

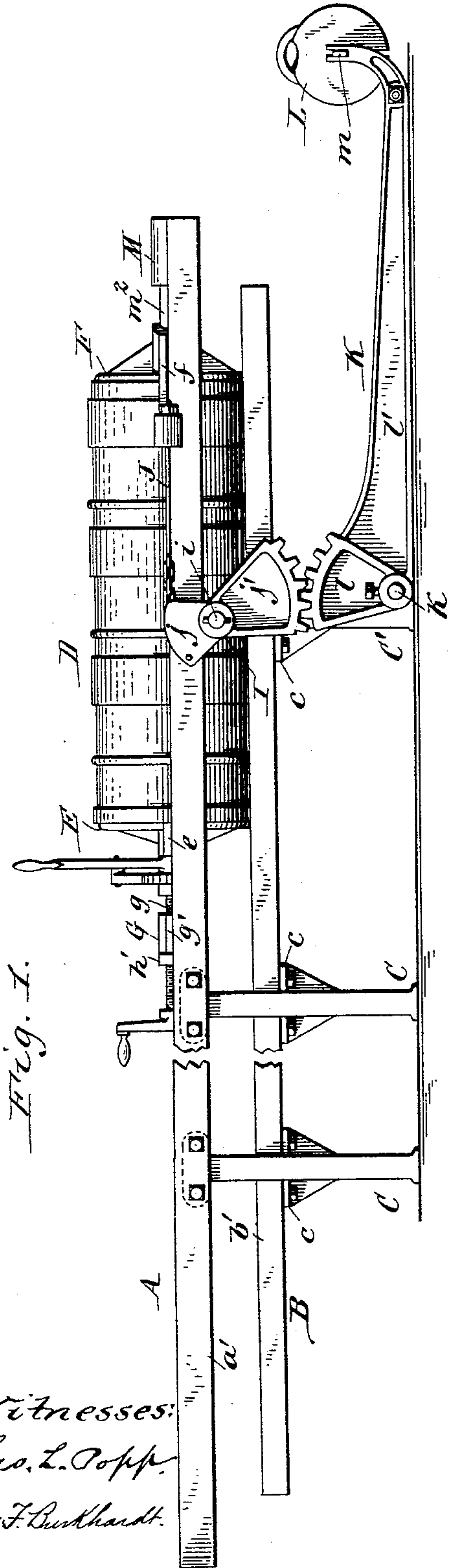
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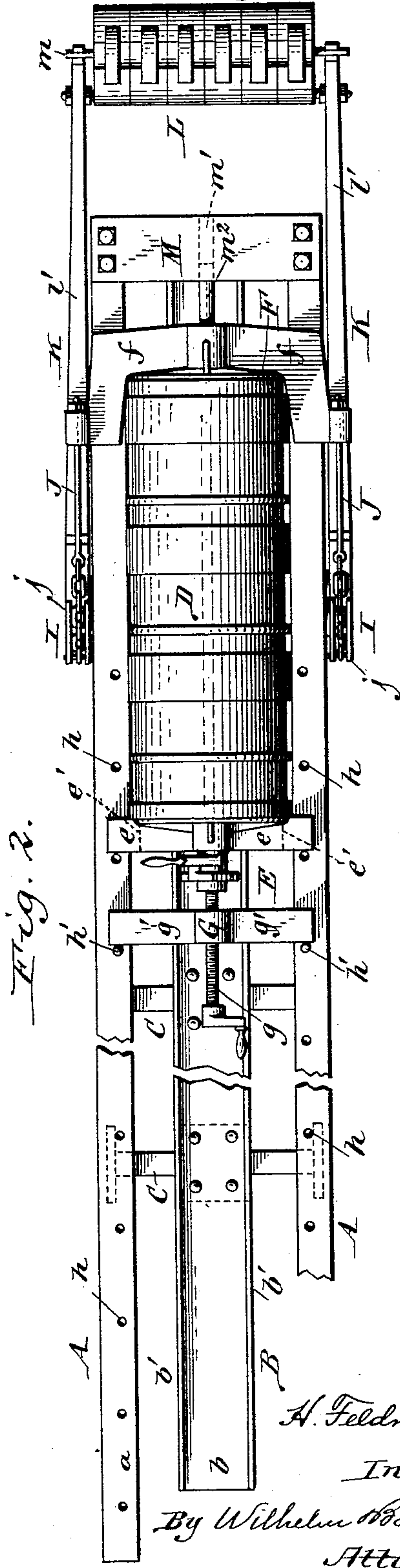
H. FELDMEIER.
CHEESE PRESS.

