

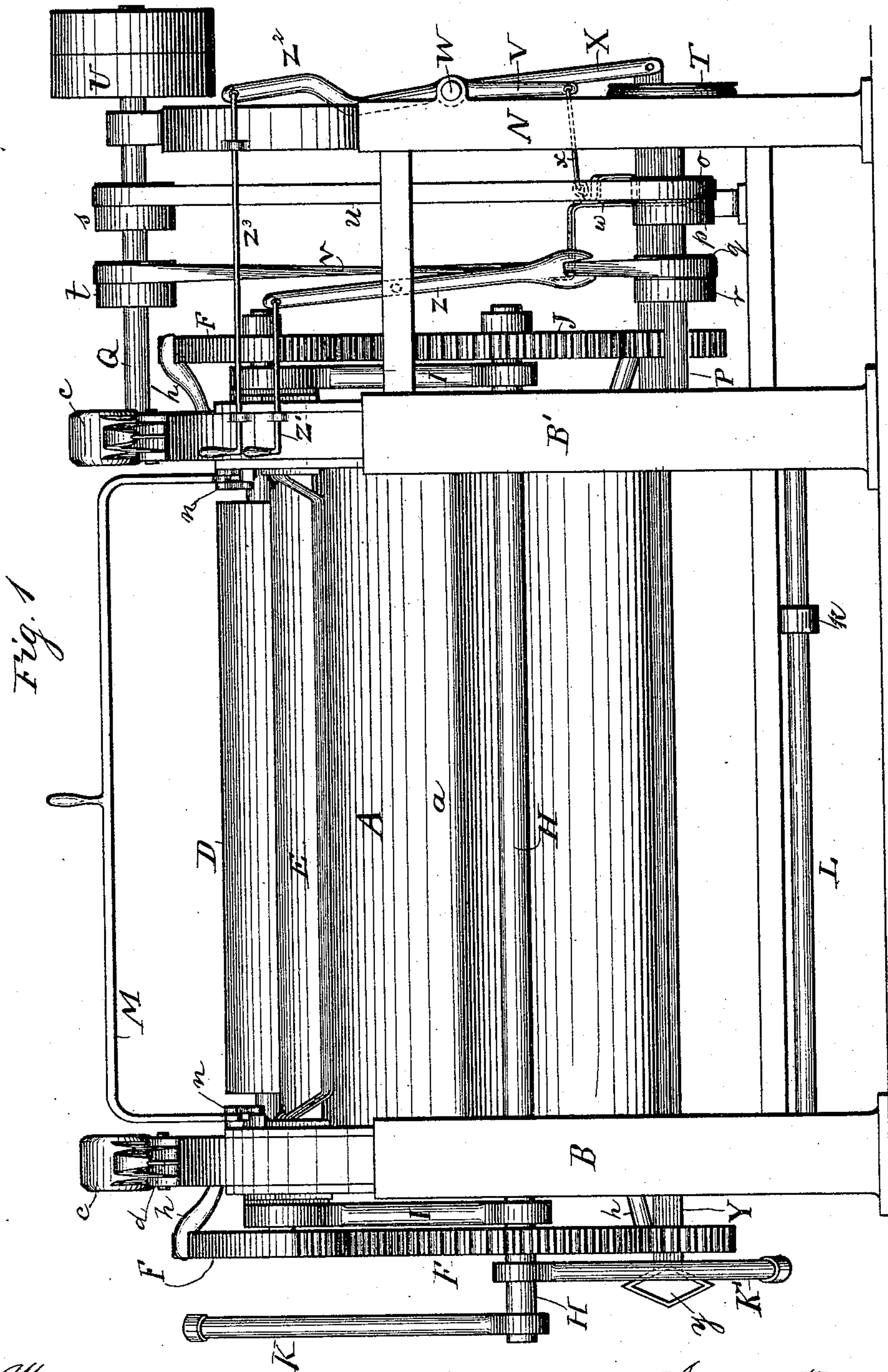
(No Model.)

5 Sheets—Sheet 1.

A. C. ANDREWS.  
LEATHER SOFTENING MACHINE.

No. 430,165.

Patented June 17, 1890.



Witnesses  
*Otto Luepke*  
*Louis H. Huchel*

Inventor:  
*Alden C. Andrews*  
By *Wm B. Lotz*  
attorney

(No Model.)

