

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 This is for our information, and not for publication.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.

Inquirles 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. Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

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price.

Minerals sent for examination should be distinctly marked or labeled.

(1) F. E. asks: If a piece of magnetic iron were dropped from a balloon several miles above the surface of the earth, would the magnetic attraction of the north pole attract the iron, or would it fall in a perpendicular line to the earth? A. Possibly the course of the falling body would be slightly affected by the magnetic attraction, but such pull would be very small compared with that of gravity.

(2) J. M. asks how to polish bullocks' horns. A. First scrape with glass to take off any roughness, then use pumicestone powder with a piece of cloth wetted until a smooth face is obtained. Next polish with rottenstone; and linseed oil, and finish with a piece of clean linen rag. The more rubbing with the rottenstone and oil, the better the polish.

(3) K. S. S. asks: Is white clothing warmer to wear than black? A. For the same material black is warmer in sunshine and white during dark-

(4) E. G. desires: 1. Receipt for making a good cosmetic. A. For black, use good lard 5 parts, wax 2 parts (or hard pomatum 7 parts), melt, stir in levigated ivory black 2 parts, and pour it into moulds of tin foil, which are afterward to be placed in paper sheaths. For white, the same without coloring matter. 2. Bay rum. A. Saturate a 1/4 pound block of carbonate of magnesia with oil of bay; pulverize the magnesia, place it in a filter, and pour water through it until the desired quantity is obtained, then add alcohol. The quantity of water and of alcohol employed depends on the desired strength and quality of the bay rum. 3. Brilliantine. A. Take of honey 1 fl. ounce, glycerine ⅓ fl. ounce, cologne ⅓ fl. ounce, and alcohol 2 fl. ounces. 4. A good razor paste. A. Take of levigated oxide of tin, prepared putty powder 1 ounce, powdered oxalic acid 1/4 ounce, powdered gum 20 grains, make into a stiff paste with water, and evenly and thinly spread it over the strop. With very little friction, this paste gives a fine edge to the razor, and its efficiency is still further increased by moistening it.

(5) S. E. L. asks the best and surest way to drill holes in chilled iron. A, A moderate chill can only be drilled by the hardest blunt drill with great pressure and very slow speed.

(6) N. P. K. wants a receipt for taking varnish off of furniture. A. Use a solution of about 3 pourds common washing soda to a gallon of water. Apply this to the work with a common paint brush, and after allowing it to stand for a short time the varnish can be removed with an ordinary stiff scrub-

(7) J. C. H. asks how to reduce overintensedry platenegatives without the use of potassium oxalate. A. First immerse the negative in a concentrated solution of alum and citric acid (make a 10 ounce saturated solution of alum, let stand for a few hours. and add 1 ounce citric acid). The negative should be left in this solution for a quarter of an hour. If no reducing effect takes place, then wash and immerse the plate in a bath of:

Sulphuric acid. 1 oz. bave a grayish color. 2. What is a good formula for ground glass varnish?

A. Sandarac Mastic.... 200 "

3. A good cigar flavor. The following is one of many recipes said to be used in improving inferior qualities of tobacco: Comminute cassia bark, orris root, licorice root, angelica root, and rosewood, each 7 oz. Macerate with 4 gallons of water, press out the liquor, and compound with a solution of 2 pounds of pure saltpeter and 31/4 pounds of white sugar in 11/2 gallons of water. This mixture is calculated sufficient for treating 100 pounds of leaf tobacco.

(8) N. M. B. writes: In the shop where I work, the main shaft pulleys and belts are greatly charged with electricity. Can you tell me the cause of it, and what effect it has on speed of shaft? Does it retard it? If so, is there any remedy for it? A. The electricity generated in belts is presumably due to the bending of the belt and its slight friction on the pulleys. It indicates dry air and a dry belt, and does not noticeably affect the running of the machinery. Moistening the air is the remedy if any is really needed, or a metallic comb with ground connection might be fixed with its teeth close to and pointing toward the belt. The charge can be taken from the shaft and pulley by attaching a wire to the shaft and thence to the water pipe.

(9) G. B. W. asks how to produce hydrogen and oxygen cheaply to use for welding purposes. A. You can produce hydrogen by passing steam over ignited iron scrap contained in a "through" retort or one with connections at both ends. By using coal instead of iron you will get a mixture of hydrogen and will probably break.

carbon monoxide that is just as good for your purpose. A very high heat is required. Oxygen can be made by heating chlorate of potash mixed with a quarter its weight of binoxide of manganese to a low red heat, or by heating binoxide of manganese alone to a very high heat. Oxygen has to be used with great care in welding, as it is liable to burn the iron. Superheated air would probably be better and cheaper.

