

tissues by treatment with strong solution of alum and salt, and filling with cotton charged with a little corrosive sublimate, arsenious acid, etc., after drying.

(41) C. W. R. says: Will you please inform me how the elevated street cars in New York are propelled? A. They are drawn in the usual way by small locomotives.

(42) J. S. S. asks where the extra weight comes from when wood petrifies or turns to stone? A. Silica (sand) is dissolved by alkaline solutions. Hence all natural waters which contain alkaline carbonates hold also in solution a little silica. If wood be present in such waters, as it decays the particles of silica are deposited in place of those that escape, and thus a copy of the wood in stone, or a petrification, is produced.

(43) T. N. & Co. say: We have been unsuccessful in an attempt to prepare the varnish recommended on p. 316, current volume. We used benzine and naphtha. A. Use ordinary wood naphtha—benzine was a mistake.

(44) T. T. W. asks: 1. What is the best point of cut-off for a stationary engine? A. That is dependent on the size of the engine, the work to be done, and the quantity or pressure of steam to do it with. The proper point of cut-off is that at which the most work can be obtained from a given quantity and pressure of steam, and is best found by a direct test. 2. Did you ever know of an engine cutting off at 1/4 stroke and allowing 3/4 expansion? A. It is practicable to cut off at 1/4 stroke if the engine is very large as compared with the boiler and the work to be done; but the steam must be of high pressure; what it lacks in quantity must be made up in tension or pressure.

(45) L. J. O'C. asks: 1. Is there any method of bleaching resin? A. Common resin (colophony) dissolves readily in hot spirit of wine or methylic spirit in oil of turpentine, benzine, and the essential oils, and in alkalies. It cannot be readily bleached. 2. What is the coloring matter in resin? A. Several resinoid acids. 3. What causes resin to smoke when burning? A. The want of a sufficient supply of oxygen to consume all of the carbon. 4. Is there anything to prevent it from smoking when burning? A. Yes; an adequate supply of air or oxygen. 5. Is there anything I can put in resin to give it a white appearance that will not prevent it from burning? A. Melt it with sufficient chalk or sulphate of barium.

(46) In answer to W. F. who asks for information concerning liquid solder: By fusing the tin and bismuth together, with a little charcoal powder, and adding the mercury when nearly cooled, a very fusible alloy may be obtained, which, although not very well suited for a solder, might be useful in some cases. For soldering delicate work the following has been successfully used: 8 parts bismuth, 5 parts lead, 3 parts tin, melt; pour this into a mortar with some boiling water and rub it with a pestle as the water cools. This will produce a fine powder. The parts to be soldered are cleaned with a drop of acid zinc chloride, covered with the powdered solder, pressed together and immersed for a time in pure boiling water, which fuses the solder.

(47) J. W. P. writes: In your last issue you give for varnishing chromos to use map varnish with a size. Please tell of what, and how the varnish and size are made? A. Zinsser's spirit copal gives perhaps the best results. Use the varnish quite thin, flowing it quickly over the surface. When the first is dry, another coat may be applied if desired.

(48) R. B. T. writes: We have been building a house in which a balloon frame was put up and sheathed inside with matched hemlock sheathing, not seasoned. As soon as the siding was put on, and before it got wet in anyway, the first coat of paint was put on, and plenty of time given for drying before second coat was put on; then a much longer time was allowed before the third and last coat was applied. We now find great blisters as large as a man's hand in some places. Would the moisture of the plaster pass through the sheathing and penetrate the siding, which is separated from sheathing by a space of 4 inches? A. The cause of the blistering is no doubt to be found in the absorption of water by the siding boards upon the inside, which water, being expanded into vapor by the heat of the sun and confined by the film of oil, separates the paint from the wood. 2. Can you tell us something of the manufacture of paint tubes, which are made of some flexible metal so that the paint can be pressed out at the opening? A. They are made of lead closed at bottom by folding over into a seam by pressure, and the top closed with a cap screwing on the tube—the whole formed by pressure. Those we have seen are patented and manufactured in France. The cost of manufacture cannot be great.

(49) E. F. asks: How thick is a bound volume of the SCIENTIFIC AMERICAN? A. About 1 1/4 inches.

