

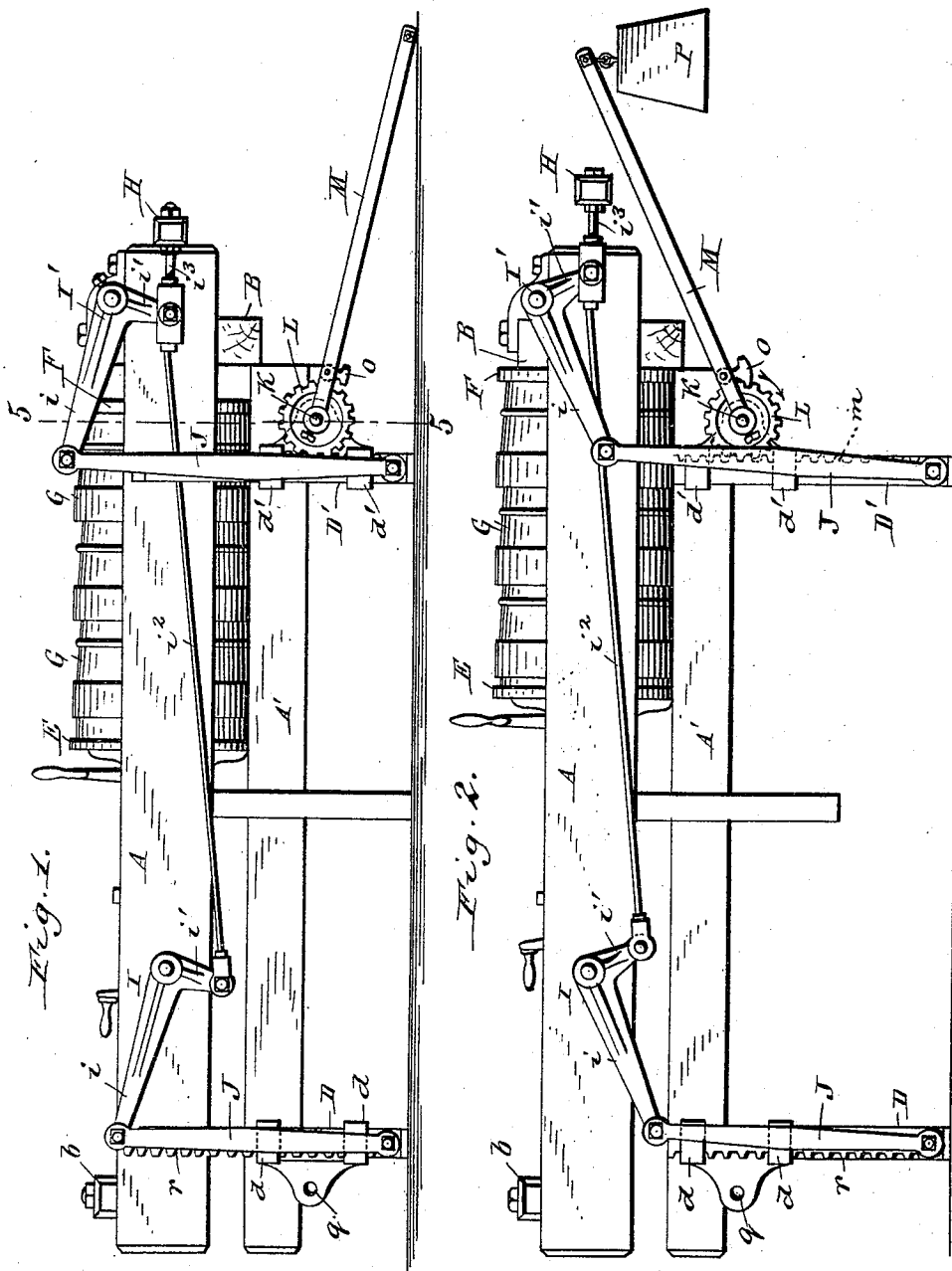
(No Model.)

3 Sheets—Sheet 1.

J. L. HELMER.
CHEESE PRESS.

No. 496,413.

Patented May 2, 1893.



Witnesses:
Friedrich August Wilhelm
Thos. L. Popp

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Attorneys.

(No Model.)

