

(No Model.)

C. J. LUNDSTROM.
CHEESE PRESS.

4 Sheets—Sheet 1.

No. 528,001.

Patented Oct. 23, 1894.

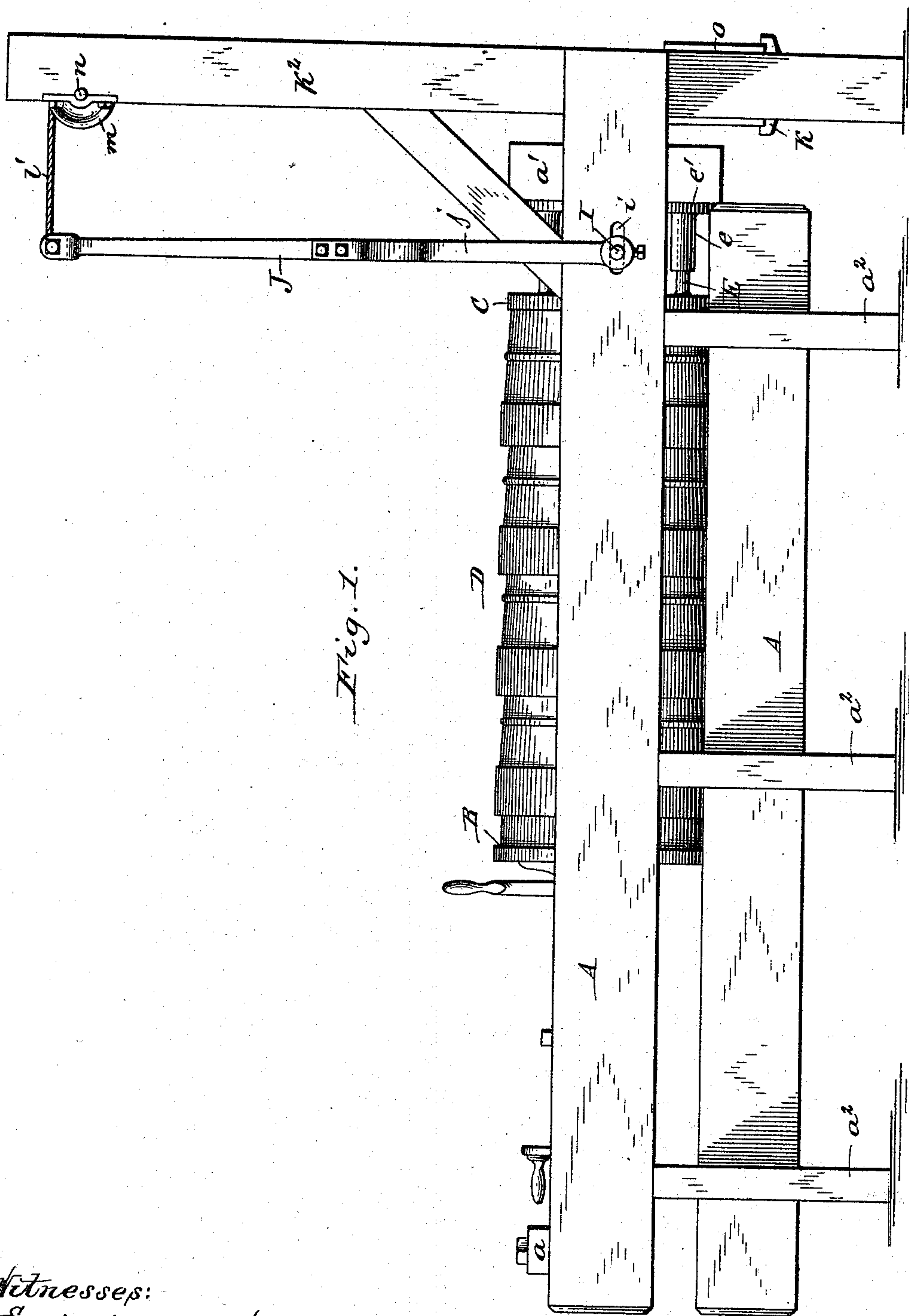


Fig. 1.

