

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication. References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn. Special Information requests on matters of personal rather than general interest, and requests for Prompt Answers by Letter, should be accompanied with remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Minerals sent for examination should be distinctly marked or labeled.

(1) R. P. asks: 1. The process of preparing photographs from pictures or natural scenery for use with a sciopticon or other magic lantern? A. They are usually copied, and a print is made from the negative to form a glass positive. 2. How the balsam is applied which causes adhesion between the photo and the protecting glass, without interfering with the requisite transparency? A. Balsam is not generally used in lantern transparencies, but you can place a small quantity of balsam in the middle of your glass, and then press down the glass cover upon it, squeezing out the surplus. The common way of applying covers to transparencies is to separate the two glasses by means of a paper mat, and then seal the edges with a strip of gummed paper. 3. How the colors are made of the necessary transparency? A. Transparent colors mixed with varnishes are employed for covering lantern transparencies, and some of the colored lacquers are used to advantage for this purpose.

(2) S. I. D.—To make ginger pop: Take 5 1/2 gallons water, 3/4 pound ginger root bruised, 1/2 ounce tartaric acid, 2 1/4 pounds white sugar, white of 3 eggs well beaten, 1 small teaspoonful lemon oil, 1 gill yeast; boil the root for 30 minutes in 1 gallon of the water, strain off, and put the oil in while hot; mix. Make overnight; in the morning skim and bottle, keeping out sediment.

(3) J. L. asks how salmon is smoked. A. If the fish is salt, it is soaked for 24 to 30 hours, in order to remove the saline matters. It is then allowed to drip, and finally hung as high as possible in the smokehouse. The latter may be of any size, from a barrel up. The heat is generated from a smouldering fire of sawdust from some hard wood, such as cedar or hickory. The length of time depends upon the weather, condition of the fish, etc.

(4) C. M.—The introduction of steam into a pipe of natural gas would have no beneficial effect further than the absorption of such of the elements as have an affinity for water. Probably the steam in condensing would absorb ammonia. You would have to provide appliances for getting rid of the water of condensation. Mixed steam and gas, if combined as a jet, might be of value. Gas with 200 pounds initial pressure can be conveyed fifty or a hundred miles, and delivered at 10 pounds pressure with properly arranged pipes. Friction is in proportion to surface of pipe and velocity of current. The larger pipe will have less friction in proportion to the quantity delivered under a given velocity.

(5) E. H. R. asks how far an object on the surface of a level plane can be removed from a man before the curve in the earth's surface makes it invisible. A. The depression of the curve of the earth's surface is for 2 miles 2 67 feet, 3 miles 6 feet, 4 miles 10 67 feet, 6 miles 24 feet, 10 miles 66 feet, 15 miles 150 feet.

(6) W. C.—"Wing and wing" is sailing with the wind, with sails on opposite sides. Lateen sails are triangular in shape, carried by a long yard slung about one-quarter its length from the lower end. See "Galley" in Webster's dictionary. In a catamaran set the mast forward of the center for convenience of handling the sail.

(7) E. J. P. asks a definition and explanation of each of the following terms and figures used in the manufacture of steel boiler plate: 60,000 tensile strength, 25,000 to 28,000 elastic limit, 15 to 30 per cent elongation of area, 50 to 55 per cent reduction of area. A. 60,000 tensile strength is the breaking weight of a square inch of the metal. Thus, if a strip of boiler plate 1 inch wide and 1/4 inch thick parted at 15,000 lb. pull, it would be called of 60,000 pounds tensile strength. The elastic limit is the number of pounds that a square inch will sustain without taking a permanent set, or in other words will spring back to its original length after removal of load. Elongation of area is the percentage of stretch of the gauged area or neck of the piece under trial, and indicates the homogeneity of structure. Thus, if the elongation is even along the whole neck, the percentage will be large, and shows good quality, whereas if the elongation takes place at one point or with a sudden depression, it shows uneven texture—a faulty quality. The reduction of area shows the tenacity or toughness of the metal, and is indicated by the amount of the area of the neck at the line of parting as compared with its original size, and is measured in percentage by the amount of the reduction. Thus 55 per cent is a reduction of more than one-half of the area before the neck parts.

(8) H. H.—All parts of the periphery of a wheel move with the same velocity around its center. The top moves along the road twice as fast as the axle. The bottom does not move, unless the wheel is said to slip. This becomes self-evident by a practical trial of a small wheel on a table. All parts of a shaft move by its revolution. The center or axis of a revolving body or shaft is an imaginary line around which the body revolves. It has no breadth and no depth, and consequently has no physical existence. It therefore does not move.

(9) O. R.—For browning gun barrels: Wet a piece of rag with antimony chloride, dip it in olive oil, and rub the barrel over. In 48 hours it will be covered with a fine coat of rust. Rub the barrel with an iron scratch brush to the desired tint, and wipe with linseed oil.

(10) A. W. E.—Better use 16 wire on your armature and 14 on your magnet for larger machine. We cannot give the exact number of pounds of wire required. Such a magnet as you describe should support 150 pounds, if wound with No. 16 wire. The attractive force of a magnet is inversely as the square of the distance, so that at a distance of 1 inch it would be small.

