

G. H. M. asks: 1. Do you use a machine to fold your papers as they come from the press? A. Folding attachments for presses have been made, but have not proved successful. The folding is now done on separate machines. 2. What is the capacity of one of your presses? A. The capacity of the presses on which the SCIENTIFIC AMERICAN is printed is about 2,000 copies per hour. 3. Would not a machine to fold papers as they come from the press be desirable? A. Yes, if it could be made to operate without being troublesome.

E. B. asks: Is there a sure test to distinguish genuine butter from the artificial, made in this city? A. It is claimed by the manufacturers that the artificial butter will keep longer without becoming rancid, the readily decomposable compounds not being found in the manufactured article. You might submit the two kinds to a test of this nature.

E. P. asks: How large must be a copper plate for a ground wire? How deep should it be buried? A. About 2 feet square, placed several feet deep. 2. What is the iron pipe running down to the ground on a fire alarm box for? A. To make connection with the earth.

J. R. M. Jr. asks: In a screw press, with a steel screw, if the screw works in a stationary nut, how much weight would the screw sustain before it would strip the thread or break? A. Multiply the cross section of the cylindrical portion of the screw in inches by the tensile strength of the steel in pounds per square inch. This gives the resistance to breaking. The area of surface resisting stripping in the thread, multiplied by three quarters of the tensile strength in pounds per square inch, gives approximately the resistance to stripping.

W. A. B. asks: Will a common lead pipe, say 1 inch in diameter, having a stream of cold water running through it, melt if exposed to the heat of a blast furnace? I am well aware that a lead pipe without water will melt immediately, but am in doubt about its standing the intense heat if a cold stream is run through it. A. Yes, if the heat is sufficiently intense.

F. M. B. asks: What is the size of the largest steam cylinder ever cast? A. There are engine cylinders 120 inches diameter. 2. If I purchase a patented machine for any particular use, for instance, a blind lat tenoning machine, cutting off and making the tenons on both ends at one operation, do I purchase the machine and right to use it without any reference to the length of time the patent has to run on the machine? Have I the privilege to run it as long as the machine lasts? A. You can use the machine as long as it lasts, unless otherwise agreed.

G. M. asks: What is the greatest number of revolutions that the propeller of a first class ocean steamship makes per minute? Also of a fast going steamship of war? A. Between 50 and 65, in each case.

E. W. B. asks: 1. What do you think of the possibility of making a freight locomotive to run up grades of 75 feet to the mile, with a ratchet wheel working on a third rail, the wheel to be applied to the rail at the pleasure of the engineer? A. This plan is in use in some localities. 2. Can eggs be preserved by placing them in an airtight vessel and exhausting the air, slowly, so as not to break the shells by the pressure outwards, or by separating the whites from the yolks and then exhausting the air? A. We think there are practical difficulties in the way. 3. Can eggs be condensed in the same way that milk is done? A. This is done at present with a fair success.

C. H. M. asks: 1. What are the contents of a ball 7 1/2 inches in diameter? A. 230-89 square inches. 2. Cut this ball through into 15 parts of equal thickness, at or through center of ball; what are the contents of each part? A. For the segments: Let R be the radius of the base and h the height of the segment: the solidity=(r^2 * 3 + h^2) * pi * 5/24 h. For each zone: let r=radius of one base, R=radius of the other h=height of the zone: solidity=(r^2 + R^2 (h^2 + 3)) * pi * 5/768 h. 3. Cut this ball into 15 equal parts (slices); what is the thickness of each part? A. This you can find by trial, substituting values in the preceding formula.

T. H. Y. asks: 1. What is a good recipe for killing fleas on a dog? A. Use carbolie soap. 2. How can I destroy garden moles? A. Set traps for them, such as those described in our paper a few months ago.

H. L. says: People say that, if a man be bitten by a dog, he is likely to go mad if the dog is not killed; but if the dog is killed at once, there is no danger, I fall to see why it is of any good to kill the dog, except to prevent his biting any other person. A. We quite agree with you.

J. C. H. asks: 1. How can I back up a mill burr, and what kind of plaster is best? What quantity would I need for a 1 1/2 foot run? A. Make the backing of plaster of Paris. Fill the interstices between the stones with a cement made of powdered alum and powder from burr stone. Some millers add a little molasses. 2. What is the best work on milling? A. Consult the catalogue of a scientific publisher. See our advertising columns.

C. D. asks: Which are considered, in Europe and America, to be the most masterly and thorough works on statics and dynamics? A. Probably Professor Bartlett's work on "Theoretical Mechanics," and Professor Rankine's "Treatise on Applied Mechanics."

