(No Model.) 2 Sheets—Sheet 1.

W. JESPERSEN.

CHEESE PRESS.

No. 396,493. Patented Jan. 22, 1889.

Fig. 1.

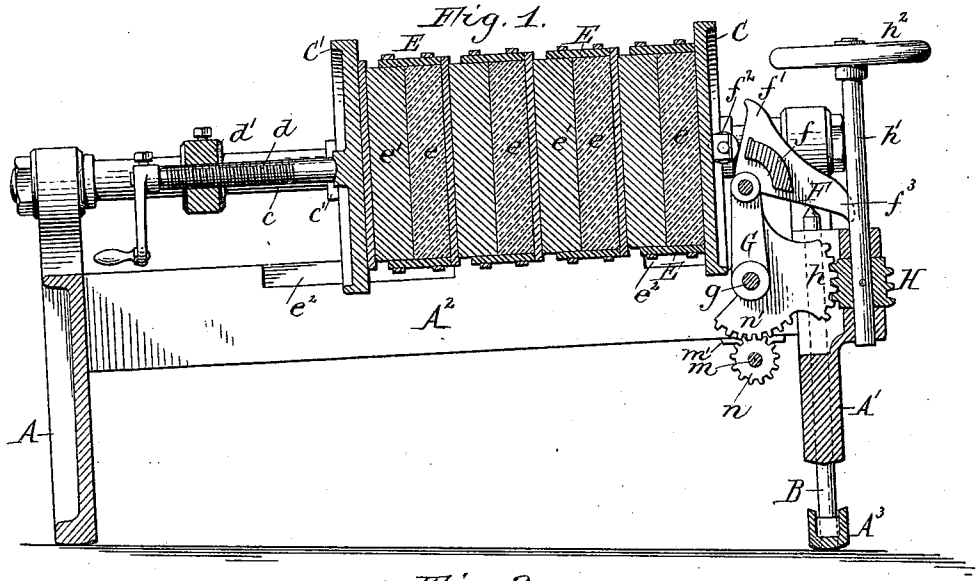


Fig. 2.

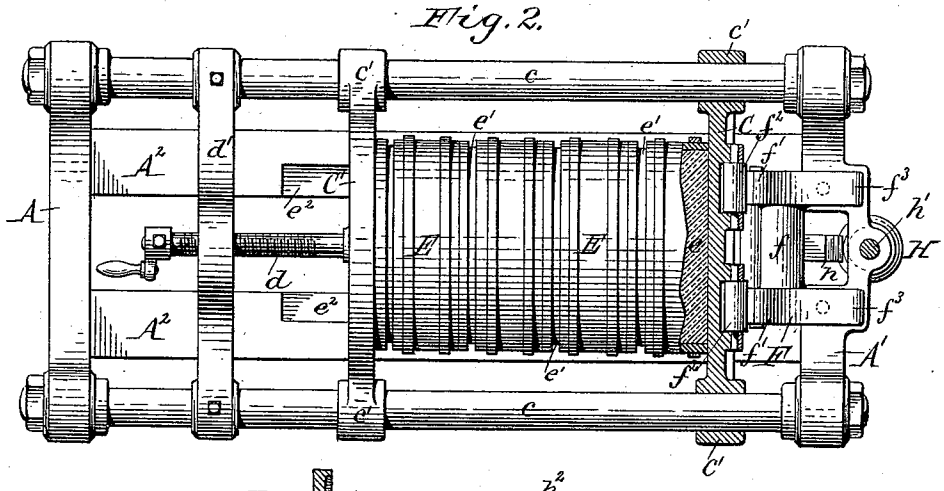
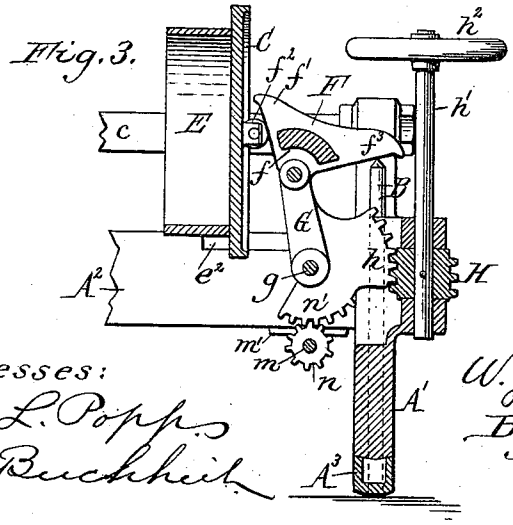


Fig. 3.



