Scientific American.

New Patent Law of 1870.

INSTRUCTIONS

LETTERS-PATENT

FOR New Inventions.

Information about Caveats, Extensions, Interferences, Designs, Trade-Marks, and Foreign Patents.

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Are desirable if an inventor is not fully prepared to apply for a Patent. A Caveat affords protection for one year against the issue of a patent to another for the same invention. Caveat papers should be carefully prepared. The Government fec on filing a Caveat is \$10, and MUNN & Co.'s charge for preparing the necessary papers is usually from \$10 to \$12.

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DESIGNS, TRADE-MARKS, & COMPOSITIONS Can be patented for a term of years, also new medicines or medical compounds, and useful mixtures of all kinds.

When the invention consists of a medicine or compound, or a new article of manufacture, or a new composition, samples of the article must be fur-ished, neatly put up. There should also be forwarded a full statement of its ingredients, proportions, mode of preparation, uses, and merits. CANADIANS and allother foreigners can now obtain patentsupon the same terms as citizens.

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MUNN & Co, have solicited a larger number of European Patents than any other agency. They have agents located at London, Paris, Drussels, Beriin, and other chief citics. A pamphlet containing a synopsis of the Foreign Patent Laws sent free.

MUNN & Co. could refer, if necessary, to thousands of patentees who have had the benefit of their advice and assistance, to many of the principal business men in this and other cities, and to members of Congress and prominent citizens throughout the country. All communications are treated as confidential.

2.779. -IMPROVEMENT IN AND ADDITIONS TO SEATES. -A. E. Clarke, Montreal, Canada. October 21, 1870.

AUTOMATIC LUBRICATORS.-E. von Jeinsen, San Francisco, Cal. (October 24, 1870. 2,805. -Horseshoes. -Ebenezer Cate, Woburn, Mass. October 24, 1870.

2,862.-LOOMS FOR WEAVING.-Enoch P. Terrel, West Liberty, Ohio. Oct. 31, 1870.

2,866. — MANUFACTURE OF ACIDS AND ALKALINE SALTS. — H. M. Baker, Wil-liamsburgh, N. Y. October 31, 1870.

2,876.—IMPROVEMENTS APPLICABLE TO SAFES, VAULTS, AND OTHER STRUC-TURES FOR CONTAINING VALUABLE PROPERTY, AND IN ALARM APPARATUS OR TELEGRAPHS CONNECTED THEREWITH. --E. Holmes, Brooklyn, N. Y., and H. C. Roome, Jersey, N. J. November 1, 1870.

2,890. — APPARATUS FOR PRODUCING AND APPLYING MOTIVE POWER. — J. M. Cayce, W. B. Barfield, and James McEwen, Franklin, Tenn. November 2, 1870.

NEW BOOKS AND PUBLICATIONS.

THE PRINCIPLES OF MECHANISM AND MACHINERY OF TRANS E PRINCIPLES OF MECHANISM AND MACHINERY OF TRANS MISSION. Comprising the Principles of Mechanism, Wheels, and Pulleys, Strength and Proportions of Shafts, Couplings for Shafts, and Engaging and Disengaging Gear. By William Fairbairn, Esq., C.E., LL.D., F.R.S., F.G.S., Corresponding Member of the National Institute of France, and of the Royal Academy of Turin; Cheva-lian of the Royal Academy of Turin; Chevalier of the Legion of Honor, etc. Philadelphia: Henry Carey Baird, Industrial Publisher, 406 Walnut street. Price, by mail, free of postage, \$250.

From the imposing array of scientific honors appended to the author's name, our readers might be led to suppose that this work was written for others than practical mechanics, but no greater mistake could be made than such a supposition. Mr. Fairbairn, though eminently scientific, is one of the most practical of men, and he knows to a nicety the wants of practical men. This book is written in the plainest and most concise style, and may be read with profit by those to whom algebra and geometry are unsealed mysteries. There are a few algebraic formulæin the book, but the larger portion is written in plain English. The work treats of a great variety of subjects included in the general classification given in the title, and ought to be in every mechanic's library.

THE ATTITUDE OF SCIENTIFIC INVESTIGATION TOWARD DIVINE REVELATION, An Essay Read before the Asso-ciate Alumni of the General Theological Seminary of the Protestant Episcopal Church at their Annual Meeting in the Chapel of the Seminary, New York, St. John Baptist's Day, June 24, A.D., 1870. By the Rev. Richard Whittingham, Rector of St. John's Church, New Haven, Conn.

