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volver in the world. Radically new both in principle and operation. Send for circular. All Right Firearm's Co., Lawrence, Mass., U.S.A.

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and separately dissolve 534 ozs. of alum in 21/2 gallons of water. Heat these two solutions to 190° Fah. and pass the goods once through the soap bath, and after-terwards through the alum solution. Lastly, dry it in the open air. The alum causes the precipitation of an insoluble alum soap within the fiber,

(2) R. J. says: Will powdered coke cemented together do for the carbon rod in a Leclanché cell? What kind of cement shall I use? A. The carbon is ground fine, mixed with gas tar, pressed into form, and baked at a strong heat. The pores are filled by dipping in the tar (sometimes molasses is used in place of the tar) and rebaking. This is often repeated 4 or 5 times.

(3) L. J. asks: What will take out the stain left by common gunpowder, where it has been blown into the skin? A. It can often be removed by blistering the parts, but this is painful, and does not always succeed

(4) G. S. says: 1. The conductivity of copper is said to be 100, that of iron about 16 per cent. Does that mean that a wire of iron, six times as large as copper wire, offers the same resistance (to electricity) as the copper wire? A. Yes. 2. Would dipping common fence wire into hot coal tar protect the wire from rust? A. Yes, for a time; depending on the conditions of exposure, etc. 3. Would the tar impair the conducting qualities of the wire? A. No. 4. I wish to prepare two miles of wire for telegraphing. What is best to protect it from rust? A. Coat with boiled oil or good asphaltum dissolved in naphtha or turpentine,

(5) T. A. J. asks for a recipe to clean ivory knife handles that have become colored by use? A.

Try bisulphide of carbon and whiting or pipe clay. Also a recipe to make solder for a Britannia teapot? A. Tin, 8 parts; lead, 4 parts; bismuth, 1 part. Melt at

a moderate heat and run into bars. (6) T. J. P. asks if rubber hose burned in a firebox is injurious to the steel or iron cf which it is machines about 250 revolutions per minute give good made, as in a fire engine for generating steam quick? A. Yes, the sulphur it contains will corrode the metal, Unvulcanized rubber would not prove injurious

(7) W. E. asks: 1. What is the Jablockhoff electric candle? A. See No. 22, p. 339, vol. 36, of the SCIENTIFIC AMERICAN. 2. Does it require a battery?

A. The candle is supplied with electricity from a powerful galvanic battery or magneto-electric machine. What is kaolin? A. Kaolin is a pure white clay-such as is used in the manufacture of porcelain ware,

(8) W. B. K. asks: 1. Does the solution of 1 lb. of tungstate of soda in 3 gallons of warm water prevent wood from decaying as well as render it fireproof? A. Yes, to a certain extent, if properly applied. 2. If not, what will prevent the decay of beams, joists, etc., in buildings? A. Solutions of zinc chloride, sodium sulphate, water glass, pyroligneous acid, carbolic ter is poisonous. 3. Is the tungstate of soda solution simply to be applied with a brush? A. It is better to saturate the wood as far as may be with it-it should be used hot. 4. If so, will you inform me how to estimate the cost both of material and labor in rendering all the wood fireproof that would be required in building a large wooden house? A. You can best determine this by experiment-it will probably require not less than a pound for every hundred square feet of surface, 5. If the solution applied as a wash is not sufficient for the purpose, how long should the wood lie in a bath of the same? A. If the wood were dry and the solution hot, ordinarily half an hour would suffice. 6. Is there any firm in the country, to yourknowledge, from whom fireproof wood can be purchased? A. We do not know of such a firm. 7. Which is the better way of making black mortar for brickwork, to use anthracite coal dust instead of sand, or to mix a sufficient quantity of ivory ness black with the sand? A. The latter. 8. Which stone trims the walls of a large country house built of pressed brick, to better effect, the brown stone so common here, New York, or the light yellow stone? A. This is a matter of taste. The brown stone is, we believe, generally preferred.

(9) G. A. P. asks: 1. How can I make a description) in series-that is, the carbon or platinum pole of one to the zinc of the next, and so on. Bring the conducting wires-one from the free pole at each end of the series of elements-to the lamp. This may be of the kind known as "Jablochkoff's candle " (described on p. 339, SCIENTIFIC AMERICAN, vol. 36). When the wires are properly connected to the lower ends of the carbons in the candle, and a small pea of carbon or lead is thrown between the upper ends of the same so the electric arc appears—the lead or carbon being burned, 2. How many batteries would I need, and what

Please give me a recipe for waterproofing a blanket? cola. For information on orange blight in Florida see a telescope varies with every object whose distance va-A. Boil 4½ ozs. of white soap in 2½ gallons of water, Packard's "Guide to the Study of Insects." ries? A. Opticians do not usually focus their telescopes

(13) E. G. asks for a recipe for preparing wax for modeling? A. Mix lard with white wax to make it malleable. It may be colored any desirable tint with dry color. In working, the tools and board or stone should be moistened with water to prevent its adhering.

