

Business and Personal.

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If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN patent agency, 361 Broadway, New York.

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Curtis Pressure Regulator and Steam Trap. See p. 285. Woodwork'g Mach'y, Rollstone Mach. Co. Adv., p. 284.

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Wanted.—Patented articles or hardware specialties to manufacture on contract or to manufacture and place on the market. First-class facilities. Correspondence solicited. Address Hull Vapor Stove Co., Cleveland, Ohio.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 334.

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For best low price Planer and Matcher, and latest improved Sash, Door, and Blind Machinery, send for catalogue to Rowley & Hearnace, Williamsport, Pa.

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Notes & Queries

HINTS TO CORRESPONDENTS.

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 This is for our information, and not for publication.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

(1) M. H. asks: 1. What wire gauge is used in measuring wire for induction described in SUPPLEMENT, No. 160? A. American. 2. By using 28 wire in said coil, will it do to light gas? A. Yes. 3. How are the medical coils made? A. Like the one described in the SUPPLEMENT, but without a condenser.

(2) C. S.—We know of no means of increasing the volume of sound in the Bell telephone receiver, but by using two receivers, one at each ear, the combined effect of the two is very much greater than that of a single receiver.

(3) E. A. R. wants some simple way in which to produce the gas and inflate toy balloons, so they will float in the air when released. A. You can make hydrogen gas for this purpose by pouring slightly diluted hydrochloric acid on an equal weight of zinc in a covered vessel having a small stop cock in the top for filling the balloon. Ordinarily, we believe, it is found to be more convenient to use the common illuminating gas, and the balloons can thus be directly filled from the gas jet.

(4) L. C. L. asks: 1. Are porpoises used for anything except oil? A. Besides the oil, the skin is of value for leather, and the flesh is eaten. It is said that a company has been organized for the purpose of using the flesh for mince meat. 2. By what kind of nets are they caught? A. The net is of loose mesh, and sometimes a seine as long as 1,000 yards is used, reaching to the bottom of the sea. 3. In your SCIENTIFIC AMERICAN of the 14th inst. you speak of turtle oil. Is there any established market for it, if so, what is its market value? A. Not in New York. 4. How is it prepared, and how preserved? A. According to Spon, it is extracted from the eggs and fat of various species of turtle in Brazil and the South Pacific islands, and is used in food and medicine, and for lighting. We presume that it is only of local importance. 5. Is the shell of the green sea turtle of any value? A. No.

(5) H. A. U. writes: I have a very old violin, and the finish or varnish is all worn off. Can you tell me how to varnish and stain it so as not to injure its sound? A. Use coarsely powdered copal and glass, each 4 oz.; alcohol, 1 pint; camphor, $\frac{1}{2}$ oz.; heat the mixture with frequent stirring in a water bath, so that the bubbles may be counted as they rise until solution is complete, and when cold decant the clear portion. Add a little dragon's blood to produce the reddish color.

(6) E. I. writes: Would like to know if you could give me some information regarding the preservation of shrimps for fishing purposes, for say two or three weeks, either alive or dead. One way to keep them alive, but only for two days, is to put them in loose sawdust. Have also tried putting the dead shrimps in salt in a glass which answered fairly, but there may be some better way to fix them? A. We know of no other methods than the one mentioned by you.

(7) G. F. B. writes: I have made a mixture of kerosene oil, camphor, and ammonia; what can I put into it to kill the disagreeable smell? A. If the odor arises from the kerosene oil, the best thing to do is to use a better grade of the oil, and then it can be masked somewhat by using some strong aromatic, such as oil of cloves with perhaps a little oil of bergamot. A good quality of the kerosene should be almost entirely odorless. There is an aromatic ammonia described in the U. S. Dispensary which, if desired, could be substituted for the plain article as used in the recipe as given by you.

(8) A. P.—You can get soda ash from any druggist by asking for sodium carbonate or sodi-

carbonas. Its preparation as well as that of caustic soda is complicated, and unless you have a supply of apparatus, you will find it more convenient to purchase it.—It is probably the following: Mix 8 oz. prepared chalk, 2 oz. turpentine, 1 oz. alcohol, 4 dr. spirits of camphor, and 2 dr. aqua ammonia. Apply this mixture to the article with a sponge, and allow to dry before polishing.

