

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 This is for our information, and not for publication.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) H. C. P.—You may generate 237 cubic feet of steam from one cubic foot of water at 100 pounds pressure.

(2) J. W. H.—Any one can readily make a microphone by following instructions given in our SUPPLEMENT. We do not know that they are regularly manufactured.

(3) J. B.—Your dynamo, if made according to instructions given in SUPPLEMENT, should operate two or three small incandescent lamps.

(4) A. J. H. asks how to burnish an agate. A. By polishing it with crocus.

(5) G. W. S.—Two cigar boxes connected by a string or wire cable form an acoustic telephone which works very well, and is not covered by any patent.

(6) H. B. P. writes: I have an Edison incandescent lamp, 6 candle power; what kind of a battery do you think is the best? A. Use 10 or 12 cells of Bunsen.

(7) W. H. V. R.—A dipping needle is sometimes employed to search for iron, but the other metals have no effect on it. No reliable instrument for indicating the precious metals has been invented. You can purchase a dipping needle from any of the dealers in philosophical or mathematical instruments who advertise in our columns.

(8) O. V. A.—A volt is the unit of the current, and is about equal to the current delivered from a Daniell's cell. An ampere is one volt delivered through one ohm for one second, and is the unit of work.

(9) C. T. A. writes: Our citizens are making an effort toward the establishment of manufacturing enterprises here (in Kentucky), and purpose sending out an agent to visit some places where small manufactures are carried on. What would be good places to visit? A. It is probable that you will find more small industries within a radius of 50 miles from New York city than anywhere else in this country, and by visiting them you could get some idea of what you want. We think that a visit to some of our large dealers in wooden ware, notions, etc., would be instructive, and might lead to business. There are many small shops in Connecticut which might be visited with profit. We believe that South Bend, Ind., is noted for the manufacture of wooden articles, particularly parts of wagons and carriages. There is of course a large variety of manufacture which you might carry on profitably, provided you get the very best and most modern tools and appliances.

(10) A. L. L. asks: 1. About how expensive are the various Geissler's tubes, such as are used in electrical exhibitions, and where can I procure them? A. Geissler's tubes cost from 75 cents to \$50 and upward, each; such as are ordinarily exhibited, 6 to 8 inches long, cost from \$1 to \$2 each. You can purchase them from dealers in philosophical instruments. 2. How much and what kind of battery power would be required to work five or six tubes? A. Two or three cells of Bunsen or the plunging bichromate battery. 3. Is it necessary to use an induction coil with the battery? If so, what size? A. Yes. One that will yield an inch spark answers very well indeed. A very small one will show one or two small tubes. 4. Where can I procure electric jewelry? A. From dealers who advertise in our columns.

(11) R. W.—We think you will not be able to construct a baker's oven from the raw clay. The clay shrinks so much that the arch would be likely to break down. Better mould and burn red bricks or slabs of clay, from which build the oven.—See SCIENTIFIC AMERICAN SUPPLEMENT, No. 59, for illustration of a flexible harrow, or address makers of agricultural machinery.

(12) J. S. asks: 1. Is it practically possible to run a dynamo, produce by it an electric current, and heat, fuse, and sublime metals by that electric current, all *in vacuo*? A. Yes, in such vacua as we are familiar with. What an absolutely perfect vacuum might do we cannot say. 2. A friend of mine contends that electricity and its operations are impossible without the presence of oxygen, that oxygen is an essential developer of electricity. A. We do not think oxygen is vital to the generation or utilization of electricity.

(13) P. J. M.—Ivory is bleached by exposing to sunlight. It takes in this way from one month to six months. Exposed to sunlight under a light cover of turpentine, the bleaching may be done in three or four days.

(14) S. J. R.—The only practicable way of getting the tanning qualities of hemlock bark in a concentrated state is by grinding and leaching and then evaporating, as bark extract is regularly made. A few of the makers of bark extract take off the rosin, or rough outside portion of the bark, before grinding, but the most or them grind and leach the whole of the bark as taken from the tree.

(15) T. N. C.—Naphtha, coal oil, and petroleum have all been used on locomotives and under stationary boilers, with varying success with locomotives, but with stationary boilers; an entire success. For valuable articles on petroleum and its derivatives as fuel, see SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 331, 33, 403, 119. For equal weight, petroleum has twice the evaporative power of coal.