(14) W. T. R. asks: 1. Whether the offensive odor, in the spring of the year, arising from the the magnifying power at once without being obliged to ailanthus tree is detrimental to health? A. Such has not proved to be the case. 2. What is the best season of the year to destroy the tree? A. It is a difficult matter to destroy them completely at any time; perhaps the latter part of October would prove most favorable.

(15) P. M. B. asks: What is the cheapest application or process to retain the polish on steel plates in a damp room? A. Oil or a thin transparent varnish is often used. The polished surfaces on machinery. stored or in disuse, are often protected by coating them with a mixture of tallow and white lead,

(16) J. J. asks: 1. Which is the most improved magneto-electrical machine? A. Probably the the vessel. Cover over and leave for two or three hours Gramme machine. 2. Where can I get a full description and illustration of the same? A. See pp. 181, 195, vol. 34, SCIENTIFIC AMERICAN, and No. 17 of SCIENTIFIC plete solution in bisulphide of carbon and benzine de-AMERICAN SUPPLEMENT. 3. When was it patented? A. We believe the first patents were secured in the year | dust. Spermaceti may be detected by the wax bend-1873. 4. How large a machine would it require to completely decompose one gallon of water in five hours? A. One using about thirty horse power would probably do this, the water being acidulated. 5. How does acidulated water compare with pure water for this purpose? A. Acidulated water is generally used; its electrical conductivity is very much greater than that of pure water. 6. How many revolutions per minute does it require to obtain the best possible results and the most powerful current? A. This depends on the size of the machine, Usually with as great a velocity as compatible with the safety of its parts. With the two or three horse power results. 7. Upon what conditions does the efficiency of a magneto-electrical machine depend? A. When properly constructed, mainly upon the rapidity with which the bobbin wires pass through the magnetic field, the number, size, and arrangement of the bobbin wires, and the power of the magnet.

(17) R. E. R. asks for a cement for aquariums? A. Take 10 parts, by measure, of litharge, 10 parts of plaster of Paris, 10 parts dry white sand, 1 part finely powdered rosin, and mix them when wanted for use into a stiff putty with boiled linseed oil. This will stick to wood, stone, metal, or glass, and hardens under water. Do not use the tank until three or four days after it has been cemented.

(18) C. A. R. says: In a discussion on optics the question was asked why we could not see through fog. A, said it was on account of polarization of light. B, said it was because the top part of the fog up in the air acted like a mirror and reflected the rays of the sun. C. said it was refraction, that is, the fog was a prism, and bent the ray so we could not see, beingable to see only in straight line. A. A. has the correct idea.

koumiss? A. As made by the Calmuck Tartars, mare's milk is distilled as it is undergoing fermentation

cheaper than alcohol that could be successfully used in handle the barrel by. Rub the solution on evenly and a common blowpipe lamp: A. No.

(21) J. H. asks what greenheart wood is, such as fishing poles are made of? A. Greenheart is a tree belonging to the laurel family. It is found in the bing off until the desired color is produced. West India Islands and in parts of South America. The value of the wood is in great strength and hard-

(22) A. I. asks how to anneal old saw blades? A. Heat carefully in a forge, fire to a dull red heat, and while hot imbed in wood ashes or air-slacked lime until cold.

(23) J. B. S. asks for a preparation for polishing turned work in the lathe; says he has used good electric light by means of a galvanic battery? A. bleached shellac and sweet oil, but it takes too many Connect fifty or sixty quart cells (of a Bunsen or Grove applications and time to produce the desired finish. applications and time to produce the desired finish. A. Dissolvegum sandarac in alcohol in proportion of 1 oz, of the gum to  $\frac{1}{2}$  pint of alcohol. Shave fine in 1 oz. of beeswax and dissolve in turpentine sufficient to make  $% \label{eq:constraint}$ a paste, Add to the dissolved sandarach. To use, apply with a woolen cloth to the work while running in the lathe, and polish with a soft linen rag

(24) H. C. B. asks what to use to paint the smokestack of a portable engine that is exposed to the i ing use water that is a little warm in hardening are the weather, to prevent its rusting? A. Dissolve asphalas to establish communication, the current passes, and tum in turpentine with the application of a gentle heat. Use when cold, Apply with a brush,

ries? A. Opticians do not usually focus their telescopes on objects to determine their focal length. Whenever they do, it is on a small star; this is the nearest to parallel light and may be considered as such. The focal length of a telescopic objective is computed for light entering parallel; it is in this condition that the eyepiece is said to have a certain magnifying power, but it is the combined magnifying power of both objective and eyepiece. Some use the dynameter, which gives know the focal length of any of the lenses.