No. 545,198.

Patented Aug. 27, 1895.



Witnesses:
Thos. L. Popp.
Chas. F. Burkhardt.



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Inventor.
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(No Model.)

3 Sheets—Sheet 2.

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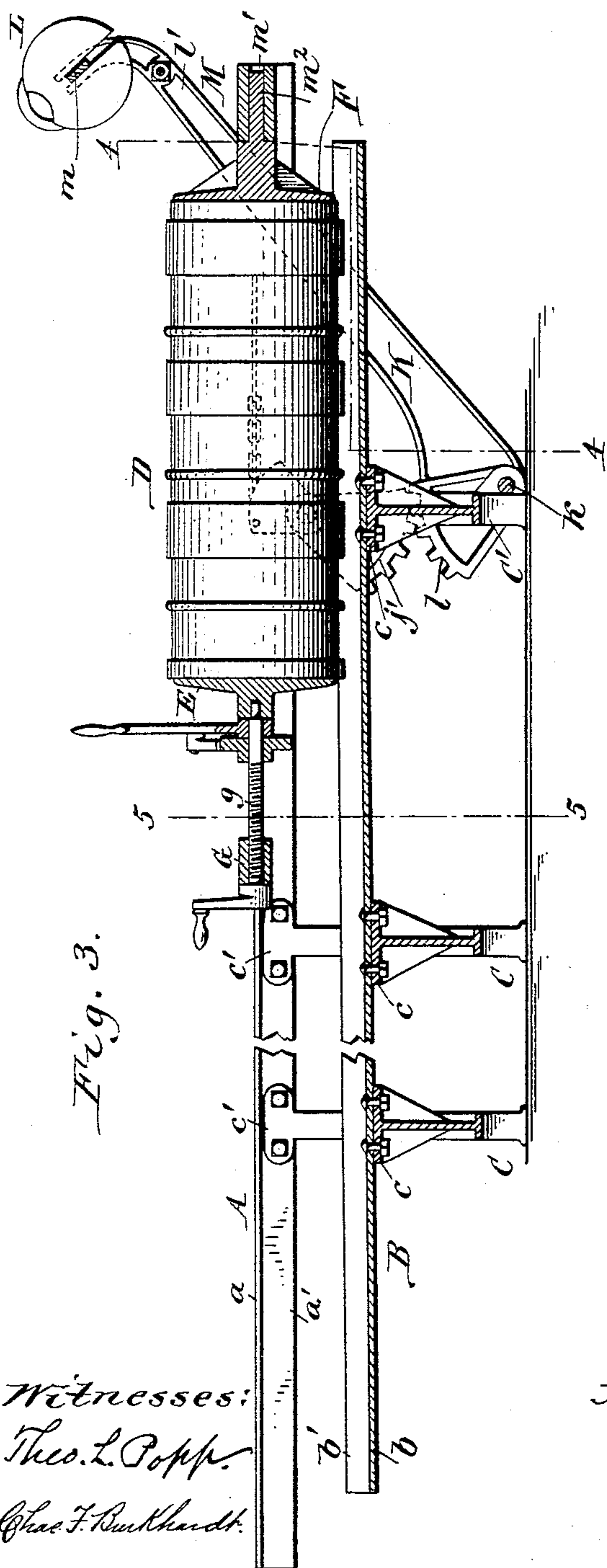


Fig. 3.

