch and gutta percha, and to this add about 2 parts of linseed oil containing 5 parts of litharge. Continue the heat until the ingredients are uniformly commingled. Apply warm.

(25) G. J. S.—For a sand blast the chamber containing the sand should be connected with the pressure pipe and closed tight. The inlet pipe should be at an acute angle with the blast pipe, so that the sand will flow freely into the blast.

(26) X.—The principle governing the pitching of a curved ball is the same for any distance; but when a person gets familiar with the peculiar motion for a given distance, he cannot give the same curve for any other distance without special practice for that distance. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 423, on Base Ball Science.

(27) W. G.—A little salt in the water for hardening files is commonly used. The heat should suit the quality of the steel. The lowest heat at which the file can be hardened is the proper one. This can only be ascertained by trial. Acid does not destroy temper, but is sometimes used to sharpen old files.

(28) E. L. P.—The hard baking japan for iron work is sold by the varnish makers. It is put on with a brush thinly, and baked in an oven at about 260°; 2 coats is generally sufficient. Cannot give the formulae for the best. Better buy it.

(29) F. J. R. asks: What acid is used to bring out the date on old copper pennies? A. By heating copper coins gradually, it is said that the inscription will in almost all cases make its appearance. Coins can be quickly cleaned by immersion in strong nitric acid and immediately washing in water. If very dirty or corroded with verdigris, it is better to give them a rubbing with the following: 1/2 ounce pure potassium bichromate, 1 ounce sulphuric acid, 1 ounce nitric acid. Rub over, wash with water, wipe dry, and polish with rottenstone or chalk.

(30) W. S. desires the best means of fusing or dissolving gum amber so as to make that varnish. A. Six pounds of fine picked, very pale, transparent amber are cautiously heated in an iron pot, and as soon as it becomes semi-liquid, 2 gallons of pale boiled oil, previously made hot, is very gradually stirred in, and the whole thoroughly blended. This operation is one of considerable delicacy, and requires experience and skill. By mixing it with four gallons of turpentine, a varnish is obtained that will work free, will flow well, is durable, and becomes very hard.

(31) H. L. asks: What is considered best for heaves in horses? A. Balsam of fir and balsam of copaiba, four ounces each, and mixed with calcined magnesia sufficiently thick to make it into balls; and give a middling sized ball night and morning for a week or ten days.

(32) E. B. B. asks: 1. Can you give me the percentage of starch and sugar in ale and beer? A. The percentage of sugar contained in ale and beer varies between 2 and 3 per cent. Among a number of analyses made of beer in this city we find the percentage of sugar in one sample to be 2.64, while in another it was only 2.20. 2. Is there any malt liquor which has no

starch or sugar in it? A. Malt liquors by definition are such in which the grain has become sweet from the conversion of the starch into sugar by an incipient growth or germination artificially produced, called mashing.

(33) E. M. K. asks how to work over butter that has become rancid from age and oiling. A. Rancid butter may be restored, or in all cases greatly improved, by melting it in a water bath with some fresh burnt and coarsely powdered animal charcoal (which has been thoroughly freed from dust by sifting), and straining it through clean flannel. A better and less troublesome method is to well wash the butter first with some good new milk, and next with cold spring water. Butyric acid, on the presence of which rancidity depends, is freely soluble in fresh milk.

(34) A. A. S. asks how to make or where to get the kind of black crayons used by rapid crayon artists on the stage. A. The crayons consist of ordinary charcoal, and can be purchased from any house dealing in artists' materials. 2. How luminous paint is made from phosphorus. A. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 249. See also Balmain's Luminous Paint, in SCIENTIFIC AMERICAN SUPPLEMENT, No. 229.

(35) R. E. M. B. writes: 1. I want a good waterproof varnish for fine fishing rods. A. Let 4 ounces India rubber in small pieces soften in 8 ounces of oil of turpentine, then add 2 pounds of boiled oil, and boil for two hours over a slow fire. When dissolved, add 6 pounds of boiled linseed oil and 1 pound of litharge, and boil until an even liquid is obtained. To be applied warm. 2. What preparation will best polish German silver trimmings on a rod, and prevent their turning brassy looking? A. Use the polishing paste described in answer to query 20, in SCIENTIFIC AMERICAN for May, 2, 1885.

