



(12) C. B. S.—The paint peels off the smoke stack because it is too thick. Use plumbago, lampblack, and boiled linseed oil.

(13) W. P. asks: What is the best wood to make a banjo with, and what kind of wood is used by the makers? A. We believe that the kind of wood used in a banjo has very little influence on its tone.

(14) C. G. R.—We know of no reliable method of plating with nickel without a battery, or its equivalent in the shape of a dynamo.

(15) T. R. asks how to make a solder that will come off easily without being heated after being put on. A. We know of no solder that will answer this purpose.

(16) W. D.—We know of no solder that can be used on tin without resin, acid, or some other form of flux.

(17) G. B.—The lenses of a magic lantern will answer for a camera; it is not uncommon to use camera tubes for magic lanterns.

(18) H. C. B.—The phonograph cannot be applied in the manner suggested by you. It is necessary to speak very loudly in the mouth piece to produce any effect.

(19) P. McC. says: I have a triangular boxwood scale that is dull in appearance and loses distinctness by use. How can I varnish it so that it will remain bright and yet not soil my drawings?

(20) J. K. C. asks the focal distances of the different glasses in the eyepiece as shown in Fig. 10, SUPPLEMENT, No. 399.

(21) E. F. McC. asks the proper method to clean oily waste. A. Place the waste in a solution of water and sal soda, and then blow steam through the mixture.

(22) W. B.—"Boiling coal tar" thickens it and makes it set quicker by evaporating part of its volatile element.

(23) J. M. asks how long it takes a train to come to a standstill when the Westinghouse brakes are put on, and what causes them not to act sometimes?

(24) R. W. asks if the condensing of steam in an ordinary locomotive boiler, after the fire is put out at night, will cause a sufficient vacuum to draw water from a tank, the water in which is but little below the level of the water in the boiler.

(25) L. J. S. writes: We have an artesian well about 1,100 feet deep and 6 inches bore, tubed down 380 feet with 3 inch pipe; the water does not come up any higher than 25 feet from the surface, and we are pumping it out.

(26) N. W. asks: 1. What saving in friction is effected by anti-friction rollers, say 1 inch diameter, surrounding an axle of 2 inch diameter? I refer to rollers whose surfaces touch the axle and its box, not to rollers which turn on axles of their own.

(27) J. C. asks: 1. Is there any formula for determining the lifting power of a magnet? A. You do not say whether you mean electro or permanent magnets.

(28) R. S. N. asks: (1) Is there any sodium chlorate (NaClO3) corresponding to the potassium chlorate (KClO3)? A. There is. 2. Could it not be produced in the same way as the KClO3? A. The simplest method of preparing sodium chlorate is by treating hydrofluosilicic acid with potassium chlorate, giving rise to free chloric acid, and then saturating the chloric acid thus formed with sodium carbonate.

(29) W. M. G. asks the reason why salt adds to the freezing qualities of ice, and if there is anything known that will draw out as much coldness without melting the ice. Also the ingredients used in ice manufacturing.

(30) H. D. H. writes: 1. We are making a phonograph according to instructions in SUPPLEMENT, No. 133; would like to ask if there is any substance better than mica and ferrottype tin of which to make the diaphragm?

(31) D. C. S.—Every chimney, gable, tower, and salient point of your building should be protected by a lightning rod. It is well to have a ground connection at each corner of the building, and all of the metallic parts of the roof and tower should be connected with the rods.

(32) E. F. S. asks: 1. What telephone has the most extensive use? A. The Bell telephone is used almost exclusively. 2. What telephone would be most suitable for use in a village?

(33) J. P. C. asks: What speed will a cannon ball have if when fired the cannon is on a train moving at the rate of 1,000 feet per second, and the ball is fired in the same direction with sufficient powder to give it also a velocity of 1,000 feet per second?

(34) W. W. H. asks: What is the best process for ebonying wood. A. SCIENTIFIC AMERICAN SUPPLEMENT, No. 207, gives several methods for dyeing wood black. A recent process consists in pouring 4 quarts of boiling water over 1 ounce of powdered extract of logwood, and when the solution is effected add 1 drachm of potassium chromate and stir the whole well.

