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Improved Beater Hay Press.

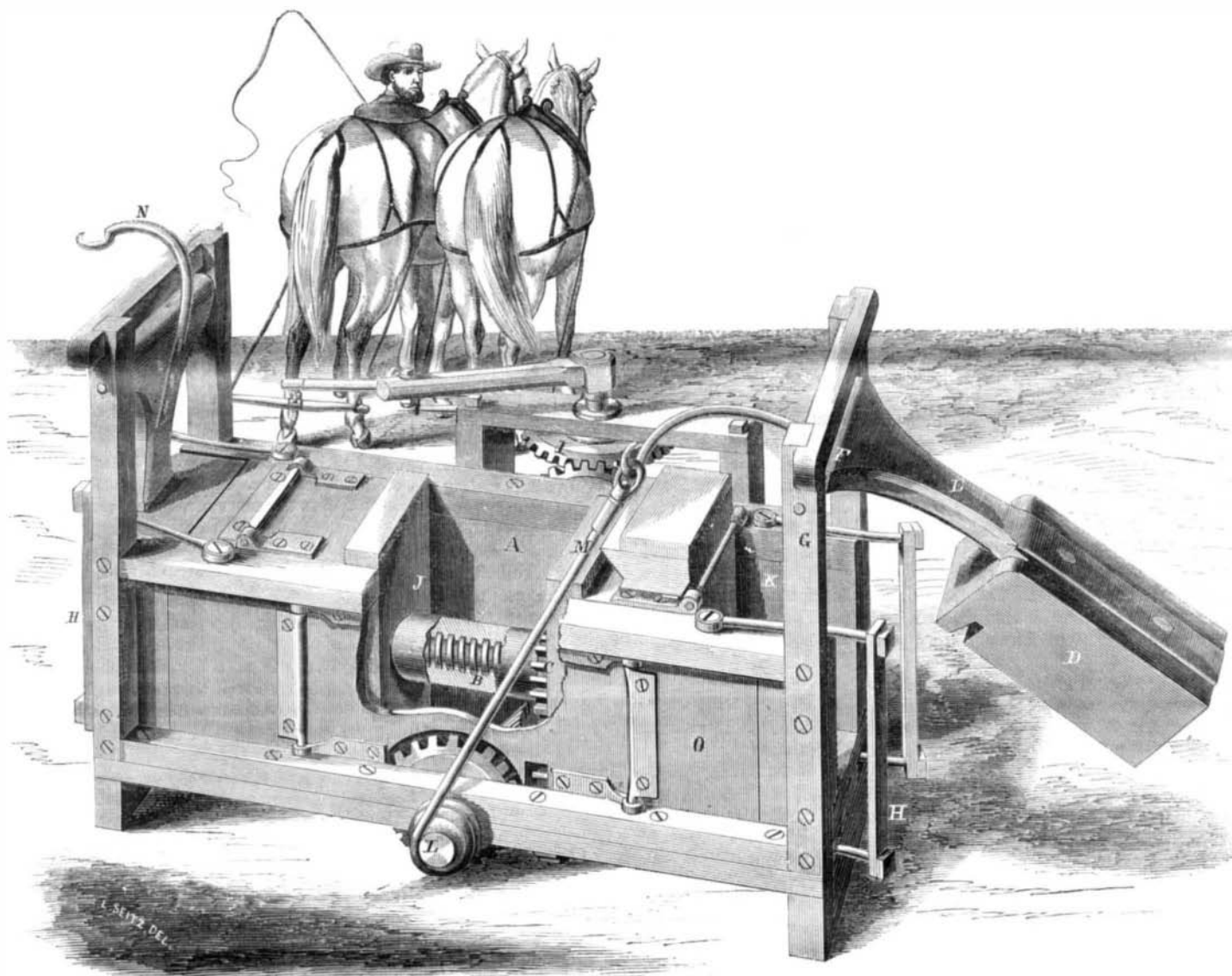
Great improvements have latterly been made in hay presses, or that class of machines which reduce the bulk of fibrous substances. Formerly, simple pressure was employed, but in later machines the force of percussion or beating is added, and the result is that the mass is condensed almost to solidity. The advantages thus gained are great, for by the increased density of the bales they are preserved much longer in a fresh condition, and besides this the greater facility with which hay, wool or cotton can be

works on a hinge, F, in the upright frame, G. The other end of the box is closed, and the clamps, H, are slipped over its sides. When the horses travel round, the bevel gears, I, rotate the screw, which causes the follower, J, to move toward the end. Meanwhile the hay, which has been placed in the compartment, K, is receiving a series of blows from the beater. This detail is driven by the worm, L, which is so made that the greatest force, in lifting the beater weight, is exerted when the lift comes hardest, as in its present position. When the belt, M, arrives at the end,

entific American Patent Agency, by D. L. Miller, of Madison, N. J., whom address for further particulars.

