Business and Lersonal.

The Charge for Insertion under this head is One Dollar a line for each insertion.

chine, patented August 13, 1870, will please address F. L. Johns, Calcutta, Clay county, Ind.

inches square. Edward Harrison, New Haven, Conn.

40 Horse Second-hand Upright Engine wanted, in good order. J. Leffel & Co., Springfield, O.

Brown & Sharpe Universal Milling Machine for sale. Address W. E. Lewis, Cleveland, O.

I want to buy some good second-hand Lathes, Planers, Drills, and Boiler Maker's Tools. Address Shearman, 132 N. 3d St., Philadelphia, Pa.

Pattern Makers can get Metallic Pattern Letters, to letter patterns, of H. W. Knight, Seneca Falls, N. Y.

The Varnishes and Japans of Hyatt & Co., established 1872 ("The London Manuf. Co."), made from scientific formula by a practical maker of materials, free of deleterious substances, are, in the success met with, noted for color, purity, and durability, with cheapness, giving them meritorious pre-eminence. Try them. Send for circulars and price list to Company's office, 246 Grand

Small Fine Gray Iron Castings a specialty. Soft and true to patterns. A. Winterburn, 16 De Witt street. Al-

Tin Foil.-J. J. Crooke, 163 Mulberry St., N. Y.

For the best Gate Valves of all kinds, apply to D. Kennedy & Co., 88 John St., N. Y.

Plumbers—Address Bailey, Farrell & Co., Pittsburgh, Pa., for the best and cheapest iron case street hydrants.

Magic Lanterns and Stereopticons of all prices. Views illustrating every subject for public exhibitions. Profitable business for a man with a small capital. Also lanterns for college and home amusement. 74 page cata logue free. McAllister Mf. Optician, 49 Nassau St., N.Y.

"Little All Right," the smallest and most perfect Revolver in the world. Radically new both in principle and operation. Send for circular. All Right Firearm's Co., Lawrence, Mass., U.S.A.

For Solid Wrought Iron Beams, etc., see advertiseent. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Shaw's Noise-Onieting Nozzles for Escape Pipes of Locomotives, Steamboats, etc. Quiets all the noise of high pressure escaping steam without any detriment ever. T. Shaw, 915 Ridge Ave., Philadelphia, Pa.

John T. Noye & Son, Buffalo, N. Y., are Manufacturers of Burr Mill Stones and Flour Mill Machinery of all and dealers in Dufour & Co.'s Bolting Cloth. Send for large illustrated catalogue.

Power & Foot Presses, Ferracute Co., Bridgeton, N. J. For Best Presses, Dies, and Fruit Can Tools, Bliss &

Williams, cor. of Plymouth and Jay Sts., Brooklyn, N.Y Hydraulic Presses and Jacks, new and second hand, E. Lyon & Co., 470 Grand St., N. Y.

Emery Wheel - other kinds imitations and inferior. Standard Belting, Packing, and Hose. Buy that only. The best is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, N. Y.

Steel Castings from one lb. to five thousand lbs. Invaluable for strength and durability. Circulars free Pittsburgh Steel Casting Co.. Pittsburgh, Pa.

Best Pulleys and Couplings made; secured to shafts without keys, set-screws, bolts, or pins. Send for catalogue. Taper Sleeve Pulley Works, Erie, Pa.

Yacht and Stationary Engines from 2 to 20 H.P. The best for the price. N. W. Twiss, New Haven, Conn.

Hand Fire Engines. Lift and Force Pumps for fire and all other purposes. Address Rumsey & Co., Seneca Falls, N. Y., U. S. A.

Arbors or Mandrels hardened, ground perfectly true and durable. For machinists, jewelers, and others use. Send for circular. A. A. Pool & Co., Newark, N. J.

Chester Steel Castings Co. make castings for heavy gearing, and Hydraulic Cylinders where great strength is required. See their advertisement, page 286.

Silver Solder and small Tubing. John Holland, Cincinnati, Manufacturer of Gold Pens and Pencil Cases

Diamond Saws. J. Dickinson, 64 Nassau St., N. Y. Patent Scroll and Band Saws. Best and cheapest in

use. Cordesman, Egan & Co., Cincinnati, O.

For Boult's Paneling, Moulding, and Dovetailing Machine, and other wood-working machinery, address B.C. Machinery Co., Battle Creek, Mich.

Reliable information given on all subjects relating to Mechanics, Hydraulics, Pneumatics, Steam Engines, and Boilers, by A. F. Nagle, M.E., Providence. R. I.



- (1) J. R. asks how to bleach human hair? A. Gaseous chlorine is the most effective agent. Cleanse stand for 24 hours, and if necessary repeat the opera-
- (2) E. W. M. asks how to make celluloid? A. See reply to G. R. (73) p. 204, No. 13, present volume Scientific American.
- (3) J. H. H. asks: What is used to make CAN SUPPLEMENT, p. 272, for directions for such work. gold leafadhere to the letters cut into a granite monument? A. Apply a coat of size and then two or three coats of size and fine powdered whiting. Let each coat dry and rub down with fine glass paper before the next is applied. Then go over it thinly and evenly with gold size, and apply the gold leaf.
- (4) J. L. S. asks: 1. If coal oil will percolate through glass? A. No. 2. Also, if there is any terstices of the type. Add other sheets of adhesive free from starch and soap, and should be afterwards Is this a good recipe and safe to use? A, The bath will known material which can percolate through glass without destroying it? A. No.