This is an effort to show that the asserted antagonism of science with or thodox theology is a real one, and that so-called science is full of contradictions. Professor Huxley is made the object of direct attack, and his "Lay Sermons" arc denounced as calculated to poison the minds of thousands who It must be conceded that in that part of his argument based upon the contradictions of science, the author makes some strong hits.

ATALOGUE OF PRACTICAL AND SCIENTIFIC BOOKS Published by Henry Carey Baird, 406 Walnut street, Philadelphia, Pa. Sent free to any address.

This catalogue comprises the most complete list of industrial publications on all subjects pertaining to the arts and manufactures, published in this country. To mechanics, engineers, and manufacturers, no matter in what department, it offers works of sterling value expressly prepared to suit their practical needs. Young mechanics seeking for guides in their various callings will do well to send for this catalogue.

A TEXT-BOOK OF ELEMENTARY CHEMISTRY, THEORETICAL AND INORGANIC. By George F. Berker, M.D., Professor of Physiological Chemistry in Yale College. 12mo, pp. 342. New Haven : Charles C. Chatfield & Co.

In nothing is the great change that has taken place in the nomenclature of chemistry and in the symbolic language of the science more conspicuously shown than in some of our recent text-books. Professor Barker has prepared a remarkably accurate book founded on the most advanced theorie and doctrines of chemistry, and no teacher who desires to keep abreast of the times can afford to be without it.

THE RIGHTS OF AMERICAN PRODUCERS AND THE WRONGS OF BRITISH FREE TRADE REVENUE REFORM. By Henry Carey Baird. Philadelphia: Collins, Printer, 705 Jayne street.

3 This is the title of a strong argument from the trenchant pen of an able writer upon a subject in which every American citizen is interested. It is a small pamphlet, printed, we believe, for gratuitous circulation.

SERMONS, ADDRESSES, AND REVIEWS. By Thomas Henry Huxley. 8vo., pp. 378. New York: D. Appleton & Co. 1870.

The Messrs. Appletons have reprinted on very poor paper and in inferior style, the famous lectures delivered before popular audiences in England by Professor Huxley. Few books of greater importance have appeared within a long period. The topics discussed relate to the origin of life, scientific education, and the most advanced theories of the new school of thinkers in England. However slow many readers may be to accept the reasoning of writer, every one must be swift to acknowledge that the subject is the handled in faultless language and the most captivating style.

THE AMERICAN JOURNAL OF ARTS AND SCIENCE. Haven, Conn.: B. Silliman and James B. Dana.

The November issue contains a number of very exhaustive scientific arti cles. Examination of the Bessemer Flame," by Prof. J. M. Silliman; "Electrical Conductivities," by Alfred M. Mayer; "Northern Drift of the Pacific Slope," by Robert Brown; "Influence of Temperature on the Electricity o. Certain Metals;" "Willet on the Georgia Meteoric Stone," and "Hovey o Hailstorm of June, 1870," arc leading and able papers.

WE are in receipt of THE WORKSHOP, for Septemter, a German publica

2,765.—CONSTRUCTION OF BRIDGES.—C. S. Smith, C. H. Latrobe, and F. H. from a locomotive boiler containing 300 square feet heating surface; boiler Smith, Baltimore, Md. October 20, 1870. well covered by a thick jacket, and a 3/ inch blower pipe, besides the ex-haust, running into the smoke stack. Fuel, wood; feed water, hot. I cannot make steam fast enough to keep my pressure up to 70 pounds. I want more boiler power, and am offered two cylinder boilers 30 inches in diameter and 40 feet long, and I am told they will supply me with sufficient steam. Query: Will two cylinder boilers 30 inches in diameter and 40 feet long make sufficient steam, with wood for fuel, to run an engine (common slide valve), with 12 by 18 cylinder, 150 revolutions per minute, requiring 70 pounds steam to do the work ?-- W. V. B.

> 4.—HEATING SURFACE OF TUBES.—In counting the heating surface of tubular boilers, is it most proper to calculate the internal or external circumference of the tubes? I should like to know the opinion of your correspondents in regard to this.-W. V. B.

> 5.-TO KEEP POLISHED BRASS FROM TARNISHING.-I should like information on the best methods of keeping polished brass from tarnishing. What have the readers of the SCIENTIFIC AMERICAN found best for this purpose ?-O. F.