(11) C. H. B.—For a short telephone line use an ordinary battery call. It is efficient and inexpensive. For a long line use a magneto call. It may be purchased at a small expense. We are unable to refer you to anything simpler than the call described in SUPPLEMENT, No. 162.

(12) W. M. asks: How many cubic feet of loose air will 1 foot of compressed air make at 100 pounds pressure? A. 13 cubic feet.

(13) G. S. would like to know from what kind of skins kid gloves are made. A. In Germany and Austria lambskins are largely employed; in France kid skins are used principally, and always for the best qualities.

(14) F. G. B. desires to stain articles made of spruce a bright yellow? A. Either of the following will answer: 1. Brush over the wood with the tincture of turmeric. 2. Warm the work, and brush it over with weak nitric acid; varnish or oil as usual. 3. A very small bit of aloes put into the varnish will give a rich yellow color to the wood.

(15) W. A. C.—A white precipitate produced by silver nitrate in drinking water is indicative of the presence of chlorine, and suggests contamination with sewage. The proper application of the test is described in the "Sanitary Examination of Drinking Water," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 462.

(16) B. T. E. asks a cure for a young horse with a wart near one eye. A. Tie around the wart as tightly as possible with a thread or horsehair until it rots away.

(17) B. S. writes: I have a telescope with which I want to make observations of the sun. I had thought of covering the object glass with a plain smoked glass, but thought you could tell me of something better. A. Place over your eyepiece a smoked glass, or, better yet, a piece of so-called black glass, which by strong transmitted light appears red, blue, or green.

(18) L. H. A. asks (1) if there is any cure for freckles, and what is it? A. Use the following: Sulphocarbonate of zinc 2 parts. Distilled glycerin 25 " Rose water 25 " Scented alcohol 5 " Apply twice daily for from half an hour to an hour, and then wash off with cold water. 2. What may be put in stereotype moulds to harden and not break them? A. See the "Stereotype Process," described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 310, under title of "Electro Metallurgy."

(19) J. W. L.—Caterpillars may be destroyed by spraying a solution of petroleum soap over the tree. They may be prevented from crawling up the tree by a giraffe of cotton wool surrounding the trunk. The spindle of the microscope table is usually provided with a collar, which is adjustable up and down on the spindle and fastened with a set screw.

(20) J. H.—For repolishing a glass eye use the finest jeweler's rouge on a piece of soft leather with water.

(21) B. R. asks (1) how to prepare his own dry plates for instantaneous photography. A. Consult Abney's book on "Gelatin Emulsions," also Dr. Eder's work on "Modern Dry Plate Photography." 2. What developer should be used? A. Beach's potash developer, as per formula in the August 2, 1884, issue of the SCIENTIFIC AMERICAN; or the carbonate and sulphite soda developer as prepared by Cramer of St. Louis, Mo.

(22) C. W. H. asks for a wire to protect oysters and mussels in the sea. A. We know of nothing better and cheaper than galvanized wire.

(23) P. A. asks: 1. Is the distillation of wood an important industry? A. All of the acetic acid of commerce is obtained in this manner. It is therefore an important industry. 2. What woods do they distill? A. Most woods can be used, but the harder varieties are generally employed, such as the oak, birch, beech, ash, etc. 3. How many arrobas (25 pounds) of purified acetate (acetato), suitable for use in the arts, do they distill from 100 arrobas of the wood? A. From 1 1/4 to 3 1/4 per cent of crude pyroigneous acid is obtained, which is subsequently purified, thereby reducing the amount. 4. What is the price of the purified acetate per arroba? A. About 2 cents a pound (50 cents an arroba). 5. Is not the distilled wood useful for domestic purposes? A. The wood is sold as charcoal. Wood naphtha is likewise obtained, and the combustible vapors are used as fuel. Very full information on this subject is given in the article on acetic acid in Spon's Encyclopedia of the Industrial Arts and Manufactures.

(24) F. O. B. asks: 1. What kind of cement is there for mending rubber garden gloves? A. Use rubber cement. A formula for its preparation is given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 158. 2. How to polish ivory, pearl, and bone, such as fans are made of? A. Ivory and bone may be polished by rubbing first with glass paper, and then with a piece of wet linen cloth dipped in powdered pumice-stone. This will give a very fine surface, and the final polish may be produced by washed chalk or fine whiting applied by a piece of cloth wetted with soap suds. Pearl is treated with finely powdered pumice-stone, and then putty powder and water. As a cement use 1 part isin-

glass and 2 of white glue dissolved in 30 of water, strain, and evaporate to 6 parts. Add one-thirtieth part of gum mastic, dissolved in one-half part of alcohol, and 1 part of zinc white. When required for use, warm and shake up. 3. What will take stains out of satin fans? A. It depends on the nature of the stain. See table in SCIENTIFIC AMERICAN SUPPLEMENT, No. 158.

(25) C. H.—Cerin is the waxy substance extracted by alcohol or ether from cork. The same term is applied to that portion of beeswax soluble in alcohol. We know of no animal fat having this name.