- (5) C. W, & S. ask how the marbling of paper is done? A. A mucilage of gum is prepared, about the thickness of sweet oil, and placed in a shallow trough. The colors are sprinkled on the gum and disposed as fancy may dictate. The sheets of paper are taken, one by one, bent in the form of a bow, and James E. Austin, inventor of Shingle Cutting Magradually let fall on the composition in the trough The colors, which float on the surface, and a portion of the mucilage adhere to the paper, which is then taken Wanted -A first-class Planer, with table, to plane 30 | up and hung on racks to dry. The paper is then finished by burnishing.
 - (6) W. H. S. & F. D. ask for a recipe for making liquid solder, to be used without heat? A. Mix together bismuth 1/4 oz., quicksilver 1/4 oz., block tin filings 1 oz., spirits of salt (muriatic acid) 1 oz.
 - (7) K., B. & L. ask how to ebonize hard wood in durable color? A. Black may be produced by means of copperas and nutgalls, or by japanning with two coats of black japan, after which varnish or polish, or use size and lampblack previous to laying on the japan. Another method is to pour two quarts boiling water over one oz. powdered extract of logwood, and when solution is effected, add one drachm of yellow chromate of potash, the whole being well stirred. Repeat on the wood with general applications until the desired depth of color is produced.
 - (8) M. J. G. asks for information in the art of "marbleiging" or imitating the colored marbles on inferior marble? My chief difficulty lies in the preparation of the water and in the colors. A. It is neces sarv to heat the marble hot, but not so hot as to injure it, the proper heat being that at which the colors nearly boil. For blue, use alkaline indigo dye, or turnsole with alkali: for red. dragon's blood in spirits of wine: for yellow, gamboge in spirits of wine; for gold color, sal ammoniac, sulphate of zinc, and verdigris, equal parts; for green, sap green in spirits of potash; for brown, tincture of logwood; for crimson, alkanet root in turpentine. To stain marble well is a difficult operation.
 - (9) F. H. S. asks how rubber stamps are made? A. See Scientific American, present volume, No. 6, p. 91 (33), and No. 17, p. 267 (17), and Scientific AMERICAN SUPPLEMENT No. 83.
 - (10) J. W. W. asks for a black composition or cement to fill in zinc work that will stand exposure to the weather? A. Use pitch 11 lbs., lampblack 1 lb., turpentine sufficient. Mix with heat.
 - (11) H. G. asks for a recipe that will show the twist one un barrels? A. Spirits of niter 34 ozs... tincture of steel 34 oz., or use the unmedicated tincture of iron if the tincture of steel cannot be obtained; black brimstone (sulphur vivum) ¼ oz., blue vitriol 1/2 oz, corrosive sublimate 14 oz., nitric acid 1 drachm, bottle for use. Clean the barrels and apply as directed in (36), p. 203, current volume.
- (12) J. B. asks for a recipe for tempering Lathes and Machinery for Polishing and Buffing metals. | millpicks? A. Select good cast steel. Forge carefully, using a low heat, and light blows. To harden get two Solid Emery Vulcanite Wheels-The Solid Original gallons of rain water, add 2 lbs. of salt. Take off the chill of the water by plunging a hot iron into it. Heat Caution.—Our name is stamped in full on all our best the pick gradually from the center, and plunge the point vertically into the water, letting the heat toward the center draw the temper. Draw to a "red" or " copper color."
 - (13) C. R. & F. S. ask if the price of gold as a metal is higher than that of platina? A. Yes.
 - hole through glass $\frac{s}{16}$ inch thick? A. Use a sand blast or a revolving cylinder of wood, brass, or copper, of the desired size of hole, supplied with emery and water.
 - (15) W. B. asks: What is Zeiodite, and how is it made? A. It is made by mixing 20 to 30 parts roll sulphur with 24 parts powdered glue or pumice, which forms a mass as hard as stone. It is said to resist the action of water and acids.
 - (16) E. A. J. asks how to fill the engraved designs may appear like burnished silver? A. Cover the parts not designed to be plated with wax, deposit the metal by electro-plating, and finish by burnishing.
 - What is used as a body for filling the texture of silk goods used in banner making, that will keep the silk bitt metal? A. No. flexible and elastic? A. A thin size of bleached shellac and alcohol is used. For inside work the white of an egg makes a good size. If gold is to be laid, put it on while the size is still wet. A little honey, combined with thick glue, is sometimes used.
 - (17) C. N. N. asks: When is the greatest strain upon a bridge? Is it while a train is moving slowly or while running at a high rate of speed? A. When moving at a high speed.
 - (18) E. B. D. asks how to color gold plate Roman or Etruscan color? A. See Scientific American, present volume, No. 5, p. 75 (27).
- (19) J. S. H. asks: What is the best method of making an oil belt for finishing or polishing hard wood? A. If a wide belt is desired, use canvas, if a the hair in a warm solution of soda, and wash with narrow one use leather, running over pulleys the same water. While moist, put in a jar and introduce chlor- as common belts are run, one pulley, of course, being ine, until the air in the jar looks greenish. Allow to the driver. Coat the belt with glue and sprinkle on fine sand, the fineness of which must be appropriate to the finish required. Let the glue get thoroughly dry before
 - (20) E. C. C. says: I wish to make moulds to cast a few badges of soft metal. How can I best succeed in so doing? A. See No. 17 Scientific Ameri-
 - (21) C. H. W. asks how to prepare the paper matrix for stereotyping? A. Take thick soft un-

which has been moderately heated. Screw the press down and the heat will dry the matrix, which may then be removed for casting.