(10) G. A. C.—See Lowe Gas Process, in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 98, 114, 53, and on Water Gas consult Scientific American Sup-PLEMENT, Nos. 60, 303, 398, 311. Use one square foot heating surface in boiler to 8 square feet of radiating surface for ordinary rooms, and one square foot of radiat ing surface) to 100 cubic feet of air in exposed rooms or 120 cubic feet of air in ordinary rooms. The square root of the square root of the heating surface, in feet, in the boiler will give a fair average diameter of the main steam pipe in inches. Proportion the distribution to the radiation according to intervening pipe sizes. No radiator should have steam inlet less than 3/4 inch for low steam. Medium and large radiators should have 1 inch and 1% inch inlets, one less size outlets; 1 inch pipe is the most suitable for radiators. There is no perceptible difference in the one and two pipe system of radiators

(11) B. S. M. Co. asks (1) what receipt there is for staining wire, or iron or steel, blue. A. The processes are similar for obtaining colors by a stain. Bluing is generally done by heating to obtain the color desired. 2. And brown. A. For browning, wet a piece of rag with antimony chloride, dip it into olive oil, and rub the iron over. In 48 hours it will be cov ered with a fine coat of rust. Remove this with a scratch brush, and apply oil.

(12) J. H.—Gun barrels are not casehardened. They are blued by heating and mottled by acids. This is a very difficult work, requiring experience and a suitable muffle oven. The browning of gun barrels is a chemical process alone. See answer to pre-

(13) W. G. K. asks: How can I color cop er medals so as to give them the appearance of old bronze? A. Dissolve 30 parts of carbonate or hydrochlorate of ammonium and ten parts each of common salt, cream of tartar, and acetate of copper in 100 parts of acetic acid of moderate concentration or in 200 parts of strong vinegar, and add a little water. When an intimate mixture has been obtained, smear the copper object with it, and let it dry at the ordinary temperature for 24, or 48 hours. At the end of that time the object will be found to be entirely covered with verdigris presenting various tints. Then brush the whole, and especially the reliefs, with a waxed brush, and if necessary set the high reliefs with hematite for chrome yellow or other suitable colors. Light touches with ammonia give a blue color to the green portions, and carbonate of ammonium deepens the color of the parts on which it is laid.

(14) G. C. F.—The North American magnetic pole is in about 731/2° north latitude and 96° west longitude, moving west. Its greatest elongation is supposed to be about 33°. As only about 1/4 of a revolution of the magnetic pole has been noticed, it is yet uncertain whether it completes a revolution or is only vibratory. It is supposed to occupy the point of most intense cold. What connection the two phenomena have is not yet known. The variation of the needle for New York for 1887 is 8175 and increasing at the rate of 3 minutes per annum. The Coast Survey have this work in hand, and publish reports of investi gations on the subject.

(15) J. H. V. asks the greatest number of tons it would be safe to pull up an incline of four inches to the foot with a seven-eighth inch diameter or No. 9 steel wire cable. A. 15 tons.

(16) G. B. asks a varnish for protecting fence wire. A. Use well boiled linseed oil, properly laid on; if necessary, color with umber. The iron should be first well cleaned and freed from all dust and dirt; the oil should be of the best quality and well boiled without litharge or any drier being added. Asphalt varnish or coal tar may be used instead of the above

(17) L. F. M.—If an attempt were made to use the House telephone to talk, the Bell Company would treat it as an infringement of their patent. It will talk if constructed in accordance with the patent. If a microphone transmitter was u ed with it, the claim of infringement by the Bell Company would be by so much the more ratified.

(18) J. L. P.—The vacuum system of propulsion described by you does not take into account the theory of equality of action and reaction. The vessel would, as far as the vacuum is concerned be pushed as hard backward as forward

(19) J. S.—In answer to your question. how many feet of heating surface is calculated per horse power on a boiler at 60 pounds pressure, the types made us say 150 instead of 15 square feet. The latter figure is large, but is not, out of the way in a small plant with such engines as are most frequently used, although with better efficiency the heating sur face may be reduced to as low as 6 to 12 square feet per horse power.