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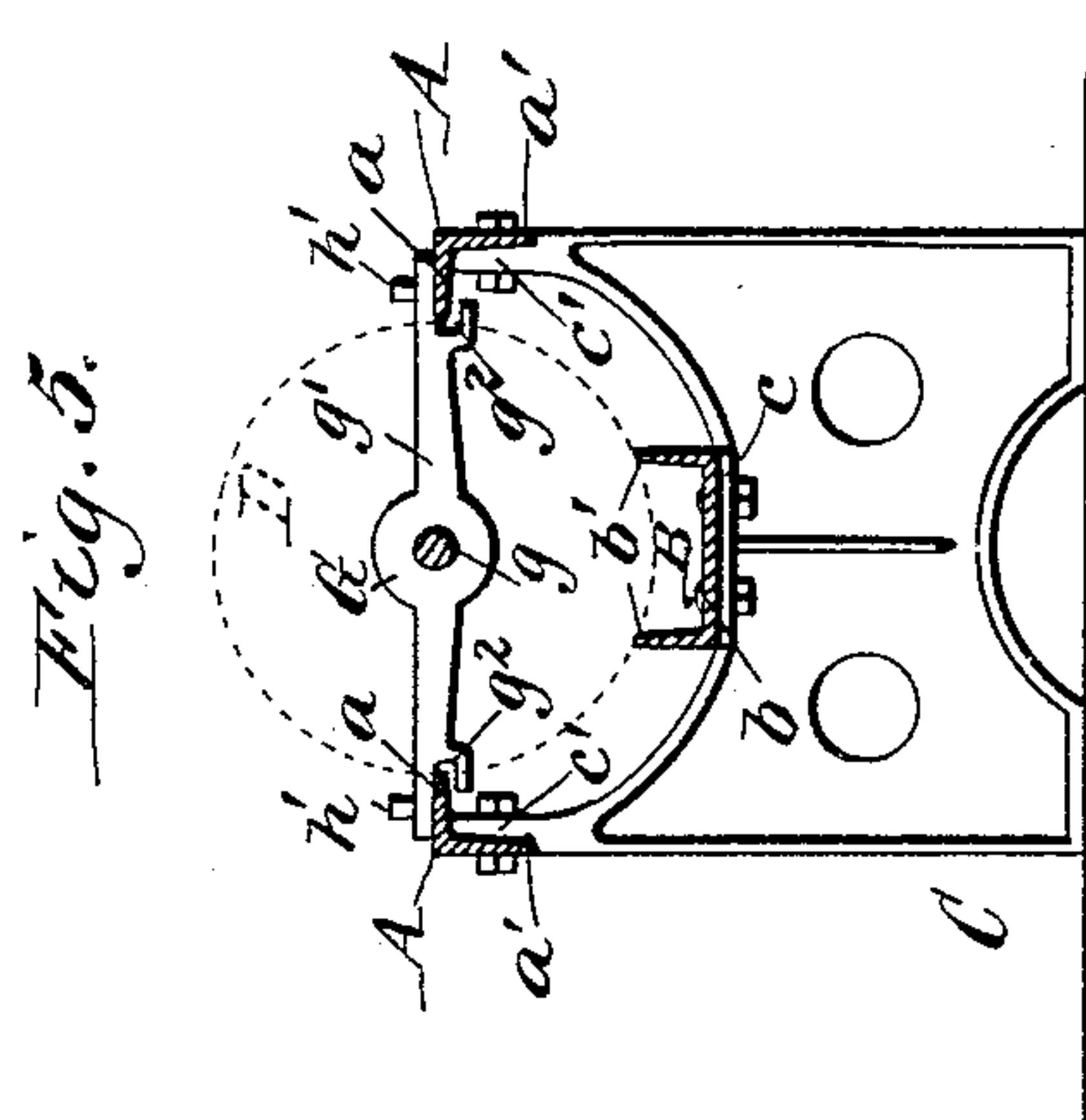


Fig. 5.

