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 This is for our information, and not for publication.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) T. H. W. J. desires (1) a paste to clean white leather belts (military), that will not rub off. A. If the belts are of a dull white, stale bread is the best preparation to use in cleaning them. If they have a gloss, use a sponge with tepid water. 2. What to clean white helmets with? A. As for the helmets, we know of no means by which they can be cleaned except by coating the soiled places with ordinary crayon chalk. A little pipe clay mixed with water would probably answer equally as well.

(2) X. Y. Z. desires a method of making paper tough and flexible. Also, can the tough paper used for flour sacks, etc., be made soft like leather or cloth without too great expense, by a chemical or a mechanical process? Is there any machine for taking out stiffness? A. The character of the paper depends largely upon the material with which it is made and also upon the amount of size worked into the mass. The "Technology of the Paper Trade" was the title of a series of articles published in the SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 109, 110, 116, 117, 118, and 123, and we would refer you to these.

(3) E. H. desires a recipe for a mucilage for adhering photographs to convex glasses, for painting what is called ivorytype. The mucilage must be perfectly transparent, and not contain either dextrine or starch, or any chemical that would stain the photograph. I want a mucilage that will not sour or mould, spot or crack, after applied to the photograph. A. This information is given very fully on page 120 of SCIENTIFIC AMERICAN, February 21, 1885, under title of "Practical Method of Transferring and Coloring Photographs on Glass." 2. Would like a recipe for a preparation to be applied to the surface of zinc to kill it or remove the gloss, so that when paint is applied it will adhere firmly and not chip off. A. Use dilute sulphuric acid.

(4) J. H. N. asks if there is any way of making phosphorus hold its luminous property on paper for a week or more. Also kindly state if you know of any magnetic iron ore being found in paying quantities in western New York, west and south of Rochester? A. We would recommend that luminous paint be substituted for the phosphorus compound. The luminous property of phosphorus is due to the slow oxidation of that element giving rise to an exceedingly poisonous gas; and if the phosphorus is in sufficiently large quantity, the oxidation will increase until it bursts into flame. The two principal deposits of magnetite in New York State are, 1, those of the Adirondack region and, 2, those located in the southeastern portion of the State. There are no worked deposits of importance in the region mentioned by you.

(5) L. S. asks (1) how to clarify rosin to render it either transparent or a nice white color. A. You can dissolve rosin in ether or benzol; filter the mixture, and allow the solvent to volatilize, and then you will have the rosin freed from mechanical impurities. 2. How to produce wax similar? A. Beeswax is bleached by exposure to sunlight in thin cakes. 3. If there is a compound cheap and good, white or transparent, fusing similar to rosin and setting hard and tough? A. Try paraffine. 4. How to treat moulds in which rosin is run so that it won't adhere to the mould? A. Covering the contact surfaces in the mould with pure glycerin is recommended.

(6) A. C. D. writes: The air saturated with vinegar fumes seems to destroy the strength of the lime in plaster, and it is constantly falling in dust and sand. I wish to use some ingredient in the mortar which will not be susceptible to a vinegar atmosphere, and make the wall permanent. A. Quicklime and linseed oil mixed stiffly together form a hard cement, resisting both heat and acids. A stiffly mixed paste of pipe clay and coal tar is also used. Coating the wall with waterglass or sodium silicate is excellent; the silicate will combine with the lime, and form a calcium silicate which is as hard as stone.

(7) W. H. writes: I have a large mirror, the back of which has from cause unknown to me become spotted, looks as if was smoked or rubbed; now, where can I have it repaired, or how can I do it myself? A. It may be necessary to resilver the entire mirror, but if the injured localities are not too extensive, the following plan will answer: Pour upon a sheet of tin foil about 3 drachms of quicksilver to the square foot of foil. Rub smartly with a piece of buckskin until the foil becomes brilliant; lay the glass upon a flat table, face downward; place the foil upon the damaged portion of the glass; lay a sheet of paper over the foil, and place upon it a block of wood or a piece of marble with a perfectly flat surface; put upon it sufficient weight to press it down tight; let it remain in this position a few hours. The foil will adhere to the glass.