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(No Model.)

4 Sheets—Sheet 2.

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Fig. 2.

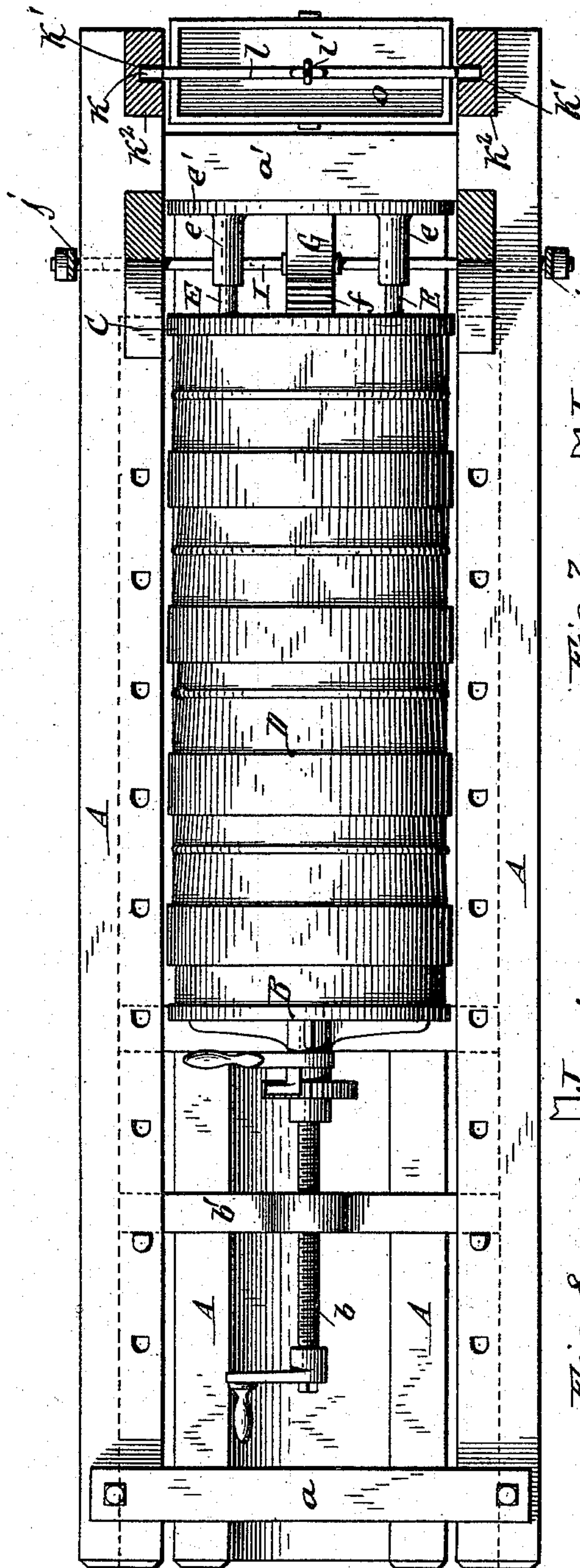


Fig. 7.