(35) R. M. C asks: How many gallons of water per minute will be discharged through a nozzle of 3/4, 1/2, and 1/4 inch diameter, under a pressure of 60 pounds to the square inch, pressure fully sustained? A.

Discharge for 3/4 inch nozzle. 3 1/2 gallons per minute; do. for 1/2 nozzle, nearly 2 gallons per minute; do. for 1/4 nozzle, 1/2 of a gallon per minute.

(36) A. J. D. asks: What is the dark bluish crocus used by burnishers for polishing? A. It is rouge. 2. What is the best record for a 100 mile go as you please? A. The best time for 100 miles is 18 hours 8 minutes and 15 seconds, in London.

(37) W. R. H. writes: 1. I wish to run a sewing machine by power; would you advise weight or water power? A. We advise water power, if it is available; but if you are obliged to pump up the water to secure the power, it would be better for you to procure some form of small motor.

(38) E. C. B. asks the number of cubic feet of water and the number of pounds of coal engines of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 horse power would need to run at 60 pounds pressure.

(39) T. H. B. writes: Suppose the cylinder of an ordinary steam engine to be lengthened out to twice its present length, no matter what that may be, and reduced to a corresponding extent in diameter, so that the cubic space in the cylinder will remain as large as before and hold the same amount of steam; will the lifting power on the end of the piston rod be the same as in the shorter and wider cylinder?

(40) A. E. M. asks: 1. What could I use in bookcases, closets, and wardrobes to get rid of wood lice, book worms, and small spiders, etc., which keep getting in continually? A. Use camphor gum in small boxes set upon the shelves or among the books of your case, for insects.

(41) C. M. asks: 1. Would a bullet or other missile thrown perpendicularly into the air, fall to the point of starting with the same velocity and force as it received upon starting? A. Theoretically yes; practically only if in a vacuum.

(42) B. W. S. says: Many makers of mowing machines claim they get rid of side draught by means of a rod running from shoe to the whiffletree connection on pole. Will you inform me if this is good reasoning, or possible? A. If by the arrangement designated the power is applied at the center of resistance, side draught will of course be obviated.

(43) J. K. says: I have a lens 5 inches in diameter, 2 1/4 inches focus, for the camera obscura to enlarge photographs, but cannot reflect it on paper as given in one of your SUPPLEMENTS.

(44) W. S. F. asks how the water proof blacking, or more properly speaking "liquid gloss," for ladies' and children's shoes is made.

length. Your mirror may be much smaller than the projected image, but to get the best results you should have a condenser in the form of a double or plano-convex lens to concentrate the light on the picture.

(45) R. P. Y. asks: Does the telegraph cable sink the full depth of the ocean, which I believe is five miles, and if so, what sort of grappling machinery is it that will work at that depth?

(46) A. C. C. asks: How many cells would it take of a Grenet fluid battery, zincs 5 x 2 1/4 x 1 1/2 inch thick, carbons same dimensions, to heat to incandescence 3 1/2 inches or 3 inches No. 38 platinum wire, and how long will each zinc last, if used 5 hours every evening?

(47) T. W. H. writes: The reservoir of our water works consists of a stand pipe 6 feet in diameter and 160 feet in height. In the winter we are bothered more or less with ice forming around inside of the pipe.

(48) G. C. P. asks: 1. Can I build a dam of cement and sand by making a box to hold the mortar until it hardens? A. Yes. 2. Can I use small stones to help fill up and save cement, stones to be from 3 inches to 18 inches diameter, dam to be 7 feet high, 7 feet thick at bottom and 2 1/2 feet thick at top, front side perpendicular and pond side slanting?

(49) J. S. asks for a receipt for removing water bugs or red roaches. A. Borax is considered one of the very best roach exterminators. It should be pulverized and sprinkled around the infested places.

(50) W. S. F. asks: How the water proof blacking, or more properly speaking "liquid gloss," for ladies' and children's shoes is made.

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted September 9, 1884, AND EACH BEARING THAT DATE.

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

Table listing inventions and their patent numbers: Alarm. See Fire alarm. Amalgamator, S. Truby... 304,765. Anti-siphoning trap, F. W. Kelly... 304,736.