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(1) J. V. asks: 1. How to color brass or olled plate chains, etc. red or copper colored, without a battery? A. Steep in warm dilute oil of vitriol for a short time. 2. In making chloride of gold, is it best to heat to dryness? A. It should be carried as nearly to dryness as possible, but a very moderate heat only should be applied, so as not to cause the decomposition of the salt.

1. Would you advise sulphurizing a fertilizer before or afterdrying, to fix free ammonia? A. The fixation should be before drying, or otherwise the ammonia will be lost. 2. Would not sulphur fumes do? A. No.

(2) Mrs. J. M. D. asks for some simple method of preserving autumn leaves so they will retain their color? A. Dry the leaves perfectly, immerse them for a short time in a solution of clear gum arabic in 20 parts of water, and dry. The colors cannot be so fixed that long exposure to light will not alter them. If protected as above and kept in the dark, the colors will suffer little alteration.

(3) W. H. H. asks for a recipe for making east or baking powders? A. Baking powders are usually composed of bicarbonate of soda, mixed with cream of tartar, tartaric or citric acids, or a mixture of these. Dry at a moderate temperature, grind separately to finest powder, and then mix thoroughly 20 parts bicarbonate of soda and 50 parts cream of tartar; or 20 parts bicarbonate of soda, 30 parts of cream of tartar, and 10 parts of tartaric acid. As the cream of tartar of commerce is often of variable character, it may be necessary to use it slightly in excess of the above propor-

(4) K. X. says: I have a half lb. of phosphorus in a bottle which by exposure to heat has melted one Schenck's, No. 5, 24 in. Planer and Matcher; two and formed a solid cake. How can I reduce it again to Eureka Scroll Saws; one No. 3 Sturtevant Exhaust Fan. | sticks, or to any shape convenient to use in small quanand formed a solid cake. How can I reduce it again to tities? A. Unstopper the bottle and immerse it carepletely in a large vessel of water; heat the water over a water bath until the phosphorus is liquified; then draw vessel of cold water. When cold the phosphorus may easily be shaken or forced out of the tabe (under wa-

> (5) A. J. G. asks: 1. Is a heavy driving wheel, say of 150lbs., an advantage on a common lathe not back geared, or would a lighter one, 75 or 80 lbs., be better for all purposes? A. For common light work a wheel of 80 lbs. is sufficiently heavy. For heavy work one of 150 lbs. might be at times preferable. One disadvantage of the heavy wheel is in starting and stopping. 2. Should the wheel be counterbalanced, so as not to stop on dead centers, or would the lathe run steadier without? A. It is well to counterbalance the wheel for an inch. convenience in starting, but the lathe will not run any steadier for so doing.

(6) Mrs. M. A. C. asks: What compound would be the most durable as a paint for gravestones, that would stand all kinds of weather? A. Use a turpentine solution of pure asphaltum mixed with a suffi- covered with two layers of note paper; have the spool cient quantity of willow charcoal ground to impalpable

(7) C. J. H. asks: 1. How can I best stiffen the ends of sewing silk or thread, so as to readily pass through a fine capillary tube without bending? I want the ends about as stiff as shoemaker's bristles and impervious to water. I have tried dipping in shellac and solution of rubber. A. Try the following: Fuse together equal parts of g tta percha and resin. This may be dissolved in carbon disulphide.

1. Is the "plume miraculeuse" made of aniline color? If so, how can I best copy writing done with it without a press? A. Yes. Slightly dampen the tissue in the usual manner, place in contact with the writing between sheets of unglazed paper and pass, with moderate pressure, a suitable rubber-covered roller over the whole, 2. What is the best fluid gold for illuminating on parchment and paper? A. Rub up fine gold leaf with a little A. Digest in an open vessel 10 ozs. coarsely powdered honey, dissolve out the honey with warm water, and nutgalls, 4 ozs. gum senegal, 4 ozs. sulphate of iron mix the fine gold dust remaining with sufficient gum water and a few drops of oil of cloves.

(8) K. M. R. asks for the preparation that is used at the laundries to give goods a glossy appearance? A. Starch, 1 oz.; paraffin, about 3 drachms; white sugar, tablespoonful; table salt, tablespoonful; water, q. s. Rub up the starch with soft water into a thick smooth paste. Add nearly or quite a pint of 1½ pint; turpentine, ½ pint; corn starch, 1 oz.; a small boiling water, with the salt and sugar dissolved in it, quantity of burnt umber. Mix well together. boiling water, with the salt and sugar dissolved in it, and, having dropped in the paraffin, boil for at least half an hour, stirring to prevent burning. Strain the For Best Presses, Dies, and Fruit Can Tools, Bliss & starch and use while hot. Sufficient bluing may be Williams, cor. of Plymouth and Jay Sts., Brooklyn, N.Y. added to the water, previous to the boiling, to overcome the yellowish cast of the starch, if necessary. Spermaceti may be used in place of paraffin. Starched linen can only be properly finished by hard pressure applied

> (9) J. H. P. asks how to take the bitter taste from crabapple vinegar? A. Warm a sample of the vinegar and agitate it with a little egg albumeu. If this does not improve it, distillation must be resorted to.

(10) A G asks how the hair can be permanently removed from a person's forehead, on which it grows very low, without injury to the person? A. Preparations called depilatories are used for this purpose. Delcroix's Poudre Subtile consists of orpiment (sulphide of arsenic) 1 part; finely powdered starch and quicklime each, 11 parts. These are mixed together, made into a paste with warm water, and applied to the part closely Cleaner; tempered and strong. Chalmers Spence Co., N.Y. shaven. As soon as it becomes dryit is washed off with water. Ryder's depilatory consists of lime, 1 oz.; carbonate of potassa, 2 ozs.: charcoal powder, 1 drachm; use prove them stronger and more durable than wrought used as above. All of these preparations are more or dress, if of a dark color or brown, take 40 oz. of bichroless pernicious, and those containing arsenic, when improperly applied, are dangerous. They speedily destroy the vitality of the capillary bulbs, but, if allowed to remain too long in contact with the flesh, are apt to disorganize it.

(11) D. E. H. says: Please give me information as to method and cost of preparing farina from potatoes for market, cost of machinery, etc.? A. Potato flour is simply fine potato starch ground to powder between millstones. Suitable mills may be had for from \$200 to \$1,000. For a concise description of the process and machinery for extracting starch from potatoes, you should consult Wagner's" Chemical Technology.