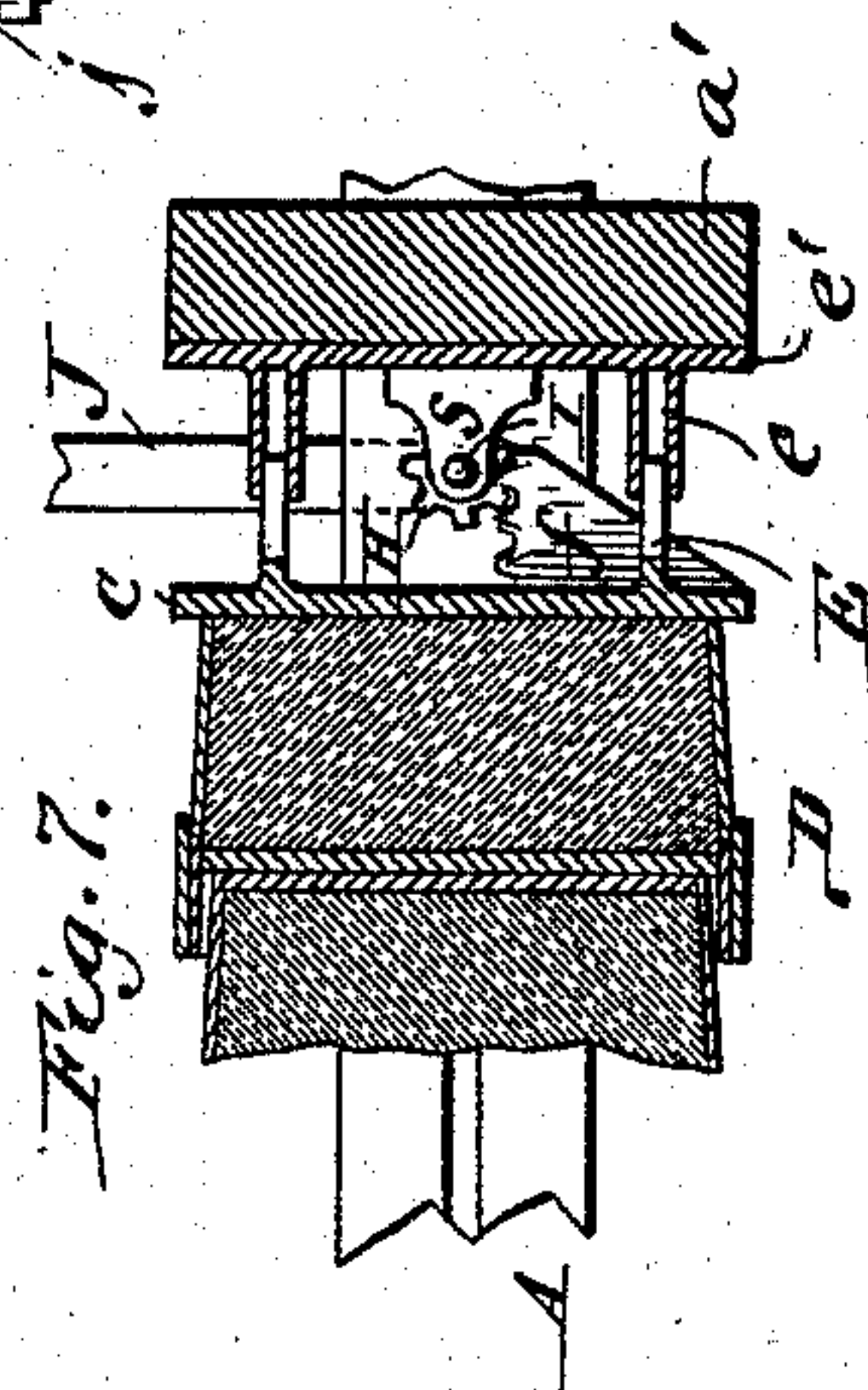