3 Sheets—Sheet 2.

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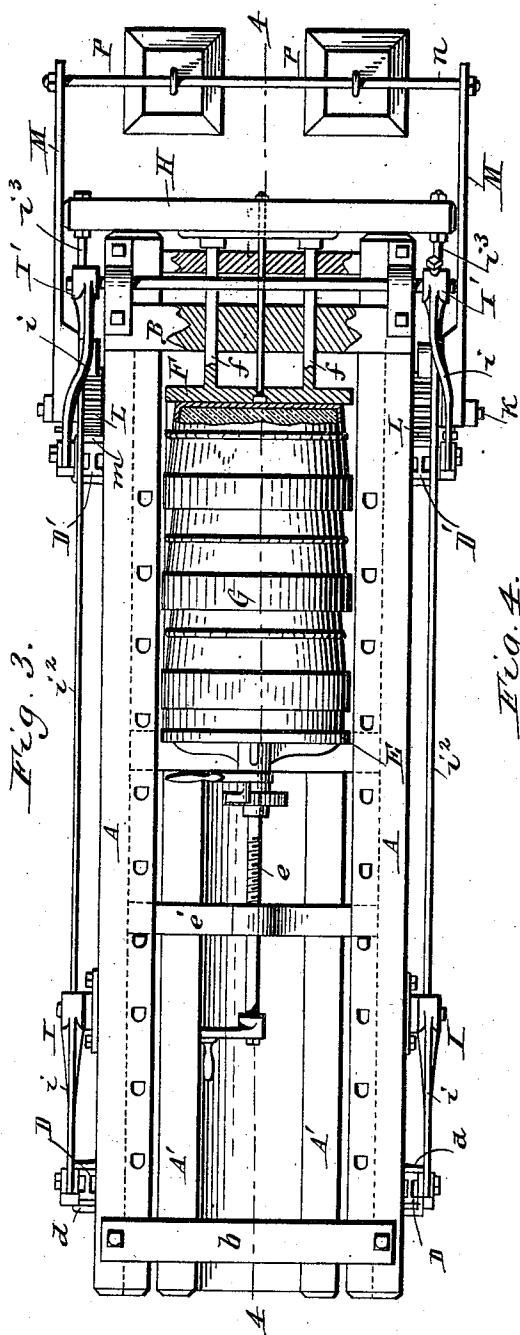


Fig. 3.

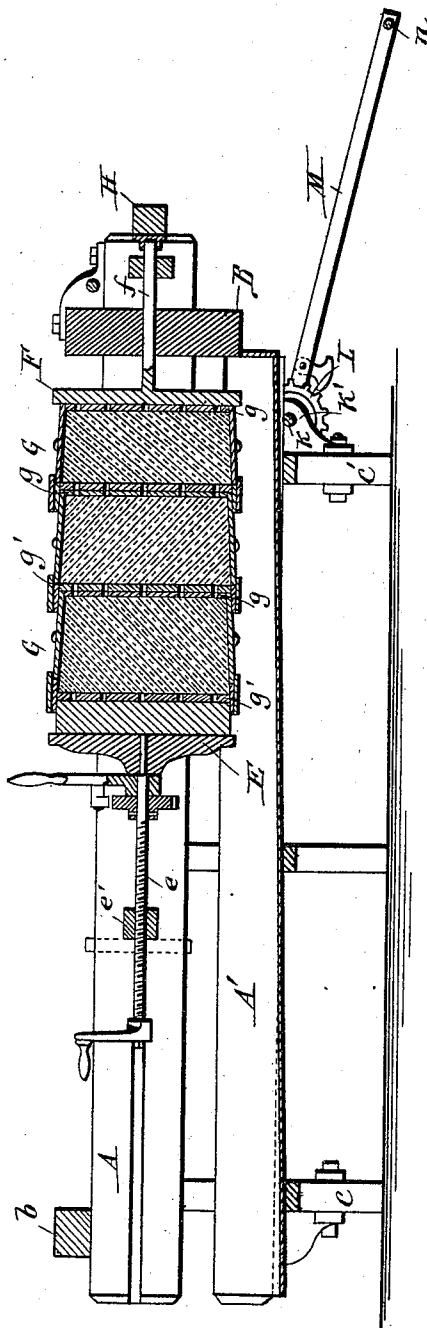


Fig. 4.