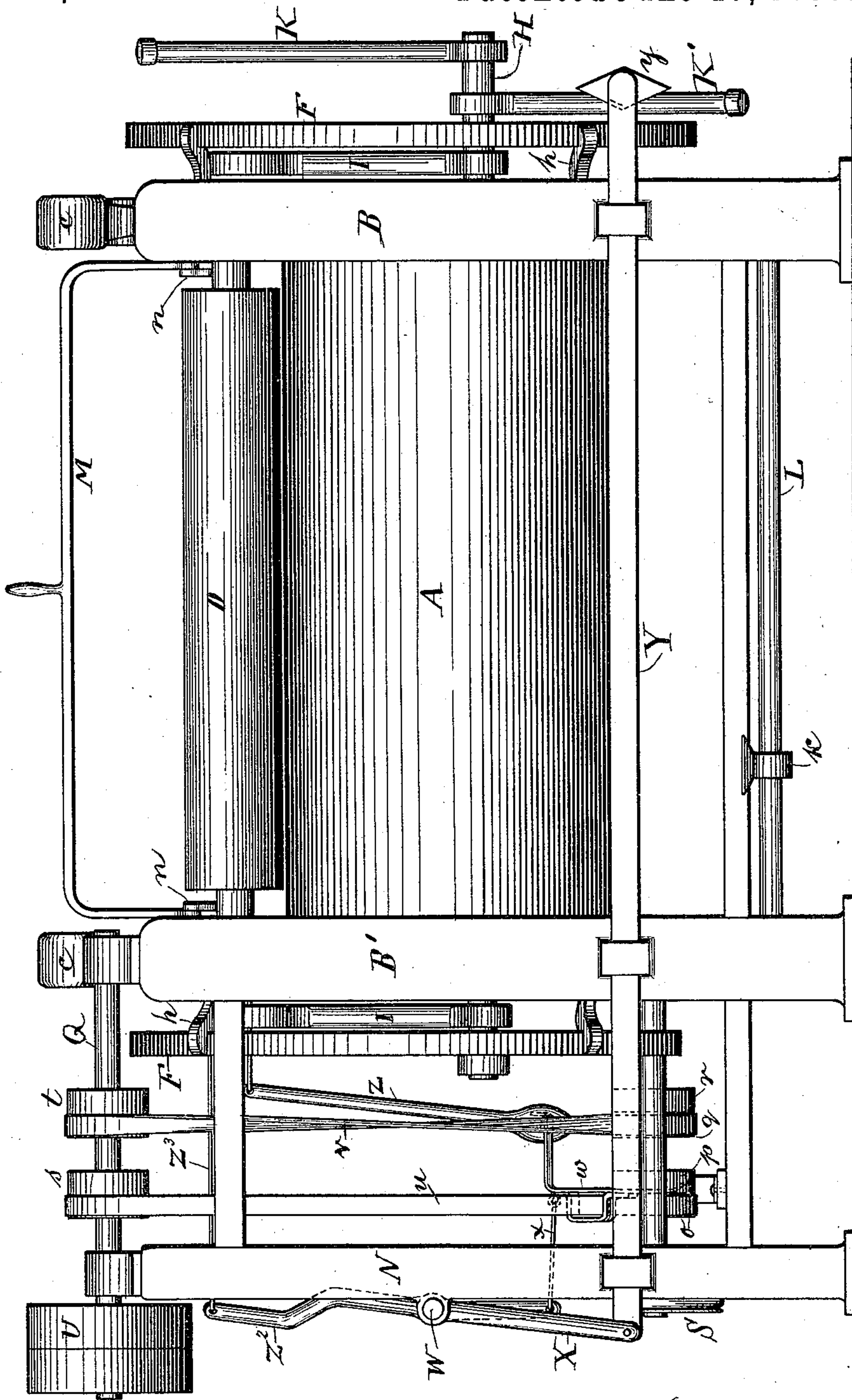
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Fig. 2



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(No Model.)