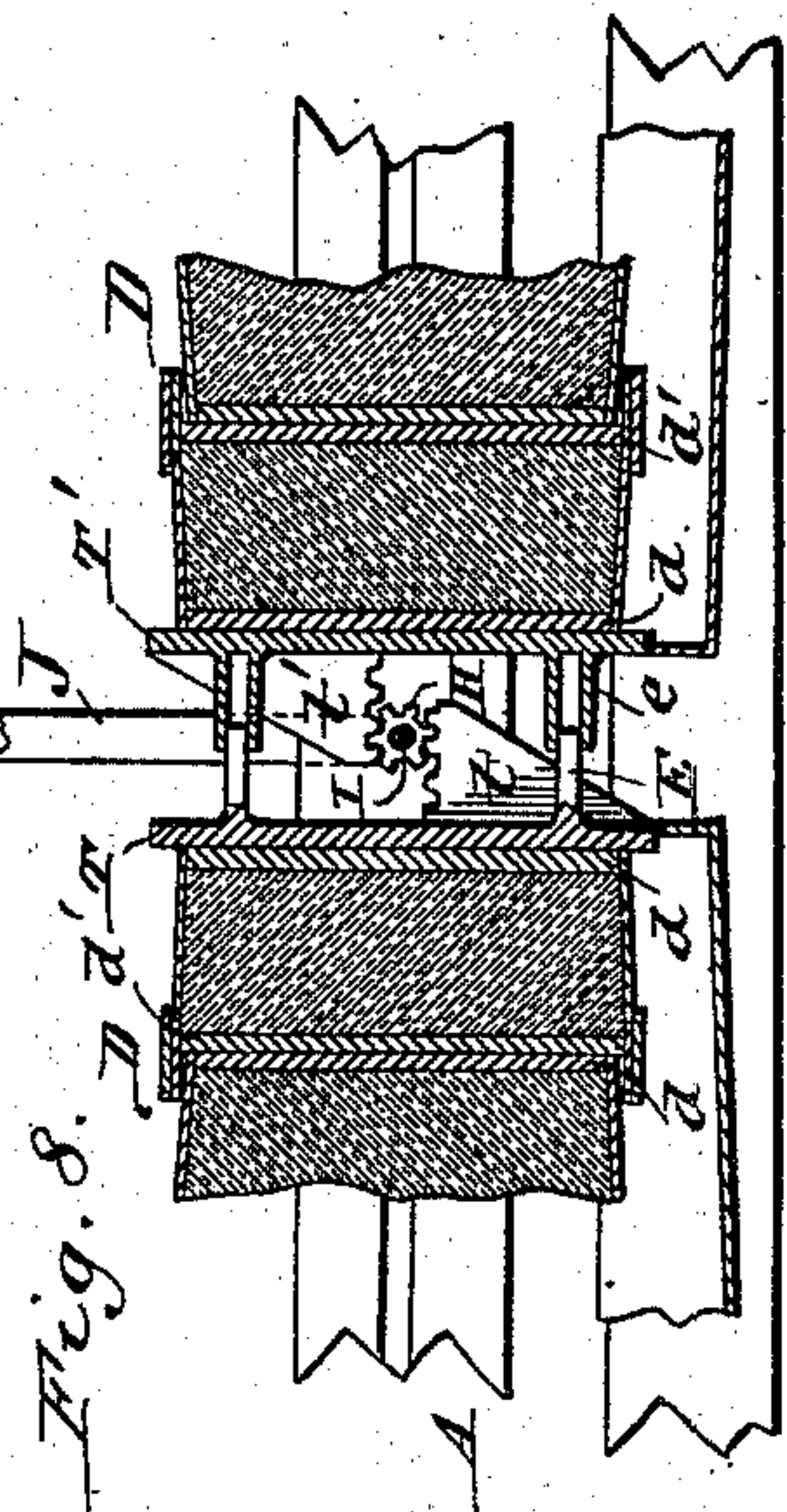