Steel in English Iron-clads.

The *Army and Navy Gazette*, London, says:—“We are informed that in the construction of Mr. Reed's new ship, the *Lord Warden*, there will be employed at least 500 tons of toughened steel, manufactured under the process known as Bessemer's. The advantages derived from the employment of this



MILLER'S BEATER HAY PRESS.

transported is an important feature. Beater hay presses, as they are called, are generally very high and topheavy so that the several parts are out of reach. In this press all parts are easy of access; the machine stands horizontally and the action of the beaters is in the same direction. In the engraving, A is the box or ease, in which the hay is pressed, with a part between broken out to show the screw, B, which exerts the pressure. This screw is driven by the gear, C, and the thread runs the same way through its length. One of the press-boxes is shown open on the right, with the beater, D, elevated, in the act of striking. This beater is a heavy cast-iron weight or block, firmly secured to the arm, E, which

as shown, it slips off, and the beater falls heavily against the hay in the box, thus rapidly reducing its bulk. The weight strikes every time the horse travels round, or with every additional forkful of hay. It will be seen that the pressing is always continued or going on in one compartment or the other, for when the beating is completed on one side the belt is transferred to the opposite arm, N, and the bale just beaten, pressed by the action of the screw, as above explained. The finished bale is taken out at the door, O. This press is portable and can be worked in a stack yard or any place where a horse can travel; it can also be taken apart and put in a common wagon. A patent is now pending, through the Sci-

improved material are so obvious, that it is daily attracting increased attention from the authorities at Whitehall. We are told that this cast steel is much tougher and stronger than wrought iron, and less liable to fracture. It is more uniform in texture. In consequence of its extreme toughness a shaft may be reduced in weight, and yet lose nothing of its required strength. This is a feature which shipbuilders and engineers can thoroughly appreciate. Again, there is less friction with steel than with iron. Thus steel shafts work with greater ease than those of iron, and lastly, experience has proved that the durability of steel shafts is three times as great as that of iron."

Classical vs. Scientific Education.

Among the gentlemen summoned before the Parliamentary commission for investigating the condition, etc., of certain schools and colleges in England, was Mr. Faraday, who, on the question as to the comparative value of the classical and scientific systems of education, said:—

"Up to this very day there come to me persons of good education, men and women quite fit for all that you can expect from education; they come to me and they talk to me about things that belong to natural science; about mesmerism, table-turning, flying through the air, about the laws of gravity; they come to me to ask questions, and they insist against me, who think I know a little of these laws, that I am wrong and they are right, in a manner which shows how little the ordinary course of education has taught such minds. Let them study natural things, and they will get an idea very different from that which they have obtained by such education. I do not wonder at those who have not been educated at all, but such as I refer to say to me, 'I have felt it and done it and seen it, and though I have not flown through the air, I believe it.' Persons who have been fully educated according to the present system, come with the same propositions as the untaught, and stronger ones, because they have a stronger conviction that they are right. They are ignorant of their ignorance at the end of all that education. It happens even with men who are excellent mathematicians. . . . Who are the men whose powers are really developed? Who are they who have made the electric telegraph, the steam engine and the railroad? Are they the men who have been taught Latin and Greek? Were the Stephenses such? These men possessed that knowledge which habitually had been neglected and pushed down below. It has only been those who, having a special inclination for this kind of knowledge, have forced themselves out of that ignorance by an education, and into a life of their own."

Sorghum for Dyeing.

