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Notes & Queries

It has been our custom for thirty years past to devote a considerable space to the answering of questions by correspondents; so useful have these labors proved that the SCIENTIFIC AMERICAN office has become the factotum, or headquarters, to which everybody sends, who wants special information upon any particular subject. So large is the number of our correspondents, so wide the range of their inquiries, so desirous are we to meet their wants and supply correct information, that we are obliged to employ the constant assistance of a considerable staff of experienced writers, who have the requisite knowledge or access to the latest and best sources of information. For example, questions relating to steam engines, boilers, boats, locomotives, railways, etc., are considered and answered by a professional engineer of distinguished ability and extensive practical experience. Inquiries relating to electricity are answered by one of the most able and prominent practical electricians in this country. Astronomical queries by a practical astronomer. Chemical inquiries by one of our most eminent and experienced professors of chemistry; and so on through all the various departments. In this way we are enabled to answer the thousands of questions and furnish the large mass of information which these correspondence columns present. The large number of questions sent—they pour in upon us from all parts of the world—renders it impossible for us to publish all. The editor selects from the mass those that he thinks most likely to be of general interest to the readers of the SCIENTIFIC AMERICAN. These, with the replies, are printed; the remainder go into the waste basket. Many of the rejected questions are of a primitive or personal nature, which should be answered by mail; in fact, hundreds of correspondents desire a special reply by post, but very few of them are thoughtful enough to inclose so much as a

postage stamp. We could in many cases send a brief reply by mail if the writer were to inclose a small fee, a dollar or more, according to the nature or importance of the case. When we cannot furnish the information, the money is promptly returned to the sender.

(1) F. R. asks: How is liquid bluing made? A. The greater part of the laundry blues in the market consist of Prussian blue dissolved in water by the aid of oxalic acid or potassium ferrocyanide (yellow prussiate). The quantities are about 17 per cent dry oxalic acid, or 18 per cent potassium ferrocyanide.

(2) G. L. D. says: Why can a person turn a screw easier with a long screw driver than with a short one? A. Because the long screw driver tips a little and so gives more leverage on the screw than the short screw driver.

(3) G. W. S. asks: 1. Will eosine make a reliable ruling ink that will not fade? A. No. 2. What is used for setting aniline colors, so as not to copy when dampened? A. You will not succeed in making an eosine ink that will not copy more or less when moistened.

(4) W. H. T. asks how to make collodion of dark purple color for the purpose of insulating fine copper wire? A. Collodion may be made by dissolving gun cotton (the low grade) in equal parts of absolute alcohol and ether. It may be colored or tinted to suit by slight additions, to the solvents, of the various coal tar dyes. The drying may be expedited by the use of hot air.

(5) J. S. B. asks: 1. How can I electro-plate with gold and have the deposit have the appearance of 16 and 18 karat gold? A. The following is said to give fine results when properly worked: Make the anode of an alloy composed of 1 part silver, 9 parts copper, and 30 parts gold. Immerse this, connected with the positive pole of a strong battery, in a hot aqueous solution of potassium cyanide contained in a small porous cup, and place the cup in a large vessel of copper. Fill up around the cup with water to which has been added a little ammonium nitrate, connect the copper with the zinc of the battery, and heat the whole to about 110° Fah. on a stove, while the current is passing. When the solution has taken up enough of the alloy (which may be determined by means of an hydrometer, or by weighing the dry plate before and after), remove the solution and plate from it in the usual manner, using the alloyed anode. 2. By what means can I best solder small pieces of steel together? A. Heat the joint sufficiently, flux with acid zinc chloride solution, and use a plumber's solder. 3. How can I best nickel plate on zinc? A. Give the zinc a good coating of copper, using a strong battery, and then plate on the nickel from an ammonio-nickel chloride bath.

(6) S. A. S. asks: Of what dimensions should I make a tank to hold 1,200 gallons, height and width to be the same, length one third longer? A. The proportions (inside measurement) should be 4 feet 9 inches width and depth, and 7 feet 4 inches length.

(7) R. E. M. B. asks: Can you give me a recipe for making a varnish impervious to water, to use on a fishing rod? A. To make it, put gum shellac in a vessel, with alcohol sufficient to cover it and keep it in a warm place until the gum is dissolved. If too thick, add alcohol until thin enough to flow readily.

(8) A. S. says: I have been trying to solder zinc, but cannot get the solder to adhere. I have used rosin and sal ammoniac, but neither will make it adhere. A. Use as a flux, muriate of zinc. To make it, dissolve zinc in muriatic acid and use after ebullition has ceased.

(9) F. B. H. asks: Would an apparatus constructed of india rubber lose its efficiency (strength and elasticity) if required to work in steam in a boiler, and would it lose this if immersed in water? A. Yes, in time.