Witnesses:
Theo. L. Popp.
Chas. J. Buchheit.

W. Jespersen Inventor.
By Wilhelm & Bonner.
Attorneys.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

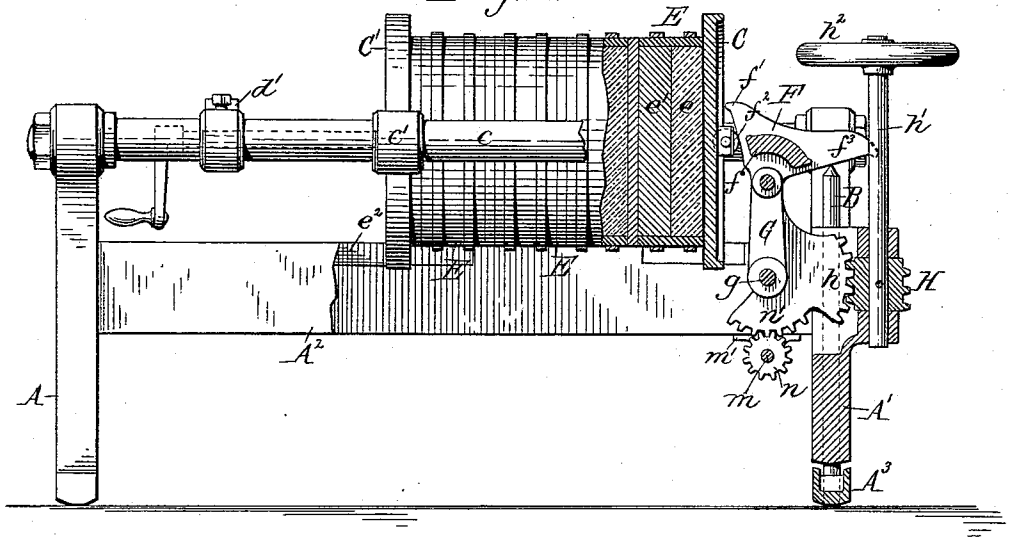


Fig. 5.

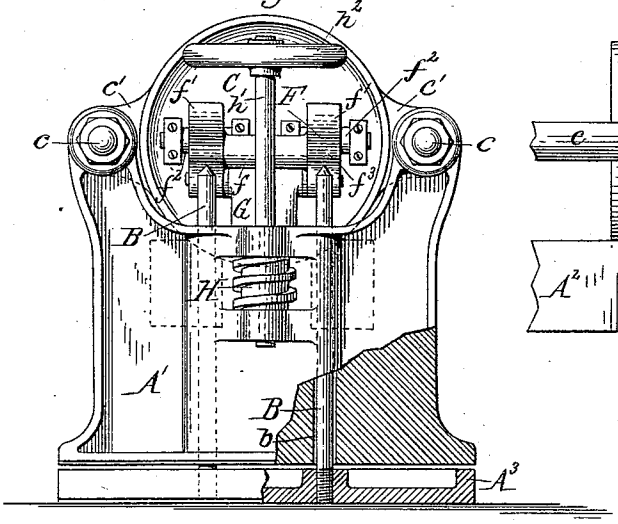
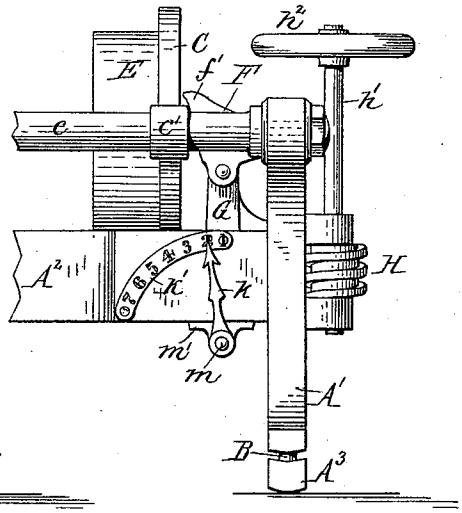


Fig. 6.



Witnesses:
Theo. L. Popp
Chas. J. Buchheit

W. Jespersen Inventor.
By Wilhelm & Bonner.
Attorneys.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILHELM JESPERSEN, OF NYKJÖBING, FALSTER, DENMARK, ASSIGNOR TO JOHAN D. FREDERIKSEN, OF LITTLE FALLS, NEW YORK.

CHEESE-PRESS.

SPECIFICATION forming part of Letters Patent No. 396,493, dated January 22, 1889.