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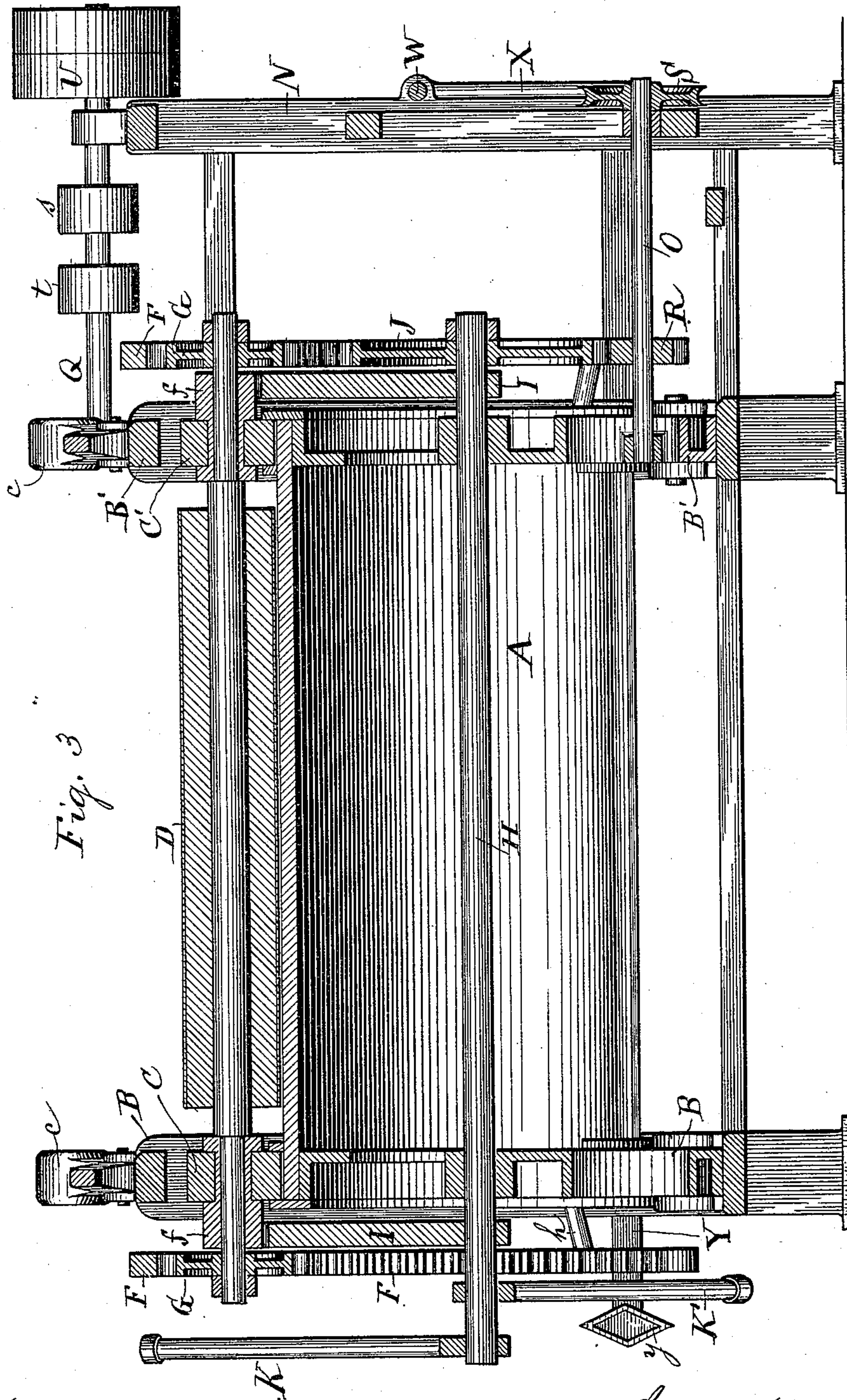


Fig. 3

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(No Model.)