(9) F. K. says: In your Notes and Queries of April 25, J. H. asks what harmless preparation he can use for coating a wooden tank, to supply his house with water, to prevent the water from penetrating the wood. Let him paint it inside with melted paraffine applied *hot*, then burn in with a gasoline burning tool, such as painters use for burning off old paint; the heat will expand the pores of the wood, and the paraffine will enter, leaving the surface clean; care should be taken not to apply the heat too suddenly, as the paraffine will run down before the pores are sufficiently open.—F. K. asks: What can I use to coat Manila paper, by dipping, to make it impervious to moisture. It must be cheap, contain no poisonous ingredients, not crack, nor deface the paper. A. Paraffine or wax is commonly used.

(10) C. W. B. writes: Please give me a recipe for mixing kalsomine so that I can put on successive coats (without mixing with alum or any size) and not wash up. A. Kalsomine is composed of zinc white mixed with water and glue sizing. The surface to which it is applied must be clean and smooth. For ceilings mix $\frac{1}{2}$ pound glue with 15 pounds zinc; for walls 1 pound glue with 15 pounds zinc. The glue, the night before its use, should be soaked in water, and liquefied in the morning. 2. Also, will you give me a recipe for making a gold size that will not lose its tack. A. Gold size is prepared by grinding calcined red ochre with the best and oldest drying oil, and mixing with it a little oil of turpentine when used. When the work is to be gilded, first give it a coat of parchment size; then apply the above size where requisite, either in patterns or letters, and let it remain till, by touching it with the finger, it feels just sticky; then apply the gold leaf, and daub it on with a piece of cotton; in about an hour wash off the superfluous gold with sponge and water, and, when dry, varnish it with copal varnish.

(11) W. B. C. writes: 1. Will a dynamo that can be run with a spring or weight of 25 pounds supply one or two Edison lamps of 15 or 30 candle power each? A. It may be possible, but it is not practical. 2. Can I run an Edison lamp (15 candle power) with a battery? A. Yes, but it will take a large number of cells, and will be very expensive. 3. Can you tell me of any work on electricity that would explain constructing a dynamo, and the way electricity is used for a motive power? A. Consult Du Moncel on electric motors. See also back numbers of the SUPPLEMENT.

(12) E. B. writes: 1. Please explain how the sound wave is changed into an electric wave in telephoning. A. Sound waves are not changed into electric waves in the telephone. You will find a full explanation of the action of the telephone in the back numbers of the SUPPLEMENT. 2. If a steel magnet was wound with copper wire, and the ends of the wire continued to a short distance and wound round a soft iron bar, would the bar of soft iron become magnetic? A. No, that is, unless the magnetism of the magnet were in some way suddenly varied so as to set up an induced current in the wire. 3. Suppose an electro-magnet was brought to within a short distance of a piece of soft iron that was covered with copper, would the iron (the piece covered with copper) be attracted by the electro-magnet by induction? A. Yes. 4. And if so, would the iron after touching the electro-magnet adhere to the magnet, or would it be repelled? A. It would be attracted by the magnet. 5. Why are carbon rods used in the electric lamp, and why would not metal do as well? Would not the space between the wires be luminous if, no electric lamp were used, but simply break the circuit? A. Carbon seems of all substances best adapted to arc lighting. All metals volatilize in the electric arc, and would therefore be speedily dissipated.

(13) W. E. D. desires the formula for an ink such as is used by penmen for engraving, the quality most desired being absolute impermeability to light. The ink I refer to is intensely black, leaving the finest lines show very distinctly. A. Try the following:

| | |
|---------------|----------|
| Bruised galls | 4 parts. |
| Gum | 1 " |
| Iron sulphate | 1 " |
| Soft water | 45 " |

Macerate for three weeks, employing frequent agitation.

(14) W. P. C. asks: Can a good oarsman row and make any headway against a current flowing at 6 miles per hour? A. An expert oarsman in a good boat can do this for a short distance.

(15) C. M. B. asks a way of ventilating a Mansard third story of a twin house to lessen the summer temperature. A. We know of no better way than to open vent holes at the base of the Mansard, and put a ventilator on the top, so as to allow a circulation of air between the roof and ceiling. Better consult with an architect or builder.

(16) G. B. writes: I saw recently an account of filings being made to resemble gold dust so closely as to be hardly distinguished from it. Will you in your next issue please inform me the materials used, and the way of using same? A. Such a process was used for the accomplishment of a fraud. We have no knowledge of the means used, but suppose that the filings were electroplated with gold.

