

(42) A. D. B. asks: How can I prepare sperm oil so as to prevent its becoming gummy and sticky when used on light machinery? A. It may be purified by agitating 100 parts oil with 4 parts chloride of lime and 12 water; a small quantity of decoction of oak bark is afterwards added to remove all traces of gelatinous matter which it retains, and the mixture is left to settle. The clear oil is afterwards agitated with a small portion of sulphuric acid, again clarified by subsidence, and washed to remove adhering sulphuric acid.

(41) W. W. B. asks: 1. How can I renovate a Philadelphia pressed brick front, which has become soiled with the weather? A. Very dilute sulphuric acid and a stiff brush are sometimes used for this purpose. 2. I tried to make the cement which you recommend as waterproof for repairing glass, namely, white shellac dissolved in 1/2 its weight Venice turpentine, but it will not dissolve. How can I do it? A. Melt them together by heat.

(43) J. M. McC. asks: How can I make marking ink of the following colors, violet, blue, green, and black? A. The various colored inks in use can be made as follows: Violet ink: 8 parts logwood and 64 parts water; boil down to one half, strain, and add 1 part of chloride of tin. Blue ink: triturate best Prussian blue, 6 parts, with solution of oxalic acid in 6 parts water, and, towards the end of one quarter of an hour or so, add gradually gum arabic 1 1/2 parts, white sugar 1 part. Green ink: digest 7 to 10 parts of the blue ink with 1 part of gamboge. Black: Fine glue 2 ozs, water 12 ozs, ivory black 1 oz. Stir well.

(43) J. C. T. asks: How can I melt old rubber car springs? A. Dissolve them in bisulphide of carbon.

(44) G. W. L. asks: What are the igniting or explosive parts of torpedoes made of? A. They are commonly made of fulminating mercury mixed in with a few pebbles, and, in some cases, a little gunpowder.

(45) J. M. says: I put a coat of boiled linseed oil on some woodwork wanting a hard surface, but it will not get hard. How can I remedy it? A. If the oil is properly thinned with spirits of turpentine, you should have no difficulty with it. The oil was probably applied while in too viscid a condition. Try again.

(46) J. H. E. says: 1. We received some sheet zinc some time since, that has large white spots on it. Is there anything that can be used to clean the zinc? A. Try a little oxalic acid or oxalochloride of zinc. If these do not answer, try a little very dilute sulphuric acid. 2. Is there anything used in soldering tin instead of acid, that will not color the tin as acid does? A. A strong solution of oxychloride of zinc is used for this purpose, although many prefer the resinous acids.

(47) W. K. J. asks: How can I harden paraffin sufficiently to enable me to turn it in a lathe? A. We know of no satisfactory method of accomplishing this.

(48) H. E. E. says: 1. In the case of the prisoners who got away from the working gang, and took charge of a passing freight train, compelling the engineer to get off, how is it that the pump caused the bursting of the cylinder heads? A. If the pump continued working, it soon filled the boiler, and then the water was carried over into the cylinders, filling the steam pipe and steam chest, so that either the engine must stop or the cylinder be broken to allow it to escape.

(49) J. M. R. asks: How can I preserve celery through winter? A. Place it in the ground so deep that the frost will not touch it, and cover with straw.

(50) C. M. & S. say: If there is one pump with piston and suction pipe having the same area, say 4 square inches each, piston to be lifted 10 feet per second, and another pump, suction pipe same area as above, 4 square inches, piston 40 square inches moving 1 foot high per second, there being the same space to be filled (480 square inches) in each pump in the same time, one piston moving 10 times faster than the other: What difference would there be in the required driving force? A. Disregarding the friction of the piston and stuffing boxes, the two pumps would require similar amounts of power for their operations.