-SOLDERING STEEL,-I wish a recipe for a flux that may be used to solder steel, and will not cause polished metal to rust.-H. W. M.

7.—CEMENT.—What is the best cement for laying stone in cold weather where it is exposed to the action of frost and water ?- B. F.

8.-TO PURIFY BLACK OIL.-How can I purify oil that has been used on shafting, so as to fit it for re-use on the same ?-A. C.

Answers to Correspondents.

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CORRESPONDENTS who expect to receive answers to their letters must, in allcase, sign their names. We have a right to know those who seek in-formation from us; besides, as sometimes happens, we may prefer to ad-eress correspondents by mail. SPECIAL NOTE.—This column is designed for the general interest and in-struction of our readers, not for grittivious replies to questions of a pure business or personal nature. We will publish such inquiries, however, when point for a divertisements at \$100 mine, under the head of "Busi-ness and Personal.

All reference to back numbers should be by volume and page.

SCATTERING SHOT CUN.-J. C. T., of Texas, has a shot gun which scatters too much, for which he seeks a remedy. Being well posted in gun matters, I can give him some ideas. The only remedy known to gun-smiths is by choke-boring, that is, boring from the breech of the gun, and so as to have a gradual taper towards the muzzle. This method of boring greatly improves the shooting qualities of the gun, as the charge concentrates at the muzzle. I have bored some guns so much for this purpose, that the diameter of the bore at the breech was one eighth of an inch larger than at the muzzle, before they would shoot well. All of the pigeonshootingclubs have their guns bored in this manner. Large shot are more apt to scatter than fine, but this depends on the bore of the gun. A large bored gun does not shoot fine shot so well as medium. A small-bored gun throws fine shot with greater force than a large-bored one. As a general thing, a small-bored gun is not adapted to large shot, as it does not chamber them well. The length of gun also depends on the size of bore 28 or 30 inches for a gun of from 10 to 14 gage; 30 to 34, of guns from 8 to 10; 26 to 28, guns of 15 to 18 gage. -C. W. L., of Mass.

DRILLING SMALL HOLES IN BRASS PLATE.-G. F. may perform the nicc job he has undertaken, in the following manner: Fasten the piece to be drilled to a face plate that runs perfectly true, so that the center of the proposed hole is exactly in the center line of the lathe. First run through on the center a twist drill, smaller than the desired hole. Then make from Stubs wire, the size of the hole desired, a half round drill, and having bored out the hole with a small boring tool or graver just so the half-round drill will enter, feed through on the center, and the drill will go through perfectly straight, and make a perfect hole.-T. G. C., of Vt.

BULLET MOLDS,-The hollow hemispheres J. B. C. inquires about, are made with reamers, called by gunsmiths cherries, which can be bought of any gun-furnishing establishment. Fit both parts of the mold and rivet them; then drill a hole in them as as large as the shank of the cherry. Put in the cherry, and hold the molds in the vise; tighten as fast as you ream, and use plenty of oil, and while finishing keep the cherry very clean.

DRILLING SMALL HOLES IN BRASS PLATE.-G. F. should lay out the holes to be drilled in the brass plate as accurate as possible, and mark deep with a center punch (which should be turned). Send for a and that k deep with a being particular to the set of t will do a good job.-H. W., of N. Y.

FEED ROLLS ON DOUBLE BEATER SCUTCHER .- "Workman's" feed rolls are not near enough to the knives of the beater. If distant over one fourth of an inch, the tendency is to clog, which, of course causes the cotton to be unevenly distributed.-C. M., of Mass.

TURNING ZINC SHAFTS.—In answer to G. D. B., I would say that zinc shafts can be turned in a lathe. I have turned 34 and 34 inch with a veryfine diamond-point tool. Set the tool as high as it will cut nicely .-0. F., of Pa.

H. L. C., of Mich.-Bodies are classed with reference to their power to let heat pass through them without becoming heated themselves, and the reverse, as "diathermanous" and "athermanous;" the former term being applied to those which allow heat to pass freely without becom-ing heated themselves, and the latter term to bodics of the opposite char. acter. A beam of solar light and heat in passing through water imparts a portion of its heat to the water, as ascertained not only by the increase of temperature in the water, but in the diminished heat of the beam after its passage. Therefore water is not a diathermanous body. You will find this subject fully treated in "Silliman's Physics."