(10) J. G. says: I am running a corn mill by water. I notice that at times my leather belt, which runs on a wood pulley at one end and an iron pulley at the other, gives off sparks of electricity. What is the cause? A. Friction of the belt upon the pulleys.

(11) J. J. H. asks: Why is it that the shadows of two objects appear to protrude and meet each other when the objects are moved toward each other, and that the protrusion proceeds from the shortest shadow? A. The effect is produced by the overlapping of the penumbra at the sides of the shadow. The penumbra of the long shadow or the shadow of the object the farthest away is the largest, and reaches the shadow of the nearest object first, making that side more dense, which makes it appear to protrude from that side first.

(12) H. H. asks: Can a spindle be made to run 32,000 revolutions per minute? A. It does not seem impossible.

(13) H. S. W. says: I find in using varnish that numbers of small bubbles rise on the surface of the work and seriously detract from the smooth appearance. What is the cause? A. It may be due to roughness of the surface varnished, presence of moisture in the wood, unevenly cut brush, imperfect fluidity of the varnish, or poor spirit solvent, etc. Use a well cut ditch or fine varnish bristle brush, see that the wood is dry, and do not lay on the coatings too heavy. With shellac varnish, perfect smoothness in the coating is with difficulty obtainable unless the first coat is rubbed down properly with pumice.

(14) W. H. G., Quebec, asks for a recipe for waterproofing cloth? A. In one vessel dissolve 1 lb. of the lead acetate in about a gallon of rain water, and in another dissolve 1 lb. of alum in 3 gallons of water. Pass the cloth first through the lead bath, then through the alum solution, and finally wash in water, and dry. Another common method of waterproofing is the following: Boil 4 1/2 ozs. of white soap in 2 1/2 gallons of water, and separately dissolve 5 1/2 ozs. of alum in 2 1/2 gallons of water. Heat these two solutions to 190° Fah., and pass the goods once through the soap bath, and afterwards through the alum solution. Lastly, dry it in the open air. The alum causes the precipitation of an insoluble alum soap within the fiber.

(15) I. F. B. asks: Will it be safe to run a six feet fly wheel up to four or five hundred revolutions a minute? The wheel has six arms and an oval-shaped rim about four or five inches wide. A. You do not send sufficient data, but if the wheel is well proportioned, it can be safely run at the higher speed named.

(16) W. G. says: I have a velocipede of the three wheel kind; how is it I cannot make it go advantageously on a good level and solid gravel road? A. If, as we suppose, the trouble in the gravel road is caused by the wheels cutting in too deeply, the remedy is to make them with wider treads.

(17) J. N. J. asks for a recipe for making citrate of magnesia? A. Take carbonate of magnesium 25 parts, citric acid 75 parts, distilled water q. s. Mix, reduce to a thick paste, which dry at a temperature of about 75° Fah. To make the effervescent mixture take of the above 14 parts, and mix with bicarbonate of sodium 13 parts, citric acid 6 parts, and powdered white sugar 3 parts. Moisten the mixture with a sufficient quantity of alcohol and pass it through a tinned iron sieve to form a coarse powder. Dry in a moderately warm place and keep in a well closed jar.

(18) L. E. says: Will you give me the best method of casehardening iron? A. Pack the articles to be casehardened in an iron box filled with bone dust or animal charcoal made of burnt leather. For small articles short pieces of gas pipe will do instead of an iron box. The ends must be stopped and luted with clay. The leather may be burnt in a pan or in a stove, and it must be reduced to powder before being packed around the work. Heat the receptacle and the contained work red hot, in a furnace, for a length of time proportionate to the size and thickness of the articles. Thin articles will require to be kept at a red heat only a few minutes, while heavy articles may require half an hour or more. When sufficiently heated, quench the work as soon as possible in cold water.

(19) E. M. asks how malleable iron is made? A. Malleable cast iron is the mode of decarbonizing cast iron by a process of cementation by means of hematite, which imparts a portion of its oxygen to the carbon in the cast iron, forming a chemical union and extracting the carbon from the castings. Scales derived from the process of rolling iron bars are sometimes used. The castings are packed in iron boxes, carefully luted, and kept in a furnace at a red heat for several days.

(20) F. T. M. asks: How can I weld malleable and wrought iron together? A. Try a high heat, and use powdered borax as a welding flux.

(21) G. W. D. asks for a method of separating iron ore in fine grains from common sand, and also asks if the mass can be passed through water resting on a liquid of greater density than the silicate portion, but not too dense to allow the iron particles to pass through? A. Metallic iron and many of its oxides and other combinations may be cleanly separated from sand by means of powerful magnets, preferably grouped into batteries the poles of which form part of the surface of a cylinder. We do not know of a fluid having all the requisite qualities to be of practical value in the way you suggest.