(16) J. F. S.—The assertion of interested parties relative to the wonderful strength of beton should be taken with several grains of allowance. Although trial tests have shown great strength, it is not reliable for arches without provision for thrust, to any greater extent than ordinary stone in a monolithic form.

(17) O. M. B. writes: I have an engine located 26 feet from the line shaft it drives. Will I gain or lose power by increasing the distance to 50 or 60 feet? A. 50 or 60 feet between centers is considered too long a distance for satisfactory running of a belt. The vibration gives a jerky motion to the shafting. The absolute loss of power is very little.

(18) A. D. C. asks the diameter and focal length of the objective to a Galilean telescope that shall have the same power and same field of view as an achromatic astronomical telescope whose objective is 3 inches in diameter and 48 inches focus, giving a power of 240? Also, what kind of lens is the best for the objective in a Galilean telescope? A. The field is very small in a Galilean telescope. You will require a glass of 3 inches diameter, 20 feet focal length, for an approximation to the power you mention, using a 1 inch focus eye glass. The glass should be as perfect as is required for achromatic objectives. We do not recommend this form in our advanced age.

(19) F. J. K.—The most approved way of deafening a roller skating floor, if in a building with a floor already laid, is to lay a set of light beams on rubber (pure gum) bearings upon the old floor and fill in with saw dust, then lay the skating floor on the light beams. In making a new floor, two sets of beams may be laid, one set a few inches higher than the other; lay roofing felt upon the upper beams, and the floor upon that. The lower beams may be lathed and plastered or felted and ceiled with boards.

(20) A. G.—Telegraph instruments are polished and lacquered. You cannot clean the parts with acid to any advantage. The best way is to take the instrument apart and clean off old lacquer with alcohol, then polish all the parts with rotten stone and oil on leather, pine stick, string, or anything that will reach the various parts. Then thoroughly clean with a cloth wet with alcohol, and lacquer with thin shellac varnish, using a flat camel's hair brush. Remove japan by burning off, or dissolving the varnish in naphtha. We do not know of any metal that will expand and contract as you desire under the influence of an electric current.

(21) F. E. F. writes: On page 188 of Mitchell's Manual of Assaying, it says: "Niter has a very powerful action on the sulphides, and where an excess of niter is used, all the sulphur is converted into sulphuric acid." Again, in Aaron's work on Assaying (published by the Scientific Press), it says on page 32, niter is a desulphurizer in two ways: First, by giving off oxygen to burn sulphur; secondly, by the potassium combining with sulphur, as the sodium of soda does; but if enough niter be used, all the sulphur is burned, being converted into sulphuric acid. I claim that sulphur never burns to *ic*, but always to *ous*, thereby forming sulphurous acid, and not sulphuric. A. According to Watts, anhydrous sulphuric acid (SO₃) "is formed by the direct oxidation of sulphurous oxide" (SO₂), and therefore we see no reason for not accepting the statement of Mitchell, especially as the present edition has been revised by so careful and competent authority as Professor William Crookes.

(22) F. G. D. asks what the chemicals are, and in what proportion they are mixed, for making blue lines on white paper. Also give the receipt for Pellet's plan. A. The process desired by you is given in answer to query 45 in the SCIENTIFIC AMERICAN for January 27, 1883. In the Pellet's process the copying paper is sensitized by immersion in a bath formed of 100 parts of water, 10 of iron perchloride, and 5 of oxalic acid. The drawing, on transparent paper, is placed on a dry sheet of the copying paper, and exposed to the light under the glass. After exposure the sheet is placed in a bath of potassium ferrocyanide (15 to 18 per cent of water), which immediately colors blue all the parts where the perchloride has remained intact, but does not affect the parts where the salt has been reduced by light. Then the drawing is washed with water and passed into a bath of 8 to 10 per cent of hydrochloric acid, which removes the salt of protoxide of iron; then it is washed again and dried.

(23) H. H. U.—White lead produced by the Dutch process is said to have a higher specific gravity than that produced by other methods. A description of this process is given in standard works on chemistry. It is too lengthy to be reproduced here. Chromium sesquioxide can be obtained by heating a mixture of potassium dichromate with sulphur or sal ammoniac and lixiviating the residue. That which distills over from crude petroleum below 100° C. is called petroleum ether. The red oxide of iron is found native, and can be obtained by heating iron sulphate. The plaster of Paris for your crucibles must be mixed with glue or starch water to prevent cracking.

