

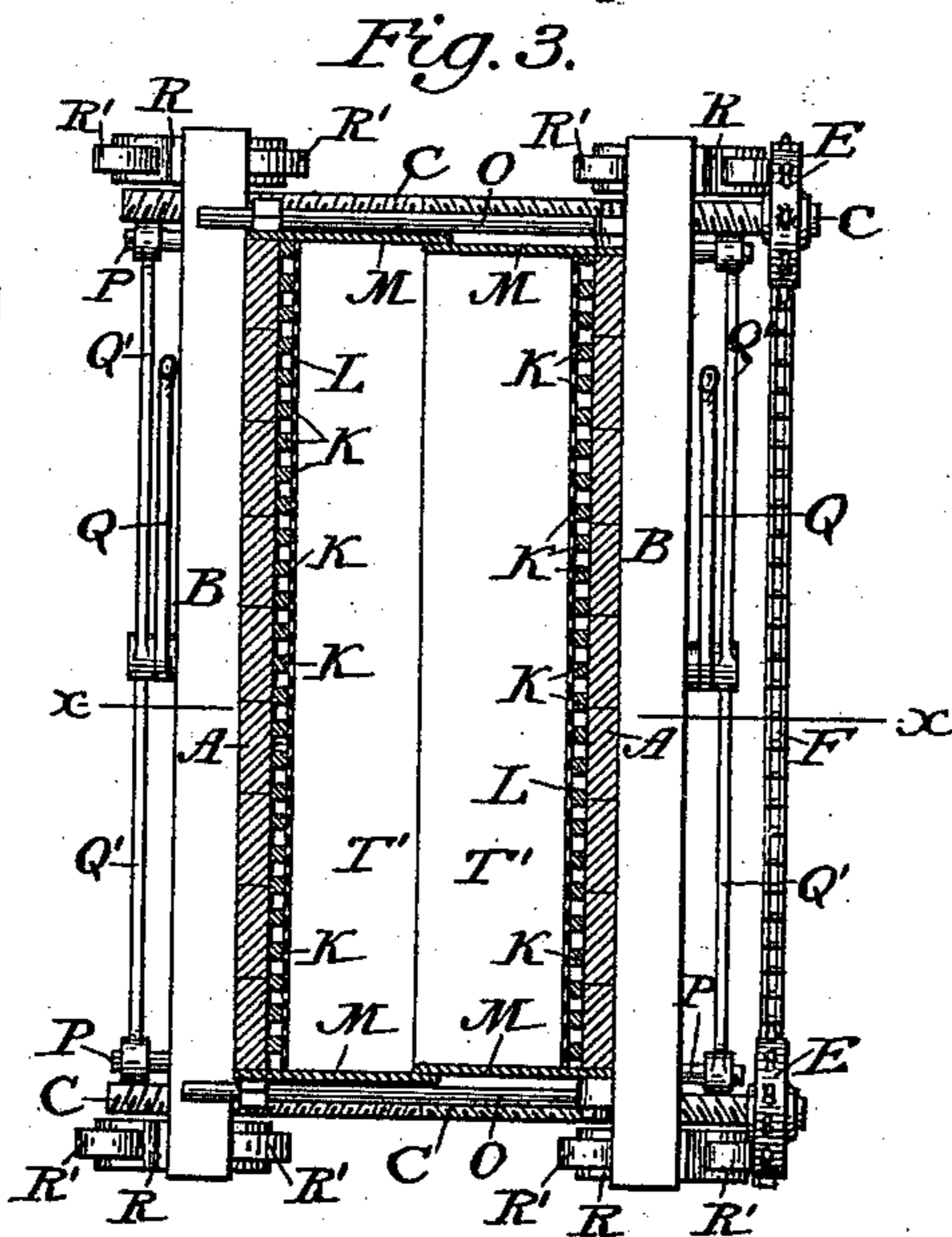