(22) H. V. asks: What is the method of diluting tinctures, etc., that is, what quantity of spirits and water are used in reducing from the tinctures to the 30th and highest dilution? A. The rule is, we believe, to reduce the strength of the tincture one hundred times at every dilution, thus: 1 part (by weight) of standard tincture (=a)-100 parts diluent=a<sup>1</sup>; 1 part a<sup>1</sup>-100 parts diluent=a<sup>2</sup>, and so on. The diluent is usually either water or a spirit just strong enough to hold the substances in solution.

(23) S. T. asks: Was a post mortem examination ever held on the bodies of the Siamese twins? What was the result of the investigation? A. Yes. The result showed that there was a union at the two ensiform cartilages, which were joined very near the median line of the band. There were three pouches, the lower one being separated from the skin by a very delicate layer of tissue, and passed from the abdomen of Chang and was lost in the duplicature of the suspensory ligament of the liver of Eng. Above this was a similar pouch belonging to Eng, and between this and the under surface of the ensiform conjunction was the third and largest pouch, also prolonged from Chang's abdomen, until it reached the peritoneal cavity of Eng, but was not continuous with it. Thus two of the pouches belonged to Eng. A connecting band was also found between the livers. The two portal circulations were connected and the peritoneal process extended across the ligament.

(24) L. K. says, in answer to E. C. H., No. 7 (22), who asks how to make a good Babbitt box: When the shaft or journal is adjusted to the proper place, sprinkle on some powdered rosin. When the metal is poured in on this rosin it burns, causing the metal to flow, by keeping it hot, into all parts of the box.

(25) Gas, Pittsburgh, asks: What was the process employed for the manufacture of oxygen gas by the company which attempted to introduce it into use in conjunction with the ordinary gas? A. It was produced by the union of a jet of oxygen and a jet of common street gas, the street gas supplying the hydrogen. The oxygen gas was made by subjecting a quantity of manganese, placed in a retort, to a heat of 850° Fah. in combination with a steam jet whereby the oxygen was liberated and carried into a gasometer for use.

(26) W. H. B. asks: Will you give me the name of some good work on optics and lens grinding? A. Consult Lommel's work.

(27) C. H. J. S. asks: Will you give me directions for making putty? A. Glazier's putty is made by working up whiting with drying oil. Polisher's putty, or putty powder, may be made by keeping molten tin exposed to the air at a strong red heat, in an open crucible, till it is converted into a white powder. How can I make the magic water pens? A. Triturate any of the aniline colors soluble in water with enough thick gum solution to form a paste. Place a little of this in the hollow part of the pen with a tight spring to

keep it in place when dry, and to direct the flow of liquid when in use.

(28) C. H. K. asks: 1. How is caustic ammonia used for rheumatism, as recommended in the SCIENTIFIC AMERICAN? A. It should be diluted with about 20 parts of water and applied externally. 2. I am somewhat confused by the different names: "Caustic ammonia," "liquor of ammonia," "aqua ammonia," etc. Are they not different names for the same thing? A. Yes. It is a solution of gaseous ammonia in water. The proper name for it is ammonium hydrate.

(29) A. L. L. asks how far apart to space the holes in a pantagraph, and by what mathematical rule it is figured? A. There is no rule for spacing the holes. Make them as close as consistent with the strength of the instrument. The scales of the drawings are to each other as the distances of the pencil and of the tracing point from the pivot.

(30) D. N. B. C. asks: Is there any simple method by which to determine whether well water, still palatable, is contaminated with sewage or other dangerous material? A. Add to a small sample of the water enough of an aqueous solution of potassium permanganate to impart a slight but perceptible tint. If this disappears shortly, it may be concluded that the water is unfit for drinking purposes. Add to another sample about 1/10th its volume of a saturated, cold aqueous solution of tannic acid, and allow to stand covered for 24 hours. Any notable quantity of organic matter in the water will be indicated by the formation of a precipitate.

(31) T. R. asks for a preparation that will keep white holly (wood) from getting soiled? A. Use a thin varnish made of bleached shellac dissolved in alcohol.

(32) A. H. W. asks for a recipe for a cement to be used cold, for cementing pieces of glass together without heating the glass? A. Boil isinglass in water, to a creamy consistence, and add a little alcohol. Warm before using.

How can I make the best dark bronze for cast iron? A. Melt together equal quantities of sulphur and white oxide of tin.

(33) Enquiring Reader asks: What is the best and cheapest process for manufacturing table salt from rock salt? A. Ordinarily it is simply washed and ground. All qualities are not sufficiently pure for table use.