(17) R. R. D.—Water deprived of air by boiling or any other means is a better conductor of heat or cold, and thereby allows the freezing process to take place quicker. It is also supposed that the air in water imposes a mechanical impediment to crystallization, as the act of freezing discharges the air from the water to a great extent.

(18) S. N. S. writes: In Philadelphia we are afflicted with bad water. Some are sinking wells. Are all impurities removed from water, by boiling? A. The object in boiling water is to destroy any

disease germs or microscopic life that would injure health. While it no doubt does have a beneficial effect, still we believe that recent investigations have shown that certain germs are capable of resisting the heat of boiling water. Well water in cities is unsafe for drinking purposes.

(19) J. T. McC. asks: 1. What would be the best material to mix with ordinary paraffine oil to stiffen it into grease? A. Paraffine wax. 2. How should it be properly mixed? A. Melt together and stir until cool. 3. Would you recommend strong lye as a part with other articles to bring it to a proper consistency? A. Lyes are without effect on paraffine. 4. Would you recommend paraffine tailings as a good and profitable article to mix with the above named oil? A. If for a lubricating compound, decidedly not.

(20) J. F. P. asks for the receipt of how to make the white powder used in making that effervescent summer drink called "sherbet," or "Persian sherbet." A. Take 8 ounces sodium carbonate, 6 ounces tartaric acid, 2 pounds finely powdered loaf sugar, 3 drachms essence of lemon. Let the powders be very dry. Mix them intimately, and keep them for use in a closely corked, wide mouthed bottle. Put two good sized teaspoonfuls into a tumbler; pour in $\frac{1}{2}$ pint of cold water, stir briskly, and drink off. See also "Summer Beverages," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 192.

(21) L. H. R. asks how much power can be developed from a 20 and 30 foot overshot wheel with a 4 inch solid stream of water. A. For 20 feet fall, 9 horse power; for 30 feet fall, 13 $\frac{1}{2}$ horse power.

(22) W. H. C., Leghorn, Italy, and others, —That the steamship Alaska was not provided with an eyebolt for chains on the outer edge of rudder is true; why, we do not understand.

(23) M. E. B. asks for the best way to prevent wrinkles (in transferring photographs on concave glass. A. See elaborate article on this subject, No. 8, vol. liii., page 120, SCIENTIFIC AMERICAN.

(24) E. S. G. asks what are "tatties" or "tatty," something or cool houses, used in India. A "tattia" is a bamboo frame or trellis hung at a door or window of a house, over which water is suffered to trickle, with a view of cooling the air as it enters.

(25) C. T. McM. writes: I am unable to account for the accepted fact of the moon's presenting to the earth the same side always. Please give me the reason. A. We, as well as all of the rest of the world, are in the same fix. We have no knowledge of the revolutions of the satellites of other planets, so that we can draw no conclusions from comparison, but accept the fact.

(26) C. T. J. asks: What must be the dimensions of a steam engine to constitute one horse power? A. Cylinder 3 inches diameter, 4 inches stroke, at 60 pounds boiler pressure and 150 revolutions per minute. If less pressure or number of revolutions, use a larger cylinder in proportion.

(27) L. A. D. asks (1) how to remove the fatty matter which collects in the pores of the face, sometimes having a black spot on their top. A. See answer to query 8, in SCIENTIFIC AMERICAN for February 21, 1885. 2. What will remove freckles from the face? A. For freckles use a mixture consisting of 2 parts sulphocarbonate of zinc, 25 parts of distilled glycerine, 25 parts rose water, and 5 parts of scented alcohol, and it is to be applied twice daily for from half an hour to an hour, and then washed off with cold water.

(28) C. D. C. asks if there is any known solution for plating glass with nickel or copper. A. We do not believe that there is any solution that can be used to plate glass with either nickel or copper. The process of silvering the ordinary looking glass is with tin and mercury.

(29) W. P. S. writes: I wish to get some inexpensive motor to operate a fan to be placed on the front of a church organ, to render comfortable the work of the organist. I have an electric motor, but the price of that is too high. A. The best device for your purpose we think would be a small jet taken from the organ bellows, and employed on the ejector principle to furnish the current of air.

(30) J. S. B. asks whether there is any form of magnet or dynamo which gives a continuous current in one direction without a commutator. A. There are several machines that give a continuous current in one direction, but of low tension; the Siemens uni-polar machine and the Delafield uni-polar machine are examples.