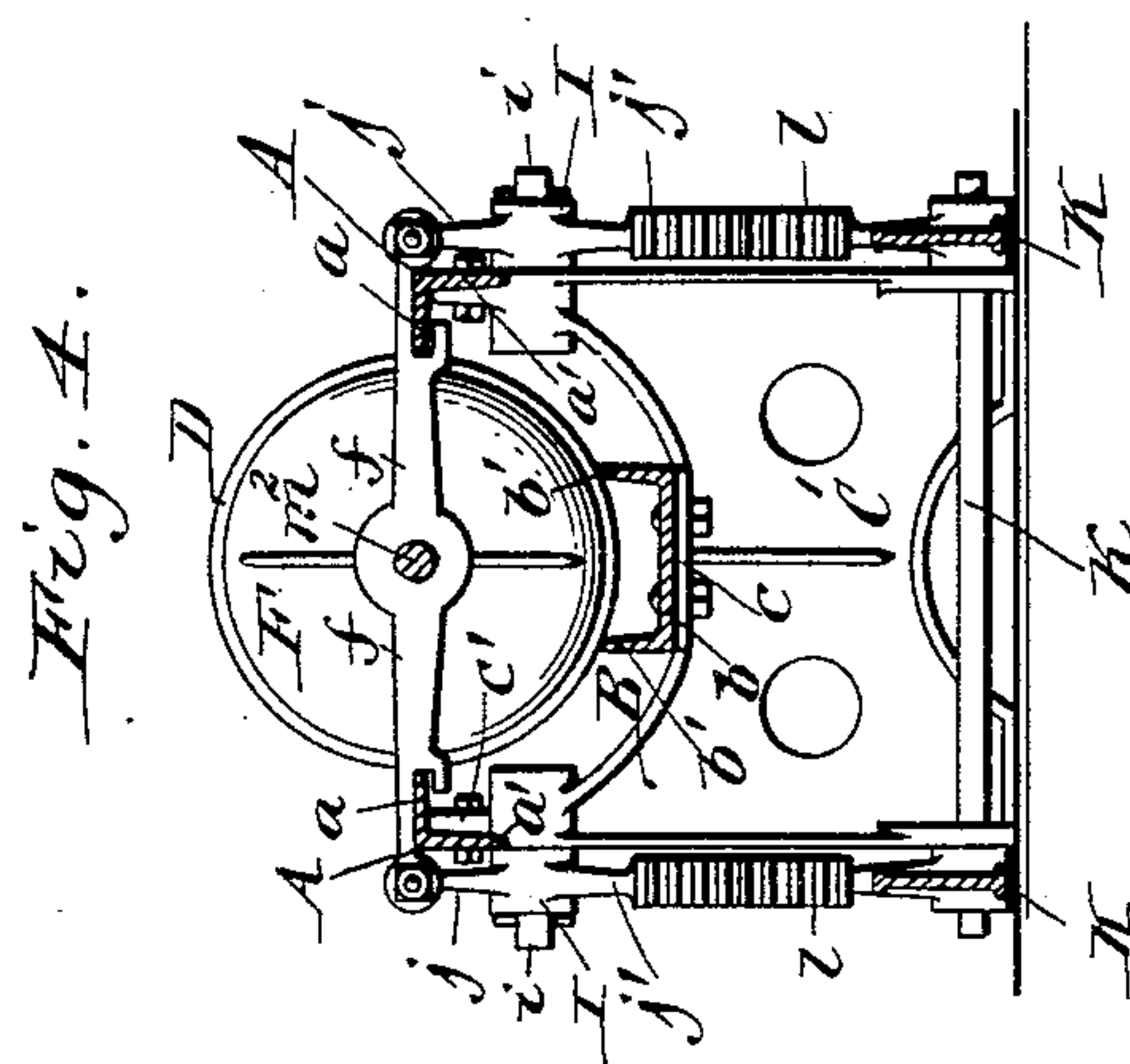


Fig. 4.

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 6.