(34) W. B. asks: Can I obtain glass that will melt in an iron ladle over a common coal fire as lead is melted? A. Soluble glass, composed of 1 part silica and 2 parts potassium or sodium carbonate, melts at a low temperature.

(35) W. F. R. asks for the number of stars stripes, and arrangement of the American flag? A. The number of stars should be thirty-eight. The number of stripes thirteen. The first stripe at the top red, the next white, then the colors alternately, making the last stripe red. The blue field for the stars is square, of the width of the first seven stripes, namely, four red and three white. The proportions of the flag should be as three to five.

(36) W. S. F. asks: Will you tell me how to galvanize hoop iron? A. Clean and scour the iron, and dip it into a bath of melted zinc covered with a layer of sal ammoniac.

(37) B. A. W. says: I have a quantity of brass chain, and I want to give it the color of gilt or gold that will not tarnish? A. Boil the articles in a dilute solution of terchloride of gold, to which some bicarbonate of soda has been added.

(38) D. R. K. asks: Why is it necessary to have a siphon to a steam gauge? A. The siphon is used for the purpose of keeping water in contact with the gauge.

(39) I. M. B. asks: What is the *modus operandi* of washing brass and copper vessels with lead without a battery? A. You probably refer to what is known as tinning, which is effected by dipping the articles into a tin bath, having first washed them with a solution of sal ammoniac.

(40) P. W. asks: What is the duty required of the fusible plugs placed in the crown sheet of locomotive fireboxes? A. To give the engineer warning. There might be no water in the crown sheet when the plug melted.

(41) E. W. D. asks: How are buggies polished? A. After the varnished surface is fully dried, rub down with rottenstone and a piece of woolen cloth, wet with water. Raise the polish by rubbing with the bare hand on which a few drops of sweet oil have been rubbed.

(42) T. E. B. says: A. contends that by taking a given point as a center and with any radius, describing an arc, you obtain an angle as of 20°, 45°, 90°, and so on until an angle of 360° is reached, when you have described a circumference. B. claims that you obtain arcs and not angles of those degrees, although the angles are measured by the intercepted arcs. B. considering an angle as the space included between any two lines running from a given point. Which is right? A. A. has the correct idea.

(43) W. A. K. asks: Can you give me an effectual method of dispatching house crickets? A. Insect powder may be efficacious, but a surer remedy is to stop up all cracks or crevices where they resort.

(44) F. H. asks: Why are the sunset tints colored red and gold? A. Little is known of the causes that produce the brilliant and varied colors assumed by the sky, particularly at sunset. They are unquestionably, however, connected with the aqueous vapor contained in the atmosphere; and the reddish hue, the most common of all, is probably owing to the greater facility with which these rays are transmitted through the watery particles.

(45) C. J. F. asks (1) for the analysis of the springs of Seltzer, Vichy, Carlsbad, Kissingen, and Congress water? A. You will find books at the leading drug stores that will give you an analysis of these waters.

2. Can I combine the different salts together so as to resemble the true waters, to bottle and charge in a fountain with carbonic acid gas? A. Yes. 3. How is the extract made that is used in ginger ale? A. It is composed of ginger extract with a little wild cherry, lemon, or other flavoring, and water.

(46) E. M. H. says: 1. Having a two horse power engine making 200 revolutions per minute, I wish to use it to pump where I want 30 lifts of the pump bucket per minute. The pulley on line shaft of engine is 9 inches in diameter. By running a belt from this 9 inch pulley on a 5 feet in diameter pulley, would it give the required number of lifts in the pump? A. Yes, if there is no slip. 2. There being a crank 9 inches long (on the same shaft that the 5 feet pulley is on) to which the rod of pump is fastened, what is now the power of the engine on the pump? Is not the power increased by thus decreasing the motion? A. You have not increased the motion, but the mechanical effect per stroke will be greater, in the proportion of the pulleys, neglecting friction.

(47) M. C. asks: What can I use to take coal tar off greenhouse pipes? A. We think a solution of potash will answer very well.

(48) S. C., of Mexico, asks: What advantages are there in the short-horned cattle over those of other classes, that make such great difference in their value? A. They give better milk, and their flesh is more valuable.

(49) O. M. M. asks how to make gold lacquer? A. To 1 gallon of methylated spirits of wine, add 10 ozs. seed lac and 4 1/2 ozs. of red sanders; dissolve and strain.

(50) O. P. asks: What per cent of 1 horse power will take to run a sewing machine, as it is run by any one sewing in the ordinary way? A. About 10 per cent.

(51) R. S. B. asks: What preparation can be used for painting the chimneys of steamships with red lead, so that the heat will not destroy the color as it does with common paint? A. We think it is difficult to make this color permanent, under the circumstances. Good varnish, 1/2 gallon; boiled linseed oil, 1/2 gallon; add red lead sufficient to bring to consistency of common paint.