Fig. 8.



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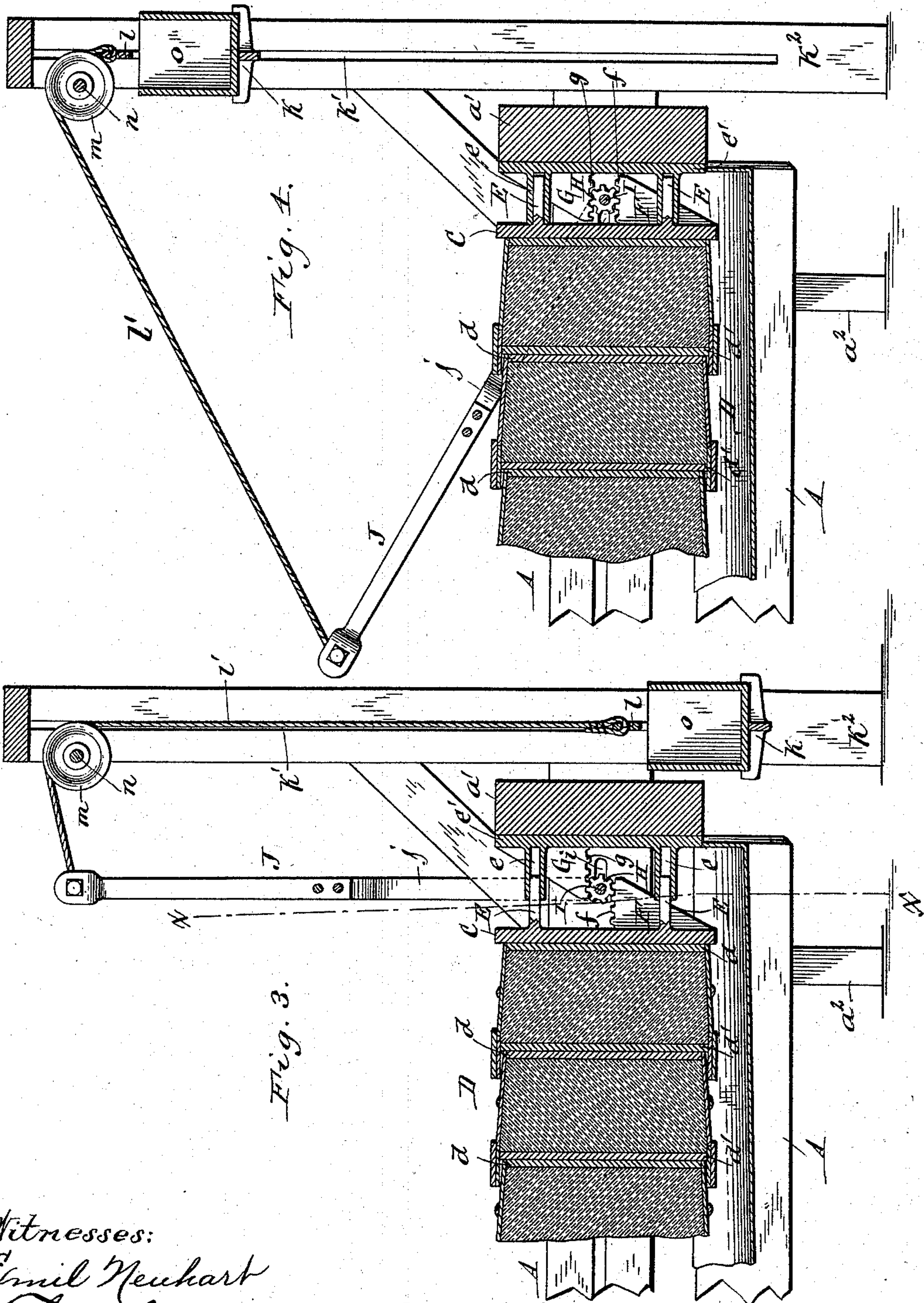
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C. J. LUNDSTROM.
CHEESE PRESS.

4 Sheets—Sheet 3.

No. 528,001.