(8) R. T.—The practice for sizes of safety valves varies somewhat to suit the trade sizes of pipe and fittings. One square inch opening in safety valve for each 5 horse power (nominal) is a fair average for stationary boilers. By Act of Congress, for cylindrical boilers, 24 square inches area is required for each 500 square feet of effective heating surface, for marine use. For obtaining the distance of the ball for a given pressure: Divide the weight of the ball by the area of the valve, and divide the required pressure by the quotient. The last quotient will be the distance of the center of the ball in parts of the distance of valve stem from the fulcrum. As in your case

$$\frac{\text{70 lb. weight}}{\text{7 sq. in. area}} = \frac{\text{90 pressure required}}{\text{10 1st quotient}} =$$

9 times the length of the leverage; then 9x2¾ inches= 24¾ inches whole length of lever from fulcrum to center of ball. As 24¾ inches less 2¾ inches=22 inches, and as you do not give the weight of the lever and valve, we apprehend that 1 inch may be allowed for their weight, and that your safety valve is set for 90 pounds pressure.

(9) M. K. B.—The sputtering of molten metal is caused by dampness or water. If cast in a metal mould, heat the mould hotter than boiling water.

(10) E. C. asks how to cut off steam gauge glasses. A. Take a small round file, and break a small piece off the end to give it a sharp edge. Pass the end of the file into the tube, and press the sharp edge of the file on the glass at the place to be cut, turning the glass so as to cut entirely around it, when it will be found to break by a gentle pull. If the place to be cut cannot be reached in the first cut, make two cuts. Or you can make a slight cut all around with a file, putting a little turpentine previously over the place to be cut.

(11) A. G. S. asks whether it is possible to put iridium on edged tools so as to hold the edge for a longtime without getting dull; also, if it can be done, the address of any concern that can do it. A. Iridium pointed tools will not do to turn hard steel or even cast iron, as it is too brittle, but for pearl, bone, rubber, or celluloid it has been proved to do ten times the amount of work done with a steel tool before it becomes dull. The iridium pointed tool costs about three times that of a steel tool. The tools are made by the American Iridium Company, of Chicago, of which John Holland is manager.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted,

July 7, 1885,

AND EACH BEARING THAT DATE.