(24) W. H. D.—If you desire to become a mechanical draughtsman, it will be best for you to attach yourself to some engineer's office. Or if you desire to follow art, then you should study in the studio of some artist.

(25) W. M. G. asks: 1. What kind of a glue or cement is used to fasten rubber on band saw wheels? A. Such a cement is best made by a solution of shellac in ammonia. This is prepared by soaking pulverized gum shellac in ten times its weight of strong ammonia, when a slimy mass is obtained, which in three to four weeks will become liquid without the use of hot water. This softens the rubber, and becomes, after volatilization of the ammonia, hard and imperme-

ble to gases and fluids. 2. What preparation is used to glue or secure sand on a sand belt? A. Use strong glue size; the sand can be procured from any druggist or grocer.

(26) C. M. R. asks (1) recipe for making camphor ice in small quantities for home use. A. Melt together over a water bath, white wax and spermaceti each 1 ounce, camphor 2 ounces, in sweet almond oil 1 pound, then triturate until the mixture has become homogeneous, and allow one pound of rose water to flow in slowly during the operation. 2. Recipe for making instantaneous ink and stain extractor. A. Take of chloride of lime 1 pound thoroughly pulverized and 4 quarts soft water. The foregoing must be thoroughly shaken when first put together. It is required to stand twenty-four hours to dissolve the chloride of lime; then strain through a cotton cloth, after which add a teaspoonful of acetic acid to every ounce of the chloride of lime water. 3. Recipe for making ink that I can use on a copy book with a press. A. See recipes given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 157. 4. Recipes for making a roof paint waterproof, for painting old tin roofs, something that will last and is good. A. You will find this information in SCIENTIFIC AMERICAN SUPPLEMENT, No. 113. 5. What city in the United States are eggs manufactured in, or if they are manufactured? A. Eggs are not manufactured at all.

(27) L. S. T.—The direction, curve, or apparent twist of liquids running from faucets is governed by the shape, form, or roughness of the nozzle as well as the shape of the opening made by turning the plug.

(28) C. M. W. asks: 1. Will 2,000 cubic feet of water with a 20 foot fall be any more effective on a 40 foot breast wheel than over a 20 foot overshot wheel? A. Where there is no liability to back water obstruction under the wheel, we believe the overshot wheel the most effective with a limited supply of water, as there is in a well constructed overshot but little leakage, although the bottom spill indicates a small loss on the total effect. 2. The total weight of a vessel is 100 tons. What is the least number of tons of water that will float her, provided she is set into a tank of water? A. The quantity or weight of water required for flotation depends entirely upon the perfection of fit of the inclosing case. It might take one ton or fifty.

(29) I. B. H. writes: Supposing a steam launch engine with a cylinder 4 inches by 6 inches to make 300 revolutions per minute (filling and emptying itself 600 times per minute), with a boiler pressure of 50 pounds per square inch, whatever would be the average effective piston pressure, what amount of water would the steam used represent? Also how much water would be used (at same number of revolutions) at 100 pounds pressure? In a word, how much more water would be in the steam at 100 than at 50 pressure? Ordinary slide valve, and steam from vertical tubular boiler. A. You will probably have a mean piston pressure of 40 pounds, which will require nearly 3½ pounds of water per minute. If you carry 100 pounds pressure, you may have 80 pounds mean piston pressure, which will require 5½ pounds of water per minute.

(30) L. M. G.—Do not try to cast brass in plaster of Paris; fine moulding sand is the proper material. To weld iron pipe, scarf the ends to be welded so that they will lap about ½ inch to 1 inch according to size. Make the scarfs so that when put together they will be somewhat larger than the diameter of the pipe, which will enable you to finish the weld the same size as the pipe. Place the scarfs together in the fire, heat to welding, tap the end of the pipe gently to give them contact, and hammer the scarfs with a light hammer in the fire, turning the pipe over as you hammer. A little sand or borax helps the weld.