N. L., B., of Ill.—This correspondent with others is puzzled to see what supports the atmosphere, if it is not wholly support d by the The subject has no practical importance, and we do not wish to burden our columns with a protracted discussion of it.

MUNN & CO., No. 37 Park Row, NEW YORK.

Inventions Patented in England by Americans,

[Compiled from the Commissioners of Patents' Journal.] PROVISIONAL PROTECTION FOR SIX MONTHS.

2,550. -CENTRIFUGAL MACHINES. -D. McC. Weston, Boston, Mass. Sept. 23, 1870.

2.741.—IMPROVEMENT APPLICABLE TO STOCKS OF MUSKETS.—R. J. Gatling, Indianapolis, Ind. October 2, 1870.

2.782. -- MANUFACTURE OF SALT AND THE APPARATUS EMPLOYED THEEEIN.

-J. R. Buchanan, New York city. October 18, 1870.

2,786.—SPIRAL PUMPS.—T. S. Blair, Pittsburgh, Pa. October 22, 1870.

2,790.—PREPARATION OF INDIA-RUBBER AND GUTTA-PERCHA COMPOUNDS FOR COATING WOODEN AND METAL SURFACES, AND THE PRODUCTION OF HARD RUBBER.—... Chapman, New York city. October 22,1870.

2,705.—MODE OF TRAINING HOPS, THE SOCKETS FOR THE POLES OR POSTS OF SAME, AND OTHER POSTS, APPLICABLE ALSO FOR THE BORING OF WATER.— E. Blythe, Rochester, N. Y. October 13, 1870.

2,755. CONSTRUCTION OF ILLUMINATING AND VENTILATING ROOFS AND GRATINGS OR PLATES, PARTS OF WHICH ARE APPLICABLE TO ORDINARY FOOTWAYS AND CARRIAGE WAYS. - Theodore Hyatt, New York city. Octo-ber 20, 1870.

tion devoted to progress of the useful arts, and republished in English, and also in German, French, and Italian, byE. Steiger, 22 and 24 Frankfort street, New York. As usual it contains a large number of original and beautiful designs, adapted to the wants of manufacturers in various departments where ornamental designs are requisite. It contains also an interesting essay on Chandeliers, illustrated with many engravings, and other mino articles of practical interest.

QUERIES.

[We present herewith a series of inquiries embracing a variety of topic of greater or less general interest. The questions are simple, it is true, but we prefer to elicit practical answers from our readers, and hope to be able to make this column of inquiries and answers a popular and useful feature of the paper.]

1.-PAINT FOR STEAM PIPES.-What paint can I use for steam pipes that will give them a brilliant red, vermilion, or white, and not discolor by heat?-J. McB.

2.—COLORLESS DRYER.—How can I make a colorless dryer to be used in fine, delicate colored paints, for drying quickly, so they will not scale and crack when dry? The dryer should be of the consistency of good linseed oil, and dry paints in five to six hours.-C. R. P.

3.—BOILER CAPACITY.—I am running an engine (common slide valve), size, 12 inches by 18 inches, cylinder; 150 revolutions per minute: boiler pressure, 70 pounds; steam pipe, short and well covered ; taking steam W. McL., of N. Y.—With reference to the use of the Brazilian pebble, we have never heard from any reliable source that it was injurious to the eye. Oculists have recommended it, but it may be that some new facts have been brought to light. You had better consult with Dr. Agnew, or some other well known oculist.

B. C., of N. H.-Steam boilers vary in evaporative capacity from say five to ten pounds of water to a pound of coal. It is a good boiler that will evaporate eight pounds of water per pound of coal. The actual horse power developed by the evaporation depends upon the engine which consumes the steam. It is a first-class engine that will run on three pounds of coal per horse power per hour with a good boiler, though still greater economy with the very best engines is attained.

H. W., of N. Y.-Have you not mistaken the drift of L. V.'s query? It is not a straight cylinder he wishes to hore, but a bent cylinder. a segment of a hollow cylindrical ring, part of a circular hellow ring, we suppose.

J. R. T., of Cuba.—We do not know how many of Fowler's steam plows have been introduced into this country. There may be two or three but they are not much used here.

J. M., of Canada.-We do not think you can get an electro. magnetic machine such as you want in this country.

-.-The theory of an all permeating, all per-T. W. T., of vading ether, supposes this substance to be so highly attenuated as to show no sensible ponderability, that it possesses a higher degree of elasticity

HOW TO OBTAIN