(12) P. B. C. asks for a recipe to make mock silver, to resemble that metal in color and ring? A. Copper, 71 ozs.; zinc, 7 ozs.; nickel, 161/2 ozs.; iron, 11/4 ozs.; cobalt (oxide), 13/4 ozs.; tin, 21/2 ozs. First fuse the zinc with 12 parts of the copper; then fuse the nickel with its own weight of the zinc alloy in a good blacklead crucible, and and the iron, the remainder of the copper, and the oxide of cobalt mixed with char-coal. Cover the mass with charcoal, lute, and expose to a high heat. When properly fused, allow the heat to subside and add the remainder of the copper-zinc alloy silver. Brush upon the places where the insects frewhenthe temperature is just sufficient to fuse it. Request. Make the amount of the ingredients according move the crucible from the fire and stir its contents well with a hazel stick. Wrap the tin in several thicknesses of dry paper, drop it into the alloy, stir for a moment, and run into the moulds. When cold, it is ready to be wrought like silver, which it resembles in every respect. The zinc is nearly all volatilized during the process of fusion.

(13) J. E. asks (1.) how hydrargyrum bisulphide (bisulphide of mercury) is manufactured? A. It is made by treating mercury, or its oxide, with sulphuric acid. 2. Also, which is the best solution for carbon batteries used for electric bells? I have used bichromate solution, but it will only work a few hours. The Leclanché or Pr dhomme battery is best for this purpose. Use one twentieth of sulphuric acid with copper by the use of acids, and the method of doing your bichromate solution, but the bichromate batterv will require cleaning more than once a year.

(14) S. H. M. asks: 1. Can the Grenet battery be used for silverplating? A. Yes; but it is not good for this purpose as it is accumulative; it is better to use a sulphate of copper, or Smee's battery. 2. If so, how many cells of No. 1 will it require? A. That depen ds on the amount of surface; one cell will answer to plate an article, such as a teaspoon. 3. How shall I Pure gum rubber is softened by immersion in boiling it into tapering glass tubes (previously moistened and connect the wires of the battery with the silver and the warmed) of suitable size, close the upper end of the article to be plated? A. Connect the zinc of the battery tube, quickly invert it under water and transfer to a with the article to be plated; and the copper to the sil- dissolved by a mixture of carbon disulphide with 6 per veranode. 4. Also how to give the articles plated a cent of absolute alcohol, and on evaporation of the solfine polish? A. Polish with pulverized chalk.

> (15) R. K. T. and C. E. F. ask: 1. Of what gauge and length sho ld the fine silk-covered wire be as used in the Bell telephone? A. The wire used is No. 40 silk covered. 2. Should the poles of the magnet be the same on each instrument, or should one be north and one south? A. The poles are the same in each instrument. 3. Of what strength should the magnet be? Magnetized to saturation. 4. Of what thickness should the iron disk be? A. About one hundredth of loge, Paris, France.

(16) A. B. writes: I have five jars of a Lockwood battery. I wish to make a permanent magnent magnet; will you please give me directions? A. Wind a spool of 800 feet of No. 19 copper wire, "magnet insulation," on a half inch round rod of hard wood, abouteightinches long, and give the outside a coat of glue, to keep it from unwinding. When dry slip it off the rod. This is called the helix or spool; any piece of hardened steel is now placed inside the helix, and the poles of the battery are connected with the terminals of the helix; on breaking the battery connection and

(17) C. C. McC. says that he uses brass moulds to cast arms for chandelier work, but the molds do not fill. The castings are imperfect. A. Use zinc : moisture. for the castings. Warm the moulds preparatory to using them. Pay attention to the ventilation. Confined airmay cause the imperfect castings. Pour the metal slowly so as to allow the heated air to escape as the metal enters and fills the moulds.

(18) J. T. asks for a good steel pen ink? (free from copper), 34 drachm of ammonia, 6 ozs. alcohol, 41/2 quarts distilled or rain water. Continue the digestion until the fluid has attained a deep black

(19) D. T. S. asks: How is the filling made that is used in filling the pores of black walnut wood? A. Whiting, 6 ozs.: japan, 1/2 pint; boiled linseed oil,

(20) A. S. asks for a recipe for making whitewash for woodwork that will not peel off? A. Alum is one of the best additions to make whitewash polishing process may be the best. of lime which willnot ruboff. When whiting is used. thin glue water is good, but it will not do for outside from paper? A. Apply muriatic acid diluted with five work, exposed to rain.

(21) W. C. asks for a grease for boots that will turn water, and also make them soft? A. Beeswax, 2 ozs.; beef suet, 4 ozs.; resin, 1 oz.; neat's foot there is printing, as it will not attack the printed text. oil, 2 ozs.; lampblack 1 oz. Melt and mix well together.

shade on mixed cotton and woolen rags? A. For drabs, work for half an hour in a solution of 8 ozs. copperas and 4 ozs, tartar: lift and drain: then work for half an hour in 4 ozs. logwood and 1 oz. bichromate of potash; wash out and dry. By varying the quantity of logwith the logwood, a great variety of drabs, slates or fawns can be produced.

(23) W. W. asks how to color woolen goods black? A. For an amount of goods equal to a lady's mate of potach in 3 gallons of water. Boil the goods in this 40 minutes: then wash in cold water. Then take 3 gallons water, add 9 ozs. logwood, 3 ozs. fustic, and 2 or 3 drops of oil of vitriol: boil the goods 40 minutes and wash in cold water. All colored goods with cotton warps

should be previously steeped one hour in sumach liquor; and then soaked for 30 minutes in 3 gallons of clean water. with a small teacupful of nitrate of iron; it must be then thoroughly washed and then dyed as for woolen

(24) A correspondent says: I have a fire alarm, the wires of which come in at the top of a third story window, go to the floor, thence along behind a bed, and down through the floor and to the indicator in the second storyroom. Is there any danger from lightning to an occupant of the second story room, or an occupant of the bed in the third story? A. There is a slight danger, but it may be obviated by the use of a lightning arrester. The parties who furnished the indicator can supply it.

(25) W. B. asks how to destroy bedbugs? A. Take five cents worth of quicksilver, and the white of one egg. Beat the egg to a froth and add the quickquent. Make the amount of the ingredients according to the surface to be brushed over.

