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NEW SERIES.

Improved Toggle-Joint Press.

There is no other mechanical device so admirably adapted for pressing cotton into bales and similar purposes as the toggle-jointed lever. As the resistance to compression rapidly increases with the reduction in the size of the bale, it is important that the multiplication of the power should increase in about the same proportion; and this is effected admirably by the toggle joint. This principle has long been well understood, and extensively applied in large establishments, but it has been strangely neglected in small presses for common purposes, as the pressing of cheeses. The annexed engraving represents a press in which the toggle joint is combined with the compound lever in a way to multiply the power a great many fold, while provision is made for rapid working in cases where great power is not required; the whole being arranged in a simple manner so as to produce a compact, powerful, cheap and convenient press. The cut shows the press as arranged for a cheese press, but it may be readily adapted for pressing hay, cotton or other material in bales.

Within a strong frame the follower, A, is fitted to move up and down in the usual manner; the cheese, B, resting upon the table, C. The toggle levers, D D, are connected at their lower ends by pivot pins to the follower and at their upper ends to the segments, E E. One of these segments is geared upon the outer edge and the other upon the inner edge of its rim, and these gears mesh into a pinion which is situated between the upper timbers of the frame. It will be seen that if this pinion is turned in one direction both of the segments will be carried down, and that this motion will carry the upper ends of the levers, D, outward; the radial arms of the segments acting as the upper levers of the toggle, and pressing the follower down with great force.

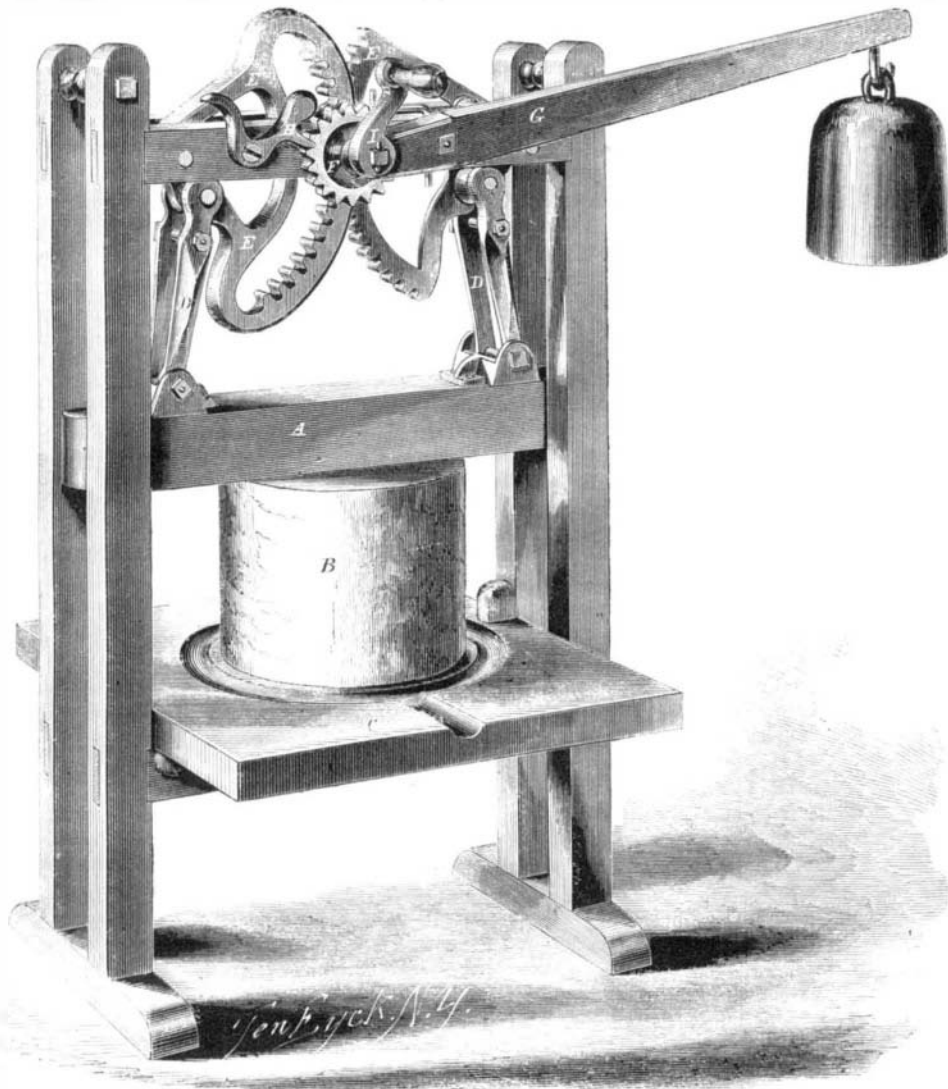
To turn the pinion its axle is brought through the timber of the frame and the pinion, F, is secured rigidly to this axle. The lever, G, is secured loosely upon the axle outside of the pinion, F, and a pawl is attached by a pivot to the inside of the lever in such place that when turned into the proper position one end will catch into the teeth of the pinion, F. Then by moving the outer end of the lever, G, up and down, the pinion F, will be turned, carrying round the inner pinion which is upon the same axle

