

ENGINEERING INVENTIONS.

A rotary engine has been patented by Mr. John T. Davis, of New York city. The construction covers two hemispheres and two cones arranged therein, with a slot through their centers for the piston, the cones forcing the piston around the sphere to give motion to the shafts, the steam being cut off at the largest area of the steam chamber by the other half of the piston passing through the same point.

MECHANICAL INVENTIONS.

An engraving machine has been patented by Mr. Ira R. Beam, of Dryden, N. Y. It is for engraving jewelry, watches, plates, etc., and has holding devices with wide range of adjustment, improved construction and arrangement of the engraving tool and the apparatus for working it, and also for holding the copy, from which the movements of the engraving tool are directed by a style.

A friction pulley has been patented by Mr. Volney W. Mason, of Providence, R. I. A counter balance is combined with the shoe, the latter being made with an attached counter balance, and there is a method for throwing shoes in and out of contact with the pulley, the principal object of the invention being to counteract the effect of centrifugal force in the working parts of friction pulleys.

AGRICULTURAL INVENTIONS.

An improved seed planter has been patented by Mr. William L. Hutson, of St. Lawrence, N. C. This invention covers a special construction of a plow with removable hopper and means for dropping and covering the seeds, the space between the hills of seed to be regulated by driving wheels of different sizes, and the height of the plow beam to be regulated by an adjustable bolt.

MISCELLANEOUS INVENTIONS.

A folding table has been patented by Mr. William W. Quigley, of Santa Ana, Cal. The invention consists in a skirt board with a recess in one edge, with supports at that edge only, for receiving and supporting a skirt while the same is being sewed, so that all parts can be easily reached by the seamstress.

An improved pump has been patented by Mr. Luis G. Careaga y Saenz, of Puebla, Mexico. It is simple and easy of construction, not apt to get out of order, will raise large quantities of water with but little loss of power, and is not likely to be clogged by sand or other analogous impurities.

A process of removing oleine from linseed oil has been patented by Mr. Thomas H. Gray, of Brooklyn, N. Y. It consists in maintaining the oil at a temperature of 110° F., and in a state of agitation for a certain time, then mixing therewith a saline solution, drawing off, and washing the purified oil with water.

An artificial leg has been patented by Mr. Edgar D. Richmond, of Hart, Mich. The invention consists in improvements in the construction of the knee, ankle, and toe joints, with special arrangement for the suspension strap, the extension spring, and the thigh and lower sections of an artificial leg for thigh amputations.

An electric alarm for spring clocks has been patented by Mr. Edward Jungerman, of Gettysburg, Penn. An electric circuit is applied to a special form of clock, with contact points, to be closed by the expansion of the mainspring, whereby an audible signal may be given on a bell, or one made at a point remote from the clock.

Smoothing the inner surface of wooden tubing forms the subject of a patent issued to Mr. Merrill F. Wilcox, of Bay City, Mich. The method consists in forcing through said tubes a rapidly rotating smooth steel plug, slightly larger than the bore, and distributing resin or like substance for glazing the inner surface in advance of the rotating smoother.

An improved bee hive has been patented by Mr. Joshua Vanzandt, of Seward, Kendall County, Ill. The body has comb frames and a high cover, with a honey board having cleats or flanges upon the edges of its lower side, and with gauze-covered openings, so the board is kept out of contact with the comb frames, and the moist air is allowed to escape freely.

A sidewalk curb and surface case for electric wires has been patented by Mr. Richard Wylie, of Napa, Cal. The invention consists in a case made of grooved castings or blocks along curbs and across the streets at the crossings, with easily removable covers, and with corner pieces, all specially adapted for the easy laying, repair, and adjustment of wires.

A process for coloring and bronzing leather has been patented by Mr. Lorenz Klopfer, of Munich, Germany. The leather is wrapped in a cloth moistened with water and milk, washed with a mixture of white of egg, glycerine, and water, covered with a varnish and then a flexible collodion compound, followed by a coating of size or similar mixture, to which the metal coating is applied before the mixture has become dry.

A hat pouncing machine and lathe has been patented by Messrs. Willet Thompson and Joseph A. George, of Brooklyn, N. Y. The pouncing machine has a special form of counter balance, to prevent swaging or lurching movement, so the machine can be run at a high speed, and there are means for shifting the position of the still point, to adapt the machine for turning hat blocks and other irregular forms.