(26) D. A. says: I am very much troubled by the tarnish and rust on brass and steel jewelry. How can I remove the tarnish and rust, or prevent it? A. The only method to remove the tarnish and rust is to re-polish orre-finish the articles, as when first made. Care in handling is the best preventative.

(27) F. M. E. asks for the number of vibrations representing the tones of the two middle octaves of the standard scale—natural? A. C has 264 vibrations, D 296, E 333, F 352, G 395, A 444, B 498, middle C 528, D 594, E 660, F 704, G 792, A 880, B 990.

(28) H. H. E. asks how to cut stencils on so? A. Cover the copper with a thin coat of wax; with sharp cutting tools remove the wax on the portions of the metal where the cutting is to be done. If necessary surround the plate with a ledge of wax. Pour aquafortis over the plate and it will soon eat through the metal where unprotected by the coating of wax,

(29) J. S. asks how to melt or work over pure rubber, so as to make it into articles of use? A. water so thatit may be kneaded or forced into moulds on cooling it contracts and hardens. It is completely vent regains its former properties. It is also soluble in chloroform or naphtha. It cannot be melted by heat without suffering partial decomposition.

Is the glycerin that is used for chapped hands, lips etc., the same as that sed for making nitro-glycerin? A. Yes, but purer and stronger.

(30) A. R. L. and others ask: Is the Gramme magneto-electric machine made in this country? A. No. It is made by L. Breguet, No. 39 Quai de l'Hor-

(31) L. D. D. asks: How could alcohol and water, used for making pickles, be made into good vinegar? A. Alcohol may be converted into vinegar by adding to it a little yeast and keeping in a moderately warm place until acetification is complete. In pickling, only strongest wine vinegar is used, mixed with the spices and sometimes a little clive oil.

(32) L. J. says: I have a brass hopper on my coffee mill which is badly fly-specked. How can I polish it? A. Remove from the mill and polish with fine emery applied with a woolen cloth moistened with oil.

Please give me a recipe for making a baking powder? removing the steel, it will be found permanently mag- A. Powder and thoroughly dry separately by gentle heat 1/2 lb. tartaric acid, 3/4 lb. of pure bicarbonate of soda, and 34 lb. of potato farina. Mix dry, pass through a sieve, and preserve as much as possible from air and

> (33) W. B. N. asks how cavendish tobacco is prepared? If it is steeped in any liquor or any preparation? A. Tobacco, by the better class of manufacturers, is not steeped in any liquor, but after stripping, the leaves are sprinkled with licorice and white sugar, made into rolls and closely packed into oak boxes, and subjected to pressure, in which form it is sent

> (34) W, H. L. asks how to bleach or whiten ivory piano keys? A. Ivory is whitened or bleached by rubbing it with finelypowdered pumicestone and water, and exposing it to the sun while still moist, under a glass shade to prevent desiccation and the occurrence of cracks. Repeat the process until the proper effect is produced. Ivory may also be bleached by immersion for a short time in water holding a little sulphurous acid. chloride of lime, or chlorine in solution; orby exposing to the fumes of burning sulphur, largely diluted with air. Where the ivory keys cannot be removed the

> (35) Star asks how to remove writing ink or six times the quantity of water, and after a minute or two wash with clean water. A solution of oxalic acid, citric acid, and tartaric acid may be applied where

(36) L. G. asks how to remove fruit stains from cotton and linen goods? A. Wash the stained (22) J. W. asks how to produce a regular portion clean and apply a weak solution of chlorine, chloride of lime, or oxalic acid. Lemon juice will frequently remove stains. Some stains may be taken out by dipping the cloth in sour buttermilk and drying in a hot sun. Thoroughly wash in warm water and dry.

(37) S. H. asks how to test a rough diamond wood, and by introducing a little fustic in combination and tell it from glass? A. Put the stone in a leaden cup with some powdered fluorspar and a little oil of vitriol. Warm the vessel over a fire where there is a copious draught to carry off the noxious vapors that will be evolved. When these vapors have ceased, stir the mixture with a glass rod to fish out the diamond. A genuine stone will remain intact, but a fictitious one will be corroded by the hydrofluoric acid that has been generated around it.

> (38) C. H. D. asks how to Babbitt the boxes of an emery wheel shaft? A. Clean the boxes of

Fire escape, E. W. Averell .....

the old Babbitting and whatever grease there may be. If practicable heat the lower boxes quite warm. After removing them and while warm, but them in place, and adjust the shaft in the way it is to run. If there is any danger of the metal running out at the ends of the boxes, cut thick straw board and fit to the ends of the boxes and up to the shaft so as to retain the metal until it hardens. Heat the metal hot, and pour carefully so as to fill the box and come to the diametrical center of the shaft, remove the shaft and trim off the superfluous metal. Put the shaft again in place. Put on the upper box and pour through the oil hole. Remove toe box, trim off, and drill out the hole for reception of oil.

pering edge tools, etc.? A. See SCIENTIFIC AMERICAN tive. Supplement No. 71, p. 1123.

(40) A subscriber asks: What is the simplest way of keeping the temperature of my greenhouse above 45° winter nights? It is ten feet square. and is well warmed by the sun during the day. A. Put in a few lengths of cast iron pipe, fill them with salt water brine, and connect them with a stove so as to bring a portion of the pipe in contact with the fire. Let the pipe be 4 inches in diameter and set at a grade, leaving the stove at a high point and returning to it at a lower one. This will insure a circulation, and by keep ing a slow fire a permanently low temperature may be maintained. This apparatus can be constructed by your plumber, or a similar one may be ordered of any dealer in this city. The salt will prevent the water from freezing should the fire be suffered to expire.

(41) A. G. M. asks for information about the fruit called Aku? A. Guinea is the native country explosive in any way. of this fruit. It was brought to Jamaica by Captain Bligh in 1791, where it grows well. The fruit is about the size of a goose's egg and has a sub-acid flavor. It is considered wholesome and nutritive.

(42) B. H. asks what or-moulu is? A. It is can be removed and takes the hair with it, a name given to a particular alloy of zinc and copper generally about 52 parts zinc and 48 of copper. It is term is often applied in a general sense to works of art, come when it is made of grain or fruit? A. Nearly all The metal is sometimes finished by dipping in an acid, which helps produce the gold-like surface. Lacquer is often applied to prevent tarnish.