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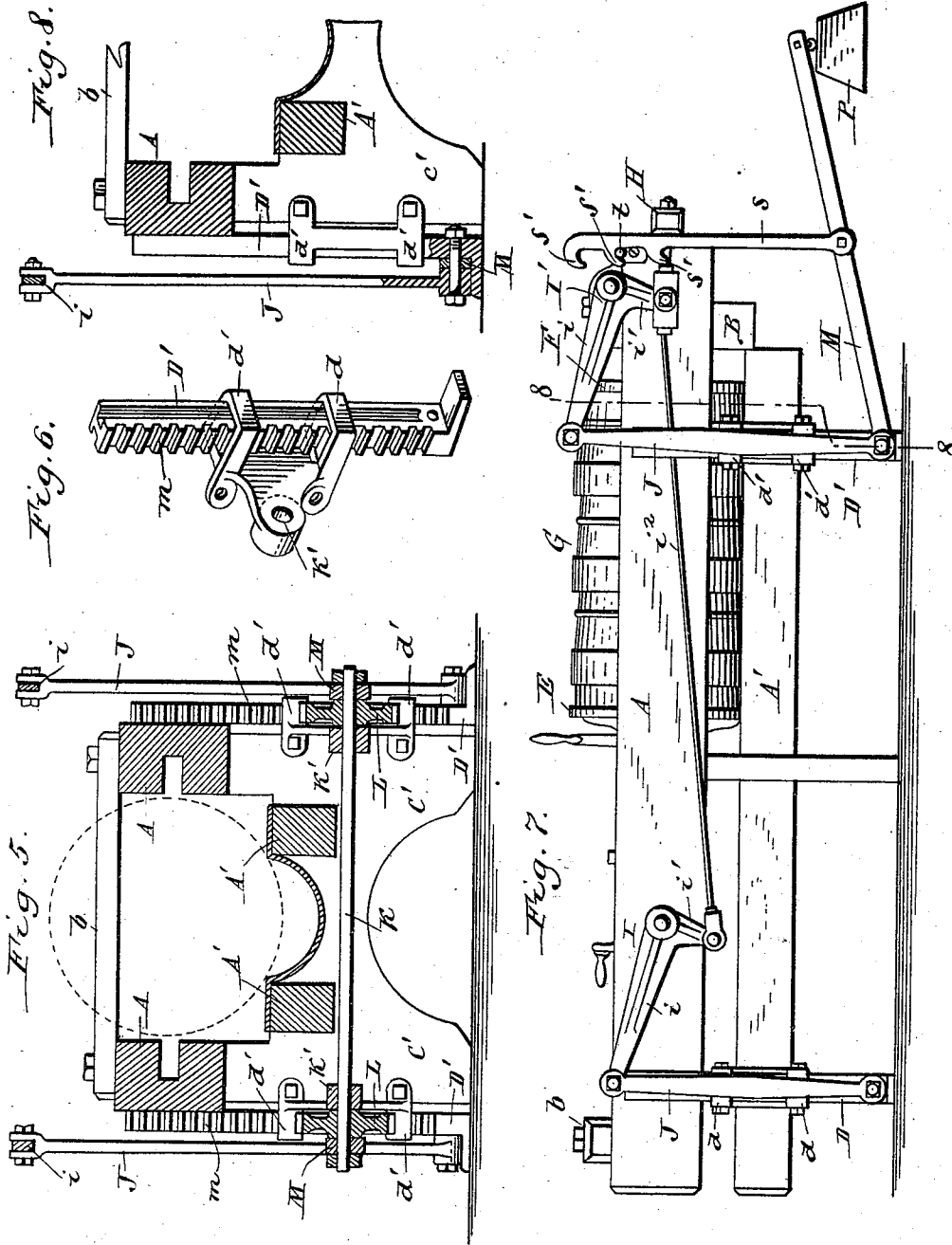
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UNITED STATES PATENT OFFICE.

JAMES L. HELMER, OF ROME, NEW YORK.

CHEESE-PRESS.

SPECIFICATION forming part of Letters Patent No. 496,413, dated May 2, 1893.

Application filed October 18, 1892. Serial No. 449,192. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. HELMER, a citizen of the United States, residing at Rome, in the county of Oneida and State of New York, have invented new and useful Improvements in Cheese-Presses, of which the following is a specification.