(31) W. J. R. asks: Is a circular saw, made for sawing logs into lumber, made concave on one side? A. No.

(32) R. I. T. asks for a process for refining beeswax, and how to tell pure wax from the adulte:ated? A. Melt the wax with a little water in a vessel heated in a water bath or by steam, and after boiling a few minutes withdraw the heat and sprinkle over its surface 3 or 4 fluid ozs, of oil of vitriol to every 100 lbs, of wax. Care must be exercised in applying the acid, as the wax is liable to froth up and run over the sides of to settle. Carefully skim and decant the clear portion, Pure beeswax burns without smoke or smell. Its commonstrates its freedom from sulphur, sawdust, or bone ing before it breaks, and by its flavor when chewed. Rosin may also be detected by the taste. When greasy matter is present in any considerable quantity it may be detected by an unctuous feel and by a disagreeable taste. Chalk. plaster, etc., will subside to the bottom of the vessel when the wax is melted, owing to their superior gravity.

(33) W. F. T. asks how to prepare glue to use cold, also what can be added to make glue pliable when dry? A. Prepare the glue with alcohol and acetic acid instead of water. To make glue pliable and gly cerin or molasses.

(34) J, N. S. W. asks (1) for a method of straightening a rifie barrel? A. Gun barrels before they are rified are straightened by observing peculiar shadow lines in the interior of the barrel, which are a guide to the workman. After the barrel is rified, these lines cannot be seen. Some gunsmiths draw a fine black silk thread through the barrel and observe if it touches the barrel alike through the interior. 2. How to blue parts of a gun, such as the lockplate, etc.? A. To blue the parts of a gun, first polish the parts and then burnish them with a steel burnisher. Put them in an iron box containing powdered charcoal or wood ashes and heat over a forge fire until by observation the parts are of the desired color, then remove and let them cool.

(35) J. B. I. asks how to cut a lamp chimney lengthwise? A. If the shape of the chimney precludes the use of a diamond, a small thin copper wheel, such as used by glass engravers, charged with sharp gritted sand and water, will accomplish it,

(36) H. G. asks how to bronze gun barrels, also the best protection of guns from rust near the sea shore? A. Mix 1 oz. each of nitric acid and sweet spir-(19) J. B. F. asks for a recipe for making its of niter, 4 ozs. powdered blue vitriol, 2 ozs. tincture of iron, and water ½ pint. Agitate until dissolved. Polish the barrel and rub with powdered lime or whiting to remove all grease. Stop up breech and muzzle of (20) C. P. W. asks: Is there anything the barrel with wooden plugs made long enough to put in a warm place to dry until the next day, when rub off the coating produced by the solution with a wire brush. Repeat the process of wetting, drying, and rub-When this is the case, wash in pearlash water and then in clear water. The best protection for guns when exposed to the influence of a sea atmosphere is to rub them over with mercurial ointment.

> (37) H. F. C. asks: Does it produce a physical or chemical change in a knife blade to magnetize it? A. No.

> (38) E. P. L. asks: What is the method employed to detect bad eggs? A. Hold the eggs to the light, encircling them with the thumb and fingers. Good eggs show transparent, but the bad ones are opaque

(39) W. & S. say: 1. We are engaged in the manufacture of cast steel mould boards for plows. In hardening them they often crack. What is the remedy? A. Over heating in forging will often cause steel to crack in hardening. Another trouble is hardening them in water that is too cold and having the steel at a high heat when so hardened. Careful forging in workremedies, 2. Can they be casehardened, and if so, how? A. Pack the work in an iron box, filling all the space around the work with fine bonedust, or burnt leather would be the cost? A. About sixty large-sized carbon cells, costing about 75 dollars. 3. In making an electric light, would I have to have an induction coll? A Not be able to a powder. Be careful to press the bonedust or leather tightly around the work, and see that the surand lute with clay so as to be tight. Heat in a brisk fire until the box and contents are heated to a red heat, (26) W. T. B. asks: Will it hurt a steam and keep so for one quarter or one half hour, then remove the cover of the box and empty the contents into water. If too hard, the temper may be drawn in same manner as hardened steel. (40) M. A. J. says: If a nut on an old bolt cannot be started with a wrench, cut into each side of the nut with a dull cold chisel, holding a sledge on the opposite side, and the cutting will stretch the nut enough so that it can be readily turned off.

and appearance as Whole-Pulleys and Whole-Collars Yocum & Son, Drinker st., below 147 North Second st., Philadelphia, Pa.