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

Advertising mat, S. F. Gibson 321,431
Air spring, L. Smith 321,768
Animal power, Yarbrough & Kyker 321,876
Armlet, H. B. Ditwiler 321,422
Automatic frogless switch, A. E. Strong 321,920
Axes, manufacture of, H. Hammond 321,494
Axle box, car, J. P. Garton 321,710
Axle box cover, car, J. Tesseyman 321,664
Axle sand band, vehicle, S. Heffley 321,435
Bag and satchel frame spring, R. C. Jenkinson 321,505
Bag filling, weighing, and registering machine, J. R. Campbell 321,793
Bar. See Grate bar. Horseshoe bar.
Barrel connection, T. O'Brien 321,520
Battery. See Galvanic battery. Primary or galvanic battery. Secondary battery.
Beam heads upon beam barrels, securing, I. E. Palmer 321,635
Bed and chair, combined sofa, G. Koenig, Jr 321,825
Bed bottom, spring, L. W. Boynton 321,419
Bed, folding, S. H. Bingham 321,572
Bed, folding, D. J. Powers 321,911, 321,912
Bed, invalid, H. Pistorius 321,754
Bed, sofa, W. R. Shaber 321,440
Bed, turn-up, L. W. Boynton 321,418
Bedstead, A. F. Miller 321,742
Bedstead guard, L. J. Shelley 321,649
Bell, door, C. D. Hughes 321,501
Bicycle, W. S. Kelley 321,819, 321,932
Bicycle, E. G. Latta 321,508
Bier, S. E. Barrett 321,781
Binding machine, automatic, G. H. Howe 321,438
Bit. See Horse bit.
Blind slat fastener, P. M. Melick 321,836
Blind, window, R. B. Ayres 321,474
Block. See Carriage block.
Boats through or above the surf to smooth water, marine way and cradle for transferring, J. E. Staples 321,316
Bobbin, Thorwarth & Tunstill 321,772
Boiler. See Range boiler. Steam boiler.
Bolting chest and middlings purifier, J. T. Lee 321,441
Bolting reel, A. N. Wolf 321,875
Bolts, etc., machine for screw threading, J. North 321,841
Book, copy, J. W. C. Gilman 321,594
Book, sales, C. W. Earnshaw (r) 10,619
Boot or shoe heel, W. W. Wallace 321,869
Boot or shoe heels, manufacturing and attaching, G. T. Demary 321, 96
Boot or shoe insole, G. S. Brown 321,577
Boot or shoe stretcher, W. Jones 321,610
Bottle stopper, S. B. Opdyke 321,447, 321,448
Bottle stoppers, wiring for, R. L. Howard 321,607
Box fastener, C. R. Nelson 321,628
Bracket. See Lamp bracket.
Brake. See Car brake.
Brick moulds, machine for sanding, D. Ralston 321,528
Broom holder, M. B. Brown 321,883
Bucket, minnow, W. W. Hough 321,606
Burglar alarm, S. Broichgans 321,679
Burner. See Vapor burner.
Bustle, C. R. Davis 321,584
Button, collar, C. M. Sharpe 321,861
Button fastener, A. C. Clausen 321,690
Button fastener, J. F. Thayer 321,665
Button or stud, T. W. F. Smitten 321,653
Can. See Creaming can. Oil can. Milk cooling can.
Cans, closing, P. Babcock 321,568
Candlestick, miner's, T. Cox 321,798
Cane scraper and pea vine harvester, sugar, J. F. Wood 321,562
Canteen, T. F. Kelly 321,730
Car brake, S. Fairman 321,428
Car brake, W. Gill 321,432
Car brake, F. O. Landgrane 321,507
Car brake, A. Reese 321,757
Car coupling, G. W. Bolton 321,677
Car coupling, J. T. Hammick 321,598
Car coupling, E. A. Richards 321,532
Car coupling, D. J. Stevenson 321,918
Car coupling, W. H. Thurmond (r) 10,622, 10,623
Car coupling, H. C. Trask 321,773
Car coupling, E. W. & S. C. Woolley 321,470
Car coupling link, R. B. Ayres 321,473
Car spring, J. K. Woolley 321,776
Car stock, F. Sell 321,860
Car wheel, L. R. Faught 321,590
Car wheels, anti-friction bearing for, S. E. Mendenhall 321,516