(36) V. J. T. asks: How can I make the color stay in a meerschaum pipe, so it will not come out in white spots when it gets hot? A. A raw meerschaum pipe would not acquire the rich color which is the smoker's delight, for the oil of tobacco absorbed by the pipe would penetrate the bowl and evaporate. Accordingly, the pipe is boiled in a preparation of wax, which is absorbed, and a thin coating of wax is held on the surface of the pipe and made to take a high polish. Under the wax is retained the oil of tobacco, which is absorbed by the pipe, and its hue grows darker in proportion to the tobacco used. A meerschaum pipe at first should be smoked very slowly, and before a second bowlful is lighted the pipe should cool off. This is to keep the wax as far up on the bowl as possible, and rapid smoking will overheat it, driving the wax off and leaving the pipe dry and raw. It is probable that the wax referred to in the foregoing has been burnt away in your pipe, and hence the white spots.

(37) W. P. H. asks: How many cubic feet for air chamber of compressed air will be required to make one horse power for one hour duration, without adding to the stored amount of compressed air in the air chamber, at the time of starting the engine, the speed of engine to remain the same through the time specified? A. For 1 hour's work equal to 1 horse power, you will require, for the operation of the engine and necessary leakages, 450 cubic feet of air per hour at 30 pounds pressure. You will require storage for 675 cubic feet at 60 pounds pressure to start with, which will run your engine for 1 hour, leaving 30 pounds pressure in the tank at the end of the hour's work. 2. What is the cost of compressed air per horse power? A. It costs more to compress air for power, if done by steam, than the value of the derived air power, by a very large percentage.

(38) B. G. C. asks if a person standing on the bow of a vessel should jump in an opposite direction to that in which the vessel is moving, would the said person make a longer jump than he would if the vessel was stationary? A. No.

(39) L. C. F. writes: I have a three wheeled Sheffield velocipede hand car which I have occasion to use almost continually. Could the car be propelled by a small steam engine or an electric motor, and the car still be readily put on and off track by one person? Present weight of car is some 150 pounds, and light running therefore would not require much power to run it. A. We know of no motor that you could apply to your hand car without adding so much weight as to render it impossible for one person to handle it. There are steam engines in the market which would readily drive it, but they would weigh perhaps 300 pounds, besides the water and fuel. You will find an electric motor very expensive and troublesome.

(40) W. F. asks the best kind of oil to put on engines, lathes, and other kinds of machinery, highly polished, to keep it looking bright all the time. A. We know of nothing better than good cylinder oil melted with leaf tallow, about equal parts; rub the bright parts with the mixture on a rag, leaving but very little oil on the surface. To keep the work looking well and clean, it should be wiped at least twice a week. The dust that lodges upon the surface of oiled work makes it appear dirty. You cannot keep machinery clean without work.

(41) E. A. writes: I have shaft with 2-8 foot wheels, one on each end of shaft, fastened to run on straight track parallel; another, wheel, 15 inches in diameter, is fastened in center of same shaft, with central rail raised up to the center wheel. In moving, does the center wheel slip or not on center rail? Also, a box car moving on a short curve, does the inside or outside wheel do the sliding? A. The small wheel will slide along the center rail if the pressure of the three wheels is alike on the three rails. There is a possibility of the large wheels slipping with a preponderance of pressure on the center wheel. The slipping of wheels does not admit of a positively theoretical answer, but an inspection of the rails at a curve should decide the question practically. The rail that has the greatest slip will be found to be worn and abraded.