A wire fence stretcher and splicer has been patented by Mr. Jonathan E. Pierce, of Deming's Bridge, Texas. In the ends of an open box is journaled a screw, one end of which is prolonged, and has a vertical bevel pinion, a rotary motion being imparted to the screw by pinions, while springs force together

the ends of levers to grasp an end of broken fence wire.

A combined cane and cigar case has been patented by Mr. David Lee, Jr., of Mount Willing, Ala. The cane is hollow, and the cigars are so placed therein, one above another, that a spiral spring in the bottom will force each one successively to the top, a removable tube adapting the space to sizes of different thickness, and a match receptacle being provided for in the handle.

A mill feeding device has been patented by Mr. James B. Allfree, of Cumberland, Md. The invention covers a shoe with a trough, to oscillate laterally to the path of the grain, the bottom of the trough being lower than its delivery edge, the shoe having a steep incline therefrom and a gate acting therewith, in order to spread the grain and deliver it in an even sheet the whole width of the delivery.

A riding saddle has been patented by Mr. William Frazier, of West Alexander, Penn. It is made of India rubber or its compounds, and is cheap, durable, and elastic, having no tree to break or sewing to rip, and is not liable to be injured by exposure to rain. The body of the saddle is made in one piece in a mould, and the whole may be shaped to prevent contact with the spine and withers.

A revolving map stand has been patented by Mr. Henry E. Hayes, of Brooklyn, N. Y. The base block has screw rod and nuts and a triangular socket; a revolving top block has sockets, supporting rods fitting into the sockets, a wedge block for securing the lower supporting rods in place, and a suspension rod for the upper supporting rods, all to promote convenience in exhibiting maps, charts, etc.

A spring board wagon has been patented by Mr. John C. F. Harris, of Littleton, N. H. A foot board is mounted on the spring board by springs more yielding and having longer range of movement than the spring board itself, to protect the feet of the rider from the bumping jar of the spring board, and there is a novel arrangement of springs with the seat to render its motion easier.

An improved inserted tooth fastening for ice plows has been patented by Mr. John G. Rodenstein, of Staatsburg, N. Y. The invention consists in a fastening with a stop plate having a specially shaped head at its upper end and a shoulder at its lower end, with a wedge key having a screw and a nut on its upper end to adapt it to be inserted between the parts of a plow beam, to clamp an inserted tooth against the edge of a plow plate section.

A safety stop for elevators has been patented by Mr. Ellison Saunders, of Austin, Texas. A lever is pivoted to the bottom of the car, with a spring for throwing it into position transversely to the car bottom, so that the ends of the lever can catch on horizontal bars on the sides of the elevator shafts, a rope on one end of the lever to the car cable keeping the spring taut and preventing it from throwing the lever unless the elevating cable brakes.

An apparatus for manufacturing illuminating gas has been patented by Mr. James J. Shedlock, of Barnet, Eng.; with the retorts for first distilling the tar, the condensing devices and tar receptacle, is a vertical retort, having a feed pipe at its upper end, connected with the tar receptacle, and an outlet pipe for gas leading to the mains, the retort being adapted to be filled with coke, and connected with a superheated steam coil, so all the volatile hydrocarbons will be converted into permanent gases.

An improved railway gate has been patented by Mr. Lawrence C. Walsh, of Webster, Mass. The object of the invention is to provide a simple and trustworthy means for closing railroad crossings on the approach of trains, for which purpose a suitably sized gate is so hung by pulleys from a bar above that the gate may be rolled to one side and back again by wires or levers properly connected with a station, or by mechanism in position to be operated by passing trains.

NEW BOOKS AND PUBLICATIONS.

NEW YORK STATE SURVEY. Report for the year 1883. By the Board of Commissioners and James T. Gardiner, Director.

In 1876 the first accurate trigonometrical survey of the State of New York was commenced, a work which has since been prosecuted in a manner which reflects credit upon the Board of Commissioners and upon the able director in charge and his assistants. During 1883, beyond the general work of the survey, considerable attention was given to the hydrography and drainage of Niagara, Erie, Genesee, and Orleans Counties, at the request of the State Board of Health, the results reached in which have, also, an important bearing on questions relating to the maintenance of water supply in streams. These reports have been growing more valuable each year, but now have an added interest, as people are more earnestly looking into the matter of forest preservation, average rainfall, and the maintenance of the larger streams and navigable channels of the State.

SHAVINGS AND SAWDUST; A BOOK ON WOOD-WORKING MACHINERY. By John Kane, "Observer." C. A. Wenborne, Buffalo, N. Y. Price, \$1.50.