(51) O. B. & D. say: We would like you to tell us what size of cylinder of engine will be required to tongue and groove 6,000 feet of 6 inch yellow pine flooring, and to run a sliding saw to split 6,000 feet of 1 inch lumber 6 inches wide into siding, per day of 10 hours? A. You will require an engine capable of exerting from 12 to 15 effective horse power.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

G. M. A.—The globular formation is marcasite white iron pyrites. The other mineral contain silica, alumina, potassa, soda, magnesia, iron, carbon, and water. We judge it to be a variety of slate. No silver was found in it. Use the cupel to determine the amount of silver in an ore.—A. D. M.—Your coal with spots on it gave none of the indications of paraffin.—S. S.—It is most probably a medicinal preparation. It is principally a compound of zinc. Consult the Dispensatory as to the application and medical uses of the zinc salts.—R. A. M.—It is calcite. For its uses consult an encyclopedia.—R. P.—No. 1 is decomposed quartz rock colored by oxide of iron. No. 2 is carbonate of lime and magnesia.—W. H. D.—They are aragonite (carbonate of lime). The primary form of crystallization of carbonate of lime is the rhombohedron: in these specimens the crystals are six-sided prisms, and consequently dimorphous.

M. & O. say: We have been heating a die which was faced with steel 1/2 inch thick, on iron

The steel became of a bright red, and the iron was still perfectly black, forming a distinct line around the die at point of welding. Can you give us a reason for the same?—G. G. F. asks: What will remove the gloss that black cloth is subject to by wear?—W. C. C. asks: How can I prepare cotton netting to prevent its shrinking and stretching when exposed to the weather?—L. B. H. asks: Is it possible to make brook trout lay their spawn when confined in a well, if they have a suitable gravel bed?—E. L. P. asks: How are the pivot jewels of watch arbors applied and set?

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 Potato Bug. By P. Y.
On Cider. By A. P.
On the Keely Motor. By S. B.
On the Origin of Life. By J. B. P.
On Meteorology. By J. H. T.

Also inquiries and answers from the following:
W. A. S.—J. H.—C. H. P.—O. P. S.—J. D. B.—
T. N. M.—S.—O. B.—W. A. C.—M. N.—A. B. C.—
A. T. W.—J. W.

HINTS TO CORRESPONDENTS.

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.

Enquiries 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.

Hundreds of inquiries analogous to the following are sent: "Who makes hand organs? Who is the best boiler incrustation preventive? Who sells the best covering for boilers and steam pipes? Who sells stills, suitable for distilling oil of sassafras? Who makes water motors? Who buys sumac for tanning and dyeing? Who sells iodate of calcium? Who sells nickel plates and salts? Who sells spectroscopes? Who sells stencilled designs for frescoing? Who sells match-making machinery? Who publishes a book on fruit culture? Who sells hand pumps? Who sells mica in plates? Who sells boilers made of corrugated iron? Who sells bicycles? Who sells gas blowpipe nozzles? Who sells machines for steaming feathers?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH
Letters Patent of the United States were
Granted in the Week ending
July 13, 1875.
AND EACH BEARING THAT DATE.
(Those marked (r) are retained patents.)

Table listing various inventions and their patent numbers, including items like 'Acids, carrier for', 'Alarms, circuit for electric', 'Aquarium, J. Wenmackers', etc.

Table listing various inventions and their patent numbers, including items like 'Coal chute, W. M. Thompson', 'Cooler, lard, F. E. Rockstroh', 'Cooler, liquid, B. F. Shaw', etc.

Table listing various inventions and their patent numbers, including items like 'Skiving and splitting belts, J. W. Fifield', 'Sleighs, lance for propelling, A. Corbett', 'Sleighs, runner for, H. Smith', etc.

DESIGNS PATENTED.

Table listing various designs patented, including items like '8,476 to 8,480.—CARPETS.—J. Webster, Philadelphia, Pa.', '8,481.—LAMP PEDESTALS.—N. Bradley, West Meriden, Ct.', etc.

SCHEDULE OF PATENT FEES.

Table listing patent fees, including items like 'On each Caveat... \$10', 'On each Trade mark... \$25', 'On filing each application for a Patent (17 years)... \$15', etc.

CANADIAN PATENTS.

LIST OF PATENTS GRANTED IN CANADA,
July 8 to 14, 1875.

Table listing Canadian patents granted, including items like '4,956.—J. Collins, Guelph, Ont. Feed cutter. July 8, 1875.', '4,957.—J. P. Connell, Kensington, Conn., U. S. Door bell. July 8, 1875.', etc.