

(13) A. F. S. asks how to prepare a good blacking for the interior of telescope tubes.

(14) J. L. B.: The method of preparing paraffine paper is as follows: Dissolve paraffine in benzine, and into the warm solution dip the paper, sheet by sheet; let drip off and dry.

(15) S. L. asks if there is any chemical or mechanical means for repolishing glass after being scratched? A. Slight scratches may be partially polished out by rubbing the part with rouge wet with water upon a piece of soft leather.

(16) A. S. M. asks: Do locomotives ever work up to 100,000 horse power on the road? A No. What is the highest power ever developed by locomotives? A. About 800 horse power.

(17) J. E. asks: 1. For a test for determining the presence of sulphuric acid in a liquid? A. Barium chloride gives a white precipitate with sulphuric acid.

(18) F. asks: The best cement for small pieces of ore on wood or metallic substances; have tried glue and whitening mixed.

A. Starch 2 drachms. White sugar 1 ounce. Gum arabic 2 drachms. Water q. s.

(19) A. L. H. asks what the composition used in common friction matches is.

A. Fine glue 2 parts. Water 4 " Phosphorus 1/4 to 2 " Potassium chlorate 4 to 5 " Powdered glass 3 to 4 "

(20) G. A. B. asks: Is there not a method of hardening and tempering shears and scissors (both solid steel and steel laid blades) in water without their water cracking or becoming too hard to work, which is preferable to hardening and tempering in oil? If so, please give directions for doing same.

(21) J. H. F. asks: 1. Does the steam pressure on a piston head keep up to a given pressure as the piston recedes, or does it diminish gradually? A. The pressure remains the same if the opening to the cylinder be large enough; but if too small, the pressure will fall.

(22) C. C. writes: In your paper of the 13th ultimo, answering query 41, a receipt is given for waterproofing linen garments. Would the same ingredients and application thereof do for worsted and woolen garments without damaging the texture and color? Or in case you know of a superior receipt, would you oblige by placing it in your columns? Would you please answer: 1. After boiling for a quarter of an hour, you say rinse out. 2. After being in the solution for 6 hours, wring out and wash. Should the rinsing and washing process take place in cold or hot water? A. The following may be tried. Two solutions are prepared. The first, composed of 1 part dry gelatine dissolved in 4 parts of oil, contains a little sulphuric acid.

(23) T. A. C. asks: 1. Is the tendency of the time to use high speed engines for increase of power? A. Yes. 2. Will an engine with a driving wheel 3 feet in diameter, running at 300 revolutions per minute, exert more power on the line shaft than an engine of driving wheel of 6 feet diameter making 150 revolutions per minute? A. Yes, because the pressure on the piston is expended on an arm or radius of 1 1/2 feet in the first case and 3 feet in the last.

(24) J. C. G. asks: What process may be used to the best advantage in coloring meerschaum pipes? If a meerschaum pipe is once burnt, can it be remedied so as to continue coloring afterward? A. When once burnt the pipe cannot be satisfactorily colored, unless the burnt portion is removed and the surface again treated by the process by which meerschaum is prepared.

(25) W. H. W. asks: 1. Where can I get selenium, what it costs, and if it would make a good electric conductor? A. Selenium can be purchased in New York of almost any of the dealers in pure chemicals. Its cost is about \$4.00 per ounce.

(26) C. F. P. asks for a recipe for making shellac varnish that will be a good insulator of electricity. A. Dissolve the best orange shellac in 95 per cent alcohol.

(27) D. S. asks: What can I put on canvas to make it airtight and flexible? A. Boiled linseed oil is generally used for the purpose indicated. In time the oil will take up oxygen from the air, and in that condition it has a rotting effect upon the fabric.

(28) E. M. G. writes: I would like to have some information on "spongy iron," and how made, if you can give any. A. Pure iron may be obtained by heating pure ferric oxide in a current of hydrogen gas.

(29) A. B. writes: 1. "To lime whitewash add sulphate of zinc." Is this of any value, and if so, how much zinc must I add? A. Zinc sulphate is added to the lime whitewash to prevent it from souring. It acts as an antiseptic. Less than one per cent should be added.

(30) G. L. asks: 1. What article contains the largest amount of butyric acid? A. Butyric acid is found in butter and in various animal and vegetable fats.

(31) G. H. B. asks: 1. What is the process of the manufacture of vaseline? A. Vaseline is obtained by distilling off the lighter and more volatile portions from American petroleum, and purifying and decolorizing the residue by treatment with sulphuric acid and potassium bichromate and subsequent digestion with animal charcoal.

(32) C. E. H. writes: I wish to do some brazing, and for this purpose I constructed a fire-pot 8 inches in diameter and lined with fire-brick. This is filled with charcoal and attached to a small blower, in imitation of those used with a portable forge. The parts to be soldered are filed clean and placed in position. The solder is then applied, and borax is used as a flux. The fire is raised to its highest temperature we can obtain before the soldering is attempted; but the difficulty encountered is that the copper pipe which we wish to unite will become red hot and all the flux apparently burnt off without melting the solder, or, at least, melt it very imperfectly.

COMMUNICATIONS RECEIVED. A Challenge for Scientific Men. By H. C. Electricity in Gold Mining. By O. H. T. On Sewage. By S. G. J. On Storms. By A. W. On the Protecting Qualities of Snow. By E. G. A. On Cleopatra's Needle. By T. H. H. On the Siemens Dynamo. By M. On the Cause of the Aurora. On the Cause of Earthquakes. By W. H. W. On Aerial Navigation. By F. B. On the Hydrostatic Paradox. By F. S. H. On the Vienna Electric Exhibition. By A. P. De R.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending March 27, 1883, AND EACH HEARING THAT DATE.