- (22) A. A. K. asks if there is a patent on engraving glass by means of the sand blast? A. Yes.
- (23) M. A. C. says: 1. With an engine running at 54 revolutions per minute, turning the main shaft 200 revolutions per minute, if the speed of this shaft be reduced to 25 revolutions by increasing the size of pulleys, will it tend to economize steam? A. You do not give sufficient details to give an answer. 2. Will you give a rule to reduce or increase the size of pulleys to give any required speed? A. See p. 181, No. 12, current volume Scientific American. 3, Also a rule to line a shaft of any length, supposing the building not to be square? A. Use a level and plumb. See No. 2. p. 24. last volume Scientific American. 4. Also a rule to find the points where a belt will pass through floors running over different sized pulleys? A. Lay out a diagram to any convenient scale and then transfer the points to the floors where the belt is to pass through. 5. Suppose the valve of an engine be set a little back. what effect does it have on the diagram as made by the indicator? A. The diagram will show that the valve does not open as soon as is desirable. 6. How is the power of an engine computed from an indicator diagram? A. Find the mean effective pressure in the piston in lbs.; multiply this by the speed of the piston in feet per minute, and divide by 33,000.
- (24) A. Z. asks for a recipe for waterproofing heavy manilla paper? A. Melt in a vessel 30 ozs. good glue and 3 ozs. gum arabic in 10 pints hot water. In another vessel 20 ozs, soap and 4 lbs. alum. Mix the contents of the two vessels. Call this composition No. 1. In another vessel heat 1/2 gallon benzole and 1 gallon paraffin, and melt it in 24 ozs. resin. Boil until it attains a good degree of consistency. This is called No. 2. Dip the paper to be waterproofed in composition No. 1 while in a heated state, and then dry it. Next apply composition No. 2 in a cooled state, with a brush, in any convenient manner.
- (25) C. H. C. asks how to remove the taste of hydraulic cement, that at first permeates the water in a cistern when first filled? A. The presence of lime in water is a source of great trouble, and to those using it for steam boilers, of the greatest danger, in crusting either as a sulphate or carbonate; and preventing contact between the water and the iron. The only absolute remedy is to distil the water; but this is expensive and inconvenient. If you breathe slowly, through a common clay pipe stem, into a tumbler of lime water, the water will become clouded with carbonate of lime, pro- and boil with alcohol. Let the alcoholic solution cool, duced by the carbonic acid of the breath combining with the lime; a deal of this carbonate will gradually settle to the bottom of the tumbler: you might be able copperas 1/4 oz.; mix with 1/2 pint of rainwater, and to use the water by burning a bushel of charcoal in a clay stove, suspended just over its surface; stir the water occasionally with a stick and it will absorb a large quantity of the carbonic acid; be careful not to fall in the cistern, as the gas would cause immediate suffocation and death.
 - (26) C. W. asks how to make a good cecloth. Mix this while hot with a solution of 1 drachm mastic in 1 oz. of alcohol, and triturate thoroughly with 1/2 drachm powdered gum ammoniac.

How can I make glycerin soap? A. Take any mild toilet soap and intimately mix with it about one twen-(14) A. T. B. asks how to drill a 4 inch tieth of its weight of glycerin, while the soap is in a liquid state. It may be tinged red or rose color with a tincture of orchil or dragon's blood, or orange yellow with a little $annatt_0$. It may be variously scented, but oil of bergamot or rose-geranium supported with a little oil of cassia, or caasia supported with oil of almonds, appear to be the best perfumes.

- (27) A. S. G. asks: 1. What is the calcium light? A. It is commonly called the Drummond light, and is produced by the action of the oxyhydrogen flame on perfectly pure lime, made free from silica by parts of plated ware, that after plating with gold the moulds. 2. Is it practical to use for lighting a dwelling house? A. No.
 - (28) R. K. S. asks if water will act as well s oil for lubricating journals, when iron is run on Bab-
 - (29) K. asks: What is meerschaum, and where is it obtained? A. Meerschaum is a hydrous silicate of magnesia. It is a mineral of soft earthy texturesomewhat resembling chalk. It is found in Spain and several countries at the head of the Mediterranean, but chiefly in some parts of Greece and Turkey.
 - (30) H B K asks how to dve horn a boiling the horn for some time in a strained decoction of logwood, and then steeping it in a solution of red sulphate, or red acetate of iron.
 - (31) A. T. R. asks how to color iron wire clotha blue tint? A. Grind Prussian blue in shellac varnish and use as a paint
 - (32) C. H. H. asks: 1. How patent leather is made? A. See Scientific American No. 4, p. 60 (47). 2 How is the polish given to morocco leather? A. By varnishing with white of eggs and burnishing. 3. How can I make liquid blacking that will give a gloss without the use of a brush? A. Gum arabic 4 ozs., coarse moist sugar 11/2 ozs., good black ink 1/4 pint; strong vinegar 2 ozs., rectified spirit of wine and sweet oil, of each 1 oz.; dissolve the gum in the ink, add the oil, rub them in a mortar until thoroughly united, then
- (33) E. O. H. asks: What is the best prepasized paper and paste upon it two or three sheets of tis- ration for removing inkstains from collars, cuffs, etc.? sue paper, or until it is about the thickness of paste-A. Stains may be removed by the application of a little board. Cover the under side with fine powdered French lemon juice, citric acid, diluted muriatic acid, oxalic chalk, andlay it upon the form of type, and beat with a acid, or tartaric acid; or by means of chlorine water or stiff brush so as to force the soft paper into all the in- solution of bleaching powder. The linen should be whiting as there is of the fluid, and it is ready for use. paper until a sufficient thickness is obtained. Cover thoroughly rinsed in warm water before using soap, with a woolen blanket and place in a press, the bed of Marking inks are variously removed by ammonia wa-