(43) E. G. M. asks how marquetry is made? A. It is different pieces of colored wood glued to a few hours, and strain off into clean barrels. 3. About ground of some firm wood. It is now chiefly confined in its use to floors, in which the various pieces of wood are usually disposed in regular geometrical figures.

(44) H. C. D. asks how to weld tortoise itmay be drawn off into clean tight barrels for storage shell?' A. Provide a pair of pincers or tongs. File the tortoise shell clean and make so as to form a lap joint, See that there is no grease about it. Wet the joint with water, apply the pincers hot, following them with water, and the shell will be joined as if it were one piece. Be careful that the heat be not so great as to burn the shell. You can test it by trying it on a piece of white paper.

cinnamon? A. Dissolve 2 drachms of oil of cinnamon fect on the iron of the boiler if the boiler were heated  $i\pi 1$  pint of good alcohol; add gradually 1 pint of water, and then stir in by degrees 4 ozs. powdered Ceylon cin-flammable, and when mixed with air, very explosive namon; agitate for some time and filter through paper.

(46) T. H. asks for a good indelible ink to use with stamps? A. Mix equal parts black oxide of manganese and hydrate of potash, heat to redness, and rub with an equal quantity of smooth white clay into a paste, water being added for that purpose, or, sulphate of manganese, 2 drachms; lampblack, 1 drachm; powdered loaf sugar, 4 drachms; rubbed into a paste with water. After stamping, dry the linen and wash well in water.

(47) N. P. asks how to test castor oil? A. If the oil be adulterated with rape oil, it may be detected by its not dissolving in strong alcohol, and also to let the exhaust escape through a blast pipe into the by its density. Pure castor oil is soluble in an equal stack? A. No. weight of alcohol, specific gravity 0.820.

by which an inexperienced person can tell which are good? A. No.

(49) S. H. J. says: I wish to fasten photographs to glass for coloring. What perfectly transparent fastener can I use which will not crack? A. See answer to E. F. (25) No. 12, p. 187, current volume.

use of any hair-producing elixir on the face? A. No. (52) G. F. S. asks: 1. What is the best where they are received. method of mending articles of celluloid, such as jewelry, etc.? A. Dissolve good glue in a small quantity of strongest vinegar or acetic acid by aid of heat. 2. Is there no way to restore the bright coral red which celluloid loses after long exposure? A. No.

(53) J. B. asks: 1. Will the airo-hydrogen blowning produce as strong a heat as the oxyhydrogen blowpipe? A. No. 2. Is the first safer than the latter? A. In inexperienced hands, yes. 3. Is there an alloy of platinum known (to solder platinum) which would resist a greater heat than fine gold? A. No. With skill ful manipulation and a good blowpipe (oxyhydrogen) platinum may be welded perfectly. 4. If so, will you please state whether such could be brought to melt by the illuminating gas and common blowpipe? A. No; the heat of an oxyhydrogen flame is requisite.

(54) G. A. says: Volatile oils cannot be used in public buildings at frontier posts, and candles purposes that will produce a brilliant light, like the lime ing graphite,-J. C. and M. S.-Specimens not received.

light, etc.? A. We do not know of such a device. Simple machines for making illuminating gas automatically from the vapor of light hydrocarbon oils are in the incrustation consists of caroonate and sulphate of lime, market. The electric lamp, using a small magnetoelectric machine driven by some small motive power, affords a brilliant light; the first cost of the apparatus, however, is considerable.

convex) 416 inches in diameter and 26 inches focus. Will it answer for an objective for a telescope? A. Not very well. 2. What size and focus will the eyepiece need to be? A. The eyepiece may be an inch in diameter (leaving an aperture in mounting of about 3/8 inch), (39) J. F. P. asks for the process of tem- 1 inch focus, and placed at 27 inches from the object

> (56) G. G. says: I wish to etch letters on glass. Have tried asphaltum varnish, shellac, etc. which all fail to keep the fluoric acid from spreading even after being dry a long time. What I wish is something which I could use to cover the whole glass, except the letters, and which will withstand the action of the acid? A. Beeswax or paraffin is used for this purpose; melt and apply it to the glass previously warmed; when cooled, cut out the letters and expose to the acid.

> (57) J. D. asks: What are the fire-extinguishing chemicals composed of, also whether they are explosive by contact with steam? A. The materials used in the Babcock and similar fire extinguishers are carbonate or bicarbonate of soda dissolved in water and a small quantity of oil of vitriol contained in a leaden cup, the inversion of which brings the acid in contact with the soda solution. The chemicals are not

(58) A. M. G. asks for a recipe for removing superfluous hair? A. Sulphuret of barium 3 ozs., water 12 ozs. A little powdered starch is wetted with this solution and immediately applied. When dry it are thrown into the waste basket, as it would fill half of

(59) R. M. H. asks: 1. What causes aniso finished as to have the appearance of gold. The malculæ to appear in the vinegar, and do they always vinegars prepared by slow fermentation contain microscopic organisms, derived from the germs present in the ferment, and from the air. 2. What must I do to re move them from the vinegar? A. Add a little of solution of sulphite of soda, agitate, allow to stand for a how long a time should elapse after making until it must be corked tight, or is it better to leave the bung out of the cask? A. As soon as the fermentation is complete,

(60) G. T. L. asks: 1. If the vapor of bisulphide of carbon will have any deleterious effects upon a steam engine as ordinarily constructed the vanor being used instead of steam to drive the engine? A. It would have no bad effect other than that of dissolving all oil or grease with which it might have contact. 2. Would there be any danger of explosion on decomposi tion of the liquid bisulphide on being evaporated in an ordinary steam boiler? Would the liquid have any efby steam? A. Bisulphide of carbon vapor is very in when ignited. It would suffer no decomposition by being heated to boiling, and, if pure, would have little effect upon the iron. 3, If water and bisulphide of carbon be mixed together, the water predominating, and the mixture be evaporated in a boiler, would there be an explosion or any chemical action of any kind, altering the character of the two mixed vapors? A. No, but the liquids would not mix, and the bisulphide would be come entirely vaporized before the temperature of the water attained the boiling point. 4. Is the liquid bisulphide compressible to any appreciable extent, and what is its cost in large quantities? A. No. The price, we believe, is about 75 cents a gallon. 5. Would it be safe

(61) W. N. H. asks for a recipe for good (48) J. H. asks: The bluing on some of our writing ink? A. Take Aleppogalls, well bruised, 4 ozs., try-squares and bevels has come off; how can I re-blue clean soft water 1 quart. Macerate in a clean corked by heat, immersing the blades in a pan of powdered add 1½ oz. gum arabic dissolved in about 2 oz. ...

charcoal while being heated. Remove from the fire ter, lump sugar ½ oz. Mix well and add 1½ oz. of sulphate of iron crushed small. Agitate occasionally for phate of iron crushed small. Agitate occasionally for the days when it may be decanted for use. In purchasing a glazier's diamond, is there any way When time is any object boiling water may be used instead of cold, and the ingredients put at once into the bottle and agitated until the ink is made.