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Fig. 5

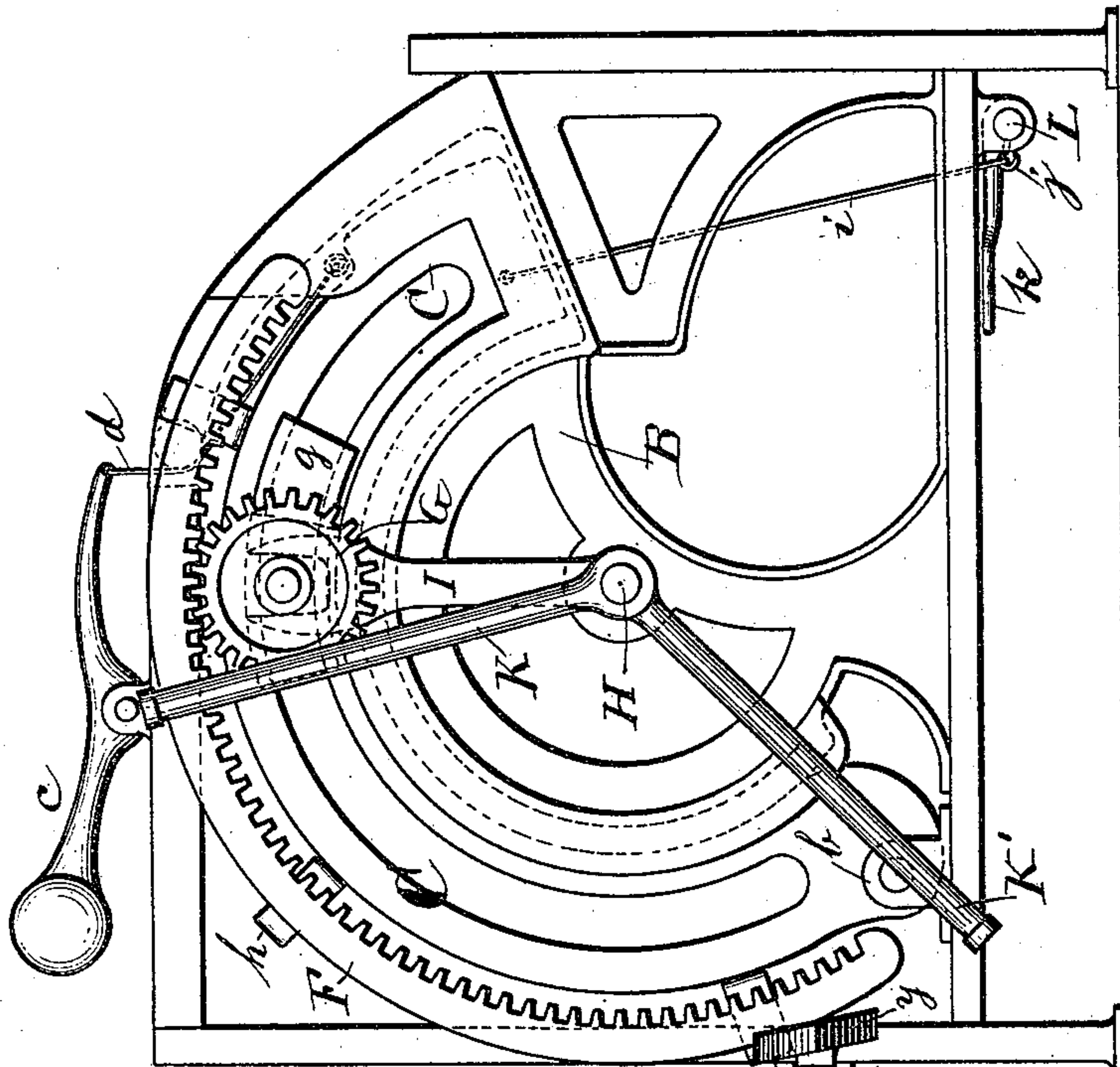
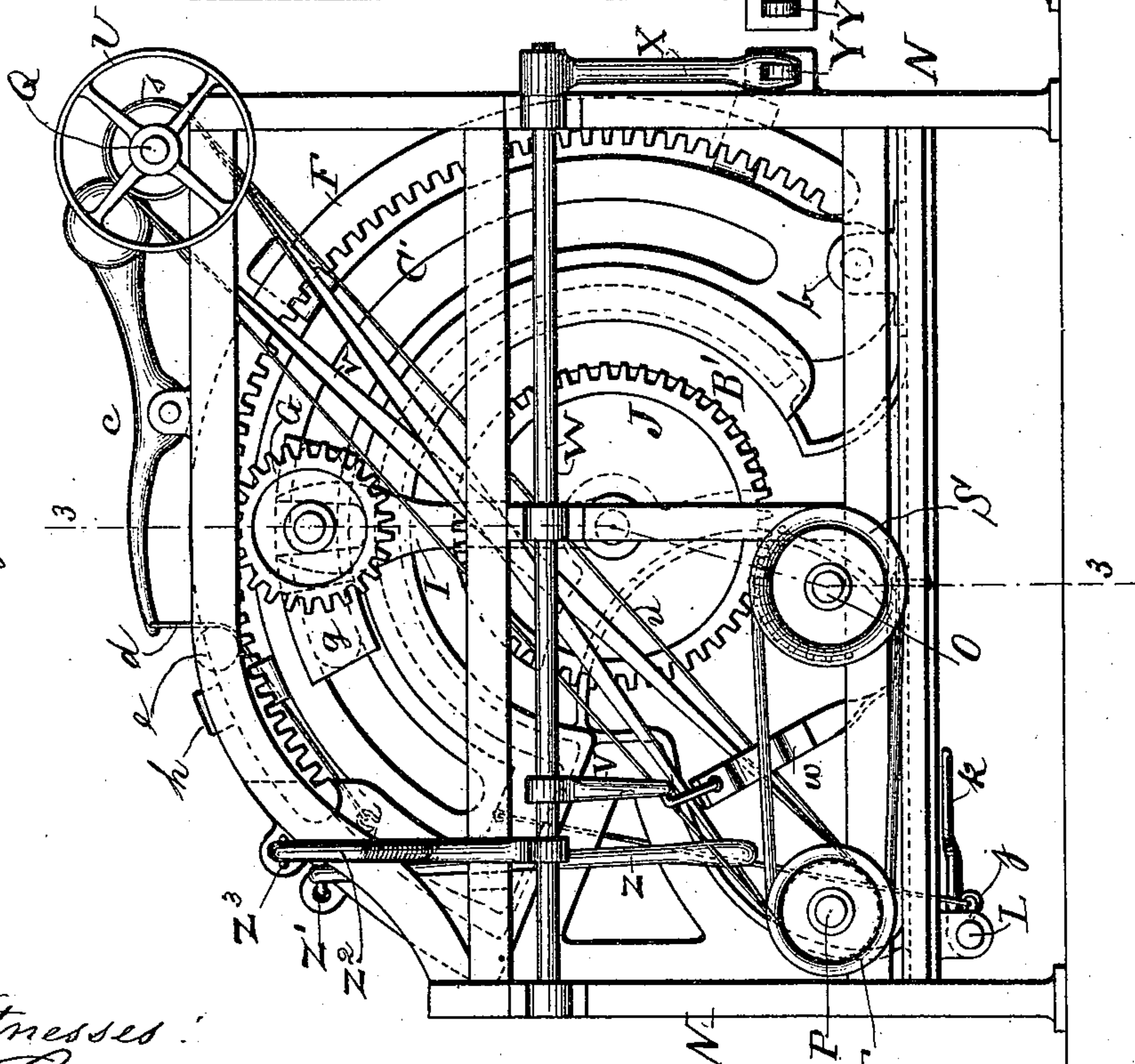


