

New Patent Law of 1870.

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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 THEREIN.—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. Dwyer, Rochester, N. Y. October 13, 1870. 2,755.—CONSTRUCTION OF ILLUMINATING AND VENTILATING ROOFS AND FRAMINGS OR PLATES, PARTS OF WHICH ARE APPLICABLE TO ORDINARY FOOTWAYS AND CARRIAGE WAYS.—Theodore Hyatt, New York city. October 20, 1870.

- 2,765.—CONSTRUCTION OF BRIDGES.—C. S. Smith, C. H. Latrobe, and F. H. Smith, Baltimore, Md. October 20, 1870. 2,779.—IMPROVEMENT IN AND ADDITIONS TO SKATES.—A. E. Clarke, Montreal, Canada. October 21, 1870. AUTOMATIC LUBRICATORS.—E. von Jensen, 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, Williamsburgh, N. Y. October 31, 1870. 2,876.—IMPROVEMENTS APPLICABLE TO SAFES, VAULTS, AND OTHER STRUCTURES 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. Cavec, W. B. Barfield, and James McEwen, Franklin, Tenn. November 2, 1870.

NEW BOOKS AND PUBLICATIONS.

THE PRINCIPLES OF MECHANISM AND MACHINERY OF TRANSMISSION. 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; Chevalier of the Legion of Honor, etc. Philadelphia: Henry Carey Baird, Industrial Publisher, 406 Walnut street. Price, by mail, free of postage, \$2.50.

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.

THE ATTITUDE OF SCIENTIFIC INVESTIGATION TOWARD DIVINE REVELATION. An Essay Read before the Associate 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.

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

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

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

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

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

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.

WE are in receipt of THE WORKSHOP, for September, a German publication devoted to progress of the useful arts, and republished in English, and also in German, French, and Italian, by E. Steiger, 22 and 24 Frankfort street, New York.

QUERIES.

- [We present herewith a series of inquiries embracing a variety of topics 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

from a locomotive boiler containing 300 square feet heating surface; boiler well covered by a thick jacket, and a 1/2 inch blower pipe, besides the exhaust, 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.

6.—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.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address correspondents by mail. SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$1.00 a line, under the head of "Business and Personal." All reference to back numbers should be by volume and page.

SCATTERING SHOT GUN.—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 gunsmiths 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 pigeon-shooting clubs 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 10 to 14 gauge; 30 to 34, of guns from 8 to 10; 26 to 28, guns of 15 to 18 gauge.—C. W. L., of Mass.

DRILLING SMALL HOLES IN BRASS PLATE.—G. F. may perform the nice 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 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 Morse twist drill, the proper size, as short as possible, and go through the work. Have the drill run perfectly true and rapid, feed slow, and he 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 3/8 and 1/2 inch with a very fine diamond-point tool. Set the tool as high as it will cut nicely.—O. 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 becoming heated themselves, and the latter term to bodies of the opposite character. 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 supported by the earth. The subject has no practical importance, and we do not wish to burden our columns with a protracted discussion of it.

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 bore, but a bent cylinder, a segment of a hollow cylindrical ring, part of a circular hollow 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.

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