(20) N. S. B. asks: How can I quickly and inexpensively freeze water in a bottle, what freezing mixture to use, and what sort of an apparatus to employ? A. Nitrate of ammonia and water is one of the best of the simple mixtures. Surround your bottle with the coldest water you can get, held in a nonconducting vessel of wood if possible. Add an equal weight of nitrate of ammonia. Stir well. A second treatment of the chilled bottle may be necessary; or what is better, if you can cool enough water to use as the solvent for the second portion of nitrate of sods, the work will be better done. Probably chopped ice with one-half its weight of salt would be cheaper and better, and two successive applications should effect the result. Almixture of 5 parts nitrate of ammonia, 6 parts sulphate of sods, and 4 parts dilute nitric acid is exceedingly powerful. Use wood as far as possible for the outer vessel, and metal for the inner. Glass

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted.

February 15, 1887,

AND EACH BEARING THAT DATE.

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

Alarm attachment for door knobs, W. P. Allison. . 357,887

Amalgamator, electric, T. H. Trauernicht...... \$58,002

Air, apparatus for drying compressed, G. R. Cul-

Alarm. See Burglar alarm.

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Cars, derailing and replacing attachment for street, Hennig & Rettig	357,759 357,820 357,827 357,812 357,811 357,811 357,816 357,959 357,764 357,945 357,610 357,610 357,794 357,794 357,794 357,794 357,794 357,794 357,794 357,794 357,794 357,794 357,794 357,794 357,794 357,794 357,795 357,794 357,793 357,793 357,793
Cars, derailing and replacing attachment for street, Hennig & Rettig. Cars, drawhead for railway, J. A. Brill. Cars, running gear for railway, G. M. Brill. Cars, safety guard for railway, E. A. Wescott. Cards, machine for grinding hand, W. S. Burton. Carriage, baby, C. M. Banks. Carrier. See Pool table ball carrier. Sheaf car rier. Trace carrier. Case. See Cigarette case. Cash indicator and register, W. L. Horne. Caster, J. S. Dignam Caster, W. P. Tracy. Cattle tie and halter, G. D. Munsing. Celery, blanching, H. G. Lee. Chain, drive, N. P. I evalley. Chain, sash, G. T. Moore. Chains, set., testing tensile strength of, W. Kent Chair. See Folding chair. Railway railchair. Reclining chair. Check rein, harness, P. A. Smith. Chlorine by electrolysis, obtaining, D. G. Fitz Gerald Churn, E. H. Inzer. Cigar machines, feed regulating device for, J. Prangley. Cigarette case, F. S. Kinney. Clasp, See Rope or line clasp. Clasp, E. E. & J. S. West. Clasp bodies, making, J. H. Doolittle. Cloth board and tag therefor, J. W. Burkman. Clipping machine, hair, L. S. Lee. Clock system, electric, T. J. Zoeller. Cold crusher, D. Lubin. Coal or rock drill, J. L. Williams. Coin counter, P. E. Sarsfield. Collar fastener, horse, B. M. Johnson. Cotler and jointer, roller, D. A. Moon. Commode, chair, E. S. Farson.	357,759 357,820 357,827 357,812 357,811 357,813 357,959 357,766 357,959 357,764 357,610 357,602
Cars, derailing and replacing attachment for street, Hennig & Rettig. Cars, drawhead for railway, J. A. Brill. Cars, running gear for railway, G. M. Brill. Cars, safety guard for railway, E. A. Wescott. Cards, machine for grinding hand, W. S. Burton. Carriage, baby, C. M. Banks. Carrier. See Pool table ball carrier. Sheaf car rier. Trace carrier. Case. See Cigarette case. Cash indicator and register, W. L. Horne. Caster, J. S. Dignam Caster, W. P. Tracy. Cattle tie and halter, G. D. Munsing. Celery, blanching, H. G. Lee. Chain, drive, N. P. I.evalley. Chain, sash, G. T. Moore. Chains, etc., testing tensile strength of, W. Kent Chair. See Folding chair. Railway rail chair. Reclining chair. Check rein, harness, P. A. Smith. Chlorine by electrolysis, obtaining, D. G. Fitz Gerald. Churn, E. S. Gibbs. Churn, E. H. Inzer. Cigar machines, feed regulating device for, J. Prangley. Ciasp. E. E. & J. S. West. Clasp bodies, making, J. H. Doolittle. Clay reducer and disintegrator, W. Burkman. Clipping machine, hair, L. S. Lee. Clock system, electric, T. J. Zoeller. Clod crusher, D. Lubin. Clay reducer and tag therefor, J. W. Jones. Clothe drier, C. D. Hawkins. Clutch, friction, D. R. Kinyon. Coal or rock drill, J. L. Williams Coin counter, P. E. Sarsfield. Collar fastener, horse, B. M. Johnson. Coler and jointer, roller, D. A. Moon. Commode, chair, E. S. Farson. Comp holder, printer's, G. W. Banta.	357,759 357,820 357,827 357,812 357,811 357,811 357,959 357,766 357,959 357,764 357,945 357,747 357,610 357,744 357,937 357,748 357,938 357,748 357,748 357,748 357,748 357,748 357,814