(42) F. P. (Mexico) writes: Our cotton, as taken from the field before ginning, is stowed away in a large warehouse, and perhaps remains there some six weeks. We find it liable to heat, which makes the color brown, besides the great danger from fire. How

can I ventilate a room full of unginning cotton? A. For preventing the heating of unginning cotton in warehouse, make the floor open and raised above the ground, so that there should be a free circulation of air under the floor and through the open floor to the cotton. The strips for such a floor may be 1 1/2 inches thick and 2 inches wide, laid 1/2 inch apart. If a floor is already laid solid, and it is not desirable to alter it, a lattice or open floor may be laid over the solid floor by laying strips 3x4 in. on edge, so there shall be continuous passage for air between them clear across the building, and on these strips lay the open floor. Make openings on opposite sides of the warehouse for every passage.

(43) E. M. D. asks: What is the liquid composed of that barbers use for shampooing? A. Dissolve 1 ounce potassium carbonate (salts of tartar) in 1 quart soft water; sprinkle freely on the head, and rub well till a lather is formed; wash off with clean water.

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

B. F. W.—No. 1 consists of iron and copper sulphides, and has the appearance of being a furnace product. No. 2 is a piece of spiegeleisen, a variety of pig iron containing manganese. They have no direct value.—M. C. H.—The powder contains iron and sulphur. Apparently it is the mineral copiapite. To positively determine what it is and its value would require a quantitative analysis. This would cost you \$12.00.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

August 25, 1885, AND EACH BEARING THAT DATE.

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

Advertising packet, perfumed, F. A. Merrell..... 325,107
Alarm. See Steam boiler alarm.
Axle, carriage, D. A. Brown..... 325,050
Bag. See Paper bag.
Bag fastener, Austin & Stone..... 324,919
Baling press, P. K. Dederick..... 324,924
Banjo, H. E. Forrest..... 325,067
Band cutter and feeder, H. K. Andrews..... 325,222
Battery. See Galvanic battery. Secondary battery.
Bed, invalid, I. D. Johnson..... 325,000
Bed slat fastener, wire, S. D. Hollister..... 325,082
Beer, making, L. Ernst..... 324,822
Bell, gong door, R. R. Buehler..... 324,915
Belt, driving, C. O. Gehrkens..... 324,908
Belt, electric, L. Hughes..... 325,064
Bicycle handle, R. Rodes, Jr..... 325,014
Billiard table leg, M. Cashin..... 324,917
Binders, knotted mechanism for self, R. W. Dixon..... 324,988
Bit. See Bridle bit.
Board. See Drawing board.
Boiler. See Steam boiler.
Boiler, J. Watson..... 324,902
Boiler furnace, steam, B. Sloper..... 324,889
Boiler furnace, steam, D. Umbstaetter..... 324,898
Bolt cutter, O. A. Sathe..... 324,961
Bolt cutter head, M. D. Luehrs..... 324,946
Bolting reel, centrifugal, E. A. Squier..... 325,128
Book, etc., note and memorandum, A. Pester..... 325,008
Boot treeing machine, J. Call..... 324,982
Boring machine, J. P. Cobb..... 324,920
Bosom pad, J. L. Wells..... 325,080
Bottle stopper, J. M. & M. L. S. Escorbia..... 325,064
Bottle stopper, E. L. Lloyd..... 325,181
Box. See Egg box. Flour box. Tree box.
Watch movement box.
Bracket, B. F. Caldwell..... 325,196
Brake. See Car brake. Wagon brake.
Brake shoe, J. J. Lappin..... 324,851
Breastpin, F. Schroder..... 325,117
Bridle bit, J. G. Eberhard..... 324,821
Buckle, N. A. Cooper..... 324,921
Buckle, W. T. Jones..... 324,846
Buckle, suspender, J. F. Townsend..... 324,897
Buggy top spring, W. R. Wood..... 324,909
Buoy, P. Delany..... 325,162
Burner. See Hydrocarbon burner.
Bustle, J. L. Wells..... 325,031
Button, W. H. Gifford..... 324,832
Button and fastener, F. A. Smith, Jr..... 324,890
Button, calendar cuff, G. Monteiro..... 325,005
Button, separable, H. G. Lathrop..... 324,852
Cables, apparatus to be used with traction, R. Gornall..... 325,168
Caliper, protractor, and bevel, combined, F. W. Woodhull..... 325,036
Calipers, micrometer, M. M. Barnes..... 324,804
Calk, driving, E. A. Buck..... 325,194
Calk sharpener, E. H. Fenton..... 324,991
Can. See Oil can.
Cans, attachment for coal oil, A. E. Fox..... 325,008
Cans with liquid, filling fruit, W. H. H. Stevenson..... 325,131
Cane, D. Crowley..... 325,198
Cant hook, Crawford & Mundy..... 325,058
Capstan, A. R. Young..... 325,148
Capsule machine, T. C. Merz..... 324,898
Car brake, J. J. Henry..... 325,309
Car brake, automatic, J. L. Munday..... 325,215
Car coupling, W. J. Brown..... 325,155
Car coupling, W. Crane..... 324,814
Car coupling, J. H. Dymond..... 325,200
Car coupling, E. Ransom..... 325,114
Car coupling, D. Wertz..... 324,868
Car coupling, J. H. Wesson..... 324,969
Car door, D. Sutherland..... 325,218
Car seat, M. N. Forney..... 324,825
Car seat rest and the escape, E. H. Hazen..... 324,889
Car, sleeping, A. Christin..... 324,815
Car springs, apparatus for indicating the flexure of, F. W. Minck..... 324,949
Car ventilation, A. Bell..... 325,040
Car ventilator, A. Miller..... 325,003
Car wheel, R. Kells..... 325,177
Cars, lamp box for, J. J. Walton..... 325,185
Carriage shackle blanks, die for forging, P. Gillick..... 325,078
Case. See Index or directory case. Thermometer case.
Caster, furniture, A. B. Diss..... 324,820
Cattle, safety attachment for horned, W. P. Simonds..... 325,021
Cell cases, partition for, G. L. Jaeger..... 324,939