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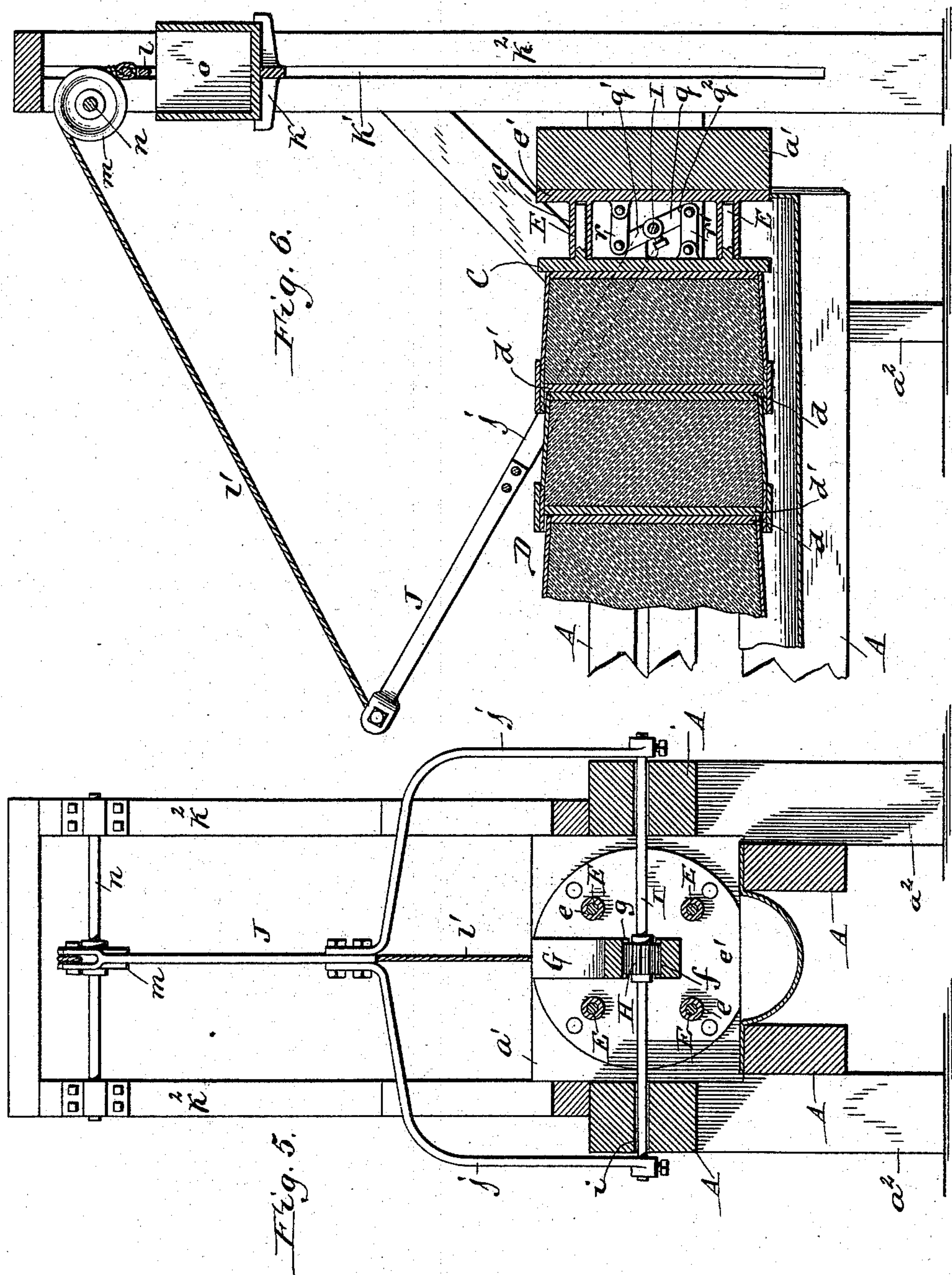
(No Model.)

4 Sheets—Sheet 4.

C. J. LUNDSTROM.
CHEESE PRESS.

No. 528,001.

Patented Oct. 23, 1894.



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UNITED STATES PATENT OFFICE.

CARL JOHAN LUNDSTROM, OF LITTLE FALLS, NEW YORK, ASSIGNOR TO
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CHEESE-PRESS.

SPECIFICATION forming part of Letters Patent No. 528,001, dated October 23, 1894.