I have two lenses (double convex) of 2 1/4 inches focus. Can I make a camera obscura of them, and how? I would like an image as large as 18 inches in diameter, and as much from the lenses. If these lenses will not do, what lenses do I need? A. No. You will require a lens of from 12 to 20 inches focus.

What is the best way to preserve chicken meat for use where the fresh article is scarce or expensive? A. Ice packing the clean meat is perhaps the best under ordinary circumstances. Immersed in water containing about seven grains of salicylic acid to the pint, it will keep some time.

(50) I. G. L. writes: Is there not a certain percentage of loss of power in cushioning an engine? I understand that it makes an engine run smoothly and stops thumping, but think it does so at a loss of power. A. You are right.

(51) W. T. W. writes: 1. Please tell me how much coarse copper wire does it take to make a pair of Bell telephones, same size as illustrated in SCIENTIFIC AMERICAN of October 6, 1877, No. 14? A. Four ozs. of No. 40. 2. Is it necessary the copper should come in direct contact with permanent magnet? A. It must not. 3. What are the collars made of that hold

the copper wire in place? A. Wood, or hard rubber. 4. How can I make a permanent magnet? A. See answer to No. 40, p. 283, and No. 16, p. 299. 5. Is it necessary that the magnet should be movable so as to adjust the same as a relay? No.

(52) E. W. writes: Is it necessary to magnetize both ends of the bar magnet of the telephone so as to have a North and South pole, or would the magnetizing of one end affect both ends? A. If magnetizing by contact with a magnet, it is well to magnetize both ends of the bar (but of course with different poles of the magnet) but even if you only magnetize one end of the bar, say with a north polarity, the other end becomes south by induction.

How do taxidermists preserve the lips, feet, and very fleshy parts of animals where those parts cannot be removed or the skin taken off so as to remove the cartilaginous substance from underneath? A. Various preserving chemicals are used, principally arsenic or arsenical soap.

Has the moon anything to do with blindness in horses? A. No.

(53) N. S. B. asks (1) the size of the magnet used in the telephone described in No. 14, vol. 37? A. The drawing is of the working size. 2. Also, the manner of coiling the wire? Is it insulated from the magnet and the separate layers from each other? Is the coil fastened securely to the magnet, or does the magnet slide through the coil? What is the number of the wire and the number of feet used? A. The spool may consist of 2 ozs. of No. 40 copper wire covered with silk; this wire is wound on the magnet in the same manner that a spool of cotton is wound. It is well to first wrap the magnet with one layer of paper.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure, the receipt of original papers and contributions upon the following subjects:

On the Practical Utilization of Natural Gas. By E. N.

On Tobacco, and its Chemical Ingredients. By H. D. T.

HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

WANTS AND BUSINESS INQUIRIES.

Almost any desired information, and that of a business nature especially, can be expeditiously obtained by advertising in the column of "Business and Personal," which is set apart for that purpose subject to the charge mentioned at its head.

We have received this week the following inquiries, particulars, etc., regarding which can probably be elicited from the writers by the insertion of a small advertisement in the column specified, by partiesable to supply the wants:

Who makes cushioned emery wheels? What are the merits of the Wardwell sewing machine?

Who makes an indelible tracing pencil for woolen or cotton goods?

Who makes a small machine for cutting lines straight or at any angle, for producing plates for embossing on book covers, or for small die work?

OFFICIAL.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending November 20, 1877, AND EACH BEARING THAT DATE. [Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

Anchor tripper, J. P. Dorr, Jr. 197,348
Auger, ether, W. H. Yarborough 197,445
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DESIGNS PATENTED.

10,315.—CARPET.—Eugene Daniel, Paris, France.
10,316.—MATCH SAFES.—O. F. Fogelstrand, New Britain, Conn.
10,317 and 10,318.—CASSIMERES FOR CLOAKINGS.—H. A. Kimball, Providence, R. I.
10,319.—SNAP HOOKS.—Eleazer Kempshall, New Britain, Conn.
10,320.—CLIPS FOR SUSPENDING CARDS.—G. W. McFill, New York, N. Y.

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