Chair, Child's chair. Opera chair. Tilting chair. Chair and sleeper, manufacture of combined, P. Kirk. 325,094
Chair socket, J. F. Thomas. 325,026
Chart, dress, M. E. Northen. 325,216
Check, draught, or other money order, W. T. Do-remus. 325,199
Child's chair, A. Knowlton. 325,178
Chimney cap, J. W. Wetmore. 325,082
Churn, Houck & Carter. 325,084
Churn, C. W. Patton. 324,879
Churn top fastener, J. H. Elliott. 325,164
Chute, coal, J. McEachern. 324,865
Cigarette mouthpieces, machine for making, J. C. Davis. 324,923
Cigar perforating machine, Heed & Hall. 324,936
Cigars, manufacturing, N. Doetsch. 325,062
Circuit closer, A. T. Smith. 325,124
Clamp. See Rope clamp.
Clamp, F. J. Bancroft. 324,863
Clip. See Locomotive spring clip. Vehicle spring clip.
Clock, electric, F. R. Field. 324,824
Clock striking mechanism, H. L. Naramore. 325,228
Clocks, adjusting beat of, H. P. Pruim. 325,111
Cloth pressing machine, J. Shearer. 325,122
Clothes drier, D. A. Dickson. 324,987
Coffee or tea pot, E. Boyes. 325,223
Cogwheel, H. O. Gadberr. 324,982
Colors, decorating paper and other materials with oil, M. B. Martin. 324,890
Colter and plow cleaner, T. W. Corby. 324,817
Comb attachment, C. H. Wells. 325,226
Cooker, steam, J. A. Marden. 325,100
Cooking utensil, M. B. Tate. 325,188
Copying apparatus, light, H. Sack. 324,960
Cork driver, J. Sommer. 324,983
Cot, folding, N. N. Horton. 324,843
Coupling. See Car coupling. Pipe coupling. Thill coupling.
Cultivator, W. S. Weir. 324,904
Cultivator shovel, S. Langford. 324,850
Cultivator, tongueless, M. G. Graham. 324,834
Current meter, W. G. Price. 325,011
Curtain fixture, F. Root. 324,959
Cutter. See Band cutter. Bolt cutter. Meat cutter. Rotary cutter.
Digger. See Post hole digger. Potato digger.
Drawing board, C. N. Leonard. 324,855
Drier. See Clothes drier. Malt drier.
Drum, snare, R. R. Perry. 324,881
Egg box, W. C. Gaskill. 324,829
Electric current meter, C. J. Van Depoele. 325,225
Electric machine regulator, dynamo, C. J. Van Depoele. 325,133
Electric machines and motors, regulator for dynamo, R. H. Mather. 324,862
Electro dynamic motor, F. J. Sprague. 324,891
Embroidery envelope, J. E. Lee. 324,854
Engine. See Rotary engine. Steam engine.
Extractor. See Lemon juice extractor.
Eyetelling machine, L. D. Hawkins. 325,077
Farm gate, J. G. Sherman. 325,123
Fastener, J. F. Thayer. 324,895
Fastening device, E. Wright. 325,221
Feed regulator, L. C. Schroeder. 324,888