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(1) T. M. S. asks how "tube white" in artist colors, is made? A. Precipitate a solution (in wa ter) of barium chloride by addition of ailute sulphuric acid in excess. Decant the liquid after the precipitate Gradual. has subsided, wash the precipitate well with water, dry

light, would I have to have an induction coil? A. No. 4. Also how calcium lights are made? A. Oxygen and

hydrogen-or coal gas-are caused to mingle in a very small, stout chamber, situated near the tip of a suitably curved jet. The mixed gases, as they issue from the jet, are ignited, and the fiame caused to impinge upon a small cylinder of hard lime, which thereby becomes pressure in large rubber bags or iron cylinders, and are mix with the water with which the mortar is made. conducted thence separately by rubber tubing to the iet. 5. How much would one cost? A. The cost of apparatus for the light is about fifty or sixty dollars.

(10) S. L, C. asks how to make parchment, use as a solvent for gum rubber (it does not dissolve paper? A. Strong unsized paper is immersed for a few seconds in oil of vitriol diluted with half its volume of water. It is then washed in pure water or weak ammonia water. The acid solution must not be warmer than the surrounding atmosphere.

(11) J. C. G. asks: Is the accumulation of carbonic oxide gas, in wells, sudden or gradual? A.

linseed oil or common kerosene and grind with a muller faces of the work do not lie in contact. Cover the box or a pallet knife on a painter's slab.

boiler to use corn cobs for fuel? A. No.

(27) E. O. K. asks for a method of coloring wall plastering before it is put on the wall? A.Wet heated to incandescence. The gases are kept under the coloring material, if in powder, with alcohol, then

> (28) J. D. B. asks: Shall I use nitric or sulphuric ether to dissolve rubber? A. Ethylic-commonly called subhuric-ether is the kind. To be of

vulcanized rubber) it must be quite free from alcohol and water. Ether of requisite purity is often difficult silver? A. No. to procure. Pure ether boils readily at the temperature

of the hand,

best to cut branches to make rustic work? A. Late in ly recognized by engineers. the autumn

(30) E. B. asks: How is it that opticians for making blackboards? A, Incorporate flour of em-(12) P. McG.-The scale insect infesting | will give eyepieces with telescopes warranted to magni- ery or powdered pumicestone with shellac varnish, addit, and finally grind it with a small quantity of fine oil. , he orange trees of Florida seems to be aspediotus citri- fy 100 or 150 diameters, when the magnifying power of , ing sufficient lampblack to give the required color. Ap-

(41) J. M. asks if there is any such thing as a mineral plumb, used by men prospecting for gold or

(42) J. Q. R. asks for a rule for the standard herse power of steam boilers? A. There is no (29) L. A. B. asks: What time of the year is standard for the horse power of a boiler that is general-

(43) S. E. S. asks: 1. What mixture is used

ply to the surface to be coated with a fine flat brush. It is better to apply two coatings. 2. What kinds of wood are best for the boards? Good clear white pine, A. It attacks and deteriorates them ucous membrane.

(44) C. B. asks: 1. What constitutes the calorimeter of a boiler, and how is it measured in con-nection with the grate and heating surfaces? A. It is will find information on the subject in standard works the area for the passage of the products of combustion from the furnace to the chimney. In case this area varies throughout the run of the gases, it is usual to take the smallest area for the calorimeter, since this limits the supply of air, and by consequence the rate of com-bustion. 2. What kind of steel is it that is generally used in making connecting, piston, and valve rods, etc., of steam engines? A. Both cast steel and semi-steel are used.

(45) C. R. P. asks: Can a press be made to work with compressed air instead of water? We are must be free from grease or oil. using an hydraulic press. It requires refilling with water quite often on account of rust from the tank getting under the valves. In case an air pump could be made towork, how much longer would it take to run it up with air than it does with water? A. Air could be used, but in the majority of cases that occur in practice indigo; for brown, tincture of logwood; for crimson, a water pressure is preferable. The time required to run up the ram would depend upon the dimensions and arrangement of the apparatus

(46) J. H. asks: Will you give mearule for finding the latitude and departure of a course when the distance and bearing are given? A. Latitude= length of course×cosine of bearing. Departure= length of course×sine of bearing.

which works well for a short time when it is primed. Valves seem to be in perfect order and airtight. There is probably a leak, either in piston, suction valve, or suction pipe.