This invention relates to a cheese press in which a number of cheeses are pressed at one operation, and in which the weight of the press and cheeses are utilized to effect the final compression of the cheeses, such for instance as the press described and shown in my application for patent filed June 24, 1892, Serial No. 437,810. When the press frame is loaded with a large number of cheeses, the combined weight of the latter and the frame causes the cheeses to be thoroughly pressed, but when only a few cheeses are contained in the press frame, the weight is not sufficient to properly press the cheeses.

The object of my invention is to provide the vertically movable press frame with means whereby an additional pressure can be applied to the cheeses, so that the necessary pressure can be produced and maintained, regardless of the number of cheeses in the press frame.

In the accompanying drawings consisting of three sheets:—Figure 1 is a side elevation of my improved press, showing the press frame lowered. Fig. 2 is a similar view showing the press frame elevated. Fig. 3 is a top plan view thereof, partly in section. Fig. 4 is a longitudinal section of the press, in line 4—4, Fig. 3, showing the press frame lowered. Fig. 5 is a vertical transverse section, on an enlarged scale, in line 5—5, Fig. 1. Fig. 6 is a perspective view of one of the stationary standards and the guide loops embracing the same. Fig. 7 is a side elevation showing a modification of my improved press. Fig. 8 is a fragmentary vertical section in line 8—8, Fig. 7.

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

The press frame consists essentially of two upper longitudinal beams A A, two lower longitudinal beams A' A', a cross bar b connecting the front portions of the upper beams, and a cross bar B connecting the rear ends of

the upper beams. The press frame is provided at its front and rear ends with legs C C', respectively.

D D' represent upright guide feet or standards on which the press frame is guided in its vertical movements. These guide feet are arranged on both sides of the press-frame opposite the front and rear legs and pass through loops d d' secured to the outer sides of the front and rear legs of the press frame. The guide feet rest upon the floor and the loops slide on the feet during the vertical movements of the press-frame.

E represents the head block or follower which moves lengthwise between the upper beams in the usual manner.

e represents the horizontal pressure screw whereby the follower E is operated and which is arranged in a yoke e' supported with its ends in the upper beams.

F represents the movable foot block arranged between the rear portions of the upper beams and provided with two horizontal guide rods f extending rearwardly from the foot block through openings in the cross beam B.

G represents a gang of cheese hoops of any suitable construction placed between the head and foot blocks in the usual manner, each hoop having a perforated bottom g and a perforated cover or follower g' and bearing with its bottom against the follower of the next hoop, so that the hoops telescope into each other.

H represents a cross head arranged in rear of the upper beams and connected with the rear ends of the guide rods f.

I I' represent two pairs of elbow levers whereby the press frame is lifted at its front and rear ends. The front pair of elbow levers I is pivoted upon opposite sides of the front portion of the press frame, while the rear pair I' is pivoted upon opposite sides of the rear portion of the press frame. Each of the elbow levers consists of a long arm i projecting forwardly and a short arm i' projecting downwardly. The short arms of the two elbow levers on the same side of the press frame are connected with each other and with the cross head H by rods i² i³.

J represents upright bars or links whereby

the long arms of the elbow levers are connected with the lower ends of the guide feet or standards.

The construction and operation of the parts hereinbefore described is substantially the same as that shown in my said pending application for Letters Patent, and I do not wish to claim said construction in this application.

K represents a shaft arranged transversely underneath the rear portion of the press frame and journaled in bearings k' secured to the rear legs C' , said bearings being preferably cast integrally with the loops d' .

L represents gear wheels secured upon the shaft k outside of the bearings k' , and meshing with vertical gear racks m formed on the rear sides of the rear guide feet D' .

M represents two weight levers whereby the gear wheels are rotated for the purpose of assisting in depressing the press frame. These weight levers are mounted loosely with their inner ends upon the transverse shaft k outside of the gear wheels, while their outer ends are connected by a cross rod n .

O represents pawls which are pivoted upon the weight levers and engage with the teeth of the gear wheels.

P represents weights which are attached to the cross rod n and whereby the free ends of the weight levers are depressed.