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Cars, derailing and replacing attachment for street, Hennig & Rettig. Cars, drawhead for railway, J. A. Brill. Cars, running gear for railway, G. M. Brill. Cars, safety guard for railway, E. A. Wescott. Cards, machine for grinding hand, W. S. Burton. Carriage, baby, C. M. Banks. Carrier. See Pool table ball carrier. Sheaf car rier. Trace carrier. Case. See Cigarette case. Cash indicator and register, W. L. Horne. Caster, J. S. Dignam Caster, J. S. Dignam Caster, W. P. Tracy. Cattle tie and halter, G. D. Munsing. Celery, blanching, H. G. Lee. Chain, drive, N. P. I evalley. Chain, sash, G. T. Moore. Chains, set., testing tensile strength of, W. Kent Chair. See Folding chair. Railway railchair. Reclining chair. Check rein, harness, P. A. Smith. Chlorine by electrolysis, obtaining, D. G. Fitz Gerald. Churn, E. H. Inzer. Cigar machines, feed regulating device for, J. Prangley. Cigarette case, F. S. Kinney. Clasp, See Rope or line clasp. Clasp, E. E. & J. S. West. Clasp bodies, making, J. H. Doolittle. Clay reducer and disintegrator, W. Burkman. Clipping machine, hair, L. S. Lee. Clock system, electric, T. J. Zoeller. Codar grachines, free for, J. W. Jones. Clothes drier, C. D. Hawkins. Clutch, friction, D. R. Kinyon. Coal or rock drill, J. L. Williams. Coin counter, P. E. Sarsfield. Collar fastener, horse, B. M. Johnson. Cotter and jointer, roller, D. A. Moon. Cotter and jointer, roller, D. A. Moon. Cotter and jointer, F. S. Farson. Copy holder, printer's, G. W. Banta. Cork retainer, Heinig & Leidigh. Corn, apparatus for separating germs from, G. S. & R. W. Graves.	357,759 357,820 357,827 357,812 357,811 357,813 357,959 357,766 357,959 357,764 357,761 357,610 357,610 357,610 357,610 357,610 357,610 357,610 357,610 357,610 357,794 357,794 357,811 357,818 357,831 357,831 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838
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Cars, derailing and replacing attachment for street, Hennig & Rettig. Cars, drawhead for railway, J. A. Brill. Cars, running gear for railway, G. M. Brill. Cars, safety guard for railway, E. A. Wescott. Cards, machine for grinding hand, W. S. Burton. Carriage, baby, C. M. Banks. Carrier. See Pool table ball carrier. Sheaf car rier. Trace carrier. Case. See Cigarette case. Cash indicator and register, W. L. Horne. Caster, J. S. Dignam Caster, W. P. Tracy. Cattle tie and halter, G. D. Munsing. Celery, blanching, H. G. Lee. Chain, drive, N. P. Levalley. Chain, sash, G. T. Moore. Chains, etc., testing tensile strength of, W. Kent Chair. See Folding chair. Railway railchair. Reclining chair. Check rein, harness, P. A. Smith. Chlorine by electrolysis, obtaining, D. G. Fitz Gerald. Churn, E. H. Inzer. Cigar machines, feed regulating device for, J. Prangley. Clasp. See Rope or line clasp. Clasp. E. E. & J. S. West. Clasp bodies, making, J. H. Doolittle. Clay reducer and disintegrator, W. Burkman. Clipping machine, hair, L. S. Lee. Clock system, electric, T. J. Zoeller. Clode crusher, D. Lubin. Coal or rock drill, J. L. Williams. Coin counter, P. E. Sarsfield. Collar fastener, horse, B. M. Johnson. Collory holder, printer's, G. W. Banta. Cork retainer, Heinig & Leidigh. Corn, apparatus for separating germs from, G. S. & R. W. Graves. Corset, T. S. Gilbert. Cotton beater, T. Oldroyd. Counter stiffener, G. H. Briggs Coupling. See Car coupling. Hose or pipe coupling. Pipe coupling. Thill coupling. Crossover stitch, N. Cort.	357,759 357,820 357,827 357,812 357,811 357,811 357,959 357,766 357,959 357,764 357,959 357,761 357,610 357,794 357,610 357,794 357,794 357,794 357,794 357,794 357,794 357,794 357,813 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838 357,838