(52) J. B. says: What is the best method of propelling a rowboat? A. By oars.

(53) I. N. D. asks: Will ripe tomatoes make strong vinegar? A. Probably not economically.

(54) J. W. D. McC. asks: Can copper be galvanized with gold? If so, what is the most simple but effectual method? A. A hot aqueous solution of the double cyanide of gold and potassium is used for the bath, with a battery of over two Smee cells for small work. Or the gold solution may be poured into a porous cup immersed in a quantity of salt water contained in a small copper cup. The whole is set on a fire until the gold solution has attained a temperature of about 110° Fah. A rod or plate of zinc is then placed in the salt bath, and the article to be plated, previously thoroughly cleaned, is immersed in the gold solution, and connected by means of a copper wire with the zinc. Under these conditions a deposit is soon obtained.

(55) W. T. R. asks: Can steam be introduced in a steam boiler from a pipe (1 inch) 400 feet long and used from boiler same as if made in boiler? We are using a rotary engine direct on to pipe. I want to put in a cylinder engine, but condensation is so great in the pipe it will knock out the cylinder head. I want the boiler in case supply from pipe fails us at any time. A. Yes. Instead of passing steam into the boiler before use, connect the engine directly to the pipe. You can easily attach a branch so that the boiler can be used when desired. Felt the pipe well, and provide a trap to carry off the condensed water.

(56) C. C. H. asks how "fraud" vinegar is made? A. It is probably a cheap, weak vinegar, the acidity of which has been strengthened by addition of a little oil of vitriol or acid lime sulphate. Vinegar of like properties has been made from pyroligneous acid—a product of the distillation of wood.

(57) M. M. asks how silk is dissolved with a liquid? A. Dissolve 16 parts (by weight) of copper sulphate in 144 to 160 parts of pure water, add 8 to 10 parts of glycerin (specific gravity 1.24) and mix by shaking. Into this, while cold, drop slowly a solution of caustic soda, while stirring, until the light blue precipitate at first formed is completely dissolved to a dark blue liquid. This fluid dissolves silk readily.

(58) C. G. C. says: I have a large, square, cut-glass inkstand, which is broken. Can you give me the composition of a cement with which I can repair it, and which will withstand the action of the ink? A. Use a strong solution of best gelatin in warm acetic acid. As ordinary inks contain tannic or gallic acid, the gelatin will only be rendered more insoluble if the ink comes in contact with it at the joint. The cement may be obtained at most druggists—one of the latest names under which it is known is "stratina."

(59) C. H. asks: Of what is belt lacing leather made? A. It is made of calf skins.

(60) Mc. Bros. ask: What is used for filling the letters of zinc signs? A. Use pitch 11 lbs., lamp-black 1 lb., turpentine q. s. Mix with heat.

(61) S. R. R. asks: What does the foundation of the towers of the Brooklyn bridge rest upon? A. Upon bed rock in some places; gravel, boulders, etc., in others.

(62) J. P. F. says: I wish directions for melting brass in crucibles in an ordinary blacksmith's fire? Also directions for brazing iron or steel? A. Heat the crucible slowly with the contained brass; when melted, cover the surface with a layer of powdered charcoal. To braze, file the surfaces clean, and unite them carefully, and retain them in place by riveting or by winding with wire. Deposit spelter solder or soft brass where the union is to be made, heat carefully in a clear fire (charcoal is best) and flux with borax.

(63) C. M. asks: 1. What is the best method of making vinegar from grapes? A. Provide two wooden vats, made of oak. At a little distance from the bottom of each fix a wooden grate, on which place a layer of small grape twigs, leaves, and stems. Press the juice from the grapes. Fill one of the vats and half fill the other. As soon as fermentation begins in the half filled vat, fill it from the full one, and every day fill the one that has remained half full with a part of the contents of the other. By this daily transfer of half of the contents of one vat to the other, the vinous liquid is brought into contact with the air until acetification is completed. 2. Is there any inexpensive and effective method of preserving grapes for winter use? A. Yes, keep in a dry cool place. 3. If wood ashes are a good application to the soil of a grape vine, why would not a weak solution of commercial potash answer the same purpose? A. It would.

(64) E. W. D. asks: 1. For the period of the comets 1680, 1811, 1843, Donati's, Coggias, and 1556? A. 1680, 10,000 years; 1811, 3,065 years; 1843, 376 years; Donati's, 2,000 years; Coggias's, 10,000 years; 1556 was predicted for 1860. 2. If the form of the earth is due to its being thrown from the sun in a hot state? A. The sun in condensing from a nebulous mass left behind portions which condensed and formed planets, etc., these planets taking on a rotary motion before they fully solidified naturally become globular.