This book, consisting largely of articles formerly published in the *Lumber World*, is the work of a practical man, and speaks as with the authority of an experienced workman on the designing, construction, care, and operation of machinery used in planing mills, sash, blind, and cabinet factories, car shops, etc. It is well calculated to be of value to purchasers and owners of machinery, and has much of instruction and needed warning for inexperienced or careless operators.

THE GLASS DEALER'S READY RECKONER. A series of tables of superficial measurement, from 1 to 132 in. in width by 2 to 180 in. in length. John Thorpe, New York. Price, \$1.50.

Special.

A CLERGYMAN'S REMARKABLE EXPERIENCE.

Evidence of the wonderful results which are following the use of Compound Oxygen accumulates with an almost bewildering rapidity. There seems to be no phase of bodily suffering, and no type of disease, which this subtle agent will not reach. The subjoined communication gives the history of one of a class of cases especially found among clergymen and all professional men and brain workers. The changes wrought in three months, as related by the writer, are truly marvelous. From a state of physical and nervous prostration, which had become alarming, he was restored to such vigorous health that, to use his own language, "I found myself able to preach Sunday morning, teach a Bible class of seventy-five or a hundred after sermon, attend an afternoon service often, and preach to a congregation of a thousand persons in the evening, and say in truth, at the close of my evening service, that I was not conscious of any more weariness than when I began in the morning."

This seems almost incredible, but Dr. Cushing, pastor of the First M. E. Church, Rochester, N. Y., is a clergyman of wide repute, and no one who knows him will for a moment question his statement. It is given herewith in his own words:

16 N. Fitzhugh St., Rochester, N. Y., January 11, 1884.

DRS. STARKEY & PALEN:

Dear Sirs: It is nearly four years since I first used Compound Oxygen. I have often spoken of its effects to others, but have never, I think, made any statement to you. There are others, doubtless, who would be glad to know of its effects in a case like mine. I was not sick, though my strength had been greatly impaired by sickness in earlier life. But for fifteen years I had been carrying very heavy burdens and doing very hard work. I found myself gradually losing the power of endurance, so that my work left me too much exhausted. I could see that my whole nervous system was giving way; that there was a manifest lack of vital force. This was most apparent and most alarming when I went to my study. There I discovered a lack of the usual quickness of perception—a lack of power to hold on. My mind was losing its grip. At the point where I needed most strength, I found it suddenly failing me. This alarmed me, though I am not aware that my friends had discovered it. Connected with this case was a lack of that physical vigor necessary for good digestion, and a consequent lack of nutrition. Sleep was fitful, insufficient, and unrefreshing. Under these circumstances I began the use of Compound Oxygen. At first I saw no results. After a time I observed my digestion was much improved. More restful sleep followed. At the end of three months I found myself able to preach Sunday morning, teach a Bible class of seventy-five or a hundred after sermon, attend an afternoon service often, and preach to a congregation of a thousand persons in the evening, and say in truth, at the close of my evening service, that I was not conscious of any more weariness than when I began in the morning. My sleep was as refreshing on Sunday night as on any other night of the week. My mind has never worked better than during these four years, and in no other time of my life could I do as much work, or do it with as much ease.

I do not use the Oxygen now unless I find myself getting a little weary. Then a resort to it for two or three weeks puts me in normal condition again. This is my experience, and I have much reason to be grateful for it.

Sincerely,
CHAS. W. CUSHING, D.D.

Many other eminent clergymen bear testimony to the efficacy of Compound Oxygen as a curative agent. It is also unequivocally indorsed by such leading public men as Hon. W. D. Kelley, Member of Congress from Penna.; Judge Flaunders, of New York City, for many years law partner of Vice-President Wheeler; T. S. Arthur, the veteran author and temperance writer; and Wm. Penn Nixon, publisher of the *Chicago Inter-Ocean*. Drs. Starkey & Palen, 1109 and 1111 Girard St., Philadelphia, are the sole dispensers of this remarkable curative agent, and will send, without charge, their Treatise on Compound Oxygen, giving all desired information in regard to it, to any one who will write to them.

Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

All Books on Electricity, cheap. School Electricity, N. Y. SCIENTIFIC AMERICAN, complete since 1860, each volume stitched in paper cover at 75 cents. W. G. Starke, Zanesville, Ohio.

Wanted.—Patented articles or machinery to make and introduce. Gaynor & Fitzgerald, Lexington, Ky.

