

a sliding jaw and hook operated by a lever, in such a manner that while the implement is firmly secured to the beam, the board to be nailed is pressed firmly against the adjoining board previously nailed, so as to form a close joint. It is a cheaply made, effective instrument.

Catch Lock for Ship's Settees—By B. F. McCreary, New York City.—The object of this invention is to insure the locking of the back of the settee without the necessity of depending on servants; also to dispense with pins and spring catches, which are liable to be broken or deranged. The back of the settee, unless fastened, is likely to become broken, owing to its great weight, by being too frequently moved by passengers or by the rolling of the vessel. The present improvement is a self-acting catch lock of a strong and durable character.

Improvement in Wigs—By Dewitt C. Warner, Wilkesbarre, Pa.—This invention consists in attaching the hair to a ground-work of gutta percha, either in the form of a perfect scalp or frame-work, or in plates or strips of any desired form, for toupees, plaits, curls, &c. A crease is made in the gutta percha with a hot iron; the ends of the hair are laid in the crease and the iron again used to turn a furrow of the hot percha over on to the hair and thus cement it down. The advantage of this ground-work over the net-work commonly employed in wigs, &c., consists in the facility with which the hair can be attached, and the consequent reduction of the expense of labor; it may be put in singly or in locks. It also allows the hair to be combed and dressed with as much ease and perfection as if it were of natural growth. We are told that wigs made on this plan can be washed and cleansed thoroughly without injuring the beauty of their appearance or affecting their durability.

Improved Harness Creaser—By G. W. Pruyn, of Mexico, N. Y.—This invention relates to the creasing of leather used chiefly in harnesses, such as straps traces, etc. It consists in the employment of a pair of rollers, one of which is made of metal and the other of wood. The peripheries of the rollers have concave and convex surfaces, respectively, corresponding to the form intended to be given the leather.—The convex portions of one roller fit into the concave portions of the other. The leather straps are placed between the rollers which are then pressed together by a foot pedal. The straps while thus under pressure are drawn through the rollers and come out creased in the most perfect manner. This machine saves much time and labor.

Hot Air Engine—By John Ericsson, of New York City.—In this new patent the inventor causes a piston, working within a cylinder, to perform the successive combined operations of simultaneously discharging the heated air, and taking in the charge of cold air, compressing and transferring it to a regenerator and heater, or either, and thence to the opposite end of the cylinder, to act upon and impel the piston. So far as we can judge, this invention is no better, if it is as good as that which was tried in the steamer *Ericsson*.

Improvement in Furnaces—By A. McDonald Sprague, of Mobile, Ala.—The object of this invention is to permit the supplying of fuel to steam boiler and other furnaces, without opening their doors. When the doors are opened, in the common manner, a large quantity of cold air rushes in and checks the fire; a loss of fuel consequently ensues in restoring the temperature.

In this improvement the fuel is deposited in a metallic box, which is then shoved into, or rather over the fire, through an aperture in the furnace front. The box has a false bottom so arranged that by means of a rod it is opened, and the fuel dumped into the flames; the apparatus is then withdrawn.

Cloth Stretcher—By J. J. Hilliard, of Fall River, Mass.—In the manufacture of woollen goods, the cloth is apt to shrink up during the dressing operation, and occasion difficulty in the work. The present improvement is an attachment to the machine, whereby the cloth is kept evenly stretched, without being in any way injured or soiled by the lubricating grease.

Stump Extractor—By J. B. Creighton, of

Tiffin, Ohio.—The stumps are removed by means of a screw and lever. The screw passes through the top of a gallows frame placed above the stump. The lower part of the frame is furnished with wheels to facilitate transportation. The apparatus is simple, strong, and very powerful.

Recent Foreign Inventions.

Smokeless Artificial Fuel—A. Morin, of St. Etienne, France, has obtained a patent for making a smokeless artificial fuel from that made with small coal or coke mixed with either tar or bitumen. He takes a common artificial fuel, which is made by mixing small coal or coke with tar or bitumen and molded into blocks, and subjects it to a high heat in a retort, so as to decompose the bituminous and tarry matter, and yet obtain from them a coke in the retort, which is the smokeless artificial fuel he claims to have produced.