Carbon, apparatus for the manufacture of bisulphide of, E. R. Taylor 321,661
Carbon bisulphide, apparatus for the manufacture of, E. R. Taylor 321,662, 321,771
Card, fancy, W. Wirths 321,668
Carriage block, street, D. H. Blascow 521,417
Carriage spring, M. Haughey 321,496
Carrier. See Cash carrier.
Cart, road, A. C. Fish 321,806
Case. See Cigar case. Ticket case. Clock case.
Cash carrier, Perkins & Kelley 321,752
Cash register and indicator, C. B. Hopkins 321,815
Caster, J. W. See 321,859
Casting stove door catches, casing for, C. Vetter 321,549
Cement, manufacture of hydraulic, J. Dimelow 321,589
Chains, connecting link for, C. N. Waterhouse 321,554
Chair. See Surgical chair. Tilting chair.
Chair, Hubbs & Bygate 321,897
Chandelier, extension, J. Kintz 321,506
Check rower, G. W. Packer 321,449
Cheese press, G. Schutte 321,857
Chimney cap and ventilator, W. J. & C. Kayser 321,729
Chopper. See Cornstalk chopper.
Chuck, lathe, C. R. Mead 321,740
Churn, J. M. Champe 321,688
Churn, D. W. Curtis 321,486
Churn attachment, O. Breckenridge 321,678
Churn dasher, A. & B. A. Malone 321,831
Cigar case and match holder, combined, G. W. Conover 321,485
Cigar moulding machine, W. J. Fox 321,592
Clamp. See Foundryman's clamp.
Clasp. See Shoe clasp.
Clip. See Wagon clip.
Clipping machine, hair, C. Carleton 321,685
Clock, P. C. Bensel 321,674
Clock, alarm, T. L. Bissell 321,415
Clock case, A. M. Lane 321,613
Clock winding mechanism, L. F. Portebois 321,526
Clothes pounder, M. Remington 321,914
Clutch, M. Stolterfoht 321,656
Cock, gauge, L. Shook 321,761
Coffin, F. C. Goff 321,433
Collar pad, horse, E. L. McClain 321,622
Combination table, Overin & Meyers 321,747
Commode, chair, B. Rubenstein 321,915
Cooking and canning apparatus, J. G. Briggs 321,480
Cooler. See Milk cooler.
Cornstalk chopper, W. O. Alexander 321,566
Cornstalk cutter, G. A. Stone 321,919
Corset, M. P. Bray 321,791
Cotton and other fibers, machine for opening and cleaning, J. C. Potter 321,851, 321,852
Cotton press, J. L. Sheppard 321,542
Coupling. See Car coupling. Thill coupling.
Creaming can, G. W. Millner 321,744
Cribbage board, C. W. Le Count 321,509
Curtain supporter, A. H. Gerdom 321,892
Cut-off valve gear, G. Schuhmann 321,538
Cutter. See Mortise cutter.
Cutter head, J. Loar 321,828
Cutter head fastening, W. H. Gray 321,596
Dental articulator, G. E. Smith 321,457
Dental instrument, Hood & Reynolds 321,814
Dental plate, Peirce & Russell 321,847
Die. See Screw cutting die.
Digger. See Potato digger.
Distilling lactic acid, C. N. Waite 321,925
Door check, C. A. Schmidt 321,645
Door fixture, sliding, E. Y. Moore 321,518
Door securer, F. R. Woodward 321,775
Doubling and twisting thread, machine for, J. E. Tyman 321,924
Draught regulator, W. Hunter 321,502
Drawers and pantaloons, S. D. Blake 321,416
Drier. See Tobacco drier.
Drill. See Rock drill. Well boring drill.
Drill jar, rope, C. Phillips 321,753
Drinking trough for animals, J. Moore 321,626
Duplex engine, L. B. Carricaburu 321,590
Electric light regulator, W. J. Paine 321,843, 321,844
Electric light regulator, W. J. & S. P. Paine 321,748
Electric lights, regulating, W. J. Paine 321,845, 321,848
Electric lights, regulating, W. J. & S. B. Paine 321,749
Electric lighting system, E. Thomson 321,461
Electric machine, dynamo, E. Jones 321,609