F. P. B. asks: Can I revarnish the body of a guitar without injuring its tone? What kind of varnish would be the best? The color of the body is dark. A. We advise you to take it to an instrument maker.

G. E. H. asks: 1. If a boiler has water in and steam up, where is the pressure the greatest, at the top of the boiler over the steam space, or on the bottom under the water? A. Pressure is greatest on the bottom. 2. In reckoning the horse power of an engine, as in your answer to J. W. F., January 31, why do you not make an allowance for friction of the wearing parts, or is there no need of it? A. The calculation was for the indicated horse power, in which no allowance for friction is usual. 3. How long before the SCIENTIFIC AMERICAN is dated is it printed? A. About ten days.

W. I. asks: Is the capacity of a boiler increased by enlarging the steam drum? Is not a steam drum 24 inches in diameter x 8 feet long better than a drum 18 inches in diameter x 4 feet long, for a boiler 40 inches in diameter x 24 feet long? A. The steam room is increased by the change, and frequently this is very desirable.

S. E. D. asks: If we take a quantity of water heated to 100° Fah. and an equal quantity at 40° Fah. and pour them together, is there any actual loss of heat, or is it merely disseminated or distributed throughout the whole quantity? And further, what would be the temperature of the water after being so amalgamated? A. The only loss would be from radiation, and taking no account of this, the temperature of the mixture would be 70°.

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

O. R.—Your mineral appears to be a fine Prussian blue, J. H. S.—Your specimens are iron pyrites, encrusted with a soft bituminous material.

L. L. F.—Your ore is the oxide of iron. If in abundance, it might prove valuable.

H. C.—Your mineral is rediasper, consisting essentially of silica, but containing also alumina and oxide of iron. Some varieties, like the striped and Egyptian jasper, on account of the richness and variety of the colors, are of considerable value for ornamental vases, seals, etc. Jasper is susceptible of a high polish.

B. D. C.—A fine yellowish colored clay. We would advise you to submit it to some potter, who will test it by burning in the kiln. A manufacturer of paints would also inform you of its value as a pigment.

W. L. V.—No. 1 is galena, sulphide of lead, the ordinary ore from which the lead of commerce is extracted. It is frequently argentiferous; but to determine this, a chemical analysis is necessary. No. 2 is blende, sulphide of zinc with quartz, and traces of iron pyrites.

C. T. C.—No. 1 is iron pyrites, sometimes used as a source of sulphur, a valuable mineral when in sufficient quantity near means of transportation. No. 2 is quartz, colored with oxide of iron, of no value.

J. McW.—Your specimen is chlorite with quartz and mica. Chlorite is so named from a Greek word meaning green, on account of its color. It is a silicate of alumina and magnesia with oxide of iron and sometimes lime.

C. J. B.—This specimen consists of galena (sulphide of lead) and blende (sulphide of zinc in quartz). Lyell's "Geology" and Dana's "Mineralogy" are standard works.

J. W.—This mineral is a kind of hornblende, like hypersthene. It yields, by analysis, silica, alumina, magnesia, and lime, and its colors are produced by iron, etc.

G. J.—Red hematite, or red oxide of iron. It contains 70 per cent of metallic iron. It is valuable as a burnisher; the red powder which it gives on pulverizing is valuable as a polishing power, and it is an excellent ore of iron.

E. N. B. asks: 1. What is the tonnage of the United States steamer Swatara? By old measurement she is about 970 tons. 2. What are the dimensions of the engines of the torpedo boat Alarm and of the United States steamer Gettysburg? What is the length of the latter? 3. What are the lengths and breadths of the frigates Sabine, Saratoga, St. Mary, St. Louis, Dale, and Cyane? 4. What was the speed of the Dictator and Monadnock in their race, in 1855 or thereabouts?—H. W. asks: How can type metal be made black or of any dark color, before jappanning?—A. McK. asks: Who was the first inventor of the letter copying press?—E. T. asks: Where can I find a description of a man hoisting engine for use in mine and other shafts?—D. L. M. asks: If the center core of the centennial tower is perpendicular, and we drop a 1 lb. weight from the south side of its top, where will it strike at the base?—W. G. asks: How can I silver glass globes, etc.? How are different colors produced? Can the silvering be done upon a flat surface with the same effect as on globes?

COMMUNICATIONS RECEIVED.

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

On Car Coupling Dangers. By S. H. D.

On the Moon Question. By M. R.

On the Minerals of South East Missouri!

By H. C. T.

On Heating Buildings. By W. H. G.

On a Cure for Rheumatism. By T. C. E.

On the Erie Canal. By J. M. H.

On Preventing Damage from Boiler Explosions. By G. M.