(48) E. M. B. asks: Which is the most economical in the use of water in supplying a boiler, an injector or pump, allowing the evaporation to be the same? A. There is not a great deal of difference so far as can be judged from the few comparative experiments that are accessible.

(49) A. H. C. asks: 1. In sea-going steamers, which is the most efficient, a screw propeller or paddle wheels? A. The propeller. 2. How do paddle wheels compare with the screw in smooth water? A. Welldesigned wheels compare favorably.

(50) P. J. M. asks if the lock gates in any canal are opened by machinery, or some motive power, such as steam? A. The machinery for opening the lock gates of the Des Moines Rapids Canal is operated by hydraulic power.

ing the grain of wood to be varnished? A. Mix magnesia with shellac varnish.

(52) Apprentice asks how to cast a joint? A. If it is a pivot joint, cast the socket part first; ream out the socket; wash it with plumbago and fine charcoal, and then run the pin part into it. (If you run the pin half first and run the socket around it, the latter is apt to shrink and split). By working the parts together the wash will be rubbed out.

of equalsize and under the same conditions are painted. one black and the other white, which will radiate the and how is it made? A. Celluloid is a kind of solidified most heat? This depends upon the pigment used. A. | collodion. It is composed of some fiberous material, The radiation from surfaces coated with lampblack and white lead are about the same.

of wood within a steam pipe, leaving an annular space or pyroxylin. When this is dissolved in ether and alcoaround the same, between core and the walls of the pipe. This space will be filled with steam during about half the year, and air during the other half of the year. What will be the life of the wood? A. Make the core of well seasoned wood, and it will probably last you several years.

(55) P. S. asks: Will it do to have a stream of oxygen gas blow through an alcohol lamp flame, used for melting smallglass rods? A. There is no objection to the use of oxygen other than that of expense

(56) C. D. asks for a recipe for an axle lubricant for heavy vehicles? A. Take 5 parts beef tallow, and 11% or 3 parts of graphite, pulverized (black lead of commerce), mix while warm. This is for summer use. For winter, use lard in place of beef tallow.

(57) L. R. asks how to soften brass work? A. Heat it red hot and cool suddenly by plunging in cold water.

(58) R. C. L. says: In using heaters for greater than the pressure of the vapor.

(63) Constant Reader asks what effect in- of inventions, assignments, etc., will not be publish (64) J. W. G. asks: What books can I get

that willinform me how to construct furnaces for small steel castings and for malleable iron castings? A. You on metallurgy.

(65) P. B. asks for a cement for mending harness or other leather? A. Take common glue and American isinglass equal parts. Put in a glue pot, and add water sufficient to cover, and soak about ten hours. Then bring to a boiling heat and add pure tannin until the mass becomes ropy or like the white of eggs. Scrape the leather where it is to be joined, apply the cement warm, rub the surfaces solidly together, and let the work remain undisturbed till dry. The leather

(66) A. B. C. asks for instructions how to stain marble? A. Apply color in solution to the stone when it is heated sufficient to make the liquid simmer on the surface. For blue, use an alkaline solution of solution of alkanet root in turpentine; for yellow, tincture of gamboge or turmeric; for red, tincture of dragon's blood, alkanet root or cochineal; for green, a tinc ture of sap green, or stain first blue, then yellow; for gold color, a mixture of equalparts of whitevitriol, sal ammoniac and verdigris, all in fine powder.

(67) A. G. R., of Canada, asks for instructions in raising sumac and preparing the leaves for including both the specifications and drawings, will market? A The roots may be planted at about six feet | furnished from this office for one dollar. In order (47) D. McR. says: I have a force pump apart. It will flourish in either low or upland. The leafy tops are broken off and dried in the shade. When dry they may be beaten with sticks or flails. The gathering of the leaves may commence in July and continue till frost. It may be packed in bags, preparatory for shipment to market. The amount of tannin contained is from fifteen to twenty per cent.

> (68) J. B. W. asks for a preparation to mix with black (printer's) ink, to print designs on tin, one that will dry readily? A. First give the plate a very thin coating of light colored copal varnish, and, if nessary, add a little fine Japan dryer to the ink. The printing plates may be of vulcanized rubber.

> (69) W. W. W. asks how to make glass fusible? A. By addition of excess of lead oxide and alkalies, glass can be made so as to fuse readily in an ordinary furnace.

(70) Drummer asks how to make parch ment for drumheads? A. Remove the wool from sheep skins, steep them in lime, stretch on a wooden frame, and scrape with a knife. If any greasy matter remains (51) G. D. asks for a wood filling, for fill- steep again in lime. If the surface is uneven or of unequal thickness, rub it down with pumicestone.