(26) C. E. C. asks: 1. How shall I clear the room of the vapor of bromine, and the length of time required? A. The room must be ventilated by opening the windows and doors before any one is permitted to enter. 2. Are the fumes injurious to persons? A. The fumes when inhaled produce great irritation, and affect the eyes very painfully. 3. Will it destroy water bugs and roaches, etc.? A. Life cannot exist where the fumes penetrate; suffocation ensues, and so it is supposed that all forms of insect life will be destroyed.

(27) C. W. B. asks (1) if there is anything that can be placed on zinc to keep paint from peeling off. A. Clean the surface with a strong soda water, wash clean, and apply with a woolen cloth a solution of hydrochloric acid and water equal parts for a few minutes, then rinse with water and dry. 2. Could there be sufficient power obtained from several coiled springs, if they could be wound up on the principle of a clock, to propel a light carriage? A. Yes, for a very short time. This scheme has been tried and found impracticable except as an experiment.

(28) C. F. asks: 1. What is the transparent waterproof glaze made of that is put on white oilcloth, such as is used for table covers? A. In a general way, the cloth selected is first coated with a weak solution of size, paint is then applied, which is rubbed down with pumice-stone. Any waterproof and colorless varnish answers the purpose. 2. What is purple rubber stamp ink made of, and what will remove it from paper? Aniline blue or violet dissolved in water with a little alcohol and glycerin. It can be removed by bleaching agents, such as javelle water, chlorine water, etc. 3. Are the casings used by sausage makers the intestines of cattle? How are they prepared to preserve them? A. The intestines or guts are used. They receive no special treatment as far as we know. 4. Please give the common name of the inclosed plants; they grow wild by the roadside. A. No. 1 is Panicum sanguinale, a variety of panic grass; No. 2, Plantago major, or rib grass; No. 3, Polygonum persicaria, or lady's thumb; No. 4, Sisymbrium officinale, or blue-eyed grass; No. 5, Maruta cotula, or common Mayweed.

(29) F. J. K.—For a harness blacking, use boneblack 4 ounces; linseed oil, 2 ounces; sulphuric acid, 1/2 ounce; treacle, 2 ounces; gum arabic, 1 ounce; vinegar, 1 pint.

(30) E. W. asks what kind of mineral "stephanite" is, what its value is, and what used for? A. Stephanite is a sulphide of silver and antimony. Its value depends upon the amount of silver that it contains. It has no special use except as an ore of silver.

(31) A. C. B. desires a receipt for oiling shoes to keep them from cracking. A. One pint linseed oil, 1/2 pound mutton suet, the same quantity of beeswax, and a small piece of rosin. Heat sufficient to mix, and use when milk-warm with a brush.

(32) W. H. H.—Engravings and prints are bleached by immersion for a few minutes in water containing a little hyposulphite of soda.—The restoration of paintings is effected by dissolving a little common soda in urine, then add a grated potato and a little salt; rub this well over the painting till clean. Wash off in spring water, and dry with a clean cloth.—Running even a small number of electric lights by batteries is expensive and unsatisfactory.

(33) W. H. asks (1) the best method of burnishing brass. A. You will find the preparation recommended in answer to query 6 (SCIENTIFIC AMERICAN, April 4, 1885) to be an excellent material for burnishing brass. 2. Silver plating and burnishing same? A. Silver plating is fully described under the title of "Electro Metallurgy" in SCIENTIFIC AMERICAN SUPPLEMENT, No. 310. The burnishing is generally accomplished by rubbing the ware with brushes attached to a lathe in conjunction with some polishing powder. The one previously recommended can be used, or rouge alone. Pumice-stone powder, crocus mastic, whiting, etc., are likewise employed. 3. A preparation for oil finish, and for reviving old work finished in oil? A. On page 193 of SCIENTIFIC AMERICAN, for April 18, 1885, you will find a furniture polish adapted to your wants.

(34) H. S. asks the botanical and common name of the within specimen. I find that the bark possesses tonic as well as laxative properties. Please state whether the bark, leaves, roots, or berries are used in medicine, etc., and for what purpose? A. The specimen sent is botanically called Rhamnus Californicus. It is a species of buckthorn. It bears a small berry-like fruit, with two or three berry seeds which have some resemblance to coffee, and they have been employed to some extent as a substitute for coffee. But if imperfectly roasted, the infusion is liable to produce colicky pains and vomiting. The bark probably possesses similar properties to the officinal buckthorn (Rhamnus catharticus) and to the California buckthorn (Rhamnus purshianus), which has been extensively introduced into medical use under the name of Cascara sagrada.

(35) K. asks for a cement to fix labels to tin boxes. A. Either of the following will answer: 1. Soften good glue in water, then boil it with strong vinegar, and thicken the liquid during boiling with fine wheat flour, so that a paste results. 2. Starch paste with which a little Venice turpentine has been incorporated while warm.

(36) A. C. B. desires the formula for indelible tracing paper. A. Transfer paper is prepared by rubbing the surface of thin post or tissue paper with graphite, vermilion, red chalk, or other pigment, and carefully removing the excess of coloring matter by rubbing with a clean rag.