Also enquiries from the following:

C. C. L.—J. S.—R.—W. B.—C. W. Y.—E.—E. B.—H. E. N.—J. W. H.—J. H. M.—J. W.—R. T.—R. L. M.—A. G. R.—J. S. P.—J. H. A. Jr.—N. R.

Correspondents in different parts of the country ask: Who makes sewage pipe machines? Who makes potato peeling machines? Where can a large aquarium be obtained? Who makes a substitute for India rubber? Who makes four wheeled velocipedes? Who makes the "flying ponies" on which children ride at fairs, etc.? Who sells muley saw mills? Who makes cooking stoves, heated by kerosene flame? Makers of the above articles will probably promote their interests by advertising, in reply, in the SCIENTIFIC AMERICAN.

Correspondents who write to ask the address of certain manufacturers, or where specified articles are to be had, also those having goods for sale, or who want to find partners, should send with their communications an amount sufficient to cover the cost of publication under the head of "Business and Personal," which is specially devoted to such enquiries.

[OFFICIAL]

Index of Inventions

FOR WHICH

Letters Patent of the United States WERE GRANTED IN THE WEEK ENDING

January 27, 1874,

AND EACH BEARING THAT DATE.

(Those marked (r) are reissued patents.)

Table listing patent holders and their inventions, including 'Air, compressing, W. Johnston', 'Annunciator, electric, L. Flinger', 'Ash box and sifter, J. D. Heins', etc.

Table listing patent holders and their inventions, including 'Boot and shoe, J. McMullin', 'Boots, etc., fastening for lacing, T. K. Keith', 'Boring machine, Doane & Bugbee', etc.

Table listing patent holders and their inventions, including 'Ponton coffer dam, J. Napier', 'Press, clothes, Webster & Dennis (r)', 'Press, cotton, J. Debeaulvais', etc.

APPLICATIONS FOR EXTENSIONS.

Applications have been duly filed, and are now pending for the extension of the following Letters Patent. Hearings upon the respective applications are appointed for the days hereinafter mentioned: 28,122.—HOISTING MACHINERY.—R. A. Wilder. April 5. 28,130.—BAKER'S OVEN.—D. McKenzie. April 15. 28,133.—KNITTING MACHINE.—E. Tiffany. April 15.

EXTENSIONS GRANTED.

27,008.—FINISHING BOOT HEELS, ETC.—H. Saloshinsky. 27,020.—STEAM ENGINE EXHAUST PIPE.—G. Edwards. 27,023.—CALENDAR CLOCKS.—E. M. & J. E. Min. 30,467.—SINGING PIGS.—A. & E. M. Denny.

DESIGNS PATENTED.

7,133.—CURRY COMB.—H. S. Bartholomew, Bristol, Conn. 7,134.—CALL BELL.—N. L. Bradley, West Meriden, Conn. 7,135.—APPLICATION TO ARTICLES OF JEWELRY.—O. P. Coggeshall, Providence, R. I. 7,136.—WATCH MOVEMENT.—A. C. Drozet et al., St. Imier Switzerland. 7,137 & 7,138.—CARPETS.—A. Heald, Philadelphia, Pa. 7,139 to 7,141.—SODA WATER APPARATUS.—G. F. Meacham, Newton, Mass. 7,142.—CANISTERS.—J. H. Procter, Brooklyn, N. Y. 7,143.—SODA WATER APPARATUS.—M. L. Smith, Detroit Mich. 7,144.—CLOCK CASE.—I. Atkins, Bristol, Conn. 7,145.—TYPES.—A. P. Bauer, Frankfort-on-the-Main, Ger. 7,146 & 7,147.—TYPES.—J. M. Conner, Greenville, N. Y.

TRADE MARKS REGISTERED.

1,606.—PLOWS.—Carr & Hobson, New York city. 1,607.—MEDICINE.—F. Howard, Newton, N. Y. 1,608 & 1,609.—CLOTHES WRINGERS.—Metropolitan Washing Machine Co., Middlefield, Conn. 1,610.—STEEL PENS.—W. Pedrick, Philadelphia, Pa.

SCHEDULE OF PATENT FEES.

On each Patent.....\$10 On each Trade Mark.....\$25 On filing each application for a Patent (17 years).....\$15 On issuing each original Patent.....\$20 On appeal to Examiners-in-Chief.....\$10 On appeal to Commissioner of Patents.....\$20 On application for Reissue.....\$30 On application for Extension of Patent.....\$50 On granting the Extension.....\$50 On filing a Disclaimer.....\$10 On an application for Design (3 1/2 years).....\$10 On application for Design (7 years).....\$15 On application for Design (14 years).....\$30