Improvement in Steam Boilers—The London *Mechanics Magazine* describes an improvement in steam boilers, for which a patent has been secured by J. Lee Stevens. The inventor is patentee of a smokeless furnace which bears his name; and the recent patent is for an improved combination of the parts of a boiler by which air is to be more advantageously applied and combined with the products of combustion; the boiler is formed with a water space above the furnace, and above this space there is a return flue through which the products of combustion pass to a chamber called "the igniting box." From this chamber the tubular flue passes to a chamber flue at the opposite end of the boiler. In front of the "igniting chamber," there is a double cover pierced with holes through which streams of air pass, to mix with the products of combustion before they pass through the tubular flues. This arrangement is of no use for furnaces, in which anthracite coal is used, but may be useful in those using bituminous coal, in which much carbonic oxyd escapes as smoke.

Breech-Loading Rifles and Muskets—C. E. Reeves, of London, has obtained a patent on the above named class of fire-arms. He employs a movable breech, which is made to fit into the end of the rifle barrel, and is held in close contact with it by the lateral pressure of a wedge piece, which is hinged to the barrel and the lock frame, and which drops between the end of the breech and a false breech. To charge the rifle, this wedge piece is first withdrawn, and the breech slid back clear of the barrel into the space vacated by the wedge piece. A small finger lever at the side slides back the breech, which is then turned up and receives the charge; then it is brought down again into line with the barrel, slid forward, and forced into position by the wedge piece described. The movable breech in this rifle, is a charge chamber, and appears to be a supplementary device to the Sharp's rifle.

Distilled Coffee—T. A. Poncelin, of Paris, has obtained a patent for distilling roasted coffee, to obtain a substance without residuum or grounds, and perfectly soluble in water. The liquid is stated to be pale limpid and volatile, and possessing a fine aroma.

Globotype Telegraph—The London *Artizan* contains an illustrated description of a new and peculiar telegraph bearing the above name, invented by David McCallum, of Stonehouse, Devon, Eng. The leading characteristic of this invention consists in releasing small glass balls of three different colors—white, black, and blue—in such a manner as to fall over a series of inclined planes, and drop into their proper places, where, by their color and the way they are made to arrange themselves, they form a message. These balls are thrown out one by one at the will of the operator, and as multiplied and intermixed they form the alphabet, like Prof. Morse's dots, spaces, and dashes. From the short description given of it we have not been able to perceive how an operator at one end of a line, can, with a single wire, separate and direct the three different colored balls, and make them arrange themselves into a message at the other end of the line, but the *Artizan* speaks favorably of its simplicity, practicability and capability of being worked with one wire. It is very far from being as simple as the Morse Telegraph or the Chemical Telegraph, and although it

evinces ingenuity in construction, it certainly is not of a character to supersede any recording telegraph now in use.

Notes on Ancient and Curious Inventions.—No. 4.

Paper Making—In article No. 1, page 238, we stated that Mr. Wilkinson had manufactured paper in Pennsylvania in 1732.—The name should have been Thomas Wilcox. We have received a letter from Joseph Wilcox in which he states that the manufacture of paper is still carried on at Ivy Mills, Delaware Co., by the descendants of the original founder of paper manufacture. The establishment manufactures bank note paper, and with only one or two exceptions, is the only mill in the United States where hand-made paper is now made.

In the Patent Office Report for 1850 there is a letter from James M. Wilcox, of Ivy Mills, on this subject, in which are some useful hints. It is stated in it that the best qualities of writing paper contain from 30 to 50 per cent. of linen, and that cotton rags of themselves are too tender to make good strong paper. An excellent substitute for the linen of paper which we obtain in foreign rags is that of raw cotton, which makes a beautiful paper when mixed with worn-out cotton rags. When the price of cotton was as low as six cents per pound it is stated that large quantities of it were used in the manufacture of paper. E. Conkling, Esq., of Cincinnati, suggests the invention of machinery to remove the short cotton knap or fiber that is left upon cotton seed by the usual process of ginning, and the using of this fiber for making paper. The suggestion is an important one. While the cotton so obtained could be used for making paper, the clean cotton seed resulting therefrom would yield more oil by expression. The amount of short cotton fiber left on the cotton seed raised in the United States is equal to three times the amount of rags, by weight, used in paper making.

Machines for making paper were used in Europe previous to their introduction into our country. In 1830 the first successful Foudrinier machine was made at Windham, Conn., and since that time no paper machines have been imported from abroad. There are two kinds of paper making machines, the Foudrinier, or shaking endless wire-web machines, and the cylinder machines. The former makes the best, but the most expensive paper.