- ter, solution of bleaching powder, chlorine water, dilute iodine tineture, or cyanide of potassium-this latter is very poisonous.
- (34) W. J. asks: Is there anything that can be mixed with melted paraffin in order to thin it without depriving it of its quick chilling property? A. We know of nothing.
- (35) C. D. N. asks: 1. What is dextrin, such as is used for mucilage? A. Commercial dextrin, or "British gum" is obtained by heating dry potato starch to a temperature of 750° Fah, in sheet iron trays or revolving iron or copper drums, similar to those used in coffee roasting, whereby it is transformed into semitransparent, brownish lumps, which are converted into a pale yellow powder by grinding between millstones. It is completely soluble in cold water, from which it maybe precipitated by addition of excess of strong alcohol. 2 How can I keep away the skin or mould that collects on such mucilage? A. Add a few drops of oil of cloves, and exclude dust and air by a suitable cover.
- To make a good solution of carbolic acid, what proportion of crystals and water must be used? Must the water be hot? The solution is needed for healing sores. A. Pare (crystalized) carbolic acid dissolves in 20 parts cold water. For use in surgery and medicine it is usually dissolved in diluted glycerin; the strength of solution depends upon the application; for ordinary external healing purposes dissolve one drachm of the carbolic acid in a mixture of one oz. of glycerin and eight ozs. of water.
- Why does black ink get ropy like molasses, and what is the remedy? A. Usually from the evaporation of the water, accumulation of dust, or decomposition of the excess of tannin.
- (36) B. A. W. asks: How is the dilute solution of terchloride of gold prepared for coloring b. ass chain? How much soda must be added? A. Dissolve the gold chloride in about 40 parts of water; add 10 parts of the alkali and boil; dip the articles to be colored in this while boiling.
- (37) P. O. S. asks how to prepare potassium or ammonium sulpho-cyanide? A. To prepare potassium sulpho-cyanide, mix together 48 parts of anhydrous potassium ferrocyanide, 17 parts of potassium carbonate, and 32 parts of sulphur; introduce the mixture into an iron pan provided with a lid, and fuse at a gentle heat: maintain the same temperature until the swelling of the mass which ensues at first has completely subsided, and given place to a state of tranquil fusion; increase the temperature now to dull redness. Remove the half cooled and stills oftmass, pulverize it, when a part of the salt in the pure state will crystallize out, and the remainder may be obtained by distilling the alcoholfrom the mother-liquor. Ammonium sulphocyanide may be obtained by mixing ammonium cyanide with yellow ammonium sulphide, and digesting this for some time with finely divided sulphur; by boiling the filtered solution the excess of ammonium sulphide may be expelled, and the sulpho-cyanide crystallized out.
- (38) J. T. S. asks: What is the gum used on the United States postage stamps composed of, and ment for glass and china ware? A. Soak 2 drachms cut how is it made and how is it applied? Also whether it isinglass in 2 ozs. water for twenty-four hours, boil can be bought in a gum state? A. Gum dextrin, 2 down to 1 oz., add 1 oz. alcohol and strain through a parts; acetic acid, 1 part; water, 5 parts; dissolve in the water and acid by heat, and add 1/2 part alcohol. Heat moderately in a covered vessel for some time with occasional stirring. It is applied hot by suitable rollers. It is not sold prepared.
 - (39) W. T. K. asks: What is honey dew as found occasionally on leaves of trees? A. The saccharine liquid phenomenon has been the subject of much discussion. By some it is supposed to be the secretion of insects; by others not. That plant lice, or aphides, do secrete a saccharine liquid is well established; on the other hand it seems to be equally well established that sometimes the liquid is exuded by the leaves of trees without insects being concerned in the operation. Dry weather is most favorable to its production. It is especially frequent on certain kinds of trees, such as linden. The rain or dew has nothing to do with its formation.
 - (40) E. T. S. asks: 1. How to make a permanentmaguet, horseshoe shape? A. Use hardest crucible steel, wrought into form and tempered nearly to straw color. It may be magnetized by bringing its poles in contact with those of a strong magnet, or by winding it (in one direction) with covered copper wire, and then passing through the wire a strong current of electricity from a galvanic battery. 2. Will it still be a permanent magnet if the horseshoe is straightened out, or can a straight rod be made a permanent magnet? A. Yes: tempered steel of any form can be magnetized.
- (41) T. W. asks: 1. What is the easiest and simplest way of finding the horse power of any black color? A. A deep black may be produced by engine? A. The power of a steam engine is calculated by multiplying together the area of the piston in inches, the mean steam pressure in lbs. per square inch, the length of stroke in feet, and the number of strokes per minute; and dividing the product by 33,000, 2. Was James Watt the first inventor of the steam engine? A. No. 3. What kind of an engine did he produce? A. A low pressure condensing engine, 4. We have a well that always had plenty of water in it, but this summer it has dried up. A well adjoining has always plenty of water. Our well is open at the top and the other is not. Is there a remedy so we can get water? A. Perhaps the following will start the flow: Introduce several hogshead of water, seal the mouth of the well around a tube reaching to the bottom, and apply a pump. 5. An engineer says that a suction pump when put in to feed a boiler against 60 lbs.pressure, the pump would always stop and stick. I said it was the strain put on it, add the vinegar, and then the spirit. Apply with a bit he said the pump contained more water than it could force. Which is right? A. You are probably both
 - (42) R. S. asks: I have a recipe for silver plating which reads thus: Dissolve 1 oz. nitrate of silver (crystal) in 12 ozs. water, then dissolve in the water 2 ozs. cyanuret of potash, and shake; then add 1/2 as much