Application filed June 22, 1892. Serial No. 437,641. (No model.)

To all whom it may concern:

Be it known that I, CARL JOHAN LUNDSTROM, a subject of the King of Sweden and Norway, residing at Little Falls, in the county of Herkimer 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 that class of cheese presses in which the pressure is applied automatically. It is particularly designed for use in cheese presses in which the preliminary pressure is applied by hand and the final pressure is effected automatically, but it is also applicable to presses in which the pressure is applied automatically throughout the pressing operation.

My invention has the object to produce a simple, durable and efficient device whereby the pressure upon the cheeses is applied automatically.

In the accompanying drawings consisting of four sheets:—Figure 1 is a side elevation of a cheese press provided with my improvements. 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 position of the automatic pressure gear before applying the preliminary hand pressure. Fig. 4 is a similar view, showing the position of the final pressure gear after the preliminary pressure has been applied. Fig. 5 is a vertical transverse section in line $x-x$, Fig. 3. Fig. 6 is a longitudinal sectional elevation of the rear portion of a cheese press, showing a modified connection of the shaft of the weight lever with the foot block and press frame. Fig. 7 is a fragmentary longitudinal section, showing the shaft of the weight lever supported in fixed bearings on the press frame. Fig. 8 is a fragmentary longitudinal section, showing my improvements applied to a press in which two gangs of cheeses are pressed simultaneously. Like letters of reference refer to like parts in the several figures.

The press frame consists essentially of longitudinal side beams A, front and rear cross pieces a a' and supporting legs a^2 .

B represents the head block or follower which moves lengthwise between the beams.

b is the hand pressure screw whereby the head block is operated and which is arranged in a cross bar b' secured with its ends to the longitudinal beams.

C represents the longitudinally movable foot block arranged between the rear portions of the longitudinal beams.

D 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 d and a perforated cover or follower d' and bearing with its bottom against the follower of the next hoop, so that the hoops telescope into each other.

The foot block is guided in its horizontal movement by guide rods E which are formed on the rear side of the foot block and slide in stationary sleeves e formed on the front side of a supporting plate e' which latter is secured to the front side of the rear cross piece.

The rear side of the foot block is provided centrally with a rearwardly projecting bracket F having a horizontal gear rack f on its upper side. The supporting plate e' is provided centrally on its front side with a forwardly projecting bracket G having a horizontal gear rack g on its under side, which latter is arranged above the gear rack f of the bracket F.

H represents a gear wheel arranged between the brackets F, G, and meshing with both the upper and lower gear racks f , g . This gear wheel is secured to the middle of a transverse shaft I, which latter passes with its ends through slots i formed lengthwise in the longitudinal beams, thereby permitting the shaft and gear wheel to move lengthwise in the press frame.

J represents a lever whereby the foot block is operated. This lever is provided at its lower end with two arms j which straddle the press frame and are secured to opposite ends of the shaft I, while its upper portion is arranged centrally above the press frame.

k represents a vertically movable cross head arranged in rear of the rear cross piece and

guided with its ends in vertical grooves k' formed in the upright members k^2 of a guide frame which is secured to the rear end of the press frame. The cross head is provided with a loop or bail l which is connected with the upper end of the lever J by a rope, chain or cable l' . The latter runs over a pulley m secured to a transverse shaft n journaled with its ends in bearings secured to the upright members k^2 of the guide frame.

o represents a box which rests upon the cross head and is filled with a weighting material.