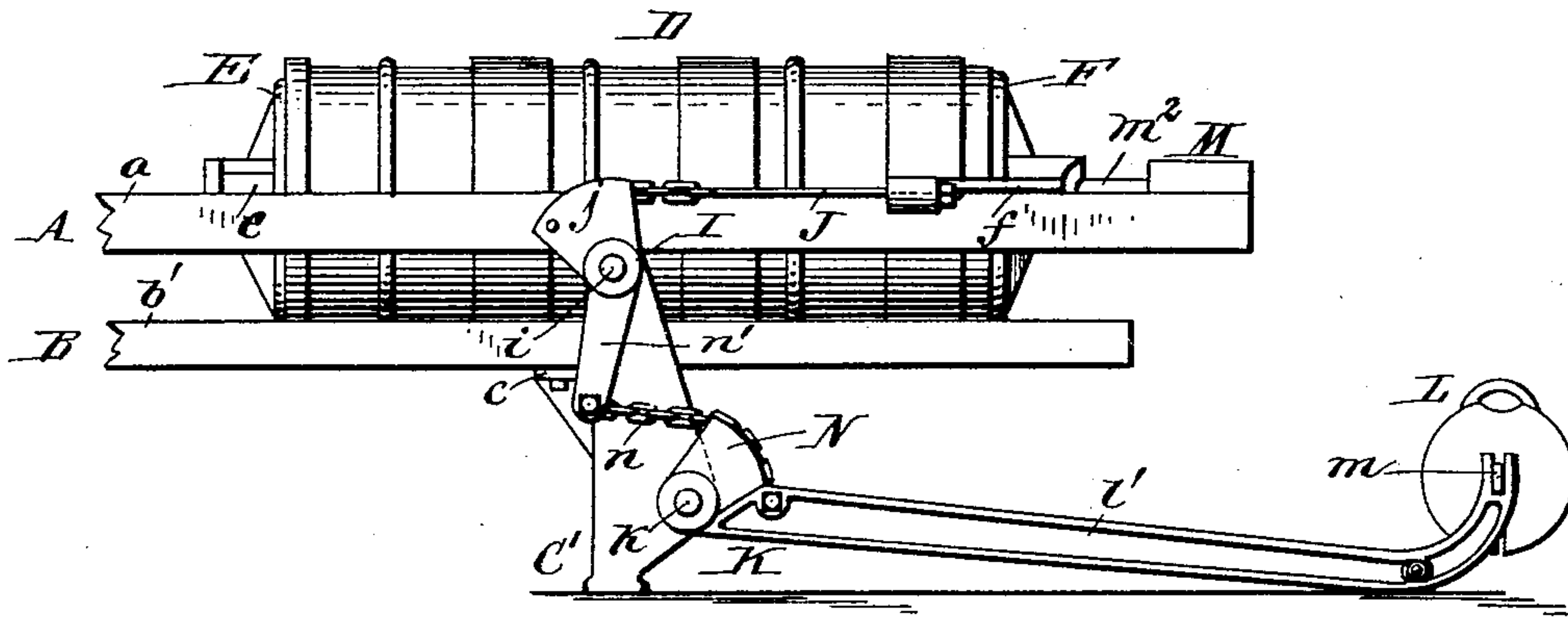
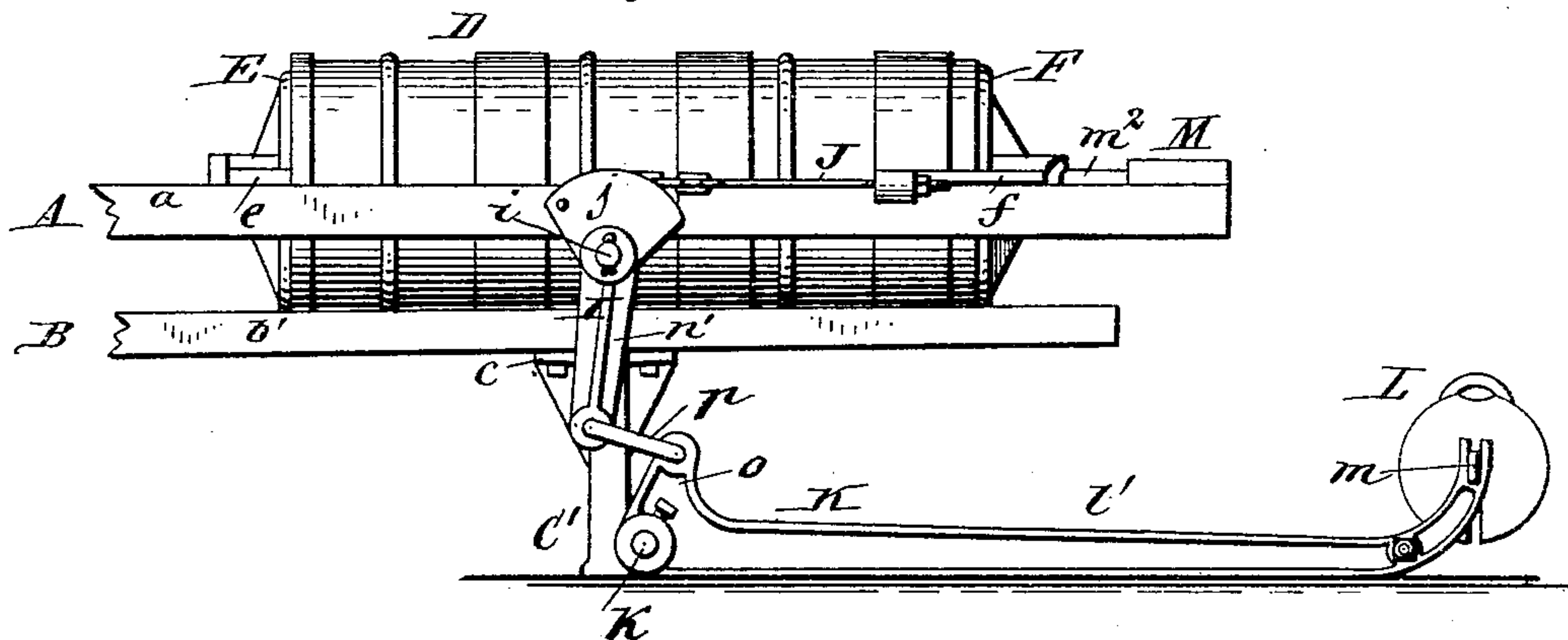