(31) M. G. asks: What will take out scratches from a thick plate mirror? A. There is no way except to repolish with rouge on a flat buff of woolen cloth or felt. If the scratches are deep, none but those used to such work can grind out the scratches and repolish the whole surface.

(32) H. C. J. asks: Is there any porous substance that I can use in manufacturing a cheap water filter for my family use, that is better than charcoal? A. Nothing better than charcoal and sand; put the charcoal between the layers of sand. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 451.

(33) A. L.—For aquarium cement use 1 gill plaster Paris, 1 gill litharge, 1 gill fine white sand, one-third gill resin finely powdered. Mix thoroughly dry. Take what may be required for immediate use, and make a putty with boiled linseed oil and a little drier. Not too soft. Apply at once, as it sets quickly.

(34) L. K. asks: 1. Can an induction coil be used to produce an electric light, either arc or incandescent? A. Induction coils are in use for lighting by incandescents. 2. Is the quantity of electricity from an induction coil increased by using larger wire for secondary coil? A. Yes. 3. Would common clay crucibles do for porous cups for an electric battery? A. No; they are not sufficiently porous.

(35) J. F. B.—The horse pushes his collar, and it is by throwing his weight thereon that he pulls the street car.

(36) H. B. S. asks: 1. Does the quality of a violin depend upon the kind of wood which it is made of? A. The quality of a violin is dependent upon the wood and upon the workmanship with which it is made. It improves as it grows old, and therefore its age is an important factor when its quality is considered. 2. If so, what kind of wood is best? A. Pine wood is used for the front and curly maple for the back. 3. Is there any work published in regard to the construction of the violin? A. We are not acquainted with any special book descriptive of the manufacture of the violin, but you will find a good deal of information contained in the various cyclopedias.

(37) H. H. asks how to make gum foam for soda water? A. Either of the following can be used with advantage: 1. To each gallon of sirup, add from 2 to 4 oz. of gum arabic dissolved in its own weight of water. 2. Quillaya bark, 4 oz.; alcohol, 4 oz.; glycerine, 4 oz.; water, 8 oz. Exhaust by percolation, so as to make 1 pint of tincture. From 2 to 5 drachms of this tincture to every gallon of sirup will be found sufficient to give every glass of soda water that creamy appearance so universally liked.

(38) E. D. F. asks how high a bicycle track should be banked on the outer edge of a 20 ft. broad track on the circle, the radius of circle being 120 ft., the rate of speed of wheelman to be 1 mile in 3 minutes. A. Under the speed named man and wheel will make an angle of 12 1/2° to counteract centrifugal force on a 120 ft. radius. The radial grade of the track should incline 1 ft. in 5. But as this is for extreme velocities, we recommend only one-half this grade, or 1 ft. rise to 10 ft., or 2 ft. for your 20 ft. track. There will be no difference in the angle of inclination for differences of height in weight of man or vehicle.

(39) C. F. C. asks: 1. How many candle power is a German study lamp? A. About 20. 2. Candle power of an ordinary 4 ft. gas jet? A. About 12. 3. How large a single incandescent lamp the dynamo in SUPPLEMENT 161 will run? A. Five or 6 candle power of low resistance. 4. Can dynamo run an arc light? A. A very small one. 5. How can I construct a simple motor to be run by water in a large reservoir for driving the above dynamo? A. Make a small turbine water wheel.

(40) J. L. S. asks: What the mixtures of varnishes are, that is, how to make the different kinds. 1. White varnish? A. A white hard spirit varnish can be made as follows: gum sandarac, 1 lb.; clear turpentine, 6 oz.; rectified spirits (65 over proof), 3 pints; dissolve. 2. Black varnish? A. Black varnish can be made by putting 48 lb. foreign asphaltum into an iron pot and boiling for 4 hours; during the first 2 hours introduce 7 lb. of red lead, 7 lb. litharge, 3 lb. dried copperas, and 10 gal. of boiled oil; add one lb. run of dark gum with 2 gal. of hot oil. After pouring the oil and gum continue the boiling 2 hours, or until it will roll into hard pills like japan. When cool, thin it off with 20 gal. of turpentine or until it is of proper consistence. This varnish is specially adapted for iron work. 3. Common brown? A. A brown hard spirit varnish consists of sandarac, 4 oz.; pale seed lac, 2 oz.; elemi, 1 oz.; alcohol, 1 qt.; digest with agitation till dissolved, then add Venice turpentine, 2 oz.