A very great improvement was made in paper making about 1830 to render it cheaper by discharging the color from rags by the use of chlorine, whereby common printed rags could be used for making white paper. Before that period white rags alone were used for writing paper. Every improvement which tends to make paper cheap is of vast benefit to mankind. It is believed by many that a cheap kind of cotton may be cultivated to be used raw in making paper. Beautiful paper can be made from hemp bagging and cable rope.—Hemp bagging is in great demand, for mixing with rag pulp to give strength to paper for newspaper printing. Machine-made paper costs about one-eighth that of hand-made paper for work—not taking into account the expense of the machinery. As good paper is now made in the United States as in any other country, and with the same quality of materials our paper manufacturers can produce paper equal to that of the best English or French. A great deal of wall paper is imported from France, but very little of any other kind. Much of our coarse wrapping paper is made from straw, and a finer quality is now extensively manufactured from the sea grasses which grow in great abundance along our shores in the salt marshes. The excitement which existed in the early part of last year, when rags were dear, respecting obtaining new materials, such as wood, shavings, &c., for white paper making, has resulted in the erection of a large and splendid mill at Little Falls, N. Y. The machinery is now almost completed, and the establishment is expected to be in full operation in a few weeks more. We have seen some very fine specimens of wrapping paper made from bass wood at this concern. The projectors are expecting, shortly, to turn out fine printing paper in large quantities made from the same wood.—The making of paper from wood is a very old

art. The improvement claimed at Little Falls is in the mode of bleaching.

A great number of patents (85) have been taken out for improvements in the processes, machinery, and materials relating to paper making. Paper making from other substances than rags engaged the attention of many persons long ago. A patent was taken out in 1801 by Joseph Condit, Jr., of New Jersey, for making paper from currier's shavings. B. Allison and J. Hawkins, of New Jersey, obtained one for making paper of corn husks in 1802. S. Green, of Connecticut, obtained one for paper made from sea-weed in 1809. J. McThorndyke, of New York, made patent paper from pelts in 1817. E. Collier, of Massachusetts, took out one for making paper of sea grass in 1828. J. W. Cooper, of Pennsylvania, for making it of straw, in 1829, and L. Wooster and Joseph E. Holmes, of Pennsylvania, for making it of wood, in 1830. The patents for making paper from these different substances are now public property.

A Railway for Ships.

A correspondent—G. B. Onslow—suggests a "Ship Railway" across the Isthmus of Nicaragua, as a superior and more speedy means of transporting ships from ocean to ocean, than by a canal. "A ship car," he says, "may be supported on a number of trucks, and these may be placed, three abreast, on as many separate tracks of rails. The center track and trucks would require to be very strong and heavy. At the harbor, on each ocean, a floating dock can be made, into which the car for a ship may be made to descend, and again take up the ship. This railroad should be built level, and in the most substantial manner."

He has no doubt but a ship railroad can be built, by which steamers and ships may be transported overland with all their passengers and cargoes, from the Pacific to the Atlantic Oceans. We believe that such a railroad can be built, and that ships can be transported on it, in the manner described by him. The idea is a grand one,—but the great question is, would such a railroad pay? War ships were transported over land on rollers to batter down the walls of Constantinople, by a Turkish Sultan, more than three centuries ago, and certainly with our modern improvements in engineering, we can do so now on a railroad. If such a railroad would pay, it would be the means of greatly extending our commerce. A full description of this idea, with an illustration, may be found in No. 15, Vol. 1, SCIENTIFIC AMERICAN.

A Hollow Mountain.

The *North Californian* states that recently while eight men were crossing Table Mountain they observed that in many places the ground seemed hollow, and in one place, on striking upon the ground with a sledge, the echo was given back with such distinctness that led them to believe that there would be little difficulty in breaking through. Having procured proper implements, they set to work. After going the depth of four feet, one of the party who was using a crowbar was seen suddenly to fall, and upon examination a hole was found about four inches wide, through which the bar had slipped and sunk into the mountain. The aperture was immediately enlarged, but it was found that, owing to the brittleness of the rock, it was exceedingly dangerous working around it.

Gold Quartz Mining.

The *Nevada Journal* (Cal.) states that the prospects of gold quartz mining at present is excellent, and the yield from this source is about one-sixth of the product of the whole State. In 1851 there was a wild excitement regarding the immense profits that were expected to be made at once in crushing quartz and obtaining gold from this source, and vast sums of money were expended in erecting untried machinery. Much experience has been gained since, and a mill can now be put up for \$8000 that will do more work than some of those which cost \$100,000. Improvements have also been made in the amalgamating processes. New mills are being continually put up, and the product from gold quartz is constantly on the increase.