bath for electro-plating, but it is well to observe that the | tached to the middle of the abdomen and extends conmaterials are extremely poisonous when introduced into

How can I make soft solder in thin sheets? A. Bv rolling.

- (43) B. & S. ask how to detect the presence of benzinein turpentine? A. The presence of any notable quantity of benzine in turpentine can readily be detected by the sense of smell. Place a little of the suspected oil in a small test tube, pour over it an equal quantity of rain water, cork, and shake once or twice; then let rest. If, after standing a minute, the parted fluids still remain opalescent, adulteration is propable.
- (44) R. L. F. asks of what the ink with which postage stamps are printed is made of? A. For the three cent stamps the ink is made of a mixture of Prussian blue and chrome vellow of a standard grade with much carbonate and oxide of iron, in a trap rock, (made only for the government) ground in a compound oil, the precise nature of which is not made public. For the one cent denomination the color is ultramarine—sulphides of sodium and iron, and silicate of alumina. For two cent stamps sulphide of mercury is used, and for the 90 cent, carmine.
- (45) N. C. L. asks how to copper plate leaves of trees, insects, feathers, and other perishable things, so as to preserve the form? A. Brush the leaves or other objects over with black lead. Insert a pin, and to this attach a wire that is connected with the zinc of the battery. It may be placed in the solution and the whole arrangement completed by the insertion of a piece of copper, which is to be connected with the silver of the battery.

How can I cast a medal, and what composition can I use? A. You can make the mould of calcined plaster of Paris. Old type metal is a good material to use for casting.

- (46) G. R. G. asks: Is such a thing as a hydraulic ram without an air chamber practically possible?
- (47) J. C. asks if there is a preparation or paint that, when applied to a building, will render it fireproof, and withstand the heat of a burning building adjoining? A. No.
- (48) J. B. asks for a process for engraving on brass? A. Cover the plate with a film of wax and surround it with a border made of beeswax 1 part, pitch 2 parts, and tallow 1 part. Cut through the film of wax with sharp instruments, leaving the outline of the design clearly shown in the metal of the plate. Flow the plate with a mixture of equal parts of squafortis and water. When the acid has eaten sufficiently into the plate, wash thoroughly in warm water to prevent its
- (49) A. S. asks for a recipe or composition for beeswaxing floors? A. In a hot solution of 5 lbs. of good pearlash, in soft water, is stirred 10 lbs. of good yellow wax, shaved or rasped fine. Stir the mixture while boiling, and when effervescing, add, while stirring, 5 lbs. dry yellow ocher. Pour into cans or boxes and let it harden. When wanted for use, diffuse 1 lb. of the mixture in 5 pints boiling hot water, stir the mixture well, and apply, while hot, to the floor with a paint brush. It dries in a few hours, when polish with a floor brush and wipe with a coarse woolen cloth.
- (50) L. P. S. asks for the quickest and best method of making vinegar from cider, and also which makes the best vinegar, early or late cider? A. Take, say 10 gallons, new cider, and suffer it to ferment fully, which will probably be in about two weeks if the weather be warm; then add about 8 gallons of new cider for producing a second fermentation, and in about two weeks add a like quantity to produce a third fermenta Stop the bunghole of the barrel with an empty bottle with the neck downward, and expose to the sun When the vinegar is come, set in a cool place. When making, let there be a moderate degree of heat and free access of external air. The process is hastened by adding to the cider a quantity of mother of vinegar, as it is called, a whitish ropy coagulum, of a mucilaginous appearance, which is formed in vinegar and acts as verted into acetic acid. Cider made from late apples is esteemed the best for vinegar.
- (51) Orator asks if the drug cucu possesses the power to make the bashful bold, as some persons claim for it? A. No: but a whiff or two of ether is said to allay "stage fright" and similar forms of nervous
- (52) N. Y. asks: What is butter of antimony? A. It is liquid chloride of antimony. It is made by dissolving crude or roasted black antimony in $\label{eq:muriaticacid} \textbf{muriaticacid} \ \textbf{with the addition of} \ \ \textbf{a little nitric acid.}$
- (53) S. E. N. says: I want to prevent iron rollers from rusting that are used on wet and dry linen? A. Heat your rollers with steam if practicable,
- (54) D. A. R. asks for a recipe for red ink to be used with a rubber stamp? A. Mix aniline red 2 to 4 drachms, alcohol 15 ozs., and glycerin 15 ozs.
- (55) J. M. W. says: I send you a worm that I found in an old rotten log; there were several of the same kind in said log. Can you tell me the name of it? A. It is the julus multistriatus, belonging to the group millepedes. It is commonly found under sticks, etc. It is long, cylindrical, hard, with numerous feet, short and weak, attached to the under surface of the body nearly at the middle of the abdomen. The antennæ are short and filiform. They crawl rather slowly, and at rest curve the body into a ring. They live on vegetable substances or eat dead earthworms or snails.
- (56) A. W. P. says: I send a box containing a bug or fly; what is the name of it, and the product of theegglaid? You will observe it was captured in the act of pregnating a piece of bark. The probe that 18 pierced in the bark belongs enclosed in the sheath under the belly, which divides in halves to receive it. A friend says that the eggforms a grub between the bark and the wood. A. It belongs to the family of "horntails." uroceridæ, Leach, so called from the long prominent horn on the abdomen of themales, while the ovipositor or "saw," resembling that of the true saw flies, is at-