and which meshes into the gears upon the segments, E E.

One of these segments is geared upon the outer edge and the other upon the inner edge of its rim, and these gears mesh into a pinion which is situated between the upper timbers of the frame. It will be seen that if this pinion is turned in one direction

miums in the principal cheese counties of the State. It is also well calculated for operating with steam, water or horse power, by substituting a pulley and belt for the crank and lever, and it is well calculated for pressing hay, cotton or any other elastic material.

The patent for this invention was procured through the Scientific American Patent Agency, May 22d, 1860, and for the purchase of State or county rights, or for any further information, the inventor, Charles Oyston, may be addressed at Little Falls, N. Y.



OYSTON'S TOGGLE-JOINT PRESS.

both of the segments will be carried down, and that this motion will carry the upper ends of the levers, D, outward; the radial arms of the segments acting as the upper levers of the toggle, and pressing the follower down with great force.

A pawl, H, holds the pinion F, from turning in either direction, depending upon the end of the pawl which is turned into connection with the wheel; and thus the follower is secured in any desired position.

For turning the segments, E E, rapidly when but little power is required, the axle of the pinion is prolonged outside of the lever and is mounted with a crank, J.

The working parts of this press may be made of iron with iron bearings; ensuring perfect working and great durability. The beam or follower has a perfectly horizontal motion or position in its descent producing a symmetrical cheese or bale without any trouble. As a cheese press it is being extensively used in Central New York, having taken the first pre-

by the use of the following mixtures:—1. Chloride of mercury and salammoniac. 2. Perchloride of iron, sulphate of copper, nitric acid, alcohol and water. 3. Per and protochloride of iron, alcohol and water. 4. Weak solution of sulphide of potassium. These solutions are successively, and after the previous application has become dry, applied. No. 3 is applied twice; a bath of boiling water follows Nos. 3 and 4. The shade of color is fixed by means of active friction by a piece of woollen goods, and with a little oil. The shade of color imparted is of a beautiful black, uniform in appearance. This process is used in the manufacture of arms at St. Etienne; and by it have already been colored, 11,000 barrels and bayonets of English guns, 100 Egyptian guns and 6,000 double French guns for the voltigeurs, and also the saber scabbards for the gendarmerie of the Department of the Loire. The price does not exceed forty centimes for each arm. Thirault is now employing his process on different articles of hardware, machines, &c.

Steel Rifle Barrels.

In the "New American Cyclopaedia" it is stated that the steel barrels of the Whitworth rifles are of such great strength that it is scarcely possible to burst them with 120 grains of powder, the regular maximum charge. Into a barrel of 0.49 inch bore and the barrel 1 inch in diameter at the breech, a leaden plug 18 inches long was rammed down tightly upon the charge. When the charge was exploded the bullet expanded and stuck fast in the barrel, and all the disengaged gas passed out by the touchhole.

Coloration of Iron.

M. Thirault, pharmacist of St. Etienne, has been investigating the natural oxides of iron. In addition to ordinary rust, there is another oxide (the ferros-ferric oxide) but slightly susceptible of alteration. Iron covered with this latter is protected from rust even in moist air. This varnish is produced