(31) F. A. M. writes: I have charge of 6 miles of track on a north and south road, and I find that 90 per cent of the iron worn out is on the west side of track. Can you assign the reason for wearing a greater per cent on west side than on the east? A. Your observation is a very curious one, and if this fact could be proved universally on north and south roads, would stand as a very pretty practical demonstration of the rotation of our earth. The wear you speak of must be due to the uneven loading of your freight cars or to the fact that the rotation of earth on its axis from west to east throws the greater weight of the cars on the west track, causing a greater wear of same. Mr. P. H. Dudley of the *dynograph* car, and who has examined the principal railroads in this country, informs us that he has not discovered that under normal and equal conditions the wear of west rails in north and south roads is greater than that of east rails. Further facts in this matter would be of interest.

(32) N. J. W. asks: 1. Is there any method of extracting fossils from compact rock? A. There is no way known to us for obtaining clean fossil prints, but care in splitting the rock. When a fossil is but partially exposed in the splitting, the overlying stone has to be carefully chipped off with a small chisel and hammer until the desired uncovering is procured. In some kinds of rock that are soft a small sharp graver chisel in the hand is all that may be needed. No solvent will answer. 2. Why is dew deposited only on the tip of a blade of grass? A. The tips of the blades of grass are most exposed to the effects of radiation, and become colder than the lower part. The dew gathers upon the coldest part. 3. What is the powder used to make perfumed cigars? A. This depends upon the kind of perfume desired. In cinnamon cigars the bark is pulverized and sprinkled upon the moist stock. Many essential oils are used by spraying upon the filling of the cigars.

(33) H. C. G. asks how to make strong vinegar of cider made last summer. This cider was put in stone jars and glass demijohns, and has been racked off once. It has been stored in basement, the average temperature of which is in winter 50° Fahr. Some of it was put in the sun for weeks, but none of the cider has turned to vinegar. How can the "mother" be made to form in barrels of cider? Can vinegar be made either in brandy or whisky barrels? A. The action of the atmosphere with time at a temperature

of 70° to 85° F. will produce a satisfactory cider. The above conditions will bring about the formation of the mother. Some prefer to add a little true cider vinegar to the fluid, but this is not strictly necessary. Dip a piece of coarse paper in molasses and place it in your vinegar barrel. It is immaterial as regards the barrels. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 392, on "How to Clarify and Purify Vinegar."

(34) F. H. C. asks the formula for making a solution of citrate of magnesia.

A. Carbonate of magnesium	200 grains.
Citric acid	400 "
Sirup of citric acid	1200 "
Bicarbonate of potassium in crystals	30 "

Water a sufficient quantity.

Dissolve the citric acid in 2,000 grains of water, and, having added the carbonate of magnesium, stir until it is dissolved. Filter the solution into a strong 12 ounce bottle, containing the sirup of citric acid. Then add enough water, previously boiled and filtered, to nearly fill the bottle, drop in the bicarbonate of potassium, and immediately close the bottle with a cork, which must be secured with a twine. Shake the mixture occasionally until the bicarbonate of potassium is dissolved.

(35) C. T. A. asks: What kind of oil can be made of bones (beef or hog), and how the oil is made? A. Boneoil, variously known as Dippel's oil and animal oil, is obtained in the dry distillation of animal gelatinous substance. All that is now found in commerce is recovered as a product of distillation during the calcining of bones for the preparation of animal charcoal or boneblack. It is only valuable as a coarse lubricant. The method of manufacture is described in technical works.

(36) A. J. M. asks: Is there any preparation by which you can take a natural flower and dip it in, that will preserve it? A. Dip the flowers in melted paraffine, withdrawing them quickly. The liquid should only be just hot enough to maintain its fluidity, and the flowers should be dipped one at a time, held by the stalks, and moved about for an instant to get rid of air bubbles. Fresh cut specimens free from moisture make excellent specimens in this way.

(37) L. M. B. writes: I have several upright oil tanks (cylinders), some having round or dished bottoms and others cone-shaped. I wish to know their exact capacity, and the difficulty I find is to get the capacity of the round and cone-shaped bottoms. Please give me a rule whereby I can measure them. And also how to find the capacity of a globe. A. For the volume of a cone: Multiply the area of the base by the height; one-third of the product equals the volume. For the volume of the segment of a sphere: To 3 times square of the radius of its base, add square of its height; multiply this sum by height, and product by 0.5236. For the volume of a sphere: Multiply the cube of the diameter by 0.5236.