(37) J. W. B. asks how fish food for gold fish is prepared. A. Their food is chiefly infusorial animalcules, with bread when in confinement. Another authority says: It is not good to feed them, as the food will only serve to render the water unfit for their existence, and if renewed every day, the water itself furnishes them with enough material for their sustenance.

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

W. E.—The mineral is a quartz rock, and contains apparently no metal of any value.—A. C. C.—The material sent is ordinary clay, colored by iron. It has no value whatsoever.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

September 8, 1885,

AND EACH BEARING THAT DATE.

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

Table listing inventions and their patent numbers, including: Addressing machine, Le Roy & Martignoni (325,945); Air and steam heater, G. Nixon, Jr. (325,963); Alarm, See Burglar alarm; Ammonia, apparatus for producing, C. H. Schneider (325,771); Anvil for rivet setting machines, G. H. Meade (325,689); Artist's palette cup, H. Serrell (325,872); Axle bearings, composition of matter for the manufacture of, I. P. Wendell (325,881); Axle bearings, etc., composition of matter for the manufacture of, I. P. Wendell (325,882, 325,883, 325,885 to 325,889); Axle box, car, Frost & Dawson (325,668); Axle or journal bearings, composition of matter for the manufacture of, I. P. Wendell (325,884); Back band hook, L. Hewitt (325,861); Bag, See Paper bag; Bag or satchel, M. Schwerin (325,978); Bakeries, mixing machine for, G. H. Ives (325,933); Baling press, L. B. Lathrop (325,843); Band or collar, W. Gray (325,672); Bar, See Calm bar. Grate bar; Barium and of strontium, making hydrates of, W. G. Strype (326,068); Bark mill, J. McKenrick (325,849); Barrel heads, metallic cover for, A. M. Hellman (325,930); Basket, T. F. Lawson (325,751); Battery, See Electric battery; Bed, folding, W. T. Salter (325,974); Bed lounge, O. & M. Alexander (325,897); Bedstead, invalid, W. P. Underhill (325,993); Beehive attachment, W. R. Spray (325,988); Beer and other liquids, apparatus for cooling, E. Wainwright (325,906); Beer, etc., apparatus for cooling, W. H. Hayes (325,742); Beer cooling apparatus, F. Widmer (325,892); Beer drawing apparatus, J. A. Button (326,017); Belt reel, W. E. Spangle (325,986); Bleaching purposes, application of chloride of lime to, G. Lunge (325,684); Board, See Plating board. Sign board; Boiler, See Circulating boiler; Boiler feed and alarm, T. Barber (325,898); Bolt, See Flour bolt; Bookbinder's gold saving cleaning box, T. Daniels, Jr. (325,916); Boots and shoes, heel band for, G. Castle (325,730); Bottle filler, Harner & Losch (325,929); Bottle, mucilage, W. H. Redington (325,970); Bottle stoppers, seating for, J. J. Varley (325,774); Bouquet fastening, M. Milne (325,853); Box, See Axle box. Folding box. Paper box. Tobacco box; Box, J. P. Buckingham (325,729); Boxes or crates, binding for, W. F. Reading (325,969); Broom holder, N. H. Long (325,682); Bread cutter, H. A. Grimm (325,741); Brick burning kiln, Cassidy & Fries (325,787); Brick machine, L. B. Kenney (325,939, 325,940); Bricks, drying and burning, P. Lichtenstadt (325,680); Bridge guard, draw, A. Bosch (325,965); Bridle blinkers, pattern for, C. W. Hess (325,834); Buggy seats, shifting rail for, S. Cothermon (326,019); Burglar alarm, F. D. Hill (325,838); Burglar alarm, J. G. Newell (325,961); Burner, See Gas burner; Bustles, stiffener for, E. Pohl (325,861); Button, G. W. Cavell (326,080); Button, L. P. Conard (325,612); Button, A. G. Mead (325,688); Cabs, opening and closing the doors of hansom, F. & C. Forster (325,739); Can opener, H. Sauerbier (325,770); Can or receptacle, M. H. Garland (325,925); Canned fish and method of canning, J. H. G. Walkhoff (325,997); Car coupling, D. Carlough (325,819); Car coupling, G. J. Ferguson (325,923); Car coupling, W. Forbes (325,830); Car coupling, C. H. Grambs (325,798); Car coupling, A. J. Jernagan (326,085); Car coupling, L. D. Kemerer (326,040); Car coupling, P. Lindo (325,947); Car coupling, T. L. McKeen (325,847, 325,848); Car coupling, O. C. Meusebach (325,851); Car coupling, A. Middleton (325,953); Car coupling, B. B. Morgan (325,957); Car coupling, R. S. Shaffer et al. (325,873); Car coupling, F. H. Stanford (325,876); Car heater, H. E. Freese (325,796); Car signal cord sheave, tram, J. Stephenson (325,705); Car starter, Kruzner & Tentschert (326,043); Car, street, F. W. Brooks (325,908); Car window guard, portable, E. Whitney (326,063); Cars, lighting railway, H. E. Freese (325,795); Carbon, making plates or masses of, Coxeter & Nehmer (325,822); Card grinding machine, Hicks & Metcalf (325,744); Carpet stretcher, O. L. Sprague (326,063); Carpet sweeper, E. B. Clarke (325,732); Carriage jack, J. R. Enos (325,024); Carriages, curtain light frame for, J. H. Hoops (326,036); Carrier, See Egg carrier; Cart, automatic loading, G. E. Burt (326,016); Carriage shell holder, W. H. Fisher (325,666); Case, See Glass case. Spectacle case; Chair, See Convertible chair; Chuck, lathe, C. Wilson (326,006)