Crusher. See Clod crusher. Stone and ore crusher.	
Cultivator, M. G. Graham	
Curtain fixture, W. C. Kantner	
Cutting and fitting garments, M. V. Coleman 357.762 Cyclometer, J. Butcher	
Damper mechanism, automatic, E. C. Mason 857,722 Dental anodyne or local anæsthetic, R. H. Peak 857,784	
Diffraction camera, J. Vansant	
Door hanger Cogger & Hamlin	
Draught equalizer, J. E. Johnson 357,832 Dredging machine, J. E. Walsh 357,890	
Drier. See Clothes drier. Drill. See Coal or rock drill. Grain drill. Rock or coal drill.	
Drilling machine, Allen & Henrie	
Eaves trough, G. W. Taylor	
Electric currents, device for regulating the flow of, E. T. Starr	
Electric generator, dynamo, J. W. Easton	
Electrical circuit, J. F. Mehren	
Electro-magnetic brake, G. F. Card	
Elevator attachment, W. E. Nickerson	
Engine. See Paper pulp or rag engine. Quadru- ple expansion engine. Rotary steam engine.	
Steam engine. Traction engine. Evaporator, W. F. Lambert	
Excavator, wheel, F. Plumb	
Kingsley	
E. Daniels	
Fare box, T. L. Beaman	
Fence, Coats & Jay	
Fences, machine for making, L. Gabel	
Fender, G. S. Blakeman 357,654 File, C. E. Darrow 358,000	
Filter, G. F. W. Begemann	
Firearm having automatic brace for the breech- block, N. D. Folsom)
Firearm, revolving, J. C. Howe	,
Fire extinguisher, automatic, A. F. Letson 357,719 Fire extinguisher, automatic, Stillson & Prescott. 357,692	
Fireplace heater, A. H. Hewitt	
Gray	,
Floor, stable, M. St. German	3
Fog horn, G. White	
Frame. See Spinning frame. Tobacco wagon frame. Fruit picker, J. R. Hunter	
Furnace grate, boiler, R. S. Watson	
Galvanic appliance, sanitary, P. H. Vander Weyde	
Galvanic battery and apparatus connected therewith, Upward & Pridham	
Game of baseball, home base for, R. M. Keating 357,675 Garment fastener, I. Morse	,
Garments, device for renovating, A. Shanley 357,791 Gas apparatus, valve for, W. T. Bate 357,896	
Gas burner, self-closing, S. D. Locke)
Gate. See Bridge gate. End gate. Gate lock, M. B. Mills)
Gearing, changeable speed, Kirkpatrick & Martin 357,834 Gearing, universal joint, J. J. Greenough 357,594	
Generator. See Electrie generator. Gas generator.	
Glass, dish or plate, E. Porrera	
Sowerby	
Globe for educational purposes, collapsible, C. B. Hite	
Governor for controlling the supply of fluids, A. & J. Darling	
Governor, steam engine, D. H. Dugar	•
Grain drill, W. H. Newton)
Sheldon	7
Grinding mill, L. D. Harrison	
surfaces of, H. Stanley	
Gynecological stirrup, C. H. Von Kline	3
Halter snap, G. M. Stout	
Harness mounting, E. R. Cahoone	L
Harrow, J. G. Eberhart	3
Harrow, disk, D. E. McSherry	3
Harvester corp. J. T. Hess	3
Harvester reel, J. Giles	1
Hat block, Howe & Fry	
Head rest, T. Ferry	ì
Fireplace heater. Hot air heater. Heating apparatus, J. G. Smith	3
Heel and toe protector, G. H. Jones	}
Heel trimming machine, C. H. Trask357,740, 357,741 Heel trimming machine cutter, C. H. Trask 387,742	l 2
Hide stretcher, H. G. Landers	•
Hoes, method of and apparatus for making, G. B. Ely	\$
Holder. See Copy holder. Rein holder. Sanh holder.	
Hook. See Whiffletree hook. Hose or pipe coupling, R. E. Ismond	
Hose reel, automatic, D. T. Boyle	