(62) C. A. J. asks how sound is transmitted by the telephone? A. The voice causes the diaphragm of the instrument upon which it is thrown to vibrate. Electric undulations are induced in the coil (50) J. M. asks how the power of a tele- that surrounds the magnet, which are precisely analoscope is estimated? A. Divide the focal length of the gous to the undulations of the air produced by that objective in inches by that of the eye piece in inches. voice. This coil and magnet is connected to a similar This will give the magnifying power of the instrument. one at the other end of the insulated line of wire, and these undulations travel through the wire and are re-(51) T. G. A. asks: Would you advise the ceived and resolved into air undulations upon a similar diaphragm of the instrument at the end of the line

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

J. M. B.—The white specimen is agate--correspond ing to the Leucachates of Pliny. The other specimen is a sanded agate pebble or an inferior opal.-J. Y .-No. 1 (powder) contains, besides gold and silver, silica, alumina, lime, and traces of magnesia. It would be called a gold-bearing quartzite rock, with, however, a large percentage of iron. No. 2 is cassiterite or tin stone,-J. B. J.-It is rich in manganese-an impure braunite,-G. M. C.-It is a calcareous deposit filled with the fossil remains of numerous species of trilo-bites, and some vegetable matter.—Minerals of J. C. and L. S. W. are missing .- E. R. A .- It is a variety of fluorspar—fluoride of calcium.—C. B. K.—Specimens not yet received.—F. P. L.—It is an argillaceous carbonate of iron; its value will depend upon the percentdo not give sufficient light for the post schoolroom. age of iron it contains.—A. H.—No. I is serpentine and Can you suggest any simple contrivance for illuminating trap rock. No. 2 is gneiss. No. 3 is quartzite contain-

-J. H. P.-It is an ocherous clay, but the amount of Fifth wheel for vehicles, W. J. Elsom ......... metallic base is small. It is not valuable. J. F.—The magnesia, alumina, silica, sesquioxide and carbonate of iron, and a little organic matter.-A. R. P.-No, 1 is a limestone containing mica schist, hornblende, and malachite-carbonate of copper. No. 2 is lime carbo-(55) H. M. says: 1. I have a lens (double nate, No. 3 is a shale rich in malachite. No. 4 is a shale containing much mica, also hornblende.

### COMMUNICATIONS RECEIVED.

The Editor of the Scientific American acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

On Using Explosives for Deep Tillage. By J. R. C. On the Keely Motor. By J. A. F. On a Remedy for the GluttedLabor Market. By R.S. On the Navy Yard Fire Test, By -

On Weak Eyes. By -On Throwing a Ball in a Curve, By ——.
On Why are we Right Handed? By F. H. P.

Also inquiries and answers from the following: M. H.—P. L. W.—J. G.—B. C.—W. L. B.—J. T. J.— H. McI.—R. J. K.—H. E. B.—H. H. A.—C. H. R.— J. C. E.-W. B. N.--C.F.-S. H. R.

#### HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address

Hundreds of inquiries analogous to the following are sent: " Who makes tile and brick making machines? Who makes models of boats?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained

OFFICIAL.

### INDEX OF INVENTIONS

FOR WHICH

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

October 2, 1877, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

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

	Aerial machine, J. B. Ward	195,860
	Anchor, C. E. M rshall	
	Animal trap, G. Comada	
		195,774
:	Apple cutter, T. B. East	195,750
•	Bag holder and truck, H. L. Tobien	
•	Bale tie, J. M. Van Durzee	195,857
!	Bath, G. H. Ellis	195,753
	Battery, galvanic, C. A. Hussey	
	Bee hive. A. T. Wright	195,870
	Billiard cue tip, R. H. Sanborn	195,773
	Blower, fan, J. P. Wilson	195,865
	Boiler plates, templet for, J. Morgan Boot and shoe holding device, W. B. Murphy	
	Boot cleaner, Condry & Quinn	
	Boot jack, C. Hull	195,712
	Boot and shoe heel counters. E. Solomon	195.845
	Bottle stopper, etc., F. J. Seybold	195,849
	Box covers, etc., W. I. Winne	195,866
	Box fastener, W. I. Winne	195,874
	Box, wooden, F. Zuenkeler	195,871 195,820
	Bridges, timber splice for, Hubbard & Eddy Brush blocks, boring, O. D. & E. C. Woodbury	
	Bull wheel, W.H.H.Morris	
	Bull wheel, C.H.& D.C.Brawley	
	Burglar alarm, Hutchison & Ransom	
	Burners or carbureters, reservoir for, V.P. Harris	195,872
	Buttons to cards, attaching, C. H. Kellogg	195,715
	Calender rolls, F. Voith	
	Can, shipping, Dennis & Betts,	195,706 195,792
	Car heating apparatus. J. F. Callaway	
	Cars, track clearer for street, L. Wood	
	Caster, furniture. S. Myers	195,768
	Casting metal articles, A. K. Rider	195,843
	Cement, hydraulic, C. F. Dunderdale	195,749
	Chair, rocking, H. Closterman, Jr	
	Chairs attaching legs to, E. B. Witherell	195,867
	Clasp for supporting garments, W. Lamb Clothes dryer, D. K. Hickok	195,827 195,761
	Cock, Dewrance & Mallinson	
	Cock, lock, G. H. Noyes	
	Cork-fastening machine, A. Werner	
ı	Corset, S. B. Ferris	195,755
	Curtain roller and bracket, A. B. Shaw	
	Curtain tassel clamp, A. H. Knapp	
	Dish-washing apparatus, Watson & Scott	
	Distilling column. E. G. Starck	
	Draft equalizer, A. K. Williams	
	Drill, hand, W. Aldrich	195,692
	Dynamometer, A. F. Nagle	195,837
	Egg beater, T. Borcher	195,695
	Enameling iron ware, Quimby & Whiting (r)	7,900
	Excavating ditches, apparatus for, W.H. Minter.	195,833
	Fare box, A. C. Godell, Jr	195,814
		195,873 195.757
		195.723
	Fence post, A. B. Sprout	
	Fence, zigzag, N. H. Hamlet	