In the normal position of the parts, the cross head is at its lowest point, the lever J stands upright and the foot block is in its forward position, as represented in Fig. 3, in which position of the parts the cheeses are placed between the head and foot blocks. Upon turning the screw b in the proper direction to apply the preliminary pressure to the cheeses, air and whey are expelled from the cheeses and the foot block is forced back. This backward movement of the foot block causes its gear rack f meshing with the lower side of the gear wheel H to turn the latter and to roll it backwardly on the upper gear rack g . As the upper gear rack is stationary, the backward movement of the gear wheel is equal to one-half of the movement of the foot block. This rotative movement of the foot block swings the lever J forwardly and raises the weighted cross head attached to the lever. When the foot block has reached the limit of its backward movement, the lever J connected with the gear wheel H has been moved forwardly and the weight has been raised, as represented in Fig. 4. After the preliminary pressing of the cheeses has been completed, the pressure which is exerted upwardly upon the lever J by the weighted cross head raises the lever J and moves the foot block forwardly, which causes a constant pressure to be exerted upon the cheeses and whereby the operation of pressing is completed.

When the lever J is depressed it stands at an acute angle to the line in which the pressure is applied to the same by the weighted cross head and the effective force of the weight is comparatively small. As the lever rises, owing to the shrinking of the cheese, the effective leverage gradually increases until the lever J has been raised nearly to a vertical position. By this means the automatic final pressure which is exerted upon the cheeses is continuous and increases gradually as the cheeses become more compact.

In the modified construction represented in Fig. 6, a lever q is substituted for the gear wheel H . This lever is secured to the transverse shaft I and has its upper arm q' connected with the supporting plate e' by a link r , while its lower arm q^2 is connected with the foot block by a link r' .

In the modified construction represented in Fig. 7, the shaft to which the gear wheel is

secured is not movable lengthwise of the press frame, but turns in fixed bearings s which are secured to the rear portion of the press frame.

In the modified construction represented in Fig. 8, my improvement is applied to a press in which two gangs of cheeses are pressed simultaneously. In this construction the shaft carrying the gear wheel is arranged between two movable foot blocks $T T'$, each of which is provided with a gear rack $t t'$ between which the gear wheel is arranged, so that the two foot blocks approach each other while the preliminary pressure is applied, and recede from each other while the automatic pressure is applied.

It is obvious that a coil spring mounted in a barrel or drum may be substituted for the weight which is applied to the lever by which the automatic pressure is applied to the foot block.

I am aware that it is not new to apply pressure automatically in a cheese press and I do not broadly claim the same. It is also obvious that the entire pressure can be applied by the automatic mechanism, in which case the head block can be made stationary.

I claim as my invention—

1. The combination with the stationary press frame, the movable head block and the screw by which the head block is moved toward the foot block, of a movable foot block, a gear rack secured to the foot block, a gear wheel meshing with said gear rack, and an automatic pressure device whereby said gear wheel is rotated in the direction in which it moves the foot block toward the head block, substantially as set forth.

2. The combination with the stationary press frame, the movable head block and the screw by which the head block is moved toward the foot block, of a movable foot block, a gear rack secured to the foot block, a stationary gear rack secured to the press frame, a gear wheel meshing with both gear racks, and an automatic pressure device whereby said gear wheel is rotated in the direction in which it moves the foot block toward the head block, substantially as set forth.

3. The combination with the press frame and the head block, of a movable foot block provided with a rearwardly projecting gear rack, a supporting plate secured to the press frame and provided with a forwardly projecting gear rack, a transverse shaft provided with a gear wheel meshing with both gear racks, a lever connected at one end with said shaft, and a weight connected with the opposite end of said lever, substantially as set forth.

4. The combination with the press frame, the movable head block and the pressure screw whereby the head block is moved, of a movable foot block provided with a rearwardly projecting gear rack, a forwardly projecting gear rack secured to the press frame, a trans-

verse shaft provided with a gear wheel mesh-
ing with both gear racks, a lever secured with
its lower end to said shaft, a guide frame se-
cured to the press frame and provided with
5 a pulley, a vertically movable cross head ar-
ranged in said guide frame and provided with
a weight, and a cable connecting the upper
end of said lever with the cross head and

passing around said pulley, substantially as
set forth.

Witness my hand this 18th day of June,
1892.

CARL JOHAN LUNDSTROM.

Witnesses:

GEO. B. WHITE,
W. C. FITCH.