

B. says: I have lots of boiled bones and animal matter, and I think of employing them in making fertilizers. How can I make superphosphates, bone dust and bone manure? What other material shall I mix with the bones, and what kind of a mill is used for crushing and grinding the stuff? Answer: Your best plan is to grind the bones and mix the bone dust with ashes or ordinary manure. This forms an excellent fertilizer. There are many mills in the market for grinding and crushing, and an advertisement for the mill you need would probably bring you the information.

W. P. B. says, in reply to a correspondent who complains of a gummy substance which exudes from his boots: It is not the wax from the thread, but comes from poor oil used in finishing the leather. Cod oil (the proper article) was so scarce a few years since that other oils, particularly menhaden or porgy, were used instead of and to adulterate it, so that it became almost impossible to get a true cod oil. I have seen hundreds of sides of leather stuck together in the roll so as to need two men to separate them. It has now become possible to get good oil, and there is little danger of gum on leather from any responsible tanner.

F. N. says, in reply to C. W. C., that the largest wheeled locomotive would reach the foot of the hill first, for she would have the advantage of the other both in gravity and friction.

L. S. F. says: Let S. M. S. kill his roaches by making a mixture of Paris green and flour in equal parts. Then pour enough water upon the floor, in the place which the roach frequents, to form a little puddle, and form a circle of the mixture around it. They will run over it to drink, and thus bedaub their legs with the poison. In making their toilets, they lick their legs, and so eat the poison, which soon despatches them.

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

M. W. H.—Your specimens are particles of galena disseminated in sand.

W. A. D.—Blende, sulphide of zinc.

E. A. W.—Grains of quartz.

G. O. H.—It is an alloy of copper, but a chemical analysis will be necessary to determine the constituents.

L. S.—No. 1 is bituminous shale. No. 2 resembles oxide of iron.

E. E.—Galena (sulphide of lead) in limestone.

R. C.—Your mineral is crystallized sulphate of lime, known to mineralogists as selenite.

P. S.—Nos. 1 and 2 are iron pyrites. No. 3 is galena. No. 4 resembles oxide of iron in quartz.

C. H. C.—Carbonate of lime. Dilute hydrochloric acid will rapidly dissolve it, and will not materially injure iron pipes, if not kept too long in contact with the metal.

W. K.—Barytes, sulphate of baryta.

J. H. S.—Sandstone.

R. F. S.—1. Blende. 2. Blende with barytes. 3 and 4. Blende (sulphide of zinc). 5. Arragonite, a form of carbonate of lime. 6. Quartz and oxide of iron. Read Dana's "Mineralogy."

W. C. B. asks: What is the best varnish to use on a water color drawing, that will not blot or crack off afterwards?—T. F. asks: If the sum of two squares be given, can science determine the two particular squares which compose the sum?—F. C. says: We put up fruit in airtight jars, and never put a jar away until we had taken off the iron clamp and found that the jars were tight enough to be lifted up by the cover. Notwithstanding this, three of the jars burst. As they were airtight, how could they ferment?—F. A. asks for a remedy for a fever sore, which breaks out on the slightest exertion.—J. O. H. asks for a cheap indelible coloring matter, or paint, which could be used with a brush in marking the horns of cattle.—H. B. asks: How can I put the finish on brass as it is in watch movements?—T. B. J. asks: What is the composition of the ink used on hand stamps and for saturating ribbon for ribbon stamps?—J. E. E. says: In a suit now in the San Francisco courts, against a sea captain for alleged cruelty to a seaman, it is shown by the witnesses that it is a common practice on shipboard to hang sailors up by the wrists as a punishment. Will some one scientifically explain the physical effect of this punishment upon the system?—J. A. McK. asks: What two metals, gases, or other substances are the most subject to expansion and contraction by heat and cold?—S. S. R. asks: Can you inform me what variation occurs in the time of sunrise and sunset on the same day of the same month, in the same place, but in different years?

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 Coal Tar Interest. By H. C. F.
On Treatment of Cancer. By G. W. B.
On a Cheap Fertilizer. By C. W. B.
On Mysterious Boiler Explosions, etc. By C. B.
On Wireless Engines. By I. P.
On the Science of Iron and Steel. By C. C. Jr.
On Railway Religion. By J. E. E.