(38) W. H. R. writes: I want information in regard to the preserving of fruit, eggs, etc., by cold storage or in cold storage rooms, as it is called, I believe. A. Cold storage consists simply in the placing of perishable articles of food in a room artificially cooled. Generally the room is cooled by passing air over ice, and then allowing it to enter the room from above, but air can be cooled by other processes and used with equal advantage. The room is also carefully built in such a way as to prevent the entrance of hot air, the doors fit tightly, and there is generally an ante-chamber through which one enters.

(39) F. W. B. writes: How much power would I get from a round brick structure thirty feet across, with an inner wall eight feet from the first, surmounted by an iron horizontal wheel thirty feet across similar to a windmill, and letting the heat from fires in the annular space between the walls strike against fans of wheel, on the principle of the stroke jack? Would this principle, modified by best forms of draught chimney, grate, etc., give any practical result? A. No. For so large an apparatus you could scarcely overcome the friction of the wheel with any natural draught that you could produce.

(40) H. M. B. writes: During a conversation, I made the assertion that there are running engines in England to-day having no cabs on same. Is it not a fact? A. Very few of the English engines are provided with cabs, as ours are.

(41) E. S. N.—Steam under sudden compression evolves heat the same as air and the gases. If the pressure can be carried to near 2,000 pounds without loss of heat, the steam would be condensed into water at a red heat.

(42) W. H. J.—There are some 16 or more lead smelting works in the United States at present, the most important of which is at Newark, N. J. The duty on pig lead is 2 cents per pound, and on lead ore it is 1½ cents per pound. Pig lead is worth from \$3.50 to \$3.70.

(43) D. C. asks: Is any advantage gained in burning hard coal moistened or dry? Would you recommend coal constantly moistened in a self-feeder coal stove? Or do you think best to burn the coal dry? A. There is no advantage, but a decided loss, in burning wet coal. The heat consumed in vaporizing the water is lost. The vapor itself is of no value, as it only imparts the heat that it has received from the coal. The water used to cake soft coal and its dust is only a mechanical expedient to utilize what might otherwise be wasted by sifting through the grate unburned.

(44) H. T.—For polishing black marble, use oxide of tin. It does not stain. Woolen cloth or felt (an old felt hat) for the rubber.—There is no difficulty in belting fore and aft in a building 21x94. Put your engine belt wheel in the central part of the room, so that the belt wheel will be next the wall, then belt forward on to a main shaft and also backward on to a main shaft, and from each of the main shafts carry belts to the front and rear. This is a common practice here.

(45) W. H.—For a full illustrated description of how to set a slide valve see SCIENTIFIC AMERICAN SUPPLEMENT, No. 13.

(46) W. J. S.—Steam flows into a vacuum from 60 pounds pressure at the rate of about 1,600 feet per second.

(47) J. H. T. asks: About what is the momentum, in foot pounds, of a train consisting of a locomotive and six passenger cars, with their complement of passengers, traveling at the rate of thirty miles per hour?

(48) E. C. writes: Can I return condensed steam to boiler from heating pipes by gravity when using 50 or 60 pounds steam?

(49) Artisan asks: About how many cells of the Bunsen battery would it take for an electric lamp equal to about four common kerosene lamps?

(50) J. M. F. asks for a simple formula for the cure of kidney disease.

(51) W. A. S. O.—Mechanical and electrical skill and education are both necessary to the profession of electrical engineering.

(52) D. H. M.—Rubber is not soluble or softened by water.

(53) W. H. M. sends a sketch of a peculiar form of magnet devised for a special purpose, having a hollow core with a valve for the armature, and asks if this construction is practical?

(54) L. & B. ask how to make a paste or mucilage to fasten labels on tin.

(55) J. R.—Leather is usually bleached with an acetate of lead and sulphuric acid.

(56) W. W.—The paste used for papier mache process of stereotyping is regular flour paste, very finely divided, but some of the stereotypers add thereto something to prevent burning when one mould is used to make a great many plates, and this is considered a trade secret.

(57) D. W. asks where to dispose of old shoes and old leather.