(71) T. W. O. asks: Is there a substitute for alcohol in the making of transparent soaps? A. Use methylic alcohol-wood naphtha.

(72) W. F. R. & Co. ask how to re-color green bronze French statuary that has become broken? A. Dissolve 1 oz. sal ammoniac, 3 ozs. cream of tartar, 6 ozs. common salt in 1 pint of hot water; add 2 ozs. (53) J. E. T. says: If two steam radiators gether and apply with a brush to the parts repeatedly.

(73) G. R. asks: 1. What is celluloid such as cotton, which is dipped in sulphuric and nitric acid. The cotton then possesses the quality of solu-(54) W. H. B. says: I wish to use a core bility and sudden explosion, and is termed gun cotton holit is called collodion, and is used in photography. Celluloid is made by using camphor in place of alcohol and ether, in connection with pyroxylin. The pyroxylin is ground to a pulp with water. It is then strained to expel the water, and pressed into a mass. Gum camphor is ground with water and thoroughly incorporated with the pulp, one part, by weight, of camphor being used to two parts of the pulp. The mass is then put in a mould and subjected to powerful pressure, and heated while under this pressure from 150° to 300° Fah. 2. Is this the article used in the manufacture of artificial ivory, billiard balls, etc.? A. Yes. 3. Is not gun cotton, the same as that used by photographers, one of its constituents? A. Yes.

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

C. F. L.—No. 1 is pyrites in trap No. 2 contains clay, oxides of iron, lime and magnesia. No. 3 is a piece of greenstone with adhering clay colored by iron steam boilers where the wateris heated nearly or quite oxide.-G. P.-No. 1 is principally of hornblendeschist to the boiling point, and the force pumprefuses to work, with some oxide of iron. No. 2 is pyroxene, with oxwhat is the remedy, supposing the pump to be in good ide of iron and clay.-I. J.-It is quartz rock-it is not order, and would work all right with cold water? A. It of value.-Lyman, London, Eng.-The sample contains sary to allow the vapor to escape. For success- copper, iron, antimony, and sulphur. We do not know ful working under such circumstances, it is well to de- of a substitute for alcohol in the varnish-wood spirits Flour, manufactur liver the water to the pump under a head somewhat (crude methylical cohol) might answer.-D. S.-It is as- Fruit picker. H. C bestos-it is found in nature as a mineral. We do not knowthat there is any patented method for dressing it.

are thrown into the waste basket, as it would fill half our paper to print them all; but we generally take ple ure in answering briefly by mail, if the writer's addr is given.

Hundreds of inquiries analogous to the follow are sent: "Who deals in wood prepared so as to res decay? Who makes clay-grinding machines that w grind small stones at the same time the clay is be ground? Who makes machinery for rolling iron? W manufactures silver card board? Who makes light spring power suitable for running sewing n chines?" All such personal inquiries are print as will be observed, in the column of "Business a Personal," which is specially set apart for that p pose, subject to the charge mentioned at the head that column. Almost any desired information can this way be expeditiously obtained.

## OFFICIAL

## INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States we Granted in the Week Ending August 21, 1877, AND EACH BEARING THAT DATE

[Those marked (r) are reissued patents.] A complete copy of any patent in the annexed please state the number and date of the patent desir and remit to Munn & Co., 37 Park Row, New York cit

Alloy for plating, M. P. Page..... 194 Barrel trussing and hooping, M. L. Deering..... 194 Bed bottom, A. Gordon...... 194 Bed bottom, L. Canfield... .... 194 Buckle and snap hook, Knapp & Schallhorn..... 194. Burglar alarm window fastening, G. Saurbrey.... 194. Car axle box, R. R. Carpenter ..... 194 Car, railroad, I. S. Van Winkle ...... 194. Chair, invalid, Smith & Riley..... 194 Clothes dryer C. B. Koon... Cock. stop, G. C. Railey ..... 194 Cultivator, J. H. Palm..... 194 Cultivator safety clamp and hook, S. Peck..... 194, Cultivator weeder and marker, M. N. Ward...... 194, 
 Curtain fixture, W. B. Noyes
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 Draft lmk, W. G. Le Duc.
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 Dredging machine, C. O. & F. Davis.
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Fire escape, J. A. Schultz ..... 194 Fire escape, W. P. Sheets ..... 194 Flat and fluting ire