(65) R. & W. ask for a recipe for making best varnish for household furniture, and best process for polishing when done? A. Best African copal 4 lbs., drying oil 1 gallon, turpentine 1 1/4 gallons. Boil the gum and oil until it strings well. When somewhat cooled, add the turpentine. To make it dry quicker, dryers may be added during the cooling. To polish, after an even surface is produced by rubbing with powdered pumicestone applied with a woolen cloth, rub with rottenstone and oil, and finish by rubbing with the bare hand moistened with a few drops of oil.

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

G. W. E.—It is a combination of iron with sulphur—called pyrites. You can find something about it on p. 7, vol. 36.—C. F. C.—The package marked A. contains only quartz pebbles. Quartz is, when not contaminated, pure silicic acid—a combination of the element silicium with oxygen. B. is a calcium phosphate, chloride, and fluoride, called apatite. Unmarked specimen contains tennantite—a sulphide of copper, iron, and arsenic.—M. F. M.—No. 2 contains oxide of iron, alumina, lime, and silica. No. 2 is felspar. No. 3 is partially decomposed orthoclase, with oxides of iron and a little copper. No. 4 contains clay, mica, and oxides of iron. No. 5 is pyrites. No. 6 is felspathic rock, the coloration of which is due to iron oxides. No. 7 is partially degenerated syenite. No. 8 consists principally of lime carbonate. No. 9 is gypsum. No. 10 is hornblende with pyrites.—A. K.—It is iron pyrites.—R. L.—It is a quartzose rock, with bright specks of pyrites. It is not valuable.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects: On Electrical Experiments. By F. J. M. On Curving a Base Ball. By R. D. W. On Remedy for Poison Oak. By H. F. A. On Labor and Capital. By A. B. W. On the Silver Mud Springs of Oregon. By B. S. Also inquiries and answers from the following: F. J. A.—D. C. H.—C. C. H.—W. T. & Co.—T. P.—C. R. M.—A. L.—I. A.—E. H.—A. P. A.—J. O. R.—I. M. D. McC.—C. E. T.

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 deals in optical glasses? Who makes Bessemer steel wire? Who makes and sells miniature engines? Who makes a good composition for covering steam pipes?" All such personal inquiries are "anted, 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 July 31, 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.

Animal fiber, process of treating, J. F. Greene... 193,649 Barbers' shears, W. Reed... 193,725 Bedstead, F. Caulier (r)... 7,817