Also enquiries from the following: C. R. C.—W. L. A.—H. H.—J. T. S.—J. H. G.—P. L.—B. W. W.—S. B. H.—F. B.—J. F.—E. C. M.—J. M. S. Jr.—E. N.

Correspondents in different parts of the country ask: Who makes a carpet stretcher with a magnet in it to hold the tacks? Who makes coal-cutting machinery? Who makes pea shellers? Who makes the best steam washing machinery? Who makes plaster fuses? Who makes transplanters? Who sells horse power potato diggers? Whose machines for pearling barley? Who makes small lithographic presses for amateur use? Who makes small steam engines for running jig saws, etc.? Where can apparatus for burning petroleum be obtained? Who makes diamond drills? 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 FOR THE WEEK ENDING
November 11, 1873,
AND EACH BEARING THAT DATE.
(Those marked (r) are reissued patents.)

Table listing inventions and their patent numbers, including items like 'Animal substances, preserving, C. Alden (r)', 'Auger, earth, W. Cole', 'Bale tie, cotton, A. G. Buford', etc.

Table listing inventions and their patent numbers, including items like 'Life preserving cape, G. & C. Palmer', 'Loom temple, N. Chapman', 'Mattress, wire, D. J. Powers', 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:
27,094.—CARTRIDGE MACHINE CASE.—E. Allen. Jan. 28.
27,135.—SUGAR CUTTER.—C. Kinzler et al. Jan. 28.
27,139.—HAWKINS RUDDER.—J. P. Manton et al. Jan. 28.
27,179.—REINFORCED GEAR.—C. D. Wheeler. Jan. 28.

EXTENSIONS GRANTED.

26,000.—RN PLANTER.—E. C. Allen.
26,028.—MANUFACTURE OF GAS.—L. D. Gale.
26,056.—MANUFACTURE OF GAS.—L. D. Gale.
26,060.—MARKING BOX JOINTS.—J. Simpson.
26,090.—PAPER FOLDING MACHINE.—C. Chambers, Jr.
26,097.—ELECTROMAGNETIC TELEGRAPH.—M. G. Farmer.
26,185.—PORTABLE PUMP.—W. T. Vose.
26,186.—MODE OF ADVERTISING.—E. Wiebé.
26,189.—PUMP.—W. Wright.
26,145.—WATER CLOSET COOK.—D. Wellington.

DESIGNS PATENTED.

6,987.—DRINKING GLASSES, ETC.—T. G. Cook, Phila., Pa.
6,988.—COLLARETTE.—A. S. Ellison, New York city.
6,989 & 6,990.—PRINTING TYPE.—H. Ilensburg, N. Y. city.
6,991 to 6,994.—OIL CLOTHS.—H. Kagy, Philadelphia, Pa.
6,995.—PICTURE FRAMES.—J. Nonnenbacher, N. Y. city.

TRADE MARKS REGISTERED.

1,522.—GOLD PENS.—C. M. Fisher, New York city.
1,523.—CLOTHES WRINGER.—Haley & Co., Boston, Mass.
1,524.—ICE.—Knickerbocker Ice Co., New York city.
1,525.—THERMOMETER TUBES.—Dental Mfg. Co., Buff. N. Y.
1,526.—WATCHES.—National Watch Co., Elgin, Ill.

SCHEDULE OF PATENT FEES.

On each Caveat.....\$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

Table listing patent fees: 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

VALUE OF PATENTS,
And How to Obtain Them.

Practical Hints to Inventors.

PROBABLY no investment of a small sum of money brings a greater return than the expense incurred in obtaining a patent, even when the invention is but a small one. Large inventions are found to pay correspondingly well. The names of Blanchard, Morse, Bigelow, Colt, Ericsson, Howe, McCormick, Hoe and others, who have amassed immense fortunes from their inventions, are well known. And there are thousands of others who have realized large sums from their patents.