Fig. 7.



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UNITED STATES PATENT OFFICE.

HARVEY FELDMEIER, OF LITTLE FALLS, NEW YORK, ASSIGNOR TO D. H. BURRELL & CO., OF SAME PLACE.

CHEESE-PRESS.

SPECIFICATION forming part of Letters Patent No. 545,198, dated August 27, 1895.

Application filed December 17, 1894. Serial No. 532,009. (No model.)

To all whom it may concern:

Be it known that I, HARVEY FELDMEIER, a citizen of the United States, residing at Little Falls, in the county of Herkimer and State of New York, have invented a new and useful Improvement in Cheese-Presses, of which the following is a specification.

This invention relates to that class of cheese-presses which contain a horizontal press-frame in which the cheese-hoops are placed.

The object of my invention is to improve the construction of the mechanism whereby pressure is applied automatically to the cheese.

In the accompanying drawings, consisting of three sheets, Figure 1 is a side elevation of the press, showing the automatic weight-levers lowered. Fig. 2 is a top plan view of the same. Fig. 3 is a longitudinal sectional elevation showing the automatic weight-levers raised. Figs. 4 and 5 are cross-sections in lines 4-4 and 5-5, Fig. 3, respectively. Figs. 6 and 7 are side elevations showing modified constructions of the automatic pressure mechanism.

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

The press-frame consists of longitudinal side bars A, a longitudinal central bar B, and transverse standards or leg-frames C C' supporting the longitudinal bars. The longitudinal side bars A are composed of rolled angle-irons, each having its upper member *a* arranged horizontally and projecting inwardly and its lower member *a'* arranged vertically and projecting downwardly. The longitudinal central bar B is formed of a rolled channel-bar having its web *b* arranged horizontally and its flanges *b'* arranged vertically and projecting upwardly. The side bars A are arranged at such a height that their horizontal members *a* stand about in line with the axis of the gang of cheese-hoops D, in the proper position to form guides for the head pressure-block E and tail pressure-block F. The central bar B is arranged lower than the side bars and at such a height that the upper edges of its flanges support the cheese-hoops.

The leg-frames C C', one of which is arranged near each end of the press-frame and one near the middle thereof, are castings, and are each provided with a horizontal transverse flange *c*, to which the web of the central channel-bar

is bolted. The upper edge of each leg-frame rises outwardly from each end of this flange to an upright flange *c'*, which fits against the inner side of the adjacent upright member of the side bar A, which is bolted thereto. In other words, the upper edge of each leg-frame is concave or recessed, and the channel-bar is secured in the bottom of the recess and the angle-bars to the upper ends of the frame. The head-block E is provided with laterally-projecting arms *e*, each having a groove *e'* in its end, by which it straddles the horizontal member *a* of the adjacent side bar A, and by which it is guided on the side-bar.