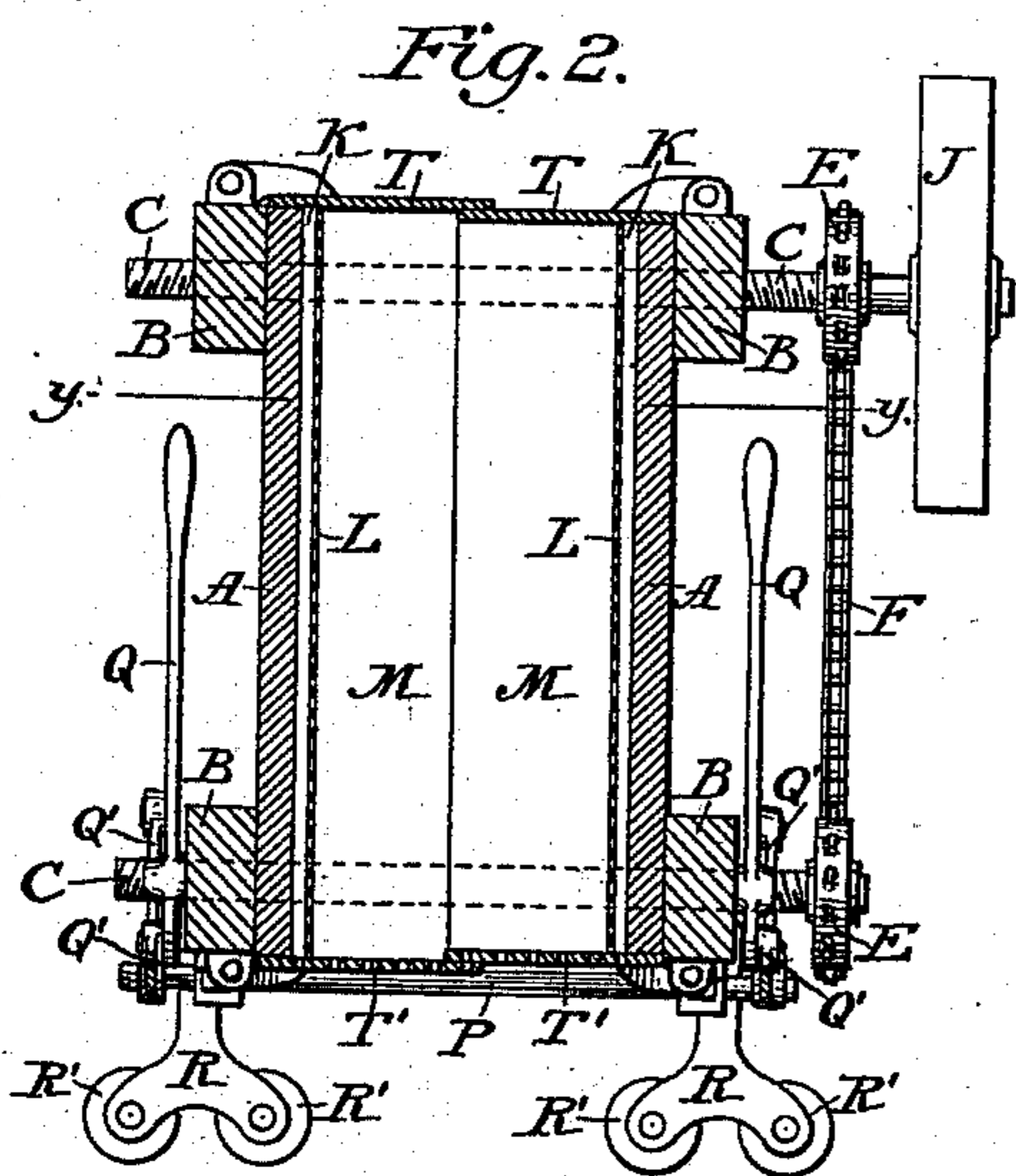