The *Sorgho Journal* recently contained an interesting communication from Prof. Erni, chemist of that department of agriculture, concerning experiments in coloring with sorghum cane, that have been conducted under his supervision. His attention had been called to the subject by reading some accounts of experiments in this direction. He says the simplest solvent is alcohol, but that is now too expensive, and attention was turned to other materials, thus far with entire success, and at a trouble and expense hardly worth mentioning. All the colors and shades mentioned (crimson, purple and brown), were produced from the same bath, the cloth being afterward drawn through solutions of chloride of tin, bichromate of potassa, sulphate of copper, etc. The Professor continues:—

"Having found upon an upper shelf in the laboratory some canes of last year's growth, sent here for the purpose of analysis, and which had become almost entirely destroyed by insects, I selected a few stalks—the outside of which were more particularly exposed to the atmospheric air, and had become deeply red. With two ounces of the cut cane a great number of samples of cloth were colored, a portion of which are those accompanying this report. The same coloring material found in the stalk is evidently contained in the seed.

"It may be proper for me to add, that it is not important that the canes should be fully matured.

"As far as tested, I find the colors to resist the action of sunlight and water in a most satisfactory manner."

A Photographic Baby.

The following appears in the *British Journal of Photography* of Oct. 28:—"Some time since my wife was engaged preparing albumen paper in the silver-bath, and in a moment of abstraction pressed two of her fingers on her forehead, being at the time about to add another 'olive branch' to the family. Soon after the birth of the baby we were surprised and annoyed at noticing that the child, when in a strong light, exhibited two distinct impressions similar to silver stains before fixing; and the strangest part of the matter is that these disappear as night comes on and reappear as daylight arrives. I have

not yet attempted to 'tone and fix' these said stains; and, although at present serving as a sort of actinometer to me, will prove a sad disfigurement to my daughter's appearance in daylight, and we much regret they were not impressed in some less conspicuous place. I am, etc., the father of the Photographic Baby."

The editor adds:—"Were the writer of the foregoing not known to us we should have thrown aside his letter as an impudent hoax; but as we know him well as an excellent photographer, a good citizen, and as being little addicted to joking, we give his communication a place in our journal and leave those more competent than ourselves to explain the strange phenomenon, which we believe to be faithfully recorded by our correspondent."

A Great Engineering Feat.

In Brazil, M. Brinless, assisted by English capitalists, has been engaged in "lifting" a railroad—the San Paulo—over the great Sierra de Mar, a mountainous elevation two thousand feet high. The entire ascent is divided into four "lifts," or inclines of a mile and a quarter each, running at a gradient of one in ten. A level platform or "bank-head" marks the summit of each incline, and at the upper end of the platform is a stationary engine. This engine has double cylinders of twenty-six inches diameter, with a five-foot stroke, and has been calculated to haul up fifty tons at the rate of ten miles per hour. Five boilers of the Cornish description are placed with each engine. On the upper half of each incline there is a double line of rails, with arrangements for passing places in the middle of each of these "lifts." A single line of rails then runs on from the center to the foot of each of the four divisions into which the ascent is divided. A steel wire rope, one and a half inches in diameter, is made for pulling up the ascending trains. This rope, tested by a weight far exceeding the requirements that will be made upon it, passes over friction wheels, and is attached to the fly shaft. The inclines are therefore partially self-acting, at the same time passing one train down to the foot of the Sierra, and drawing up another to the high levels on its way out to the province beyond. This feat is pronounced a bold and impracticable one, but with science and skill scarcely any physical obstruction can stand permanently in the way of human wants or necessities.

One ravine crossed is 900 feet in span on the level of the railway, and is crossed by a viaduct resting on clusters of iron columns, which spring up from enormous stone piers 200 feet below the center of the line which passes over them. The work is nearly completed, and will then open a way for travel and traffic between the seaboard and the interior. The Emperor of Brazil is making all kinds of useful improvements in his territory, and thereby assisting its industrial and commercial development.

Nashua Iron Works.

The Nashua Iron Company are very busy working up ten tons of iron daily, to the monthly value of \$70,000. Among the specimens of work just receiving the finishing touch are a ponderous crankshaft, weighing seven tons, for the steam sloop *Pensacola*, and another shaft for the frigate *Franklin*, at Portsmouth, weighing eleven tons. These are grand pieces of workmanship. Besides having a great amount of other work in process of manufacture, the company is turning out a large number of locomotive tires and cranks, axles and shafting for the machine shops at Lowell, Manchester and elsewhere. The number of hands employed in the works is about two hundred, and the monthly pay-roll amounts to \$8,000. The workmen are paid all the way from eight shillings to eight dollars per day. About twenty-five tons of coal are consumed each day. The capital of the company is \$125,000.