More than FIFTY THOUSAND inventors have availed themselves of the services of MUNN & Co. during the TWENTY-SIX years they have acted as solicitors and Publishers of the SCIENTIFIC AMERICAN. They stand at the head in this class of business; and their large corps of assistants, mostly selected from the ranks of the Patent Office; men capable of rendering the best service to the inventor, from the experience practically obtained while examiners in the Patent Office; enables MUNN & Co. to do everything appertaining to patents BETTER and CHEAPER than any other reliable agency.

HOW TO OBTAIN PATENTS

This is the closing inquiry in nearly every letter, describing some invention which comes to this office. A positive answer can only be had by presenting a complete application for a patent to the Commissioner of Patents. An application consists of a Model, Drawings, Petition, Oath, and full Specification. Various official rules and formalities must also be observed. The efforts of the inventor to do all this business himself are generally without success. After great perplexity and delay, he is usually glad to seek the aid of persons experienced in patent business, and have all the work done over again. The best plan is to solicit proper advice at the beginning. If the parties consulted are honorable men, the inventor may safely confide his ideas to them; they will advise whether the improvement is probably patentable, and will give him all the directions needful to protect his rights.

How Can I Best Secure My Invention?

This is an inquiry which one inventor naturally asks another, who has had some experience in obtaining patents. His answer generally is as follows, and correct: Construct a neat model, not over a foot in any dimension—smaller if possible—and send by express, prepaid, addressed to MUNN & Co., 37 Park Row, together with a description of its operation and merits. On receipt thereof, they will examine the invention carefully, and advise you as to its patentability, free of charge. Or, if you have not time, or the means at hand, to construct a model, make as good a pen and ink sketch of the improvement as possible and send by mail. An answer as to the prospect of a patent will be received, usually, by return of mail. It is sometimes best to have a search made at the Patent Office; such a measure often saves the cost of an application for a patent.

Preliminary Examination.

In order to have such search, make out a written description of the invention, in your own words, and a pencil, or pen and ink, sketch. Send these, with the fee of \$5, by mail, addressed to MUNN & Co., 37 Park Row, and in due time you will receive an acknowledgment thereof, followed by a written report in regard to the patentability of your improvement. This special search is made with great care, among the models and patents at Washington, to ascertain whether the improvement presented is patentable.

To Make an Application for a Patent.

The applicant for a patent should furnish a model of his invention if susceptible of one, although sometimes it may be dispensed with; or, if the invention be a chemical production, he must furnish samples of the ingredients of which his composition consists. These should be securely packed, the inventor's name marked on them, and sent by express, prepaid. Small models, from a distance, can often be sent cheaper by mail. The safest way to remit money is by a draft, or postal order, on New York, payable to the order of MUNN & Co. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents.

Foreign Patents.

The population of Great Britain is 31,000,000; of France, 37,000,000; Belgium, 5,000,000; Austria, 36,000,000; Prussia, 40,000,000, and Russia, 70,000,000. Patents may be secured by American citizens in all of these countries. Now is the time, when business is dull at home, to take advantage of these immense foreign fields. Mechanical improvements of all kinds are always in demand in Europe. There will never be a better time than the present to take patents abroad. We have reliable business connections with the principal capitals of Europe. A large share of all the patents secured in foreign countries by Americans are obtained through our Agency. Address MUNN & Co., 37 Park Row, New York. Circulars with full information on foreign patents, furnished free.

Caveats.

Persons desiring to file a caveat can have the papers prepared in the shortest time, by sending a sketch and description of the invention. The Government fee for a caveat is \$10. A pamphlet of advice regarding applications for patents and caveats is furnished gratis, on application by mail. Address MUNN & Co., 37 Park Row, New York.

Value of Extended Patents.

Did patentees realize the fact that their inventions are likely to be more productive of profit during the seven years of extension than the first full term for which their patents were granted, we think more would avail themselves of the extension privilege. Patents granted prior to 1881 may be extended for seven years, for the benefit of the inventor, or of his heirs in case of the decease of former, by due application to the Patent Office, ninety days before the termination of the patent. The extended time inures to the benefit of the inventor, the assignees under the first term having no rights under the extension except by special agreement. The Government fee for