siderably beyond its tip. The larvæ are "cylindrical fleshy grubs," of a whitish color, with a small rounded horny head and pointed horny tail. They are provided with powerful jaws, wherewith they bore long holes in the trunks of the trees they inhabit. They are wood eaters, and often do great damage to trees-mostly of pine and fir.

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

S. L. S.—No. 1, sample of clayey soil in small bottle, contains silica, alumina, lime, magnesia, oxide of iron, silicates, traces of sulphates, phosphates, and sulphides, organic matter, and about 15 per cent of water. It is not a rich soil. No. 2 is a deposit of carbonate of lime. -W. H. W.-From the examination made, it appears to be a clayey deposit, containing a large percentage of iron, moisture, and an oily or waxy substance somewhat resembling ozocerite—if the latter proves to be the case it may be of more value.-W. G. B. H.-Ii is semi-decomposed ferric sulphide—white pyrites—mixed withearth and iron oxides. The partial desulphurization may have been occasioned by heat.-A. D.-Dark greenish-blue powder. It is probably a mixture of sperm oil and aniline blue, with traces of copper and iron. The amount of substance was too small for a complete examination.

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 Carolina Mantis. By C. F. S. On a Magnetic Railway. By J. W. C.

Also inquiries and answers from the following: J. M. B.-W. W.-A. M. R.-A. T. O.-M. M,-E. H. -A. A. F.-M. M. S.-W. V. P.-A. W. P.-B. & N. -Mrs. L. N. C.

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 here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are sent: "Who publishes text books on journalism? Whomakes well augers and drills?" 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

OFFICIAL.

INDEX OF INVENTIONS

FOR WHICH

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

September 25, 1877, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list M including both the specifications and drawings, will be a ferment. The strength of vinegar depends on the furnished from this office for one dollar. In ordering, amount of sugaror starchy matter to be ultimately con- please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

ı			
I	Animal trap, J. H. Morris	195,632	P
	Baleband tightening machine, S. Hughes		P
	Barrel head, W. H. Murphy		P
İ	Barrel head, J. L. Thomson	195,675	P
l	Brrel-hoisting apparatus, S. A. Bates		P
l	Bath apparatus, vapor, J. V. Hirley		P
!	Bathshower, J. R. R. Morford		P
•	Bed bottom, W. M. Ward		P
i	Bed bottomand fire escape, R. O. Collis		Pi
	Bed pan, C. S. Merriman		P
ľ	Bedstead, J. W. C. Peters		Pi
l	Bedstead, A. Hausen		P
	Beehive, Hollingsworth & Walcott		Pl
1	Bell-striking apparatus, G. M. Stevens		P
1	Blacksmith's nippers and clincher, N. Brown		P
	Bottle stopper, C. S. Barnard		P
	Bottle stopper, F. Doll		P
	Bottle stopper fastener, F. J. Seybold		P
	Brake, car. L. T. Pyott		P
	Brewers' grains, H. & S. H. Chapman		P
	Broom, W. H. Paton		P
i	Buckle, composition-covered, O. Weiner		P
I	Buildings, joint for, C. Marcotte		P
i	Burial case, J. Askins.		P
	Burial casket, C. F. Spencer		P
	Can for preserving food, A. S. Lyman195,620,		Pı
١	Candy, W. H. Towers		P
	Cane and umbrella, T. F. Darcy		P
	Cane juices, apparatus for, etc., J. Miller		P
	Car axle, E Danford		R
	Car heater. C. A. West		R
	Car tongues, B McDevitt		R
	Car wheel, W. Y. Cruikshank		R
	Cars and vehicles, propelling, C. A. Gustafson		R
	Carpet lining package, Cobb & Evans		R
ı	Carriage curtain fastener, W. B. Gould		R
	Carriage tops, loop for, F. A. Neider		R
	Cellar bottom, J. R. Anthony		R
	Chair J. H. Rodebaugh		Ŕ
	Chair, G. A. Waterhouse		S
J	Chair, folding, A. B. Cogswell		Si
	Chair, folding, C. H. Sutherland		S
	Chair, folding, J. B. Wakefield195,547, 195,548,		S
	Chimney cap, E. Hawkes.		S
	Vuimuoj ναρ, Ε. Πάν κου	100,001	