Lea's Cleaning Solution.

The photographic fraternity is under great obligations to Mr. Carey Lea, of Philadelphia, for the knowledge of the following glass-cleaning preparation:—Water, 1 pint; sulphuric acid, $\frac{1}{2}$ ounce; bichromate potash, $\frac{1}{2}$ ounce. The glass plates, varnished or otherwise, are left, say 10 or 12 hours, or as much longer as desired, in this solution, and then rinsed in clean water, and wiped or rubbed dry with soft white

paper. We have used the solution in our laboratory long enough to be satisfied of its superior excellence for the purpose specified. It quickly removes silver stains from the skin without any of the attendant dangers of the cyanide of potassium. We think that photographers who once give Mr. Lea's preparation a trial will be glad to discard all others.

MISCELLANEOUS SUMMARY.

A PREPARATION FOR PRESERVING LEATHER.—We translate from the *Gerber Courier* a receipt for a preparation which is said to insure great durability to leather and to make it very pliable and soft. It consists of four articles, tallow, soap, rosin and water. These ingredients are prepared as follows:—Twenty-one parts of tallow are melted in a vessel, three parts of rosin added, and the two when melted mixed well together. In another vessel seven parts of good washing soap are dissolved in seventy parts of pure rain water. After it is dissolved and the mass heated to the boiling point, we add the part prepared before, let it boil once more gently, and the preparation is ready for use. It is especially adapted to boots, harness leather and belting.—*Shoe and Leather Reporter*.

SHEEP SKINS FOR MATS.—Steep the skins in water, and wash them well till they are soft and clean; they are then scraped and thinned on the flesh side with the fleshing knife, and laid in fermented bran for a few days, after which they are taken out and washed; a solution of salt and alum is then made, and the flesh side repeatedly and well rubbed with it, until it appears well bleached; after which make a paste to the consistency of honey, of the alum and salt solution, by adding wheat flour and the yolks of eggs, and spread this paste on the flesh side; after this they are stretched and dried, and when dry, rubbed with pumice stone.

A MINER ON A STRIKE STARVED TO DEATH.—The Birmingham correspondent of the *London Engineer* says:—"An inquest was held last week on the body of a miner who had been on a strike, and who had for some time preceding his death been on a short supply of food, and had to sleep in the open air for eight consecutive nights. A verdict of 'died from cold, exposure, and want of sufficient sustenance,' was returned."

GAS LEAKS.—Much gas and labor that are now wasted, might be saved, and the price of it possibly cheapened to the consumer, were there some satisfactory means of finding the precise locality of a leak in the pipes when it occurs outside of a building, and underground. The person who shall invent an efficient gas-leak-detector, will make a fortune and benefit the public.

WHILE filling the reservoir of the Charlestown, Mass., water works, a few days since, the pumps would not operate, and an examination proved that the pipe was completely filled with eels. The next day the trouble occurred again, and on the two occasions over 2,500 pounds of eels were removed.

[Turbine wheels in some of our large cotton factories have been stopped from this cause.—Eds.]

TO KEEP EGGS.—Last August, we placed a thick layer of salt on the bottom of a large sap-bucket; oiled the eggs with fried meat fat, and placed them in the salt in such a way as to prevent touching each other, little end down; then a layer of salt, then eggs, till the bucket was full. Set in the cellar. Used the last in May, and found them as fresh as need be—not a bad one among them.—*Ohio Farmer*.

THE Hadley Company, at Holyoke, are manufacturing a very superior, soft finish, six-corded spool cotton, pronounced by competent judges, who have used it, to compare favorably with the most popular brands imported. James M. Beebe & Co., Wintthrop square, Boston, are the agents.

THE number of persons or firms engaged in the manufacture or sale of books in the United States is now about 4,000, of whom about four-fifths are in the Northern or loyal States. Of these 2,000 are booksellers exclusively, and about 200 are publishers of books.

OVER seven thousand acres of land have been leased in Perry county, Ind., by a wealthy Louisville company for the purpose of operating in the oil business.