Churn, W. Case.....	325,910	Hinge, spring, S. S. Niles.....	325,781	Railway signal, Timmis & Currie.....	326,068	Weighing machine, automatic, Weber & Harri-	326,074
Churn, E. H. Wood.....	325,894	Hog trough, Nelson & Larson.....	325,690	Railway signal, J. S. Trites.....	326,069	son.....	326,074
Churn cover, J. C. Autley.....	325,646	Holder. See Broom holder. Cartridgeshell hold-		Railway time indicator, J. P. Rhoads.....	326,059	Well cover, Bullock & Cook.....	325,816
Cider or wine press, M. P. Schenck.....	325,976	er. Egg holder. Kettle holder. Lead and		Railway tracks, gauge and level indicating device		Wheel. See Traction wheel.....	
Cigar tip cutter, C. S. Allen.....	325,896	crayon holder. Pen holder. Spool holder.		for, F. B. Stevens.....	325,706	Wheel, S. T. Williams.....	325,808
Circulating boiler, W. Schimpf.....	325,977	Hook. See Back band hook.....		Reamer, pipe, R. G. Marcy.....	325,948	Wheel guard, A. B. Cole.....	325,821
Cleaner. See Feed water cleaner.....		Hoop for barrels, tubs, etc., J. H. Bara.....	325,809	Reel. See Belt reel. Fishing tackle line reel.		Wind instruments, mouthpiece for, O. A. Watson.....	325,715
Club, Indian, C. H. Sparks.....	325,987	Hop breaker, P. L. Sebastian.....	325,979	Reflector, reversible, G. W. Kisinger.....	326,041	Windmill, D. S. Stover.....	325,707
Cock for gas, steam, etc., fittings, H. P. Drew.....	325,824	Horseshoe, J. B. Finch.....	325,664	Regulator. See Draught regulator.....		Window, R. Martinez.....	325,753
Cock, gauge, C. H. De Witt.....	326,022	Hose nozzle, valve, J. Ashworth.....	325,720	Roll for bending plate metal, R. Kent.....	325,677	Wire, drawing, C. S. Hall et al.....	325,800
Cockey, G. J. Letchworth.....	325,946	Hose patch, S. T. Brooks.....	326,012	Roller. See Land roller.....		Wrench, B. F. Lancaster.....	325,942
Confection capsule, J. Stuckes, Jr.....	325,711	Hose wagon, E. F. Steck.....	325,930	Rotary engine, W. O'Keefe.....	326,054		
Convertible chair, C. H. Weisgerber, Jr.....	325,885	Hot air engine, A. P. Hurd.....	325,905	Roughing machines, electrolyte plate shaving at-			
Cooker, steam, J. A. Shaw.....	325,880	Hub and axle, vehicle, Robertson & Hicks.....	325,769	tachment for, E. A. Blake.....	325,781		
Cork cutting machine, J. J. Murphy.....	325,856	Hub band, A. S. Parker.....	325,692	Ruler and paper cutter, combination, R. S. Thain.....	325,992		
Corn shellers, cylinder for, J. H. Gilman.....	325,971	Hydrant, O. P. Pence.....	325,764	Safe, E. Petit.....	325,765		
Corset, A. E. Proudfit.....	326,058	Hydraulic engine, P. B. Perkins.....	325,965	Sand paper moulding apparatus, F. W. Coy.....	325,789		
Coupling. See Pipe coupling. Thill coupling.		Ice machine, H. A. Fleuss.....	326,027	Sand paper roll, F. S. Strong.....	325,708		
Cradle, G. H. Neal.....	325,960	Indicator. See Railway time indicator. Shallow		Sash fastener, J. H. Hamaker.....	325,884		
Crib and chair, combined, E. E. Matthews.....	325,885	water indicator. Speed indicator. Station in-		Sash fastener, C. W. Littlefield.....	325,846		
Crushing mill, F. A. Huntington.....	325,804	dicator.....		Sash weight, R. Vosburgh.....	325,754		
Culm bar, S. M. Hess.....	325,837	Inkstand, T. J. Little.....	326,044	Saw, J. Ledward.....	325,679		
Cultivator, S. B. Bell.....	325,723	Insect powder gun, W. P. Houchin.....	326,037	Saw, buck, A. H. Loebis.....	326,045		
Cup. See Artist's palette cup. Grease cup.		Insulating material, composition of matter for		Sawmill, circular, A. Brogden.....	325,727		
Cutter. See Bread cutter. Cigar tip cutter.		use as, I. P. Wendell.....	325,890	Saw setting device, G. H. Massingham.....	325,951		
Cylinders, machine for boring, W. J. Muncaster.....	326,049	M. Cruickshank.....	326,021	Scale, portable or folding, F. Fairbanks.....	326,025		
Demi-john, boxes, G. L. Solter.....	325,875	Interfering pad for horses, D. B. Bieser.....	326,010	Scenery, apparatus for holding and shifting			