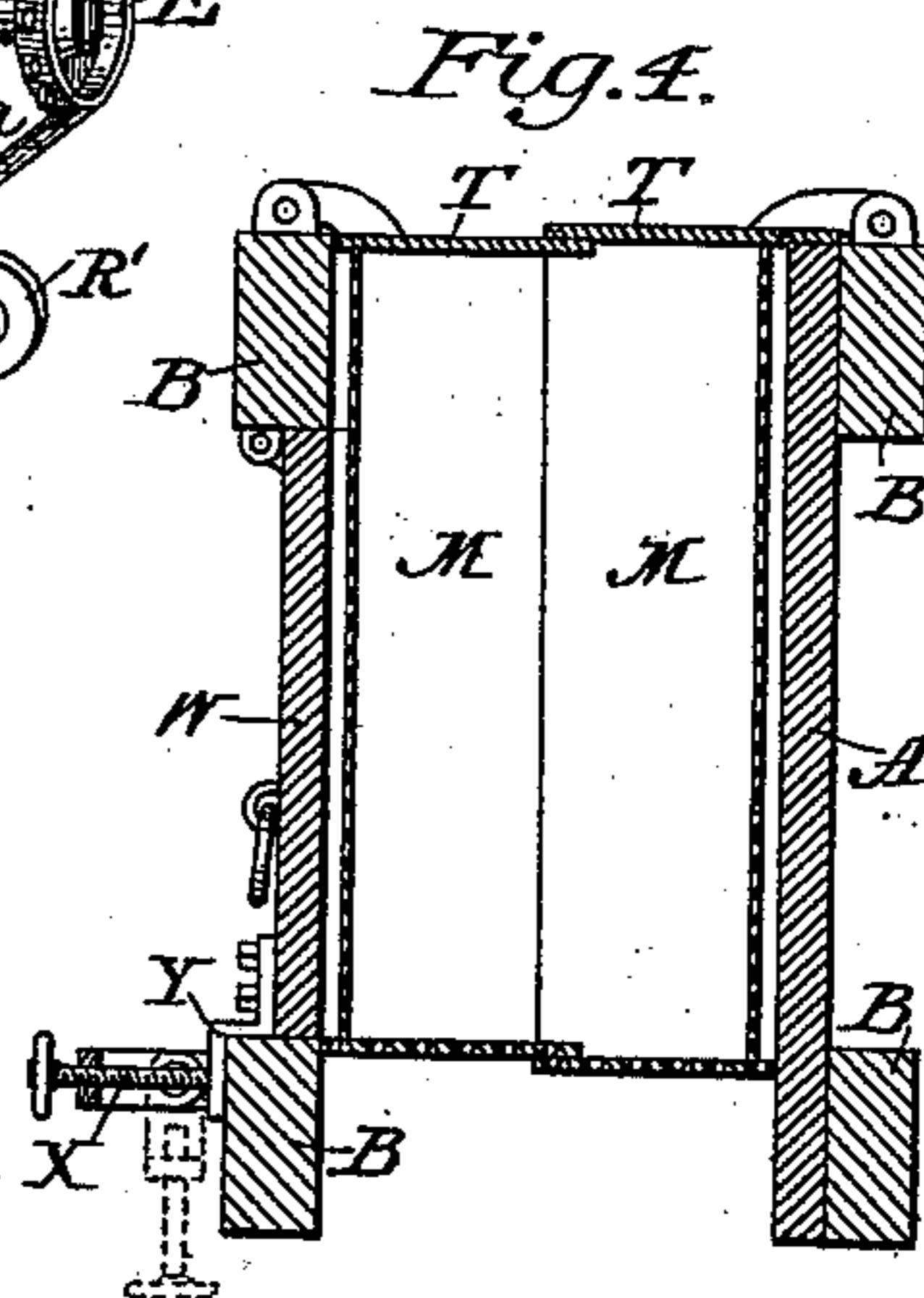