Beehive, O. Colvin... 193,752 Bell call, W. J. Cowing... 193,753 Billiard cushion rails, H. W. Collender... 193,751 Bit brace wrench, C. H. Amidon... 193,632 Bolt machine, G. Dunham... 193,644 Boot edge burnishing machine, C. H. Southall... 193,622 Boring machine, J. Simpson (r)... 7,819 Bottlestopper, D. G. Hubbard... 193,610 Bracelet, etc., C. H. Graef... 193,701 Braiding machine, A. Wietlisbach... 193,791 Burglar alarm, F. M. Swallow... 193,622 Button fastener, M. R. Kenyon... 193,611 Can, rawhide waste, A. Holbrook... 193,656 Canal boat, towing, Cole & King... 193,597 Car axle box, T. A. Bissell... 193,593 Car coupling, Wood & Scull... 193,679 Car doors, J. Capron... 193,639 Car, Powers & Gilman... 193,671 Car seat, C. Houghton... 193,659 Carriage seat, G. J. & C. L. Tucker... 193,677 Cartridge belt, A. Mills... 193,613 Cartridge, B. B. Hotchkiss... 193,658 Cartridge, T. S. Laidley... 193,612 Chain link, machine, J. H. Helm... 193,608 Chair and settee, J. A. Simonson... 193,731 Chimney, J. Browell... 193,987 Churn, A. D. Ferris... 193,698 Clay, machine for tempering, W. H. Smith... 193,794 Clock dial, F. Kroeber... 93,663 Cloth measuring machine, A. W. Barker... 193,592 Cloth measuring machine, J. Loff... 193,767 Clover, thrashing and hulling, Stocking & Lippy... 193,786 Cock box, G. P. Bowers... 193,686 Condenser for engines, W. J. Allen... 193,589 Corks, C. Bell... 193,681 Cotton gin, L. C. Glover... 193,700 Cotton harvester, C. E. Graves... 193,702 Cultivator teeth, B. Town... 193,735 Curry comb, M. Sweet (r)... 7,820, 7,821, 7,822 Cutter head, J. W. C. McCurdy... 193,769 Doll's hat, C. L. Slade... 193,674 Door spring, A. P. Yates... 193,681 Doors, roller for sliding, A. A. Freeman... 193,647 Drafting ship's lines, R. Duthie... 193,755 Eave trough, F. A. Walker... 193,626 Enameling sheet iron, W. F. Niedringhaus... 193,669 Faucet, A. W. Sperry... 193,676 Feed water heater and pump, D. E. Rice... 193,617 Felting machine, J. Keats... 193,712 Fence, V. A. Kilgroe... 193,661 Fence post attachment, G. J. Barnhart... 193,683 Fermenting vat, C. Klein... 193,714 Fifth wheel, J. J. Black... 193,594 Filter and cooler, Peter & Walter... 193,722 Filter, J. C. Nichols... 193,720 Filter, W. Nugent... 193,775 Fire arm, J. Farquharson... 193,759 Fire arm, J. C. Petmecky... 193,670 Fire arm, W. S. Smoot (r)... 7,827, 7,828 Fire arm, G. W. Schofield... 193,620 Fire engine, J. Grzybowski... 193,603 Floor cloths, R. Hoskin (r)... 7,824 Fork, A. Reagan... 193,724 Fruit picker, J. C. Stribling... 193,733 Fuel machine, E. P. Davis... 193,693 Furnaces, H. C. Richmond... 193,726 Furnaces, T. J. Taylor... 193,787 Gas burner, C. S. Ford... 193,601 Gas burner, J. G. Hanning... 193,604 Gate, J. F. Read... 193,777 Grain binder, H. H. Bridenthal, Jr... 7,837 Grain distributor, C. E. Drake... 193,695 Grain steamer, E. C. Jones... 193,711 Grinding calendars, Latham & Blinn... 193,715 Grinding machine, C. A. Werden... 193,627 Grinding mill, E. Harrison... 193,652 Grinding mill, M. P. Squire... 193,784 Grinding mill, H. B. Stevens... 193,785 Harrow, Coddington & French... 193,692 Harrow, F. Dyer... 193,756 Harrow, A. Reagan... 193,778 Harrow teeth, for, J. M. Crawford... 193,614 Harvester, McCormick, Baker & Erpelding... 193,770 Harvester, J. L. Owens... 193,614 Hinge, J. Baudet... 193,633 Hoe, G. B. Ely... 193,645 Hook, safety, W. E. Murray... 193,773 Horse detaching apparatus, W. Jones... 193,764 Horseshoe, R. B. Hugunin... 193,763 Hub boring machine, Rowe & Edington... 193,618 Hydrocarbon oils, J. Merrill (r)... 7,826 Ice making machine, P. Giffard... 193,649 Incubator, E. S. Renwick... 193,616 Ingot mould, J. Baker... 193,591 Insect guard, J. Young... 193,745 Insects, apparatus for destroying, J. R. Duke... 193,643 Ironing board, W. M. Kepler... 193,765 Knitting machines, attachment, J. J. Fitzpatrick... 193,646 Lamp, F. Rhind... 193,673 Latch for carriage doors, F. P. Pfeighar... 193,723 Latch, gate, J. D. Cameron... 193,750 Latch, gate, H. Unger... 193,678 Latch, gate, A. C. Woolman... 193,630 Lathe dog, North & Norton... 193,721 Lathes, slide rest, C. Hopkins... 193,609 Lawn seat, J. R. Wherry... 193,738 Leaf turner, C. Schwerdtfeger... 193,781 Leather, machinery, W. Pantan... 193,615 Lightning rod, J. Hewitt... 193,654 Links, die for welding, J. H. Helm... 193,607 Locket, C. A. Faas... 193,758 Locomotive tenders, W. C. Hamner... 193,703 Loom harness, J. Shinn... 193,782 Loom shuttle box, J. Shinn... 193,783 Lubricating compound, J. Johnson... 193,710 Match block machine, Andrews & Tucker (r)... 7,825 Meal, machine for crushing, F. Wegmann (r)... 7,829 Measure, liquid, L. B. Healy... 193,761 Milk cooler, C. W. Loller... 193,716 Milk cooler, R. Smith (r)... 7,823 Millstone driver, A. Cunningham... 193,598 Molder's facing powder, W. Kling... 193,662 Motor, T. H. Smythe... 193,675 Mower, W. Edgerton... 193,697 Nut lock, W. Lyon... 193,711 Nut lock, J. J. Walden... 193,789 Oiler, pocket, C. Hauck... 193,760 Paint, D. Breinig... 193,636 Pitman rod, R. Schrader... 193,730 Plaiting machine, J. H. Rowe... 193,790 Planter, corn, King & Funk... 193,766 Planter, corn, W. J. Nicholson... 193,719 Planter, hand, S. P. Babcock... 193,690 Planter, tobacco and cabbage, J. C. Tennent... 193,734 Planters, check row attachment, L. S. Woodside... 193,743 Pneumatic engine, J. F. Allen... 193,631 Potato bug poison syringe, G. T. Wisner... 193,742 Preserving apples, J. Walker... 193,788 Pressure regulator, G. H. Wood... 193,629 Projectile, B. B. Hotchkiss... 193,657 Pump, Cammack & Ray... 193,689 Pump, S. R. Dawson... 193,754 Pump, W. B. Laney... 193,656