Fig. 4



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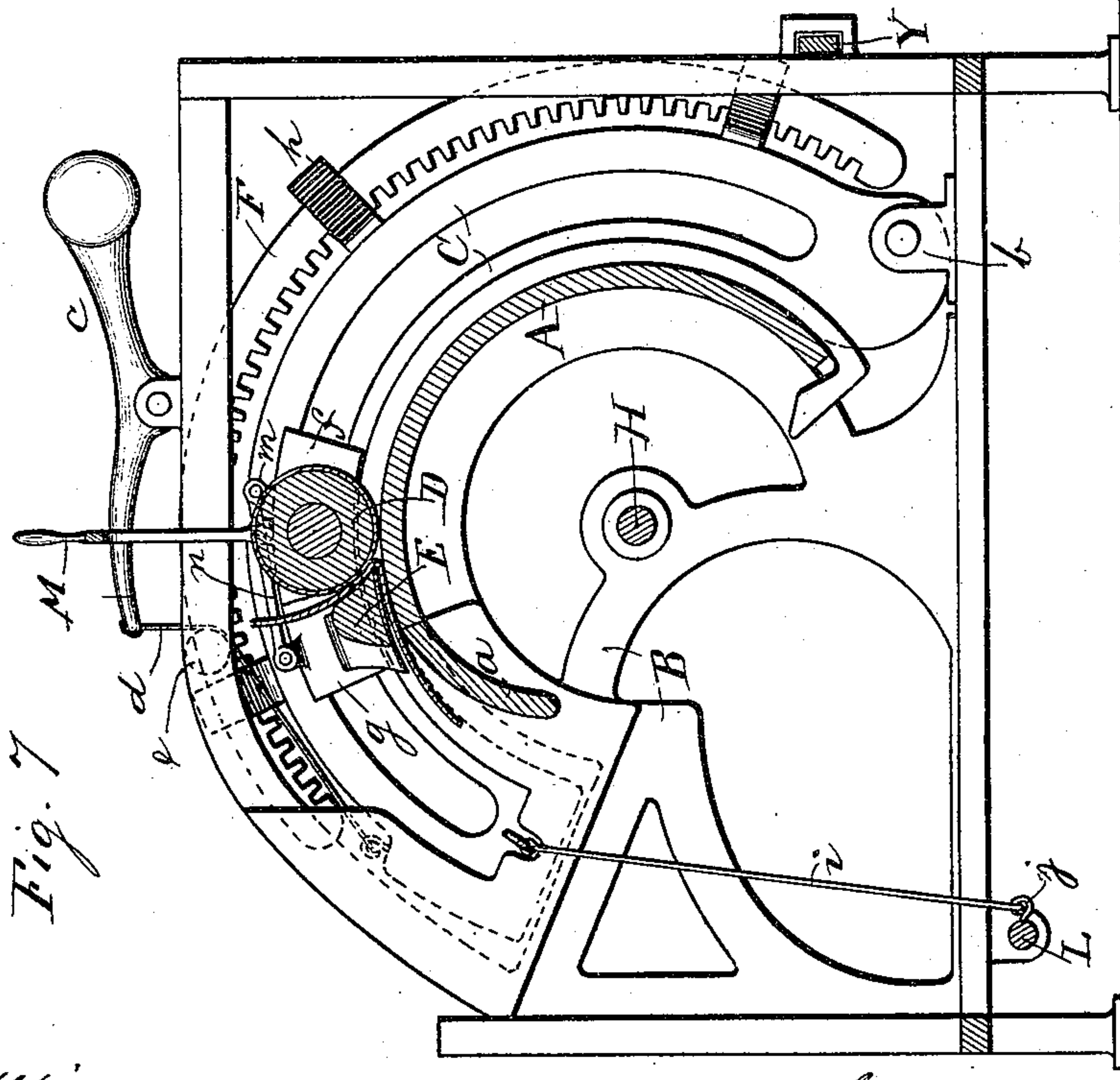
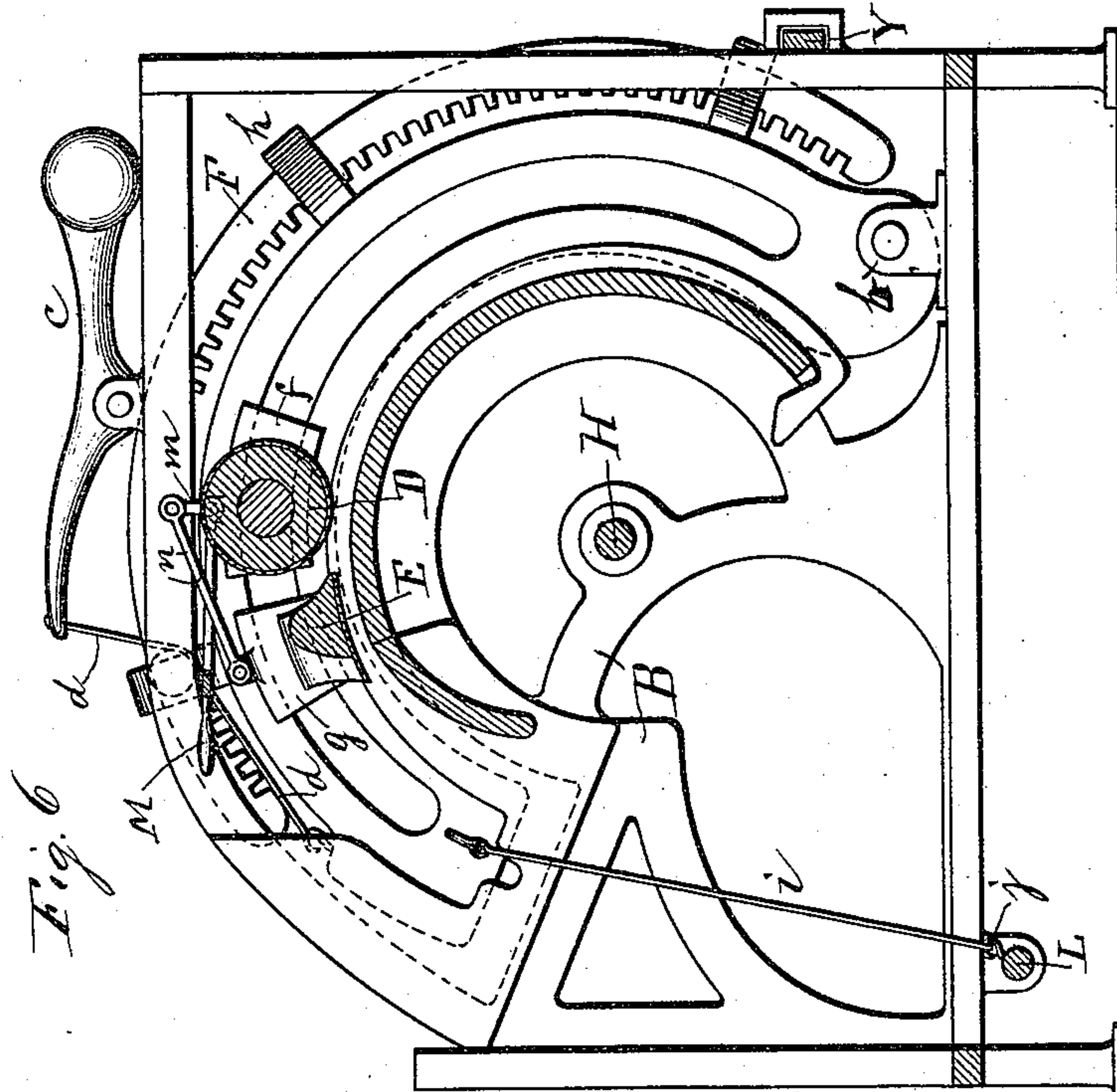
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# UNITED STATES PATENT OFFICE.

ALDEN C. ANDREWS, OF CHICAGO, ILLINOIS.

## LEATHER-SOFTENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 430,165, dated June 17, 1890.

Application filed October 15, 1889. Serial No. 327,129. (No model.)

*To all whom it may concern:*

Be it known that I, ALDEN C. ANDREWS, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Leather-Softening Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to machines for suppling and softening leather; and it has for its object to provide such a machine that, being driven by power, will do its work automatically in the most perfect manner; and with these objects in view my invention consists of the novel devices and combinations of devices hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 represents a front elevation of the machine; Fig. 2, a rear elevation of the same; Fig. 3, a longitudinal section on line 3 3 in Fig. 4; Fig. 4, an elevation of the right-hand end, and Fig. 5 an elevation of the left-hand end, of the machine; and Figs. 6 and 7 are transverse vertical sections of the same, the former in position for inserting the leather and the latter in the act of suppling and softening a sheet of leather.