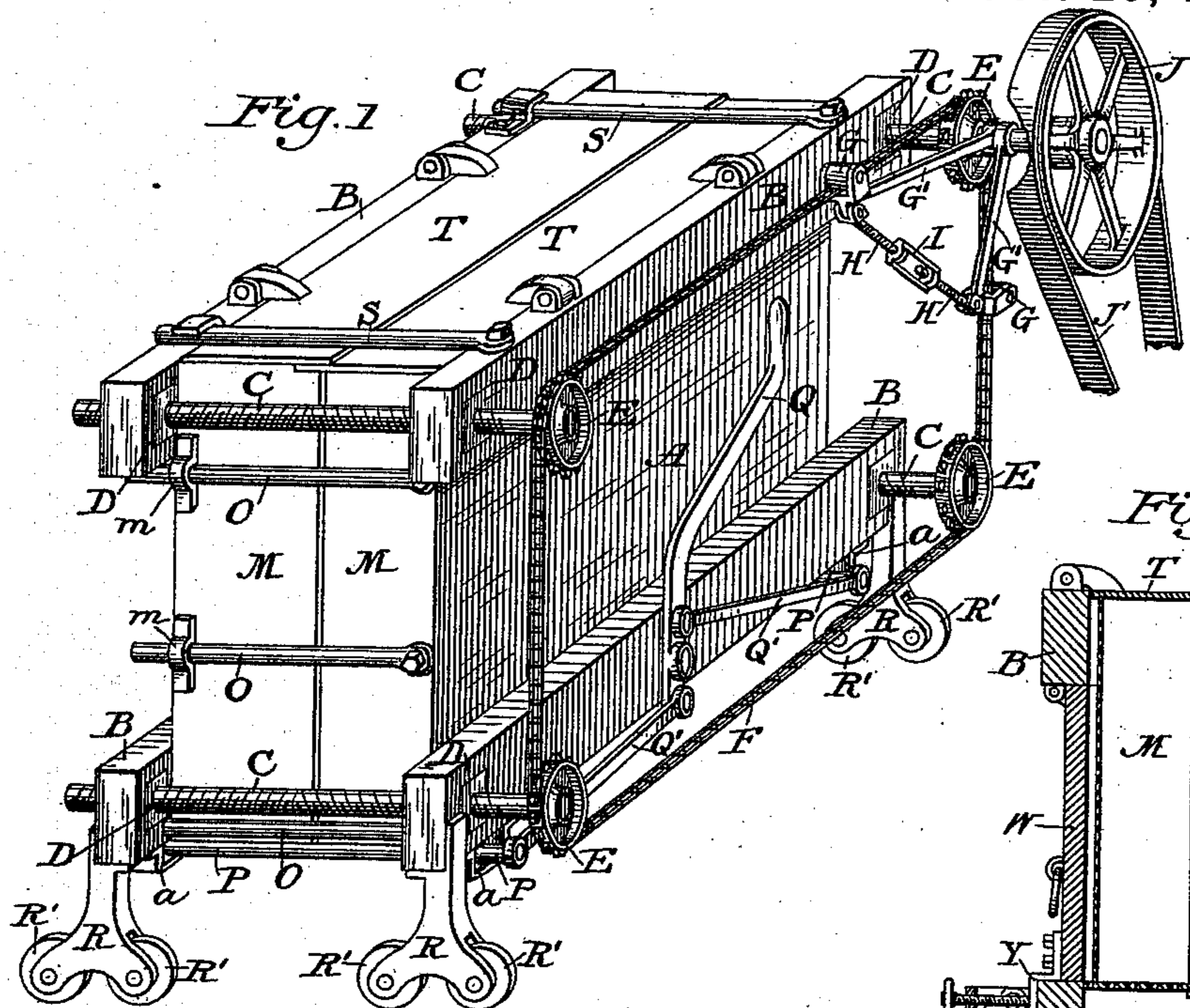
(No Model.)

