



C. M. F., of Conn.—The way to calculate the actual horse power of your engine, or any other, is to multiply the steam pressure in pounds per square inch into the area of piston in inches, and velocity of piston in feet per minute, and divide by 44,000. The result is the horse power. The power varies with the pressure of steam. You must take the average steam pressure during the stroke. More friction is involved in a large than a small engine, because the parts are more massive. The cylinder of an engine should always be sufficiently large to obtain the benefit arising from using a cut-off. We advise you to get an engine with a 3½-inch cylinder and 9-inch stroke, in preference to using a second cylinder, combined with your present engine of 2-inch bore and 5-inch stroke.

D. E. B., of Pa.—We cannot tell where you can obtain Dingler's *Polytechnic Journal* containing the receipt for making Prussian blue to which you refer. It is not republished in the English language, so far as we know.

J. K., of Pa.—The best cement known to us for fixing leather coverings on iron pulleys is made with gum shellac and india rubber, dissolved in rectified naphtha. The pulley should be heated to the temperature of the cement when the latter is applied. A temperature of about 150° Fah. will be sufficient, but we are not positive whether the cement will adhere while the leather endures.

G. W. S., of Conn.—A gun can be made weighing no more than 50 pounds, which will carry a few grape shot, and kill at a mile distant. We have recently examined a divided bullet, formed in three sections, and secured in a cloth cartridge that was fired from a secession rifle musket at the fight of Big Bethel. A convenient and portable steam apparatus, capable of being drawn by one horse, and cooking for a whole company, beside warming all their tents, would be a very desirable improvement we believe for camp life. The gun and incendiary shell which are represented in your sketch are new to us, but incendiary shells charged with phosphorated naphtha are well known, and were invented for burning ships and wood buildings.

A. G. A., of Ind.—In tempering mill picks the first object is to get the proper quality of steel, as all the tempering processes in the world cannot make a good pick of a poor piece of steel. Use the best cast steel only. Do not heat it above a cherry red for hammering, and then hammer the points till the grains of steel are driven compactly together, then file the ends sharp. Put the end in the fire and keep it therein until it acquires a low red heat, then take it out and dip it in cold water, when it will be found fit to work the best burr stones. Avoid raising the heat of the steel above a cherry red.

H. B. F., of Ill.—There is no published work on millwrighting which is up to the practice of the present day. If your supply of water on a fall of five feet is irregular, we believe that a good overshoot wheel is the best you can use. If well made, it will be found durable and well adapted for your flouring mill. On high falls, with a steady supply of water, we recommend a good turbine, as large overshoot wheels are very expensive.

E. J. B., of Pa.—The best way for you to use your old copper is to melt it with some zinc and convert it into brass for your journal boxes. Melt the copper in a crucible first, then add the zinc in small pieces, stir up until the whole becomes homogeneous, then run it into ingots. Babbit's metal is composed of 25 parts tin, 2 of antimony and 5 of copper. You may also use your old copper in making this alloy. Gum shellac varnish is the best we can recommend for coating patterns; by mixing a little red lead with it we think its quality is improved.

C. S., of Pa.—Dr. Gesner's work on coal oil, published by Balliere Bros., 440 Broadway, this city, contains information respecting the refining of coal oils. A variety of chemical processes are practiced by different refiners of such oils.

J. W. P., of England.—We do not know the address of Charles McBurney. A letter will probably reach him if you address it to the care of the Boston Belting Company, Boston, Mass.

O. R. H., of Wis.—We do not remember the apparatus to which you refer. Mr. J. D. Prindle, of East Bethany, N. Y., obtained a patent through this office not long ago for the best boiler for cooking food for cattle we have ever seen. Address him, as above, for information.

S. H. F., of Canada.—We think it would be of great advantage to Mr. A. to advertise his coal oils in our journal. It cannot be expected of us to give space for gratuitous advertising.

N. D., of N. Y.—We are always glad to receive contributions for our paper, and are much obliged for the one you have sent us, but its publication would do you no credit whatever. We want sound practical ideas. No matter if they are rudely stated, we can put them into proper shape for publication. Mere vague theories are of very little account at this time.

Z. K., of Mass.—A patent was obtained by B. Wood, of Nashville, Tenn., on March 20, 1860, for a very fusible alloy, composed of lead, cadmium and tin.

A. J. S., of Pa.—We do not know the address of Mr. Coon. You had better address him at the place given in the list of Patents.

G. A. S., of N. Y. asks the following questions:—I have a deed of a patent right for Oneida county, and gave, in consideration, a contract agreeing to pay a certain amount on each machine sold. Now, if a man who owns the right for another county wishes to purchase machines of me, to sell in his territory, would I be obliged to pay the commission on machines sold to him? Ans.—Yes. The intention of the purchaser has nothing at all to do with your contract. If I sell a machine to a man who lives in this county, and then after a time moves away to another county, would he have full right to use it there? Ans.—No. He must get the consent of the owner of the county to which he moves before he can lawfully use the invention there.