Corresponding letters of reference in the several figures of the drawings designate like parts.

A denotes a semi-cylindrical shell rigidly secured between two standard-frames B and B' and having an inwardly-curved cam-extension *a*. These standard-frames B and B' provide segmental openings with guide-strips for two segmental arms C and C', each pivotally secured with one end by a pin into a fulcrum-bracket *b*, fixed upon the lower bars of frames B and B' to have a swinging movement therein, the opposite or upper ends of arms C C' being counterbalanced by weighted levers *c*, pivotally secured to the top of the frames B B' and each coupled with the end of an arm C by a cord or chain *d*, guided by a sheave *e*. These segmental arms C C' are slotted nearly their entire length to provide guides for flanged boxes *f* to receive the journals of a cylindrical roller D and for flanged blocks *g*, between which is rigidly secured a bar E, both the roller D and bar E thus being

guided to move on a course concentric with the shell A.

Against the exterior side of each segmental arm C C' is secured by brackets *h* a segmental rack-bar F, having its teeth inward, and upon the overhanging ends of the gudgeons of rollers D are mounted pinions G, meshing the teeth of segmental racks F, whereby, with moving said roller D over shell A, it is rotated in a direction opposite to what frictional contact with the shell A, would make it turn.

Concentric with shell A is journaled in suitable boxes of standard-frames B and B' a shaft H, and upon each overhanging end of this shaft H is rigidly mounted an arm I, provided with a bifurcated end that grasps the projecting end of a box *f* for reciprocating these boxes in the slotted arms C, and upon one end of this shaft H, exterior of arm I, is mounted a spur-wheel J for driving such shaft, and upon the opposite end of said shaft H are mounted two radial arms K and K' for automatically reversing the movement of such shaft, all as will be hereinafter described.

The swinging ends of arms C C' are connected by rods *i* with two cranks of a shaft L, pivoted in suitable boxes to the bottom of the standard-frames B B', which shaft L is provided with a pedal *k* for the operator by his foot to counteract the lifting-power of the balance-levers *c* and to move and hold the roller D and bar E down to its work upon shell A. Reciprocating motion being imparted to boxes *f* by arms I, the blocks *g* are coupled to such boxes *f* to move therewith. This connection between boxes *f* and blocks *g* consists of a U-shaped double lever M, the ends of which are pivotally secured upon boxes *f*, each pivotal end being provided with a bell-crank *m*, that is coupled with one end of a link *n*, the opposite end of which links are pivotally secured to the top of blocks *g*. By this connection, with turning the lever M downward, as shown in Fig. 6, the roller D and bar E are separated, and with swinging the lever M up the bar E is pulled toward the roller D, and is securely held there by the crank-arm *m* and link *n* being in straight line with each other. The bottom face of bar E is concaved to correspond with



the face of shell A; and is lined with sheet metal, and forwardly it is curved correspondingly with the curve of the face of the roller D, and thus provides a sharp or wedge-like edge that passes under the roller D, which roller is covered with leather. While the roller D and bar E are on their most forward position opposite to the cam-extension *a* of shell A, the lever M is swung down for separating the roller D and bar E, and the pedal *k* is released for allowing the weighted levers *c* to lift the arms C C', and therewith the roller D and bar E, all as shown by Fig. 6 of the drawings. Now, after passing the end of a sheet of leather down between roller D and bar E, and then under bar E by swinging the lever M upward, I move the bar E toward the roller D until such leather is clamped between said roller D and bar E, and then by placing the foot upon pedal *k* I press the end of the leather by bar E upon shell A, when, with starting the machine by applying power to shaft H, the arms I will push the roller D and bar E rearward over the surface of the shell A, whereby the bar E will slide over the leather, while the roller by its friction will continuously draw the leather down upon the shell A, thereby holding it bent around the sharp edge of bar E until the roller D and bar E have thus reached their lowest rear position, and the whole sheet of leather has thus been passed through between this roller D and bar E, after which, with reversing the machine, the leather is passed through again between the roller and bar, and so on as many times as may be necessary for suppling and softening it.