(58) S. H.—Permanent magnets are made by the contact of tempered steel with an electro-magnet, or by enclosing the tempered steel in a coil, then sending a current through the coil.

(59) W. S.—See article on Induction Coil in SUPPLEMENT, No. 160, for making sparks to light gas.

(60) L. H. T.—We know nothing of the composition of the ink mentioned by you.

(61) W. H.—Leather scraps are worth but very little unless large enough to make something from.

the Eastern shoe manufacturers that such refuse as is left is burned. A very little of it is made into pulp for leather board, but it is not good for this purpose.

(62) W. G.—Both the heliotrope and the blood stone are used in limited quantities by manufacturing jewelers.

(63) J. O. P. desires for experimental purposes a substance of consistency and nature of paraffine or beeswax, which is transparent in pieces say one-sixteenth or one thirty-second inch in thickness.

(64) D. J. C. desires a receipt for making blue-black writing ink (it looks blue in the bottle but turns black after writing).

(65) E. H. asks: Will you please give me receipt for making liquid polish for ladies' kid shoes or leather bags, that will not injure the leather and that will give it jet black polish on any colored leather?

(66) C. C. C. desires a receipt for making the composition used in the hektograph.

(67) C. V. C. desires a formula for transferring printed pictures from the paper on to wood or glass.

(68) H. B. B.—Use as cherry stain: rain water 3 quarts, annatto 4 ounces, boil in a copper kettle till the annatto is dissolved.

(69) Acmon asks: 1. How can paper be made waterproof, and yet left free from any oil, etc., which will soil or taint any article which may be wrapped in it?

(70) R. von L. desires a receipt to give a belt a nice, dark, shining appearance.

(71) N. W. asks how far an ordinary steamboat electric light can be seen in an ordinary fog.

(72) W. P. M.—The papier mache matrices for stereotyping are made by moistening several sheets of rather stout tissue paper with very thin size, and then beating or pressing these sheets down upon the face of the type.

(73) F. E. R. asks how many cells of the Bunsen battery would produce an electric light equal to 4 or 5 ordinary kerosene lamps, and if it would be practicable.

(74) K. B.—You may japan small articles by dipping in japan thinned with turpentine, and baking in an oven at 250° to 270° Fah.

(75) J. M. W.—We do not see how any one can protest against the use of glycerine in any form whatever, for roller composition.

(76) C. E. M. asks for a cement to stick white metal tops on glass bottles.

(77) E. H. asks: Would a powerful jet of water directed to right or left of stern have any perceptible effect in steering the Alaska or any other ship which has lost its rudder?

(78) C. D. writes: I am attempting to make a tubular boiler to furnish steam for a small engine which is intended to supply power for a jeweler's lathe.

(79) W. G. F.—All solid substances like metals that are heavier than water sink immediately to the bottom of the sea.

(80) F. S. asks: 1. Which will be the most durable—a flat spring 15 inches long, 2 inches wide, 1/4 inch thick, fastened at one end with two bolts;

(81) W. asks: 1. What are diamond dyes and paints made of? A. Probably solutions of the aniline colors.

(82) W. W. P. asks: 1. What size upright boiler would freely furnish steam at 100 pounds pressure to two equalizing cylinders 2 inches by 4 inches?

or copper boiler? And how much oil and water would it take to run with this power 25 miles over any ordinary road?

(83) A. E. M. writes: I am anxious to mould some small ornamental objects in nickel and copper. I can make a splendid mould of plaster of Paris, but the great heat of the melted copper next the article seems to completely rot or decompose the plaster mould, and is not satisfactory.

(84) W. H. S. asks (1) how much the photo exposure should be decreased on a clear day, with fresh fall of snow on the ground.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted March 24, 1885, AND EACH BEARING THAT DATE.