Derrick and carrier, combined, J. N. Fisk.....	325,738	Ironing table, J. M. Smyth.....	325,835	stage, W. H. Gifford.....	325,927		
Desk, school, E. R. Shepard.....	325,881	Jack. See Carriage jack.....		Scraper, road, W. E. Jacobs.....	326,034		
Die grinding machine, E. S. White.....	326,001	Jar. See Fruit jar.....		Screw plate, B. Elmore.....	325,790		
Dish washer, S. M. Fenton.....	325,792	Kettle holder, E. A. Seely.....	325,688	Seal lock, J. M. Edgar.....	325,661		
Draught regulator, J. Q. Everson.....	325,791	Key seating machine, D. W. Porter.....	325,695	Separator. See Mineral separator.....			
Drapery pin, G. W. Ferguson, Jr.....	325,924	Kiln. See Brick burning kiln.....		Separator, A. N. Wolf.....	326,077		
Draw shave, W. Millsbaugh.....	325,759	Kneader, dough, L. Durand.....	326,023	Settee, crib, and cradle, folding, A. M. Freeman.....	325,794		
Drawer for drawing paper and documents, A.		Knitting machine, T. Langham.....	325,943	Sewer, J. H. Clark.....	325,820		
Russell.....	326,061	Knitting machines, needle presser for, A. H.		Sewing machine, A. A. Sturtevant.....	326,067		
Dredging machines, discharge pipe for, A. W.		Brothers.....	325,815	Shallow water indicator, F. E. Forster.....	326,028		
Von Schmidt.....	326,072	Knob attachment, T. J. Morgan.....	326,048	Shear blade for hot blooms, bars, etc., S. M. Guss.....	325,673		
Drier. See Fruit drier.....		Knob, drawer, J. R. Sutliff.....	325,712	Sheller. See Pea sheller.....			
Dyestuff, violet methyl, F. Fischer.....	325,828	Lamp, arc, G. M. Hopkins.....	325,802	Shelving, portable, C. H. Post.....	325,696		
Dyestuffs, manufacture of violet, F. Fischer.....	325,827	Lamp attachment for show globe brackets, A.		Shingle sawing machine, W. J. Perkins.....	325,693		
Earthen and stone ware, machine for forming, D.		Lemon.....	325,845	Shoe soles and other purposes, fabric for G. F.			
S. Chesebro.....	325,911	Lamp, incandescent electric, O. A. Moses.....	325,958	Butterfield.....	325,785		
Egg beater and liquid mixer, E. F. Hough.....	325,840	Land roller, W. H. Knowles.....	325,749	Siding gauge, Benson & Perry.....	325,811		
Egg beater, batter mixer, and churn, T. E. Haak.....	325,674	Lathe, J. O. Haas.....	325,832	Sieve for sifting flour, meal, etc., E. L. Barber.....	325,780		
Egg carrier, R. Keith.....	325,936	Lathe, F. A. Wellman.....	326,000	Sign board, Bushnell & Van Gilder.....	325,817		
Egg holder, R. Keith.....	325,935	Lathe, engine, V. H. Ernst.....	325,682	Signal. See Railway signal.....			
Electric battery, E. G. Hammer.....	326,083	Lead and crayon holder, O. A. Moses.....	325,659	Siphon starter, L. Hirt.....	326,084		
Electric machines and electric motors, armature		Lens, J. W. Cloud.....	325,675	Skate, roller, W. Kelley.....	325,987		
for dynamo, S. F. Van Choate.....	325,714	Light. See Skylight.....		Skylight, B. Overman.....	326,056		
Electric switch plug, J. H. Bunnell.....	325,653	Liquid meter, P. Samain.....	325,975	Sled, P. Coy.....	325,658		
Electric wires, laying, W. D. Smith.....	325,834	Lock. See Milk can lock. Nut lock. Oar lock.		Solder mould, M. J. Stark.....	325,704		
Elevator, H. J. Reedy.....	325,971	Seal lock. Trunk lock.....		Sole trimming machine, A. F. Smith.....	325,703		
Embossed fabric for decorating walls, etc., T.		Locomotive engine, electric, L. Daft.....	325,915	Spark arrester, F. S. Bragg.....	325,907		
McGovern.....	325,887	Log mover and dog, W. E. Hill.....	325,745	Spectacle case, G. H. Striker.....	326,065		
Engine. See Hot air engine. Hydraulic engine.		Loom, A. Urbahn.....	326,071	Speculum, G. D. Bally.....	325,647		
Locomotive engine. Rotary engine. Steam		Loom shuttle, H. Barsley.....	325,721	Speed indicator, H. Tabor.....	325,991		
engine. Traction engine.....		Lubricating car axles, O. A. Pierce.....	325,966	Spinning mules or frames, silver trumpet or guide			
Fabric. See Embossed fabric.....		Lubricator, F. Bold.....	325,904	for, E. Rounds.....	325,700		
Fan attachment, H. P. Roberts.....	325,863	Mainspring winder, A. F. Robbins.....	325,973	Spirometer, D. A. A. Buck.....	325,784		