, f	Fire escape, E. W. Averell	195,78
	Fire extinguisher. T. Flagler	. 195,70
ì	Fulling mill, R. Elckc_neyer	
l	Gas or lamp fixture, B. T. Steinhardt	
•	Gate, W. L. Willis	195,86
ì	Gem setting, H. G. Mackinney	. 195,76
	Halter, C. Stone	. 195,77 195,84
	Harrow coupling, Ough, Loyd & Johnson	195,88
	Harrows, seeding attachment, E. H. Chamberlain	
	Hat-pouncing machine, Wheeler & Manley (r) Hay rake and loader, C. A. O'Dell	
	Hay rake, horse, W. Adriance	
	Head rest, I. B. Peckham	195,84
	Heating and drying apparatus, J. M. Case	
,	Hobby horse, J. A. Peabody	
	Horseshoe. C. H. Chubbuck	
	Hot blast pipes, valve for, T. Whitwell	195 86
	Keg for white lead, paints, etc., R. B. Turnbull.	195,73
	Lamp, L. H. Olmsted	195,71
	Lampblack, machine for making, J. K. Hallock	195,70
	Lantern, G. A. Beidler	195.74
	Latch, gate, C. B. Clark Lathes, tool posts for, R. Neasham	195,79
	Leather-crimping machine, J. D. Bacon	195,78
•	Lock, combination, H. Goodrich	
,	Lock for desks, etc., W. ParkLock for desks, etc., etc., W. Park	
•	Loom stopping mechanism, J. Megson	195,76
	Mail bag catch, W. S. Hamlin	
	Mattress, S. A. Shepherd	
	Meal bin, J. C. Durbin	
	Meats, curing, G. S. Gray	195,75
	Millstone dresser, J. G. Holderman	
l	Molding apparatus, Aikin & Drummond	
	Motor, spring, P. Cavalier	195,79
	Nailing machine, C. T. Brandon	195,69
	Napkin holder, E. Mears	
	Package, sampling, W. P. Groom	195,810
•	Packing for oil wells, J R. Cross (r)	7,90
,	Packing piston, J. H. F. Otto	195,77
	Paper machine, P. W. Hudson	
1	Paper machines, Buchanan & Smith	195,698
,	Pen, Might & Taylor	
	Planter, seed, W. S. Barton	195,743
	Plow, J. C. Ferguson	195,760
	Potato bug catcher, I. S. Munroe	195,835
	Pruning shears, C. Lloyd	
	Pump, J. B. Moutier	195,834
	Pump and well, J. Q. Adams	195,78
	Pump piston. G. W. Low	195,764
	Pumps for oil well, E. A. L. Roberts	195,728
	Rail joint. B. Ross	195.844
	Railroadrails carrying, A. J. Gustin, (r)	7,898
	Rulers, attachment to parallel, H. K. Averill, Jr.	195,702
	Saddle tree, gig, W. H. Taylor	
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	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Schone drilling machine, S. Palmer Stove, T. Gemmell. Stove, cooking, C. T. Lynd.	195,85(6) 195,82:195,82:195,717 195,719 195,719 195,719 195,718 195,82:195,74 195,82:195,72 195,82:195,72 195,82:195,72 195,82:195,72 195,82:195,73 195,82:195,73 195,83 195,73 1
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Scone drilling machine, S. Palmer Stove, T. Gemmell Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison. 195,751,	195,856 195,797 195,747 195,744 195,699 195,712 195,826 195,82
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Skope, C. T. Gemmell Stove, T. Gemmell Stove, Cooking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison	195,856 195,797 195,717 195,717 195,717 195,858 195,748 195,858 195,707
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Shone drilling machine, S. Palmer. Stove, T. Gemmell. Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison	195,856 195,797 195,797 195,717 195,717 195,718 195,82
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook. L. M. Doddridge. Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Stove, T. Gemmell. Stove, Cooking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison 195,751, Tile-laying machine, J. H. Sparkes Tobacco cutters, M. B. Morris Tool bandle, J. H. Anthony Toy, buzz, S. A. Standiford	195,856 195,797 195,741 195,741 195,741 195,822 195,822 195,823 195,702 195,823 195,702 195,823 195,702 195,823 195,702 195,823 195,702 195,823 195,702 195,823 195,702 195,823 195,823 195,823 195,824 195,82
	Safety pins, sharpening, Butler & Wellge. Sand dryer, J. Maguire. Saw hand, cross cut, E. C. Atkins. Saw teeth, insertible, W. Burger. Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch. Seeder and planter, Baldwin & Shumard. Seeding machine, Van Brunt & Davis. Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois. Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r). Spark arrester, Blair & Bush. Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman. Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Shone drilling machine, S. Palmer. Stove, T. Gemmell. Stove, cooking, C. T. Lynd. Stuffing box, J. Lockhart. Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford. Telegraph, automatic, T. A. Edison 195.751, Tile-laying machine, J. H. Sparkes. Toobacco cutters, M. B. Morris. Tool bandle, J. H. Anthony. Toy, buzz, S. A. Standiford Trace carrier for harness, J. L. Scholl	195,856 195,797 195,797 195,717 195,74 195,699 195,718 195,829
	Safety pins, sharpening, Butler & Wellge. Sand dryer, J. Maguire. Saw hand, cross cut, E. C. Atkins. Saw teeth, insertible, W. Burger. Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch. Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis. Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois. Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Sjmonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r). Spark arrester, Blair & Bush. Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Scone drilling machine, S. Palmer. Stove, T. Gemmell. Stove, Cooking, C. T. Lynd. Stuffing box, J. Lockhart. Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison	195,856 195,797 195,747 195,744 195,699 195,717 195,826 195,82
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Skope, C. T. Gemmell Stove, T. Gemmell Stove, Cooking, C. T. Lynd Stuffing box, J. Lockhart Syrinke, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison Telegraph, automatic, T. A. Edison Tobacco cutters, M. B. Morris Tool handle, J. H. Sharkes Tobacco carrier for harness, J. L. Scholl Truck iron for railway cars, J. T. Wilson Trunk, J. DeQuindre Tubes, die for drawing, S. P. M. Tasker	195,856 195,797 195,717 195,717 195,717 195,858 195,718 195,872 195,876 195,877 195,707 195,707 195,707 195,707 195,707 195,817 195,707 195,707 195,707 195,817 195,707