Feed water heater, F. S. Zwickl. 324,910
Fence, R. F. Wilcox. 325,140
Fence, portable, machine for winding, E. W. Shoemaker. 324,891
Fence wire, machine for winding, E. W. Shoemaker. 324,887
Fertilizer distributor, J. F. Keller (r). 10,640
Fifth wheel, L. C. Fuller. 324,827
Fifth wheel, S. P. Stillman. 324,965
Firearm, repeating, A. Chuchu. 325,063
Fire escape, E. H. Bergmann. 324,914
Fire escape, F. Kogoschek. 325,180
Fire escape, J. H. Wilson. 325,142
Fire escape, R. Woolliscroft. 324,971
Fire extinguisher, automatic, C. Barnes. 324,977
Fish packing apparatus, Marshall & York. 325,102
Flour box and sifter, combined, W. C. Marr. 324,859
Fly trap, G. W. W. Edson. 325,168
Foot warmer, H. Sack. 325,116
Fork. See Hay fork.
Fork, W. H. Withington. 324,908
Furnace. See Boiler furnace. Smoke consuming furnace.
Furnace, J. Hill. 325,175
Furnace grate, J. Storer. 324,966
Furnaces, fire door casing for, J. R. McElligott. 325,105
Furniture, knockdown, J. B. Brolaski. 325,049
Gauge. See Seed drill gauge.
Galvanic battery, J. B. Low. 324,858
Game, J. B. Morse. 324,873
Garments, staying slits in, Smith & Paul. 325,126
Gas apparatus for generating illuminating, Booklen & Averell. 324,809
Gas regulator, J. D. West. 325,138
Gas supplied to burners, device for enriching, N. Finck. 324,992
Gate. See Farm gate. Railway gate. Wire gate.
Gate, Kyte & Martin. 325,213
Gate attachment, swinging, J. F. Mook. 324,871
Gates, operating device for swinging, G. Zink. 325,144
Gear, portable speed reducing, J. S. Worth. 325,220
Generator. See Motor pressure generator.
Gold from placer mines, apparatus for extracting, G. M. Levette. 324,856
Grader, road, C. A. Calaway. 325,156
Grain bin ventilator, B. F. Harrell. 325,170
Guano distributor, B. B. & A. C. Grant. 324,833
Gun, magazine spring, A. J. Benjamin. 325,042
Guns, support for whaling, J. J. Haviside. 324,935
Hair crimper, S. E. Norton. 324,877
Hame, J. S. Mitchell. 324,950
Hames, die for manufacturing, J. S. Mitchell. 324,951
Hammock spreader, W. E. Brock. 325,048
Hand rake, W. H. Jones. 324,940
Handle. See Bicycle handle.
Harrow, A. H. Bell. 325,151
Harrow, Fischer & Grother. 325,065
Harrow, L. Theis. 324,896
Harrow, disk, J. S. Corbin. 325,224
Harrow, wheel, A. E. Myers. 324,953
Harvester, W. P. Hale. 325,208
Harvester, corn, C. Williamson. 325,190
Harvesters, comb for grass seed, J. I. C. Naff. 325,109
Hay fork, C. A. Gutenkunst. 324,836
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