Pumps, valve, W. C. D. Body... 193,685 Pumping engines, valve for, J. Tregoning... 193,736 Railroads, W. Eppelsheimer... 193,757 Reflectors, R. Henry... 193,705 Saddle, harness, E. R. Cahoon... 193,749 Saw, C. J. Wilson... 193,740 Saw, hand, W. Hankin... 193,704 Sawing machine, W. Hinchliffe... 193,706 Scale top, E. J. Bliss... 193,634 Scales, D. F. Fetter... 193,699 Scales, combined ruler and letter, G. D. Wyckoff... 193,744 Scales, E. A. Martin... 193,768 Scales, S. H. Hibbard... 193,762 Scrapper for excavating, J. A. Botkin... 193,685 Seal, bolt, G. S. Winslow... 193,741 Seal, metallic, W. W. Johnson... 193,709 Sewers, check valve for, B. C. Hay... 193,605 Sewing machine, M. Christopherson... 193,681 Sharpeners, C. P. Brown... 193,748 Shearing boilerplates, A. Thomson... 193,624 Shingle bolt machine, S. D. & G. W. Albright... 193,746 Ships, port hole protector, W. H. Forbes... 193,793 Signal, hydraulic railroad, H. Tilden... 193,625 Spectacle frame, T. A. Willson... 193,739 Spectacles, A. & B. Kent... 193,660 Speed measure, W. Ireland... 193,707 Spring, air, C. J. A. Dick... 193,694 Stalk cutter, M. E. Roach... 193,729 Steam engine, H. Merrill... 193,772 Stove, W. H. Hoadley... 193,655 Stove, M. A. Sheiby... 193,621 Stove, A. H. Chase... 193,690 Stove, C. Ruprecht... 193,619 Stoves, boiler, R. E. Killip... 193,713 Suspenders, G. B. Gurley... 193,651 Tablet holder, O. Cleveland... 193,795 Tea pot, J. E. Jeffords... 193,708 Telegraph, J. H. Guest... 193,650 Telegraphs, C. A. Randall... 193,672 Thill coupling, A. P. Ladd... 193,664 Ticket case, H. W. Conger... 193,640 Till lock, A. Rosenfeld... 193,779 Tobacco packing machine, J. R. Lawrence... 193,686 Tobacco pipe, S. R. Dummer... 193,696 Torch, B. F. Card... 193,596 Torpedo guard, B. A. Richardson... 193,727 Toy balloon, J. J. Detwiller... 193,599 Traction engine, L. Walker... 193,737 Traction wheel, R. H. Yale... 193,680 Thief and robber trap, W. E. Wharton... 193,790 Type casting, C. S. Westcott... 193,628 Type writers, P. Deming... 193,642 Upholstering fiber, G. F. Miller... 193,668 Valve for pumps, G. W. Dixon... 193,600 Valve gear for steam engines, J. D. Hazlet... 193,606 Vehicle wheel, J. Bacon... 193,747 Velocipede, P. W. Mackenzie (r)... 7,818 Ventilator, J. W. Brown... 193,638 Wagon, T. H. Wood... 193,792 Washing machine, M. Nauss... 193,718 Washing machine, T. E. Smilback... 193,732 Weather, strip, H. Gollings... 193,602 Well boring screw, McLean & Herveck... 193,771 Wells, lining, H. M. Bradley... 193,595 Whiffletree, J. J. Panoost... 193,776 Windmill, S. Rittenhouse... 193,728 Woodworking machinery, D. C. Newell... 193,774 Wrench, A. B. Lipsey... 193,667 Wringer, M. A. Caldwell... 193,688 Wringing machine, Baldwin & Parkhurst... 193,682

DESIGNS PATENTED.

- 10,131.—CASSIMERE.—D. D. Bowen, Adams, Mass. 10,132.—CARPETS.—J. H. Bromley, Philadelphia, Pa. 10,133.—HEATING STOVES.—R. A. Culter & D. C. Proctor, Peoria, Ill. 10,134.—GLASS SHADES.—W. W. Lyman, Meriden, Conn. 10,135 and 10,136.—CASSIMERE.—J. Perry, Dudley, Mass. 10,137.—CASINGS OF SODA WATER APPARATUS.—J. W. Tufts, Medford, Mass.

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