	Safety pins, sharpening, Butler & Wellge. Sand dryer, J. Maguire. Saw hand, cross cut, E. C. Atkins. Saw teeth, insertible, W. Burger. Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch. Seeder and planter, Baldwin & Shumard. Seeding machine, Van Brunt & Davis. Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois. Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r). Spark arrester, Blair & Bush. Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman. Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Scone drilling machine, S. Palmer. Stove, T. Gemmell. Stove, cooking, C. T. Lynd. Stuffing box, J. Lockhart. Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford. Telegraph, automatic, T. A. Edison	195,856 195,797 195,741 195,742 195,742 195,742 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,702 195,852 195,702 195,852 195,702 195,852 195,702 195,852 195,702 195,852 195,702 195,852 195,702 195,852 195,702 195,852 195,702 195,852 195,702 195,852 195,70
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Stove, T. Gemmell Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison 195,751, Tile-laying machine, J. H. Sparkes Tobacco cutters, M. B. Morris Tool handle, J. H. Anthony Toy, buzz, S. A. Standiford Trace carrier for harness, J. L. Scholl Tripick in of or railway cars, J. T. Wilson Trbnk, J. DeQuindre Turbine water wheel, J. M. Case Turbine water wheel, E. R. Stillwell	195,856 195,797 195,741 195,741 195,741 195,822 195,823 195,823 195,823 195,823 195,823 195,823 195,823 195,823 195,823 195,823 195,823 195,707 195,707 195,707 195,707 195,707 195,707 195,813 195,715 195,71
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering, machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Schone drilling machine, S. Palmer. Stove, T. Gemmell Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison Telejaying machine, J. H. Sparkes Tobacco cutters, M. B. Morris Tool handle, J. H. Anthony Toy, buzz, S. A. Standiford Trace carrier for harness, J. L. Scholl Truck iron for railway cars, J. T. Wilson Trunk, J. DeQuindre Tubes, die for drawing, S. P. M. Tasker Turbine water wheel, E. R. Stillwell Type case, A. A. De Calonne Valve adjuster, slide, H. B. Doolittle	195,856 195,797 195,717 195,797 195,717 195,798 195,718 195,828 195,828 195,828 195,828 195,828 195,828 195,828 195,828 195,828 195,828 195,828 195,828 195,828 195,72
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Stove, T. Gemmell Stove, Cooking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison Tile-laying machine, J. H. Sparkes Toola handle, J. H. Anthony Toy, buzz, S. A. Standiford Trace carrier for harness, J. L. Scholl Tripck in the star of the	195,856 195,797 195,741 195,744 195,699 195,711 195,824 195,825 195,825 195,825 195,825 195,825 195,825 195,825 195,825 195,825 195,725 195,727 195,72
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Stove, T. Gemmell Stove, Cooking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison Tile-laying machine, J. H. Sparkes Toola handle, J. H. Anthony Toy, buzz, S. A. Standiford Trace carrier for harness, J. L. Scholl Tripck in the star of the	195,856 195,797 195,741 195,744 195,699 195,711 195,824 195,825 195,825 195,825 195,825 195,825 195,825 195,825 195,825 195,825 195,725 195,727 195,72
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering, machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Scone drilling machine, S. Palmer. Stove, T. Gemmell Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison Telegraph, automatic, T. A. Edison Telegraph, automatic, T. A. Edison Trybus, S. A. Standiford Trace carrier for harness, J. L. Scholl Tryick iron for railway cars, J. T. Wilson Trybnk, J. DeQuindre Tubes, die for drawing, S. P. M. Tasker Turbine water wheel, E. R. Stillwell Type case, A. A. De Calonne Valve adjuster, slide, H. B. Doolittle Vehicle hub, J. M. Whiting Vehicle hubs, sand band for, E. P. 8-own	195,856 195,797 195,714 195,797 195,714 195,699 195,713 195,826 195,826 195,826 195,826 195,826 195,826 195,826 195,826 195,827 195,826 195,826 195,827 195,82
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Stove, T. Gemmell. Stove, Cocking, C. T. Lynd Stuffing box, J. Lockhart Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison Tile-laying machine, J. H. Sparkes Tobacco cutters, M. B. Morris Tool bandle, J. H. Anthony Toy, buzz, S. A. Standiford Trace carrier for harness, J. L. Scholl Trynck iron for railway cars, J. T. Wilson Trbuk, J. DeQuindre Tubes, die for drawing, S. P. M. Tasker Turbine water wheel, E. R. Stillwell Type case, A. A. De Calonne Valve adjuster, slide, H. B. Doolittle Vehicle dash rail, B. C. Converse Vehicle hub, J. M. Whiting Vehicle hubs, sand band for, E. P. 6-own Ventilating steam street cars, E. Longstreth	195,856 195,797 195,717 195,717 195,717 195,858 195,718 195,718 195,718 195,707 195,70
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Stove, T. Gemmell Stove, T. Gemmell Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart Syrinke, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison	195,856 195,797 195,717 195,797 195,717 195,858 195,858 195,877 195,806 7,901 195,817 195,737 195,806 7,901 195,817 195,738 19
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Stove, T. Gemmell. Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart. Syringe, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison 195,751, Tile-laying machine, J. H. Sparkes Tobacco cutters, M. B. Morris Tool bandle, J. H. Anthony Toy, buzz, S. A. Standiford Trace carrier for harness, J. L. Scholl Tryck iron for railway cars, J. T. Wilson Trbik, J. DeQuindre Tubes, die for drawing, S. P. M. Tasker Turbine water wheel, J. M. Case Turbine water wheel, J. M. Case Turbine water wheel, E. R. Stillwell Type case, A. A. De Calonne Valve adjuster, slide, H. B. Doolittle Vehicle dash rail, B. C. Converse Vehicle hub, J. M. Whiting Vehicle hubs, Sand band for, E. P. 6.0wn Venstlating steam street cars, E. Longstreth Ventilator, P. Mihan Vessels, center board for, S. R. Babbidge Washing machine, W. I. Clous	195,856 195,797 195,741 195,744 195,898 195,718 195,858 195,708 195,858 195,858 195,858 195,858 195,858 195,858 195,858 195,858 195,858 195,70