J. A. C., of C. W.—Your induced current might be stronger than the primary; still on the removal of the battery, all of the currents would cease. A caveat is not received at our Patent office except from American citizens.

Money Received

At the Scientific American Office on account of Patent Office business, during one week preceding Wednesday, Nov. 13, 1861:—

J. F. Q., of Del., \$20; C. E. P., of Wis., \$20; A. S. D., of N. Y., \$20; J. M., of N. Y., \$20; J. M. M., of N. Y., \$20; C. H. A., of Conn., \$20; B. D. P., of Pa., \$20; W. H. A., of Conn., \$20; W. R. S., of N. Y., \$15; J. P., of N. Y., \$15; I. C., of N. Y., \$15; E. D. L., of R. I., \$25; S. H., of Conn., \$25; W. W. F., of Iowa, \$25; H. M., of N. Y., \$25; H. R., of Ill., \$15; W. J. S., of Ohio, \$15; O. M. T., of N. Y., \$25; S. J. S., of N. Y., \$15; A. G. B., of N. Y., \$10; W. O. H., of Pa., \$30; A. S. F., of N. Y., \$15; J. M., of Ill., \$15; S. & P., of Conn., \$60; O. E. M., of Ill., \$15; W. A. B., of Wis., \$25; H. & H., of Ill., \$15; B. T., of Ill., \$15; M. E. L., of N. Y., \$15; E. R., of N. Y., \$40; L. W. P., of Mass., \$25; J. B. D., of Conn., \$10; J. D. H., of Pa., \$15; A. S. K., of Mich., \$15; C. M., of N. Y., \$25; F. C. P., of N. Y., \$15; W. H. S., of Conn., \$15; S. S. W., of Pa., \$75; J. C., of Mass., \$15; T. J. B., of N. Y., \$15; T. & R., of N. Y., \$25; J. F. B., of Conn., \$15; J. R. A., of Pa., \$25; D. J. S., of N. Y., \$25; S. P. C., of Conn., \$20; A. B., of N. Y., \$25; T. F. L., of N. Y., \$25; S. S. W., of N. Y., \$25; N. A., of N. Y., \$40; M. & B., of N. Y., \$20; J. H. S., of N. J., \$20; R. G. H., of Mass., \$45; J. W. S., of N. Y., \$45.

Specifications and drawings and models belonging to parties with the following initials have been forwarded to the Patent Office from Oct. 30, to Wednesday, Nov. 13, 1861:—

W. A. B., of Wis.; D. J. S., of N. Y.; H. W. M., of N. Y.; G. & Co., of Paris; E. & P., of N. J.; C. O. P., of Mass.; S. H., of Conn.; J. P., of N. Y.; O. M. T., of N. Y.; S. P. C., of Conn.; E. D. L., of R. I.; W. W. F., of Iowa; A. B., of N. J.; T. F. L., of N. Y.; T. & R., of N. Y.; S. & P., of Conn.; C. M., of N. Y.; B. M. S., of N. J.; A. G. B., of N. Y.; K. & H., of Wis.; N. A., of N. Y.

TO OUR READERS.

Models are required to accompany applications for Patents under the new law, the same as formerly, except on Design Patents, when two good drawings are all that is required to accompany the petition, specification and oath, except the government fee.

BACK NUMBERS AND VOLUMES OF THE SCIENTIFIC AMERICAN.—Volumes I, II, and III. (bound or unbound) may be had at this office ad from all periodical dealers. Price, bound, \$1.50 per volume. by mail, \$2.—which includes postage. Price in sheets, \$1. Every mechanic, inventor or artisan in the United States should have a complete set of this publication for reference. Subscribers should not fail to preserve their numbers for binding.

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Thirty Cents per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published, we will explain that ten words average one line. Engravings will not be admitted into our advertising columns; and, as heretofore, the publishers reserve to themselves the right to reject any advertisement they may deem objectionable.

THE CHEAPEST MODE OF INTRODUCING INVENTIONS.

INVENTORS AND CONSTRUCTORS OF NEW AND USEFUL CONTRIVANCES OR MACHINES, of whatever kind, can have their inventions illustrated and described in the columns of the SCIENTIFIC AMERICAN on payment of a reasonable charge for the engraving.

No charge is made for the publication, and the cuts are furnished to the party for whom they are executed as soon as they have been used. We wish it understood, however, that no secondhand or poor engravings, such as patentees often get executed by inexperienced artists for printing circulars and handbills from, can be admitted into these pages. We also reserve the right to accept or reject such subjects as are presented for publication. And it is not our desire to receive orders for engraving and publishing any but good inventions or machines, and such as do not meet our approbation in this respect, we shall decline to publish.

For further particulars, address—

MUNN & CO.,
Publishers SCIENTIFIC AMERICAN,
New York City

CHANGE IN THE PATENT LAWS.

PATENTS GRANTED FOR SEVENTEEN YEARS.

The new Patent Laws enacted by Congress on the 4th of March, 1861, are now in full force, and prove to be of great benefit to all parties who are concerned in new inventions.