The press frame rests in its normal position upon the floor, in which position of the frame the cheeses are placed between the head and foot blocks. Upon tightening the head block against the cheeses the preliminary pressure is at first applied whereby portions of the air and whey are expelled and afterward the press frame is lifted. When the press frame has been lifted with its load, it exerts a constant pressure upon the cheese and descends gradually as the cheeses shrink. After the press frame has been raised, the weight levers with their weights are raised, and their pawls are placed in engagement with the gear wheels. When the weight levers are in this elevated position their downward pressure tends to rotate the gear wheels in the direction in which they move downwardly on the gear racks of the standards, indicated by the arrow in Fig. 2, thereby assisting in depressing the press frame. The combined weight of the press frame and cheeses and the downward pressure of the weight levers are brought to bear upon the cheeses, and as the latter shrink by the escape of air and whey, the press frame and weight levers gradually descend, causing the elbow levers to press the foot block forwardly or toward the head block, which latter is held stationary by the screw e . If the weight levers have descended to their lowest position before the press frame has reached the limit of its downward movement, the weight levers can be raised again so as to continue to aid in further pressing the cheeses. When a large number of cheeses are placed in the press frame only a small weight is necessary on the the weight levers,

because the weight of the cheeses themselves is nearly sufficient to effect the desired compression. When only a few cheeses are placed in the press the weights upon the weight levers are increased to provide the requisite pressure. By means of the weight levers the pressure can be readily adjusted, according to the number of cheeses in the press frame, so that the requisite pressure can be produced under all circumstances. The front loops d are preferably also provided with bearings q , and the front guide feet D with vertical gear racks r like the corresponding parts of the rear loops and guide feet. The rear bearings and gear racks are in most cases best adapted to receive the transverse shaft and gear wheels of the weight levers, but, if it is more convenient, the weight levers may be arranged at the front end of the press by resorting to the front bearings and gear racks. In some cases it may be desirable to arrange weight levers at both the front and rear ends of the press frame in which case an additional shaft, gear wheels and weight levers are arranged at the front end of the press, thereby permitting the pressure upon the cheeses to be multiplied.

In the modified construction represented in Figs. 7 and 8 the weight lever is pivoted with its inner end to the lower end of one of the guide feet, and is provided with an arm s having an upright series of hooks s' adapted to engage with a laterally projecting pin t secured to the press frame. In this construction the fulcrum of the weight lever is immovable, and the downward pressure of the weight lever is transmitted to the press frame by the hooked arm. When the weight lever has reached the limit of its downward movement it can be raised, and a lower hook can be engaged with the pin t , to continue the action of the weight lever.

I claim as my invention—

1. The combination with the vertically movable press frame, its stationary support, a movable head block, a movable foot block, and an automatic lifting device connecting the movable press frame with the foot block, of a weight lever connected with the movable press frame and exerting a downward pressure upon the same, whereby the pressures exerted by the movable press frame and the weight lever are simultaneously applied to the foot block in the same direction, substantially as set forth.

2. The combination with the vertically movable press frame, a movable head block, a movable foot block, and an automatic lifting device connecting the movable press frame with the foot block, of a stationary standard provided with an upright gear rack, a gear wheel attached to the press frame and meshing with said gear rack, and a weight lever connected with said gear wheel and tending to move the same downwardly on the gear rack, substantially as set forth.

3. The combination with the vertically mov-

able press frame, a movable head block, a movable foot block, and an automatic lifting device connecting the movable press frame with the foot block, of stationary standards provided with upright gear racks, a transverse shaft journaled in the press frame, gear wheels mounted on said shaft and meshing with said gear racks, and weight levers mounted on said shaft and provided with pawls which engage with said gear wheels and whereby the latter are moved downwardly on the gear racks, substantially as set forth.

4. The combination with the vertically movable press frame, a movable head block, a movable foot block, and an automatic lifting device connecting the movable press frame

with the foot block, of stationary standards provided with upright gear racks, bearings secured to the press frame and provided each with loops which embrace the standards, a transverse shaft supported in said bearings, gear wheels mounted on said shaft and meshing with said gear racks, and weight levers mounted on said shaft and connected with said gear wheels, substantially as set forth.

Witness my hand this 13th day of October, 1892.

JAMES L. HELMER.

Witnesses:

C. H. DUNNING,
WM. J. DOYLE.