W. P. PRESTON & J. J. KELLEY.

PRESS FOR EXTRACTING MOISTURE FROM BREWERS' GRAINS.

No. 413,683.

Patented Oct. 29, 1889.



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# UNITED STATES PATENT OFFICE.

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PRESS FOR EXTRACTING MOISTURE FROM BREWERS' GRAINS.

SPECIFICATION forming part of Letters Patent No. 413,683, dated October 29, 1889.

Application filed January 4, 1889. Serial No. 295,406. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM P. PRESTON and JAMES J. KELLEY, both of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Presses for Extracting Moisture from Brewers' Grains; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

Our invention relates to presses for extracting the moisture from brewers' grains and other wet refuse and for pressing the juice from fruits, vegetables, &c., and the oil from fish and animal matter, and has for its object to furnish a simple, efficient movable apparatus of this description.

The invention consists in the construction and combination, substantially as hereinafter set forth and claimed, of two lateral movable walls lined with perforated screens and arranged to be drawn together by transverse screws upon an intervening mass of wet grain or other material to be pressed, the mass being confined for the purpose by means of overlapping sliding top, bottom, and end walls secured to and moving with said side walls, and also in the devices for actuating and securing the same.

In the accompanying drawings, Figure 1 is a view in perspective of our improved press; Fig. 2, a vertical transverse section in line  $x$  of Fig. 3, and Fig. 3 a horizontal section in line  $y$  of Fig. 2. Fig. 4 is a vertical transverse section similar to Fig. 2, illustrating a modification in the construction of the apparatus.

Similar letters indicate like parts in all of the figures.

A A represent the lateral walls of the press, constructed, preferably, of heavy planking, vertically disposed and supported at top and bottom by outer longitudinal beams B B, to which the planks are secured. The two lower beams are mounted upon pedestals R R, provided with wheels R' R', which permit the beams to move freely in a direction transversely to their length. Screws C C C C are

made to work transversely through the beams at each end thereof, so as to couple the walls together. The screw-shafts are threaded to the right and left from the middle of their length and carried through nuts D D, inserted and made fast in the beams.

The nuts D D are led upon each end of the screws before being secured to the beams, so that as each screw rotates in the one direction or the other it will draw together or force apart the two nuts through which it works and the beams attached thereto.

The ends of the four screw-shafts C C C C, projecting from the outer side of one of the walls A, are fitted each with a sprocket-wheel E, and are geared together by means of an endless chain F, carried over said sprocket-wheels. The slack in this chain is taken up by means of an adjusting device consisting of two tension-wheels G G, mounted upon arms G' G', pivoted upon the axis of one of the screws, each to bear against the outer face of one of the two proximate lengths of the chain F extending from said screw, said arms being drawn together to bear inwardly upon the chain by means of a divided link H, extending diagonally across from the end of one of said arms G' to the other, and whose two divisions are coupled by a turn-buckle or by a nut I, swiveled to the end of the one division to engage a thread upon the end of the other. When slack occurs in the chain, the two tension-rollers G G are drawn toward each other and adjusted by turning the nut I until the chain is made tight.

The screws may be geared in any suitable manner to a motor—as, for example, by means of a driving-pulley J, mounted upon the end of one of them, fitted with a suitable belt J', by which it is geared to an engine.

The lateral walls A A are internally faced with a series of narrow vertical strips K K, (see Figs. 2 and 3,) separated by intervening open spaces adapted for the discharge of the liquid compressed from the grain or other material placed between the walls, and a lining L, of perforated sheet metal, is placed against said strips to confine the grain.

The ends of the press are closed by means of metallic plates M M, secured to each side wall

A, to extend thence inward and overlap in the center of the intervening space, whereby the one plate may slide over the other as the side walls are closed together. These end plates are supported against the internal pressure brought to bear thereon by means of transverse rods O O, fitted against the outer side of said end plates and secured at one end to one of the lateral walls to project through an eye or staple *m*, made fast to the opposite wall.

The top and the bottom of the press are closed by means of metallic plates T T and T' T', which are hinged at one edge to the upper inner edge of each side wall, so as to extend inwardly in a horizontal plane and overlap each other at the middle of the press, so that the one plate may slide over and upon the other as the walls are closed together.