Many of the most prominent engineers testify to the superiority of the Selden Patent "Rubber Core" Packing for steam and hydraulic use. It is manufactured by Randolph Brandt, 38 Cortlandt Street, New York.

Patent for sale.—\$1,000 cash will buy the U. S. patent for "Perfect" Potato Parer. Patented February 27, 1883. Best in the market. Send \$1.00 for sample. J. A. Moffat, 118 Bay Street, N. Hamilton, Ontario, Canada.

Sewing machine, water closet, & other light castings made to order. Lehigh Stove & Mfg. Co., Lehighton, Pa.

"How to Keep Boilers Clean." Book sent free by James F. Hotchkiss, 86 John St., New York.

Stationary, Marine, Portable, and Locomotive Boilers a specialty. Lake Erie Boiler Works, Buffalo, N. Y.

Railway and Machine Shop Equipment. Send for Monthly Machinery List to the George Place Machinery Company, 121 Chambers and 103 Reade Streets, New York.

The Hyatt filters and methods guaranteed to render all kinds of turbid water pure and sparkling, at a economical cost. The Newark Filtering Co., Newark, N. J.

If you want the best cushioned Helve Hammer in the world, send to Bradley & Company, Syracuse, N. Y.

Iron and Steel Drop Forgings of every description. R. A. Belden & Co., Danbury, Ct.

"The Sweetland Chuck." See ad. p. 188.

Hoisting Engines for Mines, Quarries, Bridge Builders, Railroad Construction, etc. Send for catalogue. Copeland & Bacon, New York.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn.

Pumps—Hand & Power, Boiler Pumps, The Goulds Mfg. Co., Seneca Falls, N. Y., & 15 Park Place, New York.

For Freight and Passenger Elevators send to L. S. Graves & Son, Rochester, N. Y.

Best Squaring Shears, Tinnors', and Cannors' Tools at Niagara Stamping and Tool Company, Buffalo, N. Y.

Lathes 14 in. swing, with and without back gears and screw. J. Birkenhead, Mansfield, Mass.

If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN Patent Agency, 261 Broadway, New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every description. Send for catalogue.

For Power & Economy, Alcott's Turbine, Mt. Holly, N. J.

Presses & Dies, Ferracute Mach. Co., Bridgeton, N. J.

Supplement Catalogue.—Persons in pursuit of information on any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

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Catalogues free.—Scientific Books, 100 pages; Electrical Books, 14 pages. E. & F. N. Spon, 35 Murray St., N. Y.

American Fruit Drier. Free Pamphlet. See ad., p. 221.

Curtis Pressure Regulator and Steam Trap. See p. 222.

Brass & Copper in sheets, wire & blanks. See ad. p. 222.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 20,000 Crank Shafts and 15,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Friction Clutch Pulleys. D. Frisbie & Co., Phila.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 222.

Cutters for Teeth of Gear Wheels formed entirely by machinery. The Pratt & Whitney Co., Hartford, Conn.

Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 222.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 221.



HINTS TO CORRESPONDENTS. No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers. We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at the office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) W. A. E. asks: How is the gelatine made which the plaster of Paris workers use for their moulds? Can I find a book on this kind of casting? A. The gelatine used for moulds is made by soaking good white or light colored glue with a little water until it is thoroughly swelled; have no excess of water. Then add four times its weight of glycerine. Melt and stir, keeping up the heat for an hour to boil off the water that was in the glue. If too hard, add glycerine; if too soft, add soaked glue, reheating each time until you get the exact consistence for moulding; pour your moulds hot; grease the matrix.

(2) C. S. F. asks: Which is the better way to set a small circular rip saw (4 in.)—so that it will just reach through the stuff, or lower the table that it will move perpendicularly? Which method requires the most power? A. A saw cuts easier across the grain. Cutting at the top of the saw is lengthwise of the grain of the wood, and cuts harder and of course takes more power. Saws cut easier or with less power with the top of the table as near the center as possible, or so that the flange that holds the saw just clears the stuff to be sawed. This is the practice with the makers of frames. Sometimes the tables are made to raise for some special purpose—not for the saving of power.

(3) J. B. W. asks for a formula for the velocity of steam in steam pipes under different heads. A rule that can be used to find the area of steam pipe is what I desire. A. You will find the formula for flow or velocity under different pressures, also table of velocities, in Clark's "Manual for Engineers," pages 890, 895, etc.; they are too large to extract and send in a written communication. For ordinary air pressure engine steam pipes of area one-twelfth to one-fifteenth the area of cylinder will do well; the greater the speed of the engine, the larger the pipes.