(41) J. R. D. desires to know some preparation that will cause tender skin to become hard and callous? A. Almost any astringent substance will accomplish this purpose, and therefore various solutions, such as vinegar, dilute sulphuric acid, lemon juice, or alum water, may be employed. Rub the parts to which the liquid is applied, and slap them well.

(42) F. W. B. asks: 1. Why is the N. Y., C. & St. L. Railroad called the Nickel Plate? A. We believe it was a nickname given because its founders represented it to be superior to any other road, so the story was that they were not satisfied with steel rails, but must have them nickel plated. 2. What is the best fillings between brick walls for a fireproof safe? A. Bricks are very good; a mixture of plaster of Paris and alum is much used. Fine sand offers a very good protection against fire. 3. Can an iron body be suspended by a magnet, or held in the air, without being in contact with it, that is, is it possible to balance the action of gravity on the weight by the attraction of the magnet so nicely as to keep them a given distance, say one-half inch, apart? A. You can accomplish this by means of an axial magnet.

(43) F. B. W. asks: 1. How to smoke glass slides for magic lanterns, so the black won't come off? A. You can smoke glass over a small gas flame or over a candle. You can cause it to adhere by subjecting it to steam of alcohol. 2. The way to paint on slides for same purpose? A. For information on lantern transparencies consult SUPPLEMENTS 423, 173, 424. 3. How to get pictures from newspapers transferred to slides, so that they will be transparent? A. Coat the glass with mastic varnish, allow the varnish to become sticky, place the print face down upon the varnish surface and burnish it well, so that all parts of the paper will be brought into contact with the varnish, and when the varnish has become thoroughly dry, moisten the paper and rub it over with the fingers until it is all removed, leaving the print in the varnish. Finally brush the print over lightly and quickly with a very thin coat of varnish.

(44) W. K.—For elastic moulds, rubber is probably the most durable material. The composition of printers' rollers is 8 pounds glue dissolved to a jelly by water, then add 7 pounds molasses. With the amount of water in the smallest proportion to give it elasticity, a very elastic mould may be made. Another composition used for the hektograph, and also for printers' rollers, is made with 1 1/2 pounds good white glue soaked in water until soft, the water poured off and 6 pounds glycerine added, and the whole melted and boiled until the right consistency is obtained by cooling a small quantity for trial. The object to be moulded must be greased to prevent sticking.

(45) A. A.—The brass coated zinc plaques are electro-plated. For the brass bath: 4 1/2 gallons pure water, bisulphate of soda 2 1/2 ounces, cyanide of potassium 35 ounces. Dissolve, then add the following solution: Water 9 pints, acetate of copper and protochloride of zinc each 1 1/2 ounces, aqua ammonia 14 ounces. Or in proportion of all the above for a smaller bath. Filter the bath; it will then become

colorless, and gives under the action of a battery a brass deposit of a very fine shade, using an anode of brass. By slightly changing the proportions of acetate of copper and protochloride of zinc, the tints may be varied from reddish yellow to greenish yellow. A little experience will be required to adjust the strength of the batteries—a weak battery producing a red deposit, a strong battery producing a gray deposit.

(46) O. O.—We do not know that the limit of speed in wheels has ever been reached. The limit is entirely controlled by friction of the mechanical parts and the medium in which the revolving motion takes place. About 10,000 revolutions per minute has been obtained in machinery practice. We do not know why 50,000 or 100,000 may not be obtained *in vacuo*.

(47) C. M. asks: If a perfect circle is made with a very fine silver wire, and then, by means of four rims, the wire transformed into a perfect square, what is the difference in the result of this process and that of squaring the circle? A. The area of a circle is greater than that of any square whose sides only equal circumference of the circle. For instance, a circle 8 inches in diameter has an area of 50.2656 inches, and the circumference of such circle is 25.1328 inches. To inclose the same area in a square, its sides must be 7.0898 inches each, or 28.3592 for the four sides.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted,

May 12, 1885,

AND EACH BEARING THAT DATE.

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

Table listing inventions and their patent numbers, including items like Abrading disk, Alarm, Animal powers, Governor for, S. D. Shepperd, and many others.

Table listing inventions and their patent numbers, including items like Charts and drawings distorted by disproportionate contraction, and providing for their correct republication, measuring distances and lengths on, E. R. Knorr, and many others.

Table listing inventions and their patent numbers, including items like Harness rosette, J. R. McAdam, Harrow, F. M. Hakes, and many others.