The hinged bottom plates T' T' are prevented from swinging outward when the press is in operation by means of cross-bars P P, fitted at each end to slide in brackets or staples *a a* on the under side of the lower beams at each end thereof, so that they may be made to slip under the ends of the plates to support them, or moved back to clear them and allow them to drop open. The movement of these sliding supporting-bars P P is readily effected by means of levers Q Q, each pivoted at its lower end to the middle of each beam on the outer face thereof and each coupled to the sliding bars by links Q' Q', pivoted severally to the lever above and below its pivot, and extending thence in opposite directions to the bars. The long upper ends of the two levers Q Q are both extended and bent toward one end of the press, so as to be within ready reach of an operator standing at that end. A simultaneous pull upon both levers Q Q will operate to force the bars P P out from under the bottom plates T' T', to allow them to drop open, while a reverse movement of the levers after the bottom plates have been swung up and closed will operate to carry them under the plates for their support.

The bottom plates T' T' are perforated. The hinged top plates T T are imperforate. The top plates are secured, when closed, so as to resist the internal pressure thereon, by means of detachable cross bars or rods S S, passing through staples in the upper side of the two upper beams.

A detachable sheet-metal trough may be inserted under the press when it is in operation to catch and convey to one end thereof the liquid dripping therefrom, and when the operation is completed the trough can be removed to permit the bottom plates T' T' to drop open for the discharge of the compressed material.

When it is desired to discharge the contents of the press laterally instead of at the bottom or ends, a door W is fitted in one side of the press to swing outward therefrom, as shown in Fig. 4, and is confined by

means of a set-screw X, working in a swinging yoke, so that it may be brought to bear against a plate Y, projecting from the lower edge of the door, and be forced to drop clear thereof when the door is to be opened. (See dotted lines, Fig. 4.)

In the use of the press the lateral walls are spread apart to their full extent by the simultaneous rotation of the four screws C C C C, and after closing the bottom plates T' T' and securing them by means of the transverse bars P P, actuated by the levers Q Q, and swinging open the top plates T T the press is filled with grain through the top opening. After the press is filled the top plates are closed and secured by the transverse bars S S. The four compressing-screws C C C C are now made to rotate in unison by throwing the driving-pulley J into gear with the motor, and, as the screws rotate, the side walls A A of the press are gradually closed together upon the intervening mass until the excess of moisture is expressed therefrom. When the compression has been carried to the utmost limit, the slipping of the band J' upon the pulley J will prevent undue strain upon the screws and other parts of the press. By reversing the screws the side walls of the press are opened out, setting free its contents, which may be quickly dumped by withdrawing through a movement of the levers Q Q the supporting-bars P P from under the bottom plates T' T', so as to allow them to swing open.

We claim as our invention—

1. The combination, in a press for brewers' grains and other materials, of the two parallel movable lateral walls, the transverse connecting-screws formed with right and left threads engaging nuts in the opposing walls and all geared together to rotate in unison, and the overlapping top, bottom, and end plates, substantially in the manner and for the purpose herein set forth.

2. The combination, with the two parallel movable lateral walls, the transverse right and left screws connecting and actuating them, and the overlapping top, bottom, and end plates, the bottom plates being hinged to said lateral walls, of the transverse sliding supporting-bars moving under the ends of the bottom plates, and the levers actuating said bars, substantially in the manner and for the purpose herein set forth.

3. The combination, with the parallel movable lateral walls, the transverse screws connecting and actuating them, the sprocket-wheels on the screw-shafts, and the endless chain gearing them together, of the swinging arms pivoted on one of the screw-shafts, the tension-rollers pivoted on the end of each arm to swing against the proximate length of the endless chain, the link connecting the free ends of said arms, and means for adjusting the length of said link, substantially in the manner and for the purpose herein set forth.

4. The combination, with the two parallel

movable lateral walls, the transverse right  
and left screws connecting and actuating  
them, and the overlapping top, bottom, and  
end plates, of the transverse end-supporting  
5 bars, each secured to one of the lateral plates  
to work through an eye or staple on the oppo-  
site plate, substantially in the manner and  
for the purpose herein set forth.

In testimony whereof we have signed our

names to this specification in the presence of 10  
two subscribing witnesses.

WILLIAM P. <sup>his</sup> × PRESTON.

JAMES J. <sup>mark</sup> KELLEY.

Witnesses:

A. N. JESBERA,

E. M. WATSON.