	1 .	
on- cal	Chimney cleaner, S. H. Dickerson	195,540
.ed .ed	Closet for rooms, S. N. Stewart. Cloth-folding machine, J. D. Elliott.	195,493
in od	Cock, J. M. Graham	195,611
of	Coin detecter, E. Kronenberg Coin wrapper, R. L. Ryan	195,658
re-	Commode, J. Kutscher Corkscrew frame, J. L. Hyde	195,450
nd	Corset, C. A. Griswold (r)	195,459
le,	Cutlery strop safe, A. E. Hively Distilling petroleum, H. C. Wood	195,652
n,	Ditching and tile laying machine, R. E. Nevin Door fastening, E. Felge	195,595
es, is	Dumb waiter, J. Murtaugh Electroplate molds, W. B. Closson	195,526 195,443
ie. k.	Evaporating pan, C. McCauley Eyeglass support, F. H. Moore	195,517
of	Feather renovator, T. J. Adams	195,554 195,614
ıe-		195,487
be is	Fence post, T. L. Pope	195,533
ed za-		195,568
rk	Fire arm magazine, E. R. Quimby Fire arm, revolving, T. W. Bearcock	195,690
of n d	Fire arms, sight for, M. L. McCord	195,518
a	Fire fender, R. R. Crouse	195,578
_	Flower vase, C. H. Crater	195,479
28,	Freight chute, Crompton, Nicol & Hawley Fringe, E. Greasly	195,599
i	Furnace, English & Burr Furnaces, S. C. Salisbury	195,659
i	Furniture spring, E. A. Turner	195,676 195,585
н.	Gas regulator, Fenn & Groeninger	195,538
N.	Gate, J. S. Winsor (r)	7,897 195,477
	Grappling hook, Johnson & HansonGum, preparation of, R. Cotter	195,612 195,579
ng	Hair-curling device, R. M. Rose	195,455
to er	Harrow, cultivator, etc., G. E. Cooke Harrow, planter, etc., J. B. Wall	195,486
	Harvester, T. D. McCormick	195.625
de	Hay elevator and conveyer, I. S. Krick	195,615
he	Heat-conducting media, A. Densmore	195,584
ty ed	Hinge, C. B. Clark	195,574
n, of	Horse collar, S. Reynolds	195,649
ıs-	Horse detacher, Respess & Lumley Horses from cribbing, preventing, Snead & Burns	195,534
883	Horses, fly net for, E. Crebs	196,488
re n?	Hose coupling, F. Stewart Hose nozzle, Poh & Shoop	195,543
er- he	Hosiery goods, crocheting, J. M. Merrow	195,520
e-	Hot air registers, W. R. Lafourcade	195,636
ge ny	Inkstand, E. W. Stiles	195,635
ly	Ladder, J. Berg	195,563
-	Ladder, L. C. Boyington	195,571
	Lamp bracket, J. W. Birch	195,551
	Lantern, E. B. Requa Lantern, T. Wigley	195,683
		195,598
re	Lifting jack, E. T. Carswell Lock, J. H. P. Inslee Loom-shedding mechanism, H. Wyman	195,608
	Looms, weft fork for, S. Cook	195,485
	Medicinal compound, M. C. Peden	195,531
	Milk cooler, O. S. Prindle	195,F46
st	Milk pail, W. Heuermann Millstone-dressing machine, A. E. Smith	195,666
be g,	Miner's drill, Powell & Seddon Nut lock, R. A. Kelly	195,513
ed,	Nut lock, W. Lyon	195,684
	Ore-roasting apparatus, A. B. Crosby	195,469
32 49	Packing, adjusting piston, J. Varon	195,628
34 75	Paper hag machine, T. W. Grinter	195,501
175 148	Paper box, H. L. R. Wolf	195,593
523 550	Paper or board, J. M. Cobb	195,47 8
84 21	Piano, W. B. Tremaine	195,600
641 ! 60 6 :	Plane, bench, H. M. Clark	195,491
606 61	Planter T T Butler	195,480 195.442
41 73	Planter, J. Campbell	195,570 195,465
87 D		195,528
47 73	Plow, J. T. Speer	195,668
39 82	Plow point, M. M. Bowers (r)	7,894 195,494
152	Plow, frog plates for, T. Meikle Post hole auger, H. P. Haskin	195,627
56 609	Pulley, etc., O. H. Jadwin	195,509
64 164	Pump I W Avery	195,435
92 22	Punching machine, S. W. Baldwin	195,059
191 379	Railroad gate, W. B. Smith	195,558
519 503	Refrigerator, G. Collins	195,577
504 575	Refrigerator and water cooler, A. Axt Refrigerator building, R. M. Birdsall	195,565 195,565
109 537	Roof, J. B. Clark	195,594
171 154	Roofing tile, J. W. Hoyt	195,630
168 576	Sawa, J. T. James	195,610
545	sammili set work J. A. Robb	199,000
549 601		195,683