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

Table listing various inventions and their patent numbers, including items like 'Acid, purifying sulphuric', 'Air compressing engine', 'Animal power, Thomson & Kucher', 'Animal trap, J. Schaffer', 'Animals' mouths, device for opening, J. A. Green', 'Anvil, D. E. McCarthy', 'Armor for vessels, forts, etc., W. N. Le Page', 'Axle box, car, S. Wills', 'Bag, pocketbook, or purse frame, L. B. Prahar', 'Baling press bale ejector, J. L. Duval', 'Banjo, J. B. Howe', 'Bearing for shafting, Powers & Ball', 'Bed bottom, spring, C. Carleton', 'Bicycle, C. Johnston', 'Binder, temporary, A. T. Atherton', 'Blind slats, machine for inserting pins in, G. W. Morstatt', 'Block. See Heeling block.', 'Boiler. See Steam boiler.', 'Boiler, W. H. Payne', 'Boiler cleaner, G. A. Galloway', 'Boiler cleaner and filter, J. G. Miner', 'Boiler furnace, C. Loetscher', 'Book holder, H. Crocker', 'Boot or shoe, A. Seaver', 'Boots, drying rubber, R. Meredith', 'Bottle filling machine, H. Will', 'Bottles, combined metallic cap and fastener for, A. L. Bernardin', 'Bouquet holder, M. L. Carrell', 'Box. See Embroidery show box.', 'Brake. See Car brake.', 'Brake lever, A. W. Hamaker', 'Brick back covering, J. B. Lester', 'Brick machine, A. J. Miller', 'Bricks, machine for the manufacture of, J. Tiffany', 'Bridge truss, G. H. Pegram', 'Buckle, C. Kahlhofer', 'Burglar alarm, A. Jacobi', 'Burner. See Gas burner. Vapor burner.', 'Button fastening strip, E. Woodward', 'Camera. See Photographic camera.', 'Can filling machine, W. H. H. Stevenson', 'Cans, screw cap for metal, A. F. Cooper', 'Candle machine, G. Roth', 'Candy machine, W. E. Henry', 'Cannon, pneumatic, D. M. Mefford', 'Canvas and other fabrics, machine for testing, J. F. O'Connor', 'Car brake, J. R. Barker', 'Car brake, L. Brauer', 'Car brake, I. H. Congdon', 'Car coupling, C. M. Bennett', 'Car coupling, H. W. Tilton', 'Car coupling, A. W. Van Dorston', 'Car coupling, F. Vaughan', 'Car spring, J. T. Hershell', 'Car starter, F. Sr., & F. Dawson, Jr.', 'Car starter, N. J. Roberts', 'Carriage, child's, E. A. & E. W. Gerbracht', 'Carrier. See Cash and parcel carrier.', 'Cash and parcel carrier, J. C. Martin', 'Cash carrying apparatus, D. H. Rice', 'Casting car axle boxes, I. H. Congdon', 'Caustic holder, H. Bell', 'Chimney and ventilator, combined, T. C. Harry', 'Chimney, ventilating, S. T. Atkin', 'Churn, W. Star', 'Churn, Wilson & Sanders', 'Churn dasher, R. W. Flisk', 'Clamp. See Felly clamp.', 'Clasp. See Corset clasp. Garment clasp.', 'Clasp, G. A. Colton', 'Cleaner. See Boiler cleaner.', 'Clevis, A. D. Forbes', 'Clothes drier, J. Dennis', 'Clothes pounder, J. Just', 'Coal scuttle, J. Kingsley', 'Coffin, G. B. Markle, Jr.', 'Coin counter and tester, W. W. Haas', 'Coke from ovens, apparatus for removing, G. W. Brier', 'Combing machine roller stand, J. H. Whitehead', 'Concrete structures, mould or cribbing for, E. L. Ransome', 'Converter, J. F. Wilcox', 'Corset clasp, G. H. Colley', 'Corset steel fastening, L. Hill', 'Cover, culinary, G. H. Henkel', 'Acid, purifying sulphuric, Thomson & Kemp, 314,548', 'Air compressing engine, R. P. Bolton, 314,218', 'Alarm. See Burglar alarm.', 'Anchor, land, G. H. Cook, 314,367', 'Animal power, Thomson & Kucher, 314,492', 'Animal trap, J. Schaffer, 314,201', 'Animals' mouths, device for opening, J. A. Green, 314,527', 