Electric switch, E. Thomson 321,463
Electric wires, conduit for underground, J. Teggart 321,865
Electro-motive force, conveying persons, etc., by, E. W. Siemens 321,934
Elevator, Anderson & Reed 321,567
End gate, wagon, F. F. Everett 321,891
Engine. See Duplex engine. Fire engine. Hot air engine. Valveless engine. Water pressure engine.
Engraving machine, R. Burgess 321,482
Evaporating pan, salt, G. H. Smith 321,456
Fanning mill, W. S. Wood 321,563
Farm gate, L. T. Akin 321,413
Faucet, A. J. Bantin 321,476
Faucet or valve, J. Darling 321,694
Faucet socket, C. A. Chandler 321,689
Feed water heater, H. W. Shepard 321,541
Felly, wheel, J. Maris 321,832
Fence, A. Brock 321,576
Fence, farm, W. H. Reed 321,531
Fence making machine, W. S. & D. Romigh 321,534
Fence, post, J. A. Wright 321,564
Fences, visible guard for wire, R. Boone, Jr 321,787
Fertilizer distributer, S. Freeman 321,705
Fiber disintegrating machine, T. A. Smith 321,863
Fiber from leaves or plants, machine for obtaining, G. Sanford 321,536
Fiber from wood, apparatus for removing vegetable, J. Illingworth 321,899
Fifth wheel, vehicle, E. E. Rowe 321,641
Firearm, breech-loading, J. Turner 321,923
Firecracker, C. E. Masten 321,833
Fire engine, H. Losse 321,510
Fireplace attachment, T. W. Dickinson 321,588
Fish grapple, E. W. Clark 321,786
Fishing reel, H. L. Joslin 321,900
Flood gate, W. Donnan 321,697
Flour dressing machine, W. H. Williams 321,874
Fly trap, P. D. Horton 321,437
Folding machine, rotary, A. Campbell 321,684
Food for poultry, preparing, S. S. Myers 321,909
Foundryman's clamp, T. Harding 321,812
Fringe reel, C. Rothengatler 321,454
Fruit bleaching apparatus, A. W. Miller *et al* 321,741
Fruit jar fastener, J. C. Baldwin 321,475
Furnace. See Gas generating retort furnace. Roasting furnace.
Furnace, J. Neville 321,519
Furnace grate, J. M. Duncan 321,890
Furnace, liquid fuel, L. Nobel 321,840
Furnaces, fuel injector for, H. Mason 321,736
Furniture, folding cabinet, L. F. Deming 321,586
Galvanic battery, C. P. Orne 321,446
Garment supporter, C. C. Shelby 321,647, 321,648
Gas, apparatus for washing and scrubbing coal, F. Weck 321,870
Gas conductor, natural, J. N. Pew 321,637
Gas from sawdust, apparatus for manufacturing, G. Walker 321,868
Gas regenerating retort furnace, R. H. Smith 321,770
Gas under pressure, controlling, J. W. Ellis 321,426
Gate. See End gate. Farm gate. Wire gate.
Gate, J. F. Hopgood 321,604
Gate, I. E. Smith 321,767
Gate roller, D. Gardner 321,708
Gear cutting machines, chip clearer for, U. & H. E. Eberhardt 321,698
Glass cigar moulds, form or mould for, H. Hilde 321,498
Glove, husking, E. T. Rate 321,529
Glove or mitten, S. Helfaer 321,497
Gold from sands, etc., apparatus for separating fine, I. R. McKinney 321,623
Grade delineator, automatic, B. Faymonville 321,591
Grain and the storage thereof, apparatus for transferring, L. Smith 321,769
Grain binder, O. Cooley 321,692
Grain binder knot tyer, C. Reeb 321,639
Grate bar, J. D. McKinnon 321,442
Grate for burning anthracite coal, A. W. Decrow 321,585
Gravity separator, W. H. Wakeford 321,552
Grinding mill, roller, W. H. Wakeford 321,551
Guard. See Bedstead guard. Saw guard.
Gun, machine, H. S. Maxim 321,513, 321,514
Hair restorative, R. Danner 321,487
Handkerchief, J. E. Lee 321,732
Hanger. See Picture hanger.
Harness attachment, J. Siebel 321,652