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ren, i f of	Hopple, B. F. Melton Horse detacher, C. O. Baker	194,40
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ing	Hose, rubber, H. J. Merrens Hub-attaching device, C. C. Egerton	
sist	Hub borer, E Caswell	194,290
will ing	Illuminating Christmas trees, etc., B. Egloff Iron or steel direct from the ore, C. M. Dupuy	194,349
Vho	Ladder, A. S. Riches	194,467
a ma-	Lamp burner, E. L Bryant Lantern, E.B. Requa	194,466
ted,	Latch, chain fastening, Setchell & Higgins Leather rolling machine, H. Hudson	
and	Locomotive exhaust regulator, J. D. Murray	194,456
our of	Manger, I. Van Riper Match sticks, machine for, M. Young	
n in	Measure, tape, C. D. Ward	194,317
	Meat chopper, J. H. Huber Meat cutter, R. B. Pumphrey	194,370
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S	Milk cooler, H. A. Hannum (r)	7,853
-	Mineral wool, treating, A. D. Elbers Mold boards, D. Franklin	154,422 194,423
ere	Mortising and tenoning machine, W. Levin	194,304
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I	Paper box machine, J. P. Buckingham	194,289
E.	Paper lined bag, E. Mallalieu	194,359
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l be ing,	Pencil holder, T P. & S. B. Marshall	194,306 194,472
red,	Pile for bulk heads, M. L. Parry Planter, corn, etc., F. U. Stokes	194.300
	Planter and distributer, J. Real	194,465
4,365 4,390	Planter, E. Gerber Planting corn, marker, etc., S. J. Pefley	194,424
4,347	Plotting instrument, H. Wadsworth	194,486
1,335 1,426	Plow, J. Hartmann Plow fender, J. B. Rubsam	194,428 194.374
4,330 4,324	Plow stock and sweep, J. S. & R. Bowling	194,407
4,409	Potato bug trap, S. Hartwell Price and show cards, H. Bornstein	194,429
4,357 1,305	Printing on glass, etc., machine for, F. W. Heuer Pulley block, A. Bischoff	194,350
4,361	Pulley block sheaves, A. M. Smith	194,478
1,427 ' 1,491	Pump, Van Pelt & Lee Pump, C.Vogelsang	194,503 194,388
4,449 4,294	Pump, treadle, R. H. Schenck	194, 596
1,348	Pumping engine, W. B. Snow Railroad gate, H. A Stearns	194,383
1,498 1,417	Railroad gate, H. Vickars Railway rail joint, H. H. Doty	194,316
1,446 1,442	Railway rails, bolt for, T. McDonough Refrigerating chamber, G. W. Cornell	
1,376	Refrigerating chamber, G. W. Cornell Riveting machine, J. F. Allen	
4,500 1,484	Rock-drilling machine, W. W. Dunn	194,419
4,411	Rolling mill tender, J. F. Black Roof for grain, etc., R. Montgomery Ruling machine, Hickok & Cooper	194,403 194,455
4,351 4,399	Ruling machine, Hickok & Cooper Sad iron stand and scourer, F. Raymond	
450	Saddle, harness, Pepper & Gephart	194,460
4,301 4,461	Safe doors. R. Heneage	194,349 194,470
1,452 1,331	Sash holder, G. L. Waitt	194,487
1,418	Sawing machine, Reinhart & Houghton Sawing machine, circular, J. M. Shaw	194,378
1,315 1,286	Scraper road, S. Pennock Scraper, road, G. Thatcher	
,395	Screw-cutting tap and die, J. Schaub	194,469
7,852 1,499	Seving machine needle, I. T. Smith	194,479
4,412   1,293	Sheep-holding device, G. T. Wilson	194,318
,389	Shutter fastening, A. J. Cole	7,856
1,433 1,381	Spark arrester, F. M. Stevens Spectacles, L. Franklin	
1,477 1,420	Spinning frame bobbin support, E. Estes	194,298
,311	Spinning machines, ring for, J. W. Wattles (r) Stamp cancelling device, C. C. Egerton	7,857 194,343
1,462 1,444	Stamp cancelling device, C. C, Egerton Steam generator, T. L. Jones Steamboat engine indicator, L. Shook	
1,321	Steering apparatus, indicator for, L. Shook	194,476
1,336 1,287 ·	Stench trap for sinks, etc., S. Buhrer	194,329
1,288 7,851	Stone, artificial, O. A. Davis Stones, etc., machine for picking, C. Fuller	
1,332	Stove and heater, J. E. Corley Stove pipe thimble, W. G. Donaldson	194,413 194,338
1,355 1,482	Strainer, milk, H. T. Jones	194,354
1,366	Tenoning spokes and boringfellies, E. Goss	194,303
4,310 1,504	Thief detector for money drawers, G. Palmer Thrashing machines, Dusch & Lewis	194,308
1,458 1,448	Till or money drawer, A. T. Crippen	194,415
1,334	Time lock, J. Burge (r) Time lock, J. Burge	7,858 194,506
1,505 1,369	Tongue cleaner, L. Morgenthau	194,364
1,392	Tool handles, L. Landeker Tool handles, A. S. West	194,391
1,480 1,489	Tooth pick, H. Laurence Tricycle, M. E. Croft	194,447
4,291 4,443	Tubes, machine for welding, W. S. Sutherland	194,502
,471	Turbine water wheel, C. & C. O. Krogh Valve, balanced steam, D. C. Stotts	
4,474 4,507	Valve pump, D. F. Dodge	194,337
1,322	Valve engine, S. H. Whitmore Vehicle axle, B. T. Babbitt	194,398
4,438	Vehicle end gate rod, W. G. Collins	194,295