G represents the screw-nut, and *g* the usual pressure-screw working in the same. This screw-nut is provided with laterally-projecting arms *g'*, having notches *g''* in their ends by which they straddle the horizontal members *a* of the side bars. Holes *h* are drilled in both horizontal members *a* of the side bars at suitable distances apart to receive iron pins *h'*, against which the screw-nut abuts in the usual manner.

The rolled angle and channel bars of iron or steel are true and straight and are not liable to change their form under the influence of the moisture to which they are exposed. The alignment of the cheese-hoops so that they will not buckle is easily attained with this construction, while the parts of the frame require but little fitting and are easily secured together, so that the frame construction is very simple and at the same time very durable. The channel-bar serves not only as a longitudinal member of the frame, but also as a trough to collect and carry off the whey which is expressed from the cheese.

When this press-frame is used without an automatic pressure device, the tail-block is bolted to the side bars A of the press-frame at the rear end of the frame.

The press-frame is preferably constructed of metallic members for the reasons stated, but it is obvious that frames of other construction and materials may be employed.

My improved automatic pressure device is represented in its preferred form in Figs. 1 to 5 and is constructed as follows: The movable tail-block F is provided with laterally-projecting arms *f*, which are notched in their

outer ends to straddle the horizontal members α of the side bars of the frame and slide thereon. I represents intermediate levers pivoted to the sides of the press-frame in front of the tail-block, preferably upon arbors i , which are formed on the rear leg-frame C' and project laterally from the upper ends thereof. The upper arms of these levers are formed by segments j , having circular faces, which are arranged at such a height that the line of draft drawn through each arm of the tail-block will be tangential to the circular face of the segment in front of such arm and parallel with the ways on which the tail-block slides. J is a draft connection which extends from each arm of the tail-block to the segment in front of it and is secured with its front end to the front end of the segment. This draft connection is flexible, so that it winds upon and unwinds from the face of the segment as the latter turns on its pivot in one or the other direction and the tail-block slides on its ways, and it may be composed of a chain resting on the segment and a rod or link connecting the rear end of the chain with the adjacent arm of the tail-block, as shown, or constructed in any other suitable way. This flexible connection is tangential to the segment in all positions of the latter, and the line of the draft is therefore parallel with the guides and remains, therefore, invariably the same in all positions of the tail-block, whereby the binding and sticking of the tail-block in its ways, which is liable to occur by even a slight deviation from the true line when the tail-block is operated by a push or thrust, is avoided, and the uniform operation of the automatic pressure mechanism in all positions of the tail-block is insured. The lower arms of the intermediate levers I are formed by gear-segments j' . K represents weight-levers, one of which is arranged on each side of the press-frame below the intermediate lever I and pivoted on the press-frame by being secured to a transverse shaft k , journaled in the lower portion of the rear leg-frame C' . The short arm of each weight-lever is formed by an upwardly-projecting gear-segment l , which meshes with the gear-segment j' of the adjacent intermediate lever I. The long arm l' of each weight-lever projects rearwardly from the pivot and the rear ends of the two weight-levers are connected by a cross-bar m , upon which the slotted weights L are hung. The gear-faces of the segments j' and l are preferably eccentric or spiral, the radius of the segment j' of the intermediate lever increasing rearwardly and that of the segment l of the weight-lever decreasing rearwardly in the proper proportion to compensate for the decrease of effective leverage which results as the long arm of the weight-lever swings upwardly and decreases the effective length of the long arm of the weight-lever. These eccentric or spiral gears therefore increase the leverage in the same proportion as the leverage is de-

creased by the weights moving toward the perpendicular line drawn through the fulcrum of the weight-lever, thereby maintaining a uniform draft upon the tail-block in all positions of the weight-levers. M represents a guide-block arranged transversely in the rear portion of the press-frame and secured with its ends to the rear ends of the side bars A. This guide-block is provided at its middle with a longitudinal bearing or socket m' , in which moves a longitudinal guide-bar m^2 projecting rearwardly from the tail-block.