Fan, automatic, A. M. Richardson.....	325,862	Map, chart, or picture suspender, J. Brownlee.....	326,013	Spool holder, portable, E. Carlson.....	325,655		
Farm gate, E. M. Coombs.....	325,657	Measure, G. W. Knapp.....	325,842	Spring. See Vehicle spring.....			
Faucet, H. P. Drew.....	325,825	Mechanical movement, C. H. Newbury.....	326,052	Spring, E. A. Jones.....	326,039		
Feather, artificial, F. Seymour.....	325,870	Meter. See Liquid meter.....		Springs, attachment for connecting coil, C. Carle-			
Feed water cleaner, J. T. Bryant.....	326,014	Microtome, E. Bausch.....	325,722	ton.....	325,818		
Feed water heater and purifier, M. W. Hazelton.....	326,082	Middlings purifiers, combined dust catcher and		Squib, miner's, J. R. Powell.....	326,017		
Felly making machine, H. D. Jeffrey.....	325,841	separator for, Taylor & Lockwood.....	325,713	Stamps, inking pad for hand, C. A. Klinkner.....	326,042		
Felt and knit fabric, combined, S. G. Alexander.....	325,808	Milk can lock, W. J. Hussey.....	326,083	Stand. See Flower stand.....			
Fence making machine, S. D. Fry.....	326,029	Milk or coffee flask, A. Abrahamson.....	325,806	Staple making machine, O. P. Briggs.....	325,814		
Fence making machine, J. Zengel.....	326,007	Mill. See Bark mill. Crushing mill. Sawmill.		Station indicator, M. Anthony.....	325,948		
Fence wire machines, barb, L. W. Connell.....	325,733	Windmill.....		Steam boiler, G. A. Porter.....	325,967		
File, paper, J. M. Jenkins.....	325,676	Mill stock feeder, G. Cottrell.....	325,788	Steam engine, T. Brantley.....	325,725		
Filter ventilator, T. B. Howe.....	325,806	Mineral separator and amalgamator, A. G. Beebe.....	325,810	Steam engine piston, J. J. Love.....	326,046		
Filter, water, O. S. Lindon.....	325,681	Mould. See Solder mould. Type mould.....		Steam engines, automatic device for stopping, J.			
Firearm, breech-loading, E. A. Bassett.....	325,901	Mowing machine, D. C. Markham.....	325,949	M. Jaing.....	325,941		
Firearm, magazine, P. W. Strong.....	325,774	Mowing machines, bell crank for, D. C. Markham.....	325,950	Steam pipes, etc., device for holding, T. W. Prior.....	325,767		
Firearms, gas check for, J. E. Tyler.....	325,878	Nail, E. K. Page.....	325,859	Step and end gate, combined, E. R. Fish.....	325,665		
Fire engine houses, man hole for, E. O. Chase.....	325,731	Nail machine, George & Meyerer.....	325,670	Still, G. R. Bruchmann.....	325,728		
Fire escape, J. Walsh.....	325,988	Net, fishing, T. S. Brown.....	325,652	Still, M. V. Monarch.....	325,955		
Fire extinguisher, D. B. Smith.....	325,832	Nut guard, E. Over.....	325,762	Stirrup, W. F. Birge.....	325,902		
Fishing tackle line reel, C. H. Briggs.....	325,813	Nut lock, N. Bosmann.....	325,906	Stove, heating, J. H. Keyser.....	325,678		
Flask. See Milk or coffee flask.....		Nut lock, A. Fisher.....	325,829	Stove, heating, J. O'Keefe.....	325,857		
Flour bolt, G. Halliday.....	325,833	Nut lock, L. N. White.....	326,075	Stoves, lid for gas, S. B. Long.....	325,883		
Flower stand, folding, H. Mecke.....	325,850	Oar lock, Klenk & Haas.....	325,748	Strainer, milk, F. Heyl.....	325,801		
Folding box, R. S. Merrill.....	325,755	Oil, car axle, J. Gibbons (r).....	10,644	Straw board lining machine, J. Albey.....	325,779		
Forges, adjustable leg for, J. F. Winchell.....	326,006	Ore concentrating apparatus, H. C. & J. A. Hen-		Suspenders, Freeman & Overmeyer.....	325,740		
Fruit drier, Blatchly & Hatch.....	325,782	erson.....	325,835	Table. See Writing table.....			
Fruit drier, B. A. Wright.....	325,777	Ore feeder, W. S. Sharpneck.....	325,701	Table and ironing desk, combined, I. W. Moore.....	325,956		
Fruit jar, E. A. Taylor.....	325,877	Oven shelf, M. Armington.....	325,645	Telegraph, printing, R. J. Sheehy.....	325,702		
Furnace grate, Blackburn & Corray.....	325,651	Overshoe fastening, J. B. Belknap.....	325,650	Telegraph wires, supporting, M. Hettinger.....	325,743		