Between standard-frame B' and a frame N, rigidly connected therewith, are journaled in suitable boxes rigid with these frames three shafts O, P, and Q. Upon shaft O is mounted a pinion R, meshing with the spur-wheel J, and a pulley S in line with pulley T, mounted upon shaft P. Upon this shaft P are also mounted two sets of pulleys *o p* and *q r*, the pulleys *o* and *r* being rigid and the pulleys *p* and *q* being loose pulleys, and each pair being opposite to a pulley *s* or *t*, mounted upon shaft Q, upon which is also mounted the main driving-pulley U. Over the pulleys *o* or *p* and *s* is stretched a straight belt *u*, and over the pulleys *q* or *r* and *t* is stretched a cross-belt *v*, one belt thus transmitting a reversed movement from the other belt, and one only at the time is to be on the tight pulley, while the other one is on the loose pulley, this being regulated by a belt-shifter *w*, secured upon a cross-bar of the frame and provided with a loop for belt *u* to pass through and with a hook engaging the inward edge of cross-belt *v*. This belt-shifter *w* is connected by a link *x* to an arm V of a transverse rocker-shaft W, which is pivoted in suitable boxes against the standard-frame N, and has a pending arm X, mounted upon the rearwardly-overhanging end of shaft W, to which arm is pivotally connected a bar Y,

guided in loops secured against frames B, B', and N, and having secured against its left end a diamond-shaped head *y*, that, with the rotation of shaft H, will be engaged by the ends of the radial arms K and K', the arm K pushing the bar toward the right and the arm K' pushing it toward the left, whereby the shaft W is rocked in one direction and then in the other, and thereby the belt-shifter *w* is automatically swung to shift the belts *u* and *v*. The radial arms K and K' are secured upon the shaft H in such relative positions to each other and to the arms I that arm K will come into contact with the outward angular edges of head *y* to push bar Y toward the right when the roller D has arrived at its rear extreme position, and then both belts *u* and *v* are shifted, the belt *u* upon the tight pulley *o* and the belt *v* upon the loose pulley *q*, whereby the movement of shaft H is reversed, and then, when the roller D again arrives at the front, the arm K' will engage the inner angular edges of the head *y* and will shift the belt *u* to ride upon the loose pulley *p*, so that then both belts *u* and *v* will ride upon the loose pulleys and the machine will stop for the operator to remove and insert the leather, who then will start the machine again by shifting the belt *v* upon tight pulley *r* by means of a forked lever *z*, operated by a rod *z'*. The rocker-shaft W has also mounted an arm *z*<sup>2</sup>, having coupled a rod *z*<sup>3</sup> for operating said rocker-shaft independently of the arms K K'. Both rods *z'* and *z*<sup>3</sup> are guided in eye-lugs of the frame B' and are provided with suitable handles. The machinery parts, however, for thus transmitting an oscillating movement to main shaft H may be arranged and constructed in many different ways, and therefore I do not wish to be restricted to the particular arrangement herein shown and described.

What I claim is—

1. In a machine for the purpose described, the rigid segmental shell A, and in combination therewith the wedge-shaped bar E and roller D, both guided to move over shell A, and the overhanging ends of the gudgeons of roller D, having mounted pinions G engaging the inward teeth of a segmental rack F, all substantially as set forth, to operate as specified.
2. In a machine for the purpose described, the rigid segmental shell A, and in combination therewith the wedge-shaped bar E, secured between the blocks *g* and the roller D, pivoted in journal-boxes *f*, both the blocks *g* and the boxes *f* being guided to follow the curve of shell A and both suitably coupled to move simultaneously by a U-shaped lever M, having bell-cranks *m* and being pivoted upon boxes *f*, and by links *n*, pivoted to blocks *g* and to the bell-crank *n*, all substantially as set forth, for the purpose specified.
3. In a machine for the purpose described, the combination, with the segmental rigid shell A, of slotted segmental arms C C', pivoted at one end to the frame at *b* and adapted



to be oscillated by a pedal-shaft L, having cranks connected with the opposite ends of the same, these arms C C' providing guides for the journal-boxes of roller D and for the  
5 end blocks of bar E and having secured segmental rack-bars F, engaging pinions G, mounted upon the gudgeons of roller D, all substantially as and for the purpose set forth.

4. In a machine for the purpose described,  
10 the combination of segmental rigid shell A, roller D, journaled in boxes *f*, and bar E, secured between blocks *g*, both the boxes *f* and blocks *g* being coupled and guided in slots to move concentric with shell A, and the  
15 gudgeons of rollers D, having mounted pinions G engaging the inward teeth of segmental rack-bars F, and the central main driving-shaft H, having arms I, engaging the boxes *f*, all substantially as set forth, to op-  
20 erate as specified.

5. In a machine for the purpose described, the combination of rigid shell A, slotted segmental arms C C', pivoted at one end to the frame at *b* and adapted to be oscillated  
by pedal-shaft L, having cranks connected 25 with the opposite ends of the same, these arms C C' providing guides for the journal-boxes of a roller D and for the end blocks of a bar E, and having segmental rack-bars F engaging pinions G, mounted upon the gudgeons 30 of roller D, and the central main driving-shaft H, having arms I engaging the boxes *f*, all substantially as set forth, to operate as specified.

In testimony whereof I affix my signature in 35 presence of two witnesses.

ALDEN C. ANDREWS.

Witnesses:

WM. C. LOTZ,

OTTO LUEBKERT.