Harrow, A. C. Evans 321,805
Harrow, A. J. Sprague 321,458
Harrow, adjustable, W. Boatner 321,676
Harrow, wheel, T. A. Sweet 321,922
Harvester, corn, W. D. Murray 321,908
Harvester, cotton, J. Ledward 321,440
Harvester cutting apparatus, D. Michaels 321,837
Harvester grain binder, C. Wheeler, Jr 321,467
Harvester, grain binding, Marsh & Blood 321,511
Harvesting machine, P. F. Hodges 321,813
Hatchway, A. Ralph 321,638
Hats, brushing and finishing felt, E. F. Brown 321,690
Hay derrick, M. V. B. Kenney 321,821
Hay rake and loader, J. Dwigans 321,489
Hay rake, horse, J. Anderson 321,472
Head protector, O. Schlemmer 321,644
Heater. See Feed water heater.
Heel nailing machine, F. P. Raymond, 2d 321,750, 321,756
Holdback, R. S. Morse 321,838
Holder. See Broom holder. Lamp holder. Lead and crayon holder. Oil cup holder. Pencil and crayon holder. Shade holder.
Horse bit, D. McCance 321,737
Horseshoe bar, A. T. Culver 321,420
Horseshoes, machine for cutting toe calks for, W. A. Sweet 321,659
Hot air engine, J. J. McTighe 321,739
Hot air furnace, Oakes & Camp 321,632
Hub band, T. Brown 321,792
Hub, vehicle, J. Dump 321,424
Hydraulic dirt conveyer, A. Boschke 321,573
Hydraulic press attachment, O. R. Nelson 321,745
Incubator, A. A. Gehman 321,712
Inhaler, A. K. Long 321,904
Insulator, electric wire, E. T. Schoonmaker 321,646
Iron, manufacture of sheet, I. E. Craig 321,698
Iron, utilizing waste hoop, W. E. Harris (r) 10,620
Ironing machine, C. Angus 321,671
Irrigating, movable gate for, J. A. Fry 321,593
Jar fastening, P. Briody 321,575
Jack. See Wagon jack.
Joint. See Rail joint.
Journal box, S. & W. Shufflebarger 321,651
Key, self-locking, T. Young 321,565
Knitting machine, S. M. Levy 321,733
Knob attachment, H. J. P. Whipple 321,927
Knob attachment, door, B. F. Libby 321,627
Knob, door, J. H. Shaw 321,862
Knobs to spindles, attaching door, R. M. Keating 321,818
Knobs to spindles, attaching, H. J. P. Whipple 321,928
Laces, display box and package for, J. E. Lee 321,731
Lamp support, J. Spillinger 321,545
Lamp, C. Pabst 321,532, 321,634
Lamp, F. S. Svenson 321,657
Lamp and foot warmer, carriage, J. F. Gibson 321,713
Lamp bracket, F. J. Cross 321,887
Lamp globe support, electric, A. Bossard 321,788
Lamp holder, electric, A. Haid 321,493
Lamp holder, incandescent, H. Pieper 321,933
Latch case, H. B. Sargent 321,856
Lath sawing machine, J. T. Hall 321,716
Lathe for turning irregular forms, Doane & Bugbee 321,423
Lathe for turning polygonal forms, D. C. & S. E. Smith 321,762
Lathe, wood turning, D. C. & S. E. Smith 321,763
Lead and crayon holder, C. W. Boman 321,784, 321,785
Lever shears, J. W. Douglas 321,804
Lightning arrester, E. Thomson 321,464
Link bending machine, W. R. Lewis 321,734
Lock. See Time lock.
Logturner, D. W. Dorrance 321,803
Loom for weaving looped or terry fabrics, J. Nugent 321,631
Lubricator. See Steam engine crosshead lubricator.
Lubricator, J. Gunther 321,597
Lubricator, W. R. Holder 321,436
Mantel, J. Hewitt 321,723
Mat. See Advertising mat.
Match blanks, machine for making, Norris & Hagan 321,444
Matches, machine for making, Norris & Hagan 321,445
Meat cutting machine, B. F. Penny 321,751
Medical compound, S. W. Newer 321,839
Metal working machine, compound, A. S. Towle 321,547
Milk cooler, J. R. Ensminger 321,490
Milk cooling can, J. Wilhelm, Jr 321,774