[Those marked (r) are reissued patents.] A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications, not being printed, must be copied by hand.

Accordion, B. Berry..... 274,705 Acid from borates, process of and apparatus for obtaining borate, W. R. Robertson, Jr..... 274,660 Adjustable hook, F. D. Thomason..... 274,672 Advertising windmill, T. B. Peacock..... 274,651 Air brake for railway cars, automatic, W. J. Ford (r)..... 10,298 Alarm. See Railway safety alarm. Alkalies, manufacturing caustic, C. Lowig..... 274,619 Axle, vehicle, D. F. Hull..... 274,776 Bag dumping machinery, E. W. Scot..... 274,664 Bag seam, grain, E. Detrick..... 274,736 Bale tie, J. W. Griswold..... 274,486 Baling press, G. F. Whitman..... 274,871 Band cutter, W. B. Bowers..... 274,707 Bed bottom, spring, D. Renshaw..... 274,833 Bed cove ing, etc., manufacture of, T. M. Willey..... 274,690 Beer, hermetic apparatus for racking, J. Pusch..... 274,516 Bell, electric, C. F. De Redon..... 274,573 Bilge water indicator, J. M. Fennerty..... 274,474 Binders, knotting mechanism for self, Whiteley & Bayley..... 274,870 Bit. See Boring bit. Bridle bit. Blind stop, T. M. Brintnall..... 274,881 Board. See Musical instrument sound board. Boiler. See Cooking boiler. Sectional boiler. Boiler furnace, steam, B. Topmiller..... 274,854 Boiler furnaces, locomotive and other, J. A. Gano..... 274,482 Bolt cutter, J. H. Kennedy..... 274,499 Bolt for chilled mould boards, J. Du Shane..... 274,743 Bolting reel, Phillips & Kealy..... 274,655 Book adjuster and supporter, Garlock & Davids..... 274,719 Boot and shoe indicator, A. Muckenhaupt..... 274,689 Boot or shoe polishing machine, T. J. Pairpoint..... 274,649 Boring bit, W. W. Briggs..... 274,711 Boring mill attachment, G. T. Reiss..... 274,517 Bottle stand, lock, C. W. Hutchins..... 274,608 Box. See Match box. Box fastener, W. B. Judson..... 274,497 Bracket. See Lamp bracket. Brake. See Air brake. Car brake. Wagon brake. Brick machine, H. C. Barker..... 274,700 Bridle, Peavey & Kiekenapp..... 274,513 Bridle bit, T. Brabson..... 274,709 Bridle bit, M. J. O'Leary..... 274,648 Broom corn, cutting and preparing, J. B. Beale..... 274,702 Broom holder, whisk or other, T. H. Doyle..... 274,471 Buckle, trace, J. Thornton..... 274,849 Buffer wheel, R. Binns..... 274,456 Burial casket, G. S. Eaton..... 274,575 Button, metallic, E. N. Foote..... 274,582 Button, separable, D. Humphreys..... 274,607 Button setting instrument, P. H. Sweet, Jr..... 274,841 Cable gripper, traction, A. H. Lighthall..... 274,506 Cable way, underground, A. H. Lighthall..... 274,505 Cables or conductors, suspending, C. E. Chinnock..... 274,562 Camera. See Photo micrographic camera. Can. See Milk and cream can. Oil can. Can heading machine, W. E. Vincent..... 274,863 Cans, device for handling fruit, W. Gregg..... 274,591 Car brake, J. M. De Witt..... 274,738 Car brake, Weller, Wance & Roesch..... 274,869 Car brake, automatic, G. Heidel..... 274,767 Car cinder, F. W. Gordon..... 274,587 Car, cinder, W. Kelly..... 274,786 Car coupling, C. B. Cutler..... 274,569 Car coupling, S. J. Filson..... 274,749 Car coupling, T. Harding..... 274,764 Car coupling, P. E. Merrihew..... 274,511 Car coupling, J. D. Miller..... 274,808 Car coupling, J. F. A. Netzel..... 274,645 Car coupling, R. G. Thompson..... 274,847 Car, dumping, C. La Cosse..... 274,890 Car heater, W. M. Fuller..... 274,768 Car, railway, E. B. Meatyard..... 274,805 Car seat ticket holder, C. S. Macann..... 274,621 Car, sleeping, W. H. Wigmore..... 274,689 Car starter, A. F. Clark..... 274,463 Car, stock, Burton & Holden..... 274,458 Car, stock, M. H. Gilbert..... 274,585 Carriage, jump seat, O. Morrill..... 274,638 Carriage top, W. Hodge..... 274,416 Carrier. See Trace carrier. Cartridge capping machine, W. Lorenz..... 274,636 Case. See Leathercase. Toilet set case. Casting printers' rollers, apparatus for, C. Crutgers..... 274,728 Cement, manufacture of Portland, E. J. De Smedt..... 274,734 Chain, W. T. Foley..... 274,762 Chain, harness breast, J. C. Covert..... 274,723 Chair. See Folding chair. Opera chair. Chair frames, device for holding and forming, J. L. May..... 274,583 Chair support and foot stool, M. O. Baldwin..... 274,877 Check rower cord, H. Fopper..... 274,579 Chopper. See Cotton chopper.

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