'Anvil, D. E. McCarthy, 314,390', 'Armor for vessels, forts, etc., W. N. Le Page, 314,456', 'Axle box, car, S. Wills, 314,408', 'Bag, pocketbook, or purse frame, L. B. Prahar, 314,245', 'Baling press bale ejector, J. L. Duval, 314,523', 'Banjo, J. B. Howe, 314,295', 'Bearing for shafting, Powers & Ball, 314,475', 'Bed bottom, spring, C. Carleton, 314,427', 'Bicycle, C. Johnston, 314,335', 'Binder, temporary, A. T. Atherton, 314,508', 'Blind slats, machine for inserting pins in, G. W. Morstatt, 314,464', 'Block. See Heeling block.', 'Boiler. See Steam boiler.', 'Boiler, W. H. Payne, 314,467', 'Boiler cleaner, G. A. Galloway, 314,326', 'Boiler cleaner and filter, J. G. Miner, 314,257', 'Boiler furnace, C. Loetscher, 314,537', 'Book holder, H. Crocker, 314,436', 'Boot or shoe, A. Seaver, 314,302', 'Boots, drying rubber, R. Meredith, 314,460', 'Bottle filling machine, H. Will, 314,280', 'Bottles, combined metallic cap and fastener for, A. L. Bernardin, 314,355', 'Bouquet holder, M. L. Carrell, 314,425', 'Box. See Embroidery show box.', 'Brake. See Car brake.', 'Brake lever, A. W. Hamaker, 314,331', 'Brick back covering, J. B. Lester, 314,457', 'Brick machine, A. J. Miller, 314,340', 'Bricks, machine for the manufacture of, J. Tiffany, 314,274', 'Bridge truss, G. H. Pegram, 314,261', 'Buckle, C. Kahlhofer, 314,452', 'Burglar alarm, A. Jacobi, 314,450', 'Burner. See Gas burner. Vapor burner.', 'Button fastening strip, E. Woodward, 314,553', 'Camera. See Photographic camera.', 'Can filling machine, W. H. H. Stevenson, 314,352', 'Cans, screw cap for metal, A. F. Cooper, 314,227', 'Candle machine, G. Roth, 314,347', 'Candy machine, W. E. Henry, 314,529', 'Cannon, pneumatic, D. M. Mefford, 314,238', 'Canvas and other fabrics, machine for testing, J. F. O'Connor, 314,465', 'Car brake, J. R. Barker, 314,417', 'Car brake, L. Brauer, 314,422', 'Car brake, I. H. Congdon, 314,225', 'Car coupling, C. M. Bennett, 314,421', 'Car coupling, H. W. Tilton, 314,275', 'Car coupling, A. W. Van Dorston, 314,496', 'Car coupling, F. Vaughan, 314,408', 'Car spring, J. T. Hershell, 314,245', 'Car starter, F. Sr., & F. Dawson, Jr., 314,519', 'Car starter, N. J. Roberts, 314,299', 'Carriage, child's, E. A. & E. W. Gerbracht, 314,327', 'Carrier. See Cash and parcel carrier.', 'Cash and parcel carrier, J. C. Martin, 314,339', 'Cash carrying apparatus, D. H. Rice, 314,233', 'Casting car axle boxes, I. H. Congdon, 314,226', 'Caustic holder, H. Bell, 314,420', 'Chimney and ventilator, combined, T. C. Harry, 314,238', 'Chimney, ventilating, S. T. Atkin, 314,309', 'Churn, W. Star, 314,309', 'Churn, Wilson & Sanders, 314,501', 'Churn dasher, R. W. Flisk, 314,322', 'Clamp. See Felly clamp.', 'Clasp. See Corset clasp. Garment clasp.', 'Clasp, G. A. Colton, 314,366', 'Cleaner. See Boiler cleaner.', 'Clevis, A. D. Forbes, 314,443', 'Clothes drier, J. Dennis, 314,231', 'Clothes pounder, J. Just, 314,534', 'Coal scuttle, J. Kingsley, 314,454', 'Coffin, G. B. Markle, Jr., 314,538', 'Coin counter and tester, W. W. Haas, 314,330', 'Coke from ovens, apparatus for removing, G. W. Brier, 314,510', 'Combing machine roller stand, J. H. Whitehead, 314,406', 'Concrete structures, mould or cribbing for, E. L. Ransome, 314,398', 'Converter, J. F. Wilcox, 314,551', 'Corset clasp, G. H. Colley, 314,434', 'Corset steel fastening, L. Hill, 314,530', 'Cover, culinary, G. H. Henkel, 314,244'