The duration of patents granted under the new act is prolonged to SEVENTEEN years, and the government fee required on filing an application for a patent is reduced from \$30 down to \$15. Other changes in the fees are also made as follows:—

On filing each caveat.....	\$10
On filing each application for a Patent, except for a design.....	\$15
On issuing each original Patent.....	\$20
On appeal to Commissioner of Patents.....	\$20
On application for Re-issue.....	\$30
On application for Extension of Patent.....	\$50
On granting the Extension.....	\$50
On filing Disclaimer.....	\$10
On filing application for Design, three and a half years.....	\$10
On filing application for Design, seven years.....	\$15
On filing application for Design, fourteen years.....	\$30

The law abolishes discrimination in fees required of foreigners, except in reference to such countries as discriminate against citizens of the United States—thus allowing English, French, Belgian, Austrian

Russian, Spanish, and all other foreigners except the Canadians, to enjoy all the privileges of our patent system (except in cases of designs) on the above terms.

During the last sixteen years, the business of procuring Patents for new inventions in the United States and all foreign countries has been conducted by Messrs. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN; and as an evidence of the confidence reposed in our Agency by the Inventors throughout the country, we would state that we have acted as agents for more than FIFTEENTH THOUSAND Inventors! In fact, the publishers of this paper have become identified with the whole brotherhood of Inventors and Patentees at home and abroad. Thousands of Inventors for whom we have taken out Patents have addressed to us most flattering testimonials for the services we have rendered them, and the wealth which has inured to the Inventors whose Patents were secured through this Office, and afterward illustrated in the SCIENTIFIC AMERICAN, would amount to many millions of dollars! We would state that we never had a more efficient corps of Draughtsmen and Specification Writers than are employed at present in our extensive Offices, and we are prepared to attend to Patent business of all kinds in the quickest time and on the most liberal terms.

Testimonials.

The annexed letters, from the last three Commissioners of Patents, we commend to the perusal of all persons interested in obtaining Patents:—

Messrs. MUNN & Co.—I take pleasure in stating that, while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE CAME THROUGH YOUR HANDS. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill and fidelity to the interests of your employers. Yours, very truly,
CHAR. MASON.

Immediately after the appointment of Mr. Holt to the office of Postmaster-General of the United States, he addressed to us the subjoined very gratifying testimonial:—

Messrs. MUNN & Co.—It affords me much pleasure to bear testimony to the able and efficient manner in which you have discharged your duties of Solicitors of Patents while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and, I doubt not, justly deserved) the reputation of energy, marked ability and uncompromising fidelity in performing your professional engagements. Very respectfully,
Your obedient servant,
J. HOLT.

Messrs. MUNN & Co.—Gentleman: It gives me much pleasure to say that, during the time of my holding the office of Commissioner of Patents, a very large proportion of the business of Inventors before the Patent Office was transacted through your agency, and that I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys with skill and accuracy. Very respectfully,
Your obedient servant,
WM. D. BISHOP.

Preliminary Examinations at the Patent Office.

The advice we render gratuitously upon examining an invention does not extend to a search at the Patent Office, to see if a like invention has been presented there, but is an opinion based upon what knowledge we may acquire of a similar invention from the records in our Home Office. But for a fee of \$5, accompanied with a model or drawing and description, we have a special search made at the United States Patent Office, and a report setting forth the prospects of obtaining a Patent &c., made up and mailed to the Inventor, with a pamphlet, giving instructions for further proceedings. These preliminary examinations are made through our Branch Office, corner of F and Seventh-streets, Washington, by experienced and competent persons. Over 1,500 of these examinations were made last year through this Office, and as a measure of prudence and economy, we usually advise Inventors to have a preliminary examination made. Address MUNN & CO., No. 37 Park-row, New York.

How to Make an Application for a Patent.

Every applicant for a Patent must furnish a model of his invention. If susceptible of one; or if the invention is a chemical production, he must furnish samples of the ingredients of which his composition consists, for the Patent Office. These should be securely packed, the inventor's name marked on them, and sent, with the government fee by express. The express charge should be prepaid. Small models from a distance can often be sent cheaper by mail. The safest way to remit money is by draft 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; but, if not convenient to do so, there is but little risk in sending bank bills by mail, having the letter registered by the postmaster. Address MUNN & Co., No. 37 Park-row, New York.

The Examination of Inventions.

Persons having conceived an idea which they think may be patentable, are advised to make a sketch or model of their invention, and submit it to us, with a full description, for advice. The points of novelty are carefully examined, and a reply written corresponding with the acts, free of charge. Address MUNN & CO., No. 37 Park-row, New York.

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, under the new law, is \$10. A pamphlet of advice regarding applications for Patents and Caveats furnished gratis on application by mail. Address MUNN & CO., No. 37 Park-row, New York.

Rejected Applications.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of the case, inclosing the official letters, &c.

Foreign Patents.

We are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business, we have offices at Nos. 66 Chancery-lane, London; 29 Boulevard St. Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we can safely say that THREE-FOURTHS of all the European Patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of Patents to Inventors. Anyone can take out a Patent there.