Application filed September 25, 1888. Serial No. 286,394. (No model.) Patented in Denmark November 18, 1887, No. 225.

To all whom it may concern:

Be it known that I, WILHELM JESPERSEN, of Nykjöbing, Falster, Denmark, have invented new and useful Improvements in Cheese-Presses, (for which I have obtained a patent in Denmark, No. 225, bearing date November 18, 1887,) of which the following is a specification.

This invention relates more especially to that class of cheese-presses in which a number of cheeses are pressed in gangs at one operation, and which are provided with a foot-block and a movable follower actuated by a screw, between which the cheeses are pressed. In the use of these presses as heretofore constructed it has been customary to first press the cheese to as great an extent as possible, and after the cheese has shrunk, by the escape of air and whey, to gradually press the same still farther until the cheese has been compressed to the desired degree.

The object of my invention is to utilize the weight of the machine and the cheese supported therein for compressing the cheese after it has been subjected to the initial pressure by means of the power-screw, so as to exert a constant pressure upon the shrinking cheese and effect the subsequent and final compression thereof automatically.

The invention consists of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a longitudinal sectional elevation of my improved press, showing one end of the same elevated. Fig. 2 is a top plan view thereof, partly in section. Fig. 3 is a longitudinal sectional elevation of the rear portion of the press, showing the same lowered. Fig. 4 is a sectional side elevation of the press, showing the rear end thereof but slightly elevated. Fig. 5 is an elevation of the rear end of the press partly in section. Fig. 6 is a side elevation of the rear portion of the press.

Like letters of reference refer to like parts in the several figures.

A A′ represent the end frames of the press, and A^2 the longitudinal or side pieces connecting said end frames. The frame A, at the front end of the machine, rests on the floor, while the rear end frame, A′, is supported upon a transverse foot or base-plate, A^3.

B B represent two upright guide-rods, secured with their lower ends to the foot A^3, and passing through upright openings *b* formed in the end frame, A′. The latter is guided on the rods B B when the rear end of the press is raised or lowered.

C represents the foot-block, and C′ is the head-block or follower, both of which are guided on two horizontal rods, *c c*, secured with their ends to the end frames, A A′, the blocks C C′ being provided with perforated ears or enlargements *c′*, through which the guide-rods *c* pass.

d represents the horizontal pressure-screw, whereby the follower C′ is operated, and which is arranged in a threaded opening or nut formed in a yoke or cross-piece, *d′*, secured with its ends to the guide-rods *c c*, near the front end of the press.

E represents a series of cheese hoops or cylinders of any suitable or well-known construction. *e* are the cheeses arranged in the hoops, and *e′* are the blocks or followers arranged in the open ends of the cheese-hoops, and whereby the cheeses are compressed in the hoops in a well-known manner, the bottom of one cheese-hoop bearing against the follower-block of the next succeeding hoop, so that the pressure is exerted upon all of the several cheeses.

The cheese-hoops and the head and foot blocks are supported upon the inner edges of the side pieces, A^2, and the latter are provided with recesses e^2, for receiving the flanges of the head and foot blocks, said recesses being of sufficient size to allow of the lengthwise play of the blocks.

F represents a lifting-lever arranged in the rear portion of the press so as to bear against the movable foot-block C. This lifting-lever is composed of two similar parts arranged side by side, and rigidly connected by a tranverse bar, *f*, so as to move together. The upper arms, *f′f′*, of the lifting-lever bear with their front sides against the foot-block C, which is preferably provided with rollers f^2 f^2 to reduce the friction. The lower rearwardly-extending arms, f^3 f^3, of the lifting-lever bear

with their lower sides upon the pointed upper ends of the guide-rods B, which form the fulcra upon which the lever turns.

G is a hanger by which the press-frame is suspended from the lever F, and which is pivoted with its upper end to the lever F, between the two parts of the latter, and with its lower end to the press-frame by a transverse bolt or arbor, *g*. The hanger G is attached to the lifting-lever F between the bearing-surfaces of the upper and lower arms, *f'* and f^3, of the lever.

The hanger G is provided on its rear side with a gear-segment, *h*, which meshes with a worm, H. The latter is secured to a vertical shaft, *h'*, which is journaled in the rear end frame, A', and is provided at its upper end with a hand-wheel, h^2. By turning the worm the hanger G is turned forwardly or backwardly on the arbor *g*, thereby throwing the lifting-lever F forward or backward and increasing or decreasing the distance between the fulcra of the lever and the point at which the hanger is attached to the lever, whereby the pressure can be regulated. The worm holds the lever securely in position after it has been adjusted.