Furniture, attachment for articles of, W. F.		Packing ring, asbestos, W. Wood.....	326,079	Telegraphs, controlling press circuits of printing,			
Davis.....	325,737	Pad. See Interfering pad.....		C. L. Healy.....	326,084		
Furniture, woven or knitted cord, J. Springer.....	326,064	Paper bag, H. P. Feister.....	325,922	Telephone repeater, M. G. Farmer.....	325,920		
Gagc. See Siding gage.....		Paper box, R. S. Merrill.....	325,758	Telephone switch board plug, C. K. Mead.....	325,952		
Game apparatus, railway, J. B. Wood.....	326,078	Paper box, D. M. Smith.....	325,773	Telephone system, A. E. Dolbear.....	325,659		
Gas, apparatus for generating illuminating, Pot-		Paper cutting machine, S. Whitlock.....	326,002	Telephones, increasing the efficiency of, A. E.			
ter & Boeklen.....	325,766	Paper cutting machines, slitter shaft for, E. H.		Dolbear.....	325,660		
Gas burner, I. Kendrick.....	325,747	Bridgman.....	325,812	Thill coupling, G. W. Beaver.....	325,648		
Gas burner, automatic safety, Haines & Strong.....	325,828	Paper drying cylinders, etc., steam pipe joint for		Thill coupling, A. L. Romans.....	325,684		
Gas lighter, J. A. Cabot.....	325,786	rotary, M. J. Roach.....	325,972	Threshing machines, band cutting feeder for, J.			
Gas service valve, H. A. Stearns.....	325,888	Parer, apple, J. Bittenbender.....	325,908	B. Davis.....	325,736		
Gate. See Farm gate.....		Pavements, etc., process of making and composi-		Tile, machine for making drain, Carson & Sher-			
Gearing, traction chain, G. E. Burt.....	325,654	tion for, J. E. Wynkoop.....	325,718	man.....	326,018		
Glass case for clocks, etc., J. G. Schultheis.....	325,866	Pea sheller, G. W. Fisher.....	326,026	Tire upsetter, G. W. Ford.....	325,793		
Glass cutting apparatus, W. H. Munford.....	325,855	Pen, fountain, L. W. Fairchild.....	325,663	Tobacco box, W. Demuth.....	325,918		
Glass moulds, apparatus for cooling, Blair & Butt-		Pen holder, R. C. Fay.....	325,621	Trace carrier for harness, J. B. Gathright.....	325,831		
ler.....	325,724	Piano action, upright, I. Fusco.....	325,689	Traction engine, H. Remelander.....	325,768		
Glove, R. F. Bartel.....	325,899	Piano agraffe, G. J. Couchois.....	326,020	Traction wheel, F. F. Landis.....	325,750		
Glove, G. H. Rawlings.....	325,868	Pin. See Drapery pin.....		Trap. See Rat and mouse trap.....			
Glove fastening, W. S. Richardson.....	325,688	Pipe coupling, J. & W. Agnew.....	325,885	Trough. See Hog trough.....			
Grain scouring and cleaning machine, A. G. Deor-		Pipe coupling, May & Sidall.....	325,886	Trunk and camp bedstead, combined, G. Vuitton.....	325,879		
bold.....	325,919	Plaiting board, P. T. Vannice.....	325,894	Trunk lid support, C. P. Howell.....	325,938		
Grate bar, J. B. Miller.....	325,852	Planter, corn and cotton, Williams & Hook.....	325,716	Trunk roll, C. F. Veit.....	325,955		
Grease cup, F. H. Bolte.....	325,726	Planter feeding apparatus, D. M. Parry.....	325,763	Tube rolling machine, C. Kellogg.....	325,938		
Guard. See Bridge guard. Car window guard.		Planter, seed, J. Laude.....	325,844	Type mould, Baas, Jr., & Benton.....	326,009		
Nut guard. Railway foot guard. Wheel		Plow, hand, C. W. Terpening.....	325,775	Type writing machines, escapement or feeding			
guard.....		Plow, rotary mould board, E. G. Goddard.....	326,080	device for, W. S. Boyd.....	326,011		
Gypsum treating, W. Manning.....	326,047	Plow, sulky, J. M. Young.....	325,719	Type writing machines, type aligner for, C. Smith.....	326,062		
Hammocks, head rest for, A. Nickerson.....	325,691	Plow, wheel gang, W. J. Browne.....	325,783	Valve, balance, A. Beckert.....	325,649		
Harrow, J. Cullen.....	325,734	Power mechanism for operating steam hammers,		Valve, balanced, M. N. Packard.....	325,963		
Harrow, J. Darby.....	325,735	etc., J. W. Pertz.....	325,860	Valve for engines, relief, C. B. Turner.....	326,070		
Harrow, F. Dawson, Sr.....	325,917	Preserving animal matters, G. Holgate.....	326,085	Valve gear, M. N. Packard.....	325,		