The operation of this automatic pressure mechanism is as follows: The head-block is pressed against the gang of cheese by the pressure-screw, which is operated by a hand lever and ratchet in the usual manner. This hand-pressing forces the gang of cheese against the movable tail-block and then forces the latter rearwardly in the press-frame. The rearward movement of the tail-block exerts a rearward pull on the draft connections and swings the upper segmental arms of the intermediate levers rearwardly, and the lower gear-segments of these levers and the gear-segments of the weight-levers forwardly, whereby the long arms of the weight-levers and the weights hanging on the same are swung upwardly. The hand-pressing is continued until the rearward movement of the tail-block is arrested by the guide-block at the rear end of the press-frame. The press can now be left without further attention, as the pressure is automatically maintained by the weight-levers, which exert a constant pressure upon the cheese and descend gradually as the cheeses shrink by the expulsion of the whey. The downward movement of the weight-levers exerts a constant pulling action on the tail-block by means of the draft connections between the tail-block and the intermediate levers, and this pull is uniform, as the leverage between the weight-levers and the intermediate levers decreases in the same measure as the effective leverage of the weight-levers increases during their downward movement. As both weight-levers are secured to the same transverse shaft, both levers work in unison and the twisting of the tail-block by applying more pressure on one side than on the other is prevented. A single weight-lever, centrally arranged, may be employed, but this arrangement is less desirable because the range of movement of a centrally-arranged lever is limited by the rear portion of the press-frame.

In the modified construction of the automatic pressure mechanism represented in Figs. 8 the intermeshing gear-segments of the weight-lever and intermediate lever are replaced by other devices which effect substantially the same result. In this construction each weight-lever is provided with a segment N, the face of which is spiral or eccentric, with its radius increasing forwardly, and this segment is provided with a chain n , or other flexible draft connection, which is se-

cured with its rear end to the rear end of the face of the segment and with its front end to the lower arm n' of the intermediate lever I, which lower arm takes the place of the gear-segment of the intermediate lever. The shape of the eccentric or spiral face of the segment N is such that its leverage with reference to the intermediate lever increases in the same measure as the effective length of the weight-lever decreases during its upward movement and vice versa.

In the modified construction represented in Fig. 7 the compensating feature is omitted and the leverage of the weight-levers increases downwardly and decreases upwardly. In this construction the weight-lever is provided with an upwardly-projecting short arm O, which is connected by a link p with the lower arm n' of the intermediate lever, which latter is the same as that represented in Fig. 6. The intermediate levers serve in this construction, as they do in the hereinbefore-described constructions, to multiply the pressure exerted by the weights on the weight-levers and to transmit the pressure to the tail-block by a pull by the draft connections, but they do not equalize the pressure.

I claim as my invention—

1. The combination with the press frame, the head block and its hand pressure mechanism, and the tail block moving on guides in the press frame, of flexible draft connections attached to the tail block, an automatic weight lever operating upon the same, and circular supports for the draft connections maintaining the latter parallel with the guides on the press-frame in the different positions of the tail block, substantially as set forth.

2. The combination with the press frame and the tail block moving on guides in the press frame, of flexible draft connections attached to the tail block, an automatic weight lever, and intermediate levers mounted on fixed pivots on the press frame and having

at opposite ends circular segments to which the draft connections are secured and connections with the weight lever, substantially as set forth.

3. The combination with the press frame and the tail block moving on guides in the same, of flexible draft connections attached to the tail block, an automatic weight lever, intermediate levers mounted on fixed pivots in the press frame and having circular segments to which the draft connections are secured, and means whereby the leverage between the weight lever and the intermediate levers is increased proportionally as the effective length of the weight lever is decreased in moving out of its horizontal position, substantially as set forth.

4. The combination with the press frame and the tail block moving on guides in the same, of intermediate levers pivoted to the press frame and having their lower arms provided with gear segments, draft connections extending from the upper arms of the intermediate levers to the tail block, and an automatic weight lever provided with gear segments which mesh with the segments of the intermediate levers, substantially as set forth.

5. The combination with the press frame and the tail block moving on guides in the same, of intermediate levers pivoted to the press frame and provided at their lower ends with eccentric or spiral gear segments, draft connections extending from the upper arms of said levers to the tail block, and automatic weight levers provided with eccentric or spiral gear segments which mesh with those of the intermediate levers, substantially as set forth.

Witness my hand this 14th day of December, 1894.

HARVEY FELDMEIER.

Witnesses:

GRIFFITH PRICHARD,
J. E. SEARLES.