The pressure applied to the head-block C' by the screw *d* is transmitted through the several cheeses to the foot-block C, which latter bears by its anti-friction rollers f^2 against the upper arms, *f'*, of the lifting-lever F, thereby swinging the front portion of the lever upwardly on the supporting-rods B and raising the rear portion of the press from its supporting-foot A^3 through the medium of the hanger G, as represented in Fig. 1. The portion of the weight of the press and the cheeses which is supported on the foot-piece A^3 constitutes the resistance which opposes the backward movement of the movable foot-block C. By the time that the rear end of the press has been elevated the cheeses have received a sufficient initial pressure. The weight, which is suspended on the lever F by the hanger G, now exerts a constant pressure upon the cheeses, and as the cheeses contract or shrink by the escape of the air and whey the raised end of the press gradually descends, thereby drawing the front portion of the lifting-lever F downwardly and forwardly, and causing its upright arm to press the foot-block C forwardly toward the head-block or follower C', which is now held stationary by the screw *d*. This constant pressure upon the cheeses continues until the end frame A' again rests upon its foot-piece A^3. Should the cheeses not have been compressed to the desired extent, the operation can be repeated by applying further pressure by the screw. In this manner the final pressing of the cheeses is effected automatically by the weight of the press and the cheeses, thus dispensing with a considerable portion of the care and labor heretofore required for pressing cheese.

k represents an indicator or pointer, which traverses a graduated scale, *k'*, secured to the adjacent side piece, A^2, of the press, and which indicates the leverage of the lifting-lever F and the amount of pressure corresponding therewith.

The indicator *k* is mounted on a horizontal shaft, *m*, arranged in bearings *m'*, secured to the under sides of the side pieces, A^2, and is provided with a pinion, *n*, which meshes with a gear-segment, *n'*, formed on the lower side of the hanger G. As the hanger G is adjusted to change the leverage of the lifting-lever, the pinion *n* is turned and the pointer *k* caused to indicate the change in the leverage and pressure.

I claim as my invention—

1. The combination, with a vertically-movable press-frame, of a movable head-block, a pressure-screw by which the head-block is moved, a stationary support, a lifting device resting on said support and carrying the movable end of the press-frame, and a movable foot-block bearing against said lifting device, whereby the cheese is pressed and the press-frame is raised by tightening the screw, and further pressure is exerted upon the cheese by the descent of the frame as the cheese shrinks, substantially as set forth.

2. The combination, with a vertically-movable press-frame, of a movable head-block, a pressure-screw by which the head-block is moved, a stationary support, a lifting-lever resting on said support and carrying the movable end of the press-frame, a movable foot-block bearing against the lifting-lever, a hanger pivoted on the press-frame and connected with the lifting-lever, and an adjusting device, whereby the hanger can be turned forwardly or backwardly, thereby adjusting the leverage of the lifting-lever, substantially as set forth.

3. The combination, with the horizontal press-frame having one of its ends made vertically movable, of a pressure-screw arranged lengthwise in said frame, a movable head-block upon which said screw operates, a stationary support provided with guides on which the movable end of the press-frame can be raised and lowered, a lifting device resting on said support and carrying the movable end of the press-frame, and a movable foot-block bearing against said lifting device, substantially as set forth.

4. The combination, with the press-frame, the movable foot-block C, the head-block C', and a pressure-screw, *d*, of the foot-piece A^3, provided with upright rods B, passing through openings in the press-frame, and the lifting-lever F, attached to the press-frame and resting upon the rods B, substantially as set forth.

5. The combination, with the press-frame and the movable head and foot blocks, of a support arranged at one end of the press, a lifting-lever resting on said support, a hanger provided with a toothed segment, and a worm journaled in the press-frame and engaging with said segment, substantially as set forth.

6. The combination, with the press-frame,

the movable head and foot blocks, and the stationary supports B, of the lifting-lever F, the adjustable hanger G, having a gear-segment, n', the shaft m, provided with a pinion, n, meshing with said gear-segment, and the pointer or indicator k, mounted on the shaft m, substantially as set forth.

7. The combination, with the press-frame, the movable head and foot blocks C C′, and the stationary supports B, of the lifting-lever F, the adjustable hanger G, provided with gear-segments n' h, the worm H, engaging with the segment h, the shaft m, provided with a pinion meshing with the segment n', and the indicator k, mounted upon said shaft and traversing a scale, k', substantially as set forth.

Witness my hand this 24th day of August, 1888.

WILHELM JESPERSEN.

Witnesses:
F. JESPERSEN,
V. ALBENE.