(59) J. O'B. asks how large a boiler to make for a small engine with cylinder 11/6 by 21/6? A. 11 inches diameter, 15 inches high.

(60) W. C. T. asks how to construct a cremation furnace? A. In vol. 30, p. 295, of the SCIENTIFIC AMERICAN is given cut and description of such a furnace

(61) A. R. C. asks for a finish or polish for sheepskin colored linings? A. Varnish with the white of eggs and finish by rubbing with a burnisher.

(62) J. R. P. asks: 1. If a drop of nitric acid should be dropped on an ounce of nitro-glycerin dynamite, or dualin, would it cause them to explode? A. Probably not. With nitro-glycerin, however, the force of impact of concussion might be such as to cause an explosion. 2. Which of the three named would be of the question. the most powerful? A. Nitro-glycerin is themore powerful. 3. Suppose a person should be placed at the ex repeat them. If not then published, they may conclude treme height of the atmosphere, how would he be affected? A. Immediate death from rupture of the blood vessels and asphyxia would ensue.

COMMUNICATIONS RECEIVED. The Editor of the SCIENTIFIC AMERICAN acknowledges. with much pleasure, the receipt of original papers and contributions upon the following subjects: On the Striped Water Snake. By C. F. S. On Fire Escapes. By J. C. M. On a Simple Sash Button, By H. J. N. On the Skull of the Domestic Fowl. By C. F. S. Also inquiries and answers from the following: D. A. S.-F. C. S.-V. M. M.-J. S. A. B.-E. S. B.

## HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring 

Correspondents whose inquiries fail to appear should 

 Image: Angle of the sector in the product of each of the sector in th

Flat and fluting iron, L.C.Jennings 194,438	Vehicle end gate rod, W. G. Collins 194,295
Flour, manufacture of, C. R. Knickerbocker 194,356	Vehiclerunning gear, G. R. Duval 194,341
Fruit picker. H. C. Berbeyer 194,323	Vehicle torsion spring, C. W. Saladee (r) 7,855
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Gas generator, A. Kayser (r) 7,854	Weather strip, J. H. Davis 194,296
Gas lime, preventing fouling, Genth & Barker 194,299	Weather strip, T. H. Tyson 194,387
Gate, H. A. Stearns 194,312	Wells, tool-carryingtruck, H. T. Blackwell 194,325
Glassware, hinged top for, T. B. Atterbury 194,459	Windmill, G. S. Strong 194,314
Grain cleaner and millstone exhaust, M.K.Jones. 194,439	Wire stand for books, etc., Woods & Dudley 194,394
Grain drills, feed for, A. J. Martin 194,307	Wrench, B. L. Walker 194,488
Grain toller for grist mills, J. W. Price 194,463	
Grate bar, E. M. Erdman 194,344	
Grate fender, E. D. Hawley 194,430	DESIGNS PATENTED,
Hair. refining and bleaching, J. Bene (r) 7,850	10,157 and 10,158.—PATTERN IN SUITINGS.—Nathan Frye.
Harness holdback straps, Lecompte & Ketcheson 194,303	Andover, Mass.
Harrow, N. S. Johnson 194,353	10,159BRACELETJ. Hackenberg, New York city.
Harrow and roller, Hughes & Wall	10.160, and 10.161 CENTER PIECES. Kellett, San

. San Francisco, Cal.

10,162 .- ADVERTISING BALLS .- Edwin E. Sage, Chicago, Ill.

(Acopyof anyone of the above patents may be had by remitting one dollar to MUNN & Co., 37 Park Row, New

Hat and cap. A. B. Waring ...... 194,490

Hav rake, horse, E. Huber...... 194,435