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Stove, T. Gemmell Stove, T. Gemmell Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart Syrinke, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison	195,856 195,797 195,717 195,797 195,717 195,856 195,856 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,867 195,87 195,87 195,87 195,87 195,87 195,87 195,87 195,87 195,87 195,77
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge. Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Scone drilling machine, S. Palmer. Stove, T. Gemmell Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart. Syringe, vaginal, R. H. Woodward Tan liquor. utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison Tool handle, J. H. Anthony Toy, buzz, S. A. Standiford Trace carrier for harness, J. L. Scholl Truck in for rallway cars, J. T. Wilson Truck, J. DeQuindre Tubes, die for drawing, S. P. M. Tasker. Turbine water wheel, J. M. Case Turbine water wheel, J. R. Case Turbine water wheel, J. M. Case Vehicle hub, J. M. Whiting Vehicle hubs, Sand band for, E. P. Brown Vehicle wheel, W. J. Drew Ventilator, P. Mihan Vessels, center board for, S. R. Babbidge Washing machine, W. I. Clous Watches, dust band for, O. Hoyt Water closet, J. Demarest	195,856 195,797 195,711 195,744 195,699 195,713 195,826 195,826 195,826 195,826 195,826 195,826 195,826 195,826 195,826 195,826 195,826 195,827 195,82
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Shone drilling machine, S. Palmer Stove, T. Gemmell Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart Syrinke, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison Telegraph, automatic, T. A. Edison Truck iron for railway cars, J. T. Wilson Truck iron for railway cars, J. T. Wilson Truck iron for railway cars, J. T. Wilson Trubne, J. DeQuindre Turbine water wheel, J. M. Case Turbine water wheel, E. R. Stillwell Type case, A. A. De Calonne Valve adjuster, slide, H. B. Doolittle Vehicle dash rail, B. C. Converse Vehicle hub, J. M. Whiting Vehicle wheel, W. J. Drew Ventilating steam street cars, E. Longstreth Ventilator, P. Mihan Vessels, center board for, S. R. Babbidge Washing machine, W. I. Clous Watches, dust band for, O. Hoyt Water closet, J. Demarest Water closet, J. Demarest Water closet, J. Demarest	195,856 195,797 195,797 195,711 195,798 195,792 195,792 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,852 195,75
	Safety pins, sharpening, Butler & Wellge. Sand dryer, J. Maguire. Saw hand, cross cut, E. C. Atkins. Saw teeth, insertible, W. Burger. Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch. Seeder and planter, Baldwin & Shumard. Seeding machine, Van Brunt & Davis. Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois. Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds. Snap hook. L. M. Doddridge. Soldering machine, Dillon & Cleary (r). Spark arrester, Blair & Bush. Stand for smoothing fabrics, J. F. Frese. Starch, drying and purifying, F. Melkersman. Steam engines, A. Cunningham. Stone cutting and dressing machine, G. Campbell Skove, T. Gemmell. Stove, T. Gemmell. Stove, cooking, C. T. Lynd. Stuffing box, J. Lockhart. Syringe, yaginal, R. H. Woodward Tan liquor. utilizing, H. J. Botchford. Telegraph, automatic, T. A. Edison	195,856 195,797 195,711 195,741 195,797 195,711 195,856 195,856 195,856 195,856 195,856 195,856 195,856 195,856 195,856 195,857 195,856 195,856 195,856 195,757
	Safety pins, sharpening, Butler & Wellge Sand dryer, J. Maguire Saw hand, cross cut, E. C. Atkins Saw teeth, insertible, W. Burger Screw-cutting die, M. C. Johnson Seal skins, treatment of, J. Kokesch Seeder and planter, Baldwin & Shumard Seeding machine, Van Brunt & Davis Sewer gas, discharging, W. D. Stewart Shoe fastener, V. Nivois Sickle grinder, A. Cameron Skate holder, E. C. Henderson Sled runners, forming, S. Gilzinger Smoking hams, N. G. Simonds Snap hook, L. M. Doddridge Soldering machine, Dillon & Cleary (r) Spark arrester, Blair & Bush Stand for smoothing fabrics, J. F. Frese Starch, drying and purifying, F. Melkersman Steam engines, A. Cunningham Stone cutting and dressing machine, G. Campbell Shone drilling machine, S. Palmer Stove, T. Gemmell Stove, cooking, C. T. Lynd Stuffing box, J. Lockhart Syrinke, vaginal, R. H. Woodward Tan liquor, utilizing, H. J. Botchford Telegraph, automatic, T. A. Edison Telegraph, automatic, T. A. Edison Truck iron for railway cars, J. T. Wilson Truck iron for railway cars, J. T. Wilson Truck iron for railway cars, J. T. Wilson Trubne, J. DeQuindre Turbine water wheel, J. M. Case Turbine water wheel, E. R. Stillwell Type case, A. A. De Calonne Valve adjuster, slide, H. B. Doolittle Vehicle dash rail, B. C. Converse Vehicle hub, J. M. Whiting Vehicle wheel, W. J. Drew Ventilating steam street cars, E. Longstreth Ventilator, P. Mihan Vessels, center board for, S. R. Babbidge Washing machine, W. I. Clous Watches, dust band for, O. Hoyt Water closet, J. Demarest Water closet, J. Demarest Water closet, J. Demarest	195,856 195,797 195,711 195,741 195,797 195,711 195,856 195,856 195,856 195,856 195,856 195,856 195,856 195,856 195,856 195,857 195,856 195,856 195,856 195,757

# DESIGNS PATENTED,

10,263.—CARPETS.—Frank E. Allen, Yonkers, N. Y. 19,264.—LACE FABRIC.—Abraham G. Jennings, Brooklyn,

10,265.—Bracelet.-H. Lang, Kennett's Square, Pa. 10,2 .- POCKET BOOK CLASPS .- L. Messer. New York,

10.267.-PRINTED AND WOVEN FABRICS.-W. Morris. London. Eng. 10.268.—DISH HANDLES.—S. Stevens, Jersey City, N. J. 10,269.—Show CARDS.—W. C. Wilson, & T. S. Harrison, Philadelphia, Pa.

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