	Saws, device for cooling, F. McDonough	
	Saws, etc., operating crosscut, E. Poincot	
	Saws, planing attachment to, J. T. James Scale beams, marking, O. E. Russ	195,609
	Seal lock, H. D. Barnes	105,004
	Sewing machine, W. L. Grout	195.502
ı	Sewing machine, G. W. Baker	195,436
1	Sewing machine take-up, A. Bocher	195,439
Ì	Shoe, J. W. Hatch	195,447
ı	Show cases, T. H. B. Parks	
1	Show stand, J. N. Heinel.	195,602
	Shutter fastener, G. W. Mudgett	195,525
	Siphon, steam gage, J. S. Critchley	195,444
I	Snap hook, C. W. Blakeslee (r)	
:	Soldering apparatus, A. S. Lyman	
:	Spinning machines, mechanism for, A. P. Adams	
	Spoke-polishing machine, O. Allen	195,555
	Spool holder and collar box, Flynn & Brown	195,597
:	Springs, making spiral, B. H. Lockwood	195,619
	Stamp, cancelling, W. D. Wesson	
i	Stamp for marking logs, J. L. Major	
į	Stamp mill mortar, H. H. Scoville, Jr	195,457
	Staples, inserting metallic, H. R. Heyl	
:	Steam pipes, covering for, G. H. Levis	105,618
:	Stocking supporter, C. C. Shelby	
	Stone-sawing machine, J. M. Ballou	195,560
	Stove, M. Jones	195,511
	Stove pipe elbow machine, A. Syversen	195,674
	Stove pipe and chimney draft, G. H. Russell	195,656
	Stoves, cover for, A. B. Summers	195,673
i	Stump extractor, W. Berry	195,438
١	Stump puller, H. M. Stitzer	195,544
	Sugar, manufacturing, W. R. Elmenhorst	195,591
İ	Sulky, W. J. Donley	
ļ	Table, L. M. Bowdoin	
	Thill coupling, H. G. Morgan	
		195,586
	Ticket clasp, J. W. Lyon	
	Tillalarm, H. W. Morgan,	195,631
	Time lock, etc., J. Sargent	195,539
:	Tin foil, manufacture of, J. J. Crooke	195,490
i	Tinning apparatus, J. B. Jones	195,510
l	Tobacco, making plug, G. B. Okell	195,688
l	Tooth pick, J. S. Smith	105 690
	Treadle motion, H.B.& C.J.Barber	195 4 9
	Trunk, C. F. Weston	
	Truss, L. T. J. Lubin (r)	7,896
	Turbines, gate for, J. H. Staples	195,460
	Valve gear for steam engines, A. J. Vandegrift	195,466
	Vegetable and fruit slicer, A. D. Sweet	
	Vegetable cutter, S. W. White	195,681
	Vehicle body, H. Beard	195,437
	Vehicle propeller, E. G. Adams	195,553
•	Vehicle seat, F. Reichle	195,405
	Vehicle spring coupling, I. S. Krick	
	Vehicles, sand band for, A. Kaiser	195,613
	Ventilating grain cars, W. S. Sampson	195,456
!	Ventilator, H. M. Sanders	195,660
	Wagon jack, K. E. Rudd	195,537
	Wagons, seat for, L. J. Bazzoni	
	Washing machine, O. Jurden	195,512
	Watch key, D. D. Smith	195,542
	Watch-winding device, W. H. Zinn	195,687
	Whip and reinholder, G. C. Eastman	
	Whip socket, G. P. Rose	195 651
	Wrench and pipe cutter, B. Donohue	195.589
	Yarns, dressing cotton, W. H. Perkins	195,532
		•

DESIGNS PATENTED,

10,258.-UPRIGHT PIANO CASES.-S. Beambach, New

York city. 10,259.—Buttons.—A. H. Caron, Rauenthal, Prussia. 10,260.—PENCIL CASES.—W. S. Hicks, New York city. 10,261.—ORNAMENTING SHOES, ETC.—D. B. Moulton,

Lynn, Mass. 2.—HANDLES FOR SPOONS, FORKS, ETC.—G. W. Shiebler, Newark, N. J.

[A copyofany of the above patents may be had by remitting one dollar to Munn & Co., 37 Park Row, New

THE

York city.]

Scientific American.

The Most Popular Scientific Paper in the World. THIRTY-SECOND YEAR.

Only \$3.20 a Year including Postage. Weekly. 52 Numbers a Year.

This widely circulated and splendidly illustrated paper is published weekly. Every number contains sixteen pages of useful information, and a large number of original engravings of new inventions and discoveries. representing Engineering Works, Steam Machinery, New Inventions, Novelties in Mechanics, Manufactures. Chemistry, Electricity, Telegraphy, Photography, Architecture, Agriculture, Horticulture, Natural History, etc.

All Classes of Readers find in THE SCIENTIFIC AMERICAN a popular resume of the best scientific in-formation of the day; and itisthe aum of the publishers present it in an attractive form, avoiding as much as possible abstruse terms. To every intelligent mind, this journal affords a constant supply of instructive reading. It is promotive of knowledge and progress in every community where it circulates.

Terms of Subscription. - One copy of THE SCIEN. TIFIC AMERICAN will be sent for one year-52 numberspostage prepaid, to any subscriber in the United States or Canada, on receipt of three dollars and twenty the publishers; six months, \$1.60; three months, \$1.00.

Clubs.-One extra copyof THE SCIENTIFICAMERI-CAN will be supplied gratis for every club of five subscribers at \$3.20 each; additional copies at same proportionate rate. Postage prepaid.

One copy of The Scientific American and one copy of THE SCIENTIFIC AMERICAN SUPPLEMENT will be sent for one year, postage prepaid, to any subscriber in the United States or Canada, on receipt of seven dollars by the publishers.

The safest way to remit is by Postal Order, Draft, or Express Money carefully placed inside of envelopes, securely sealed, and correctly addressed, seldom goes astray but is at the sender's risk. Address all letters, and make all orders, drafts, etc., payable to

> MUNN & CO., 37 Park Row New York.