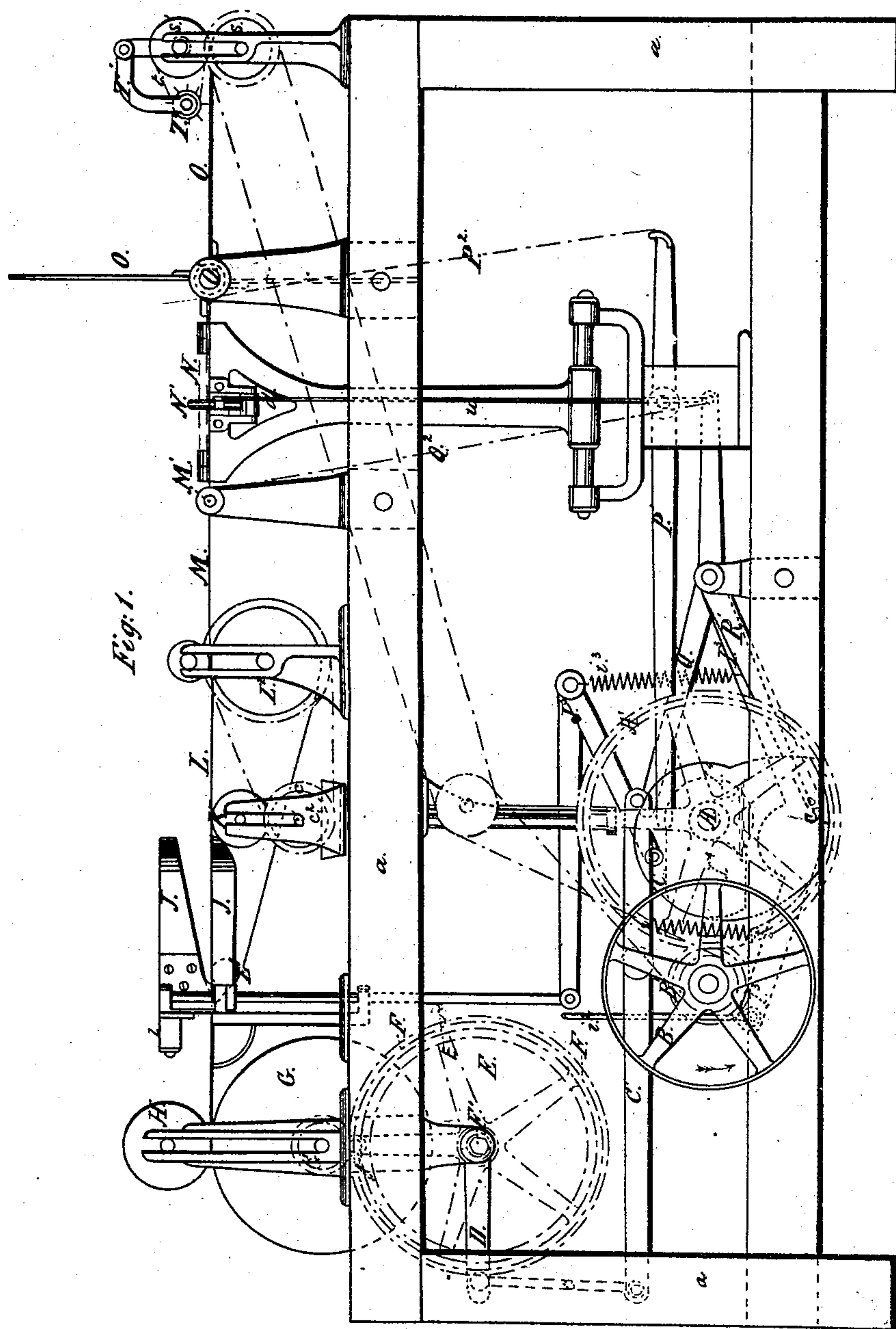


No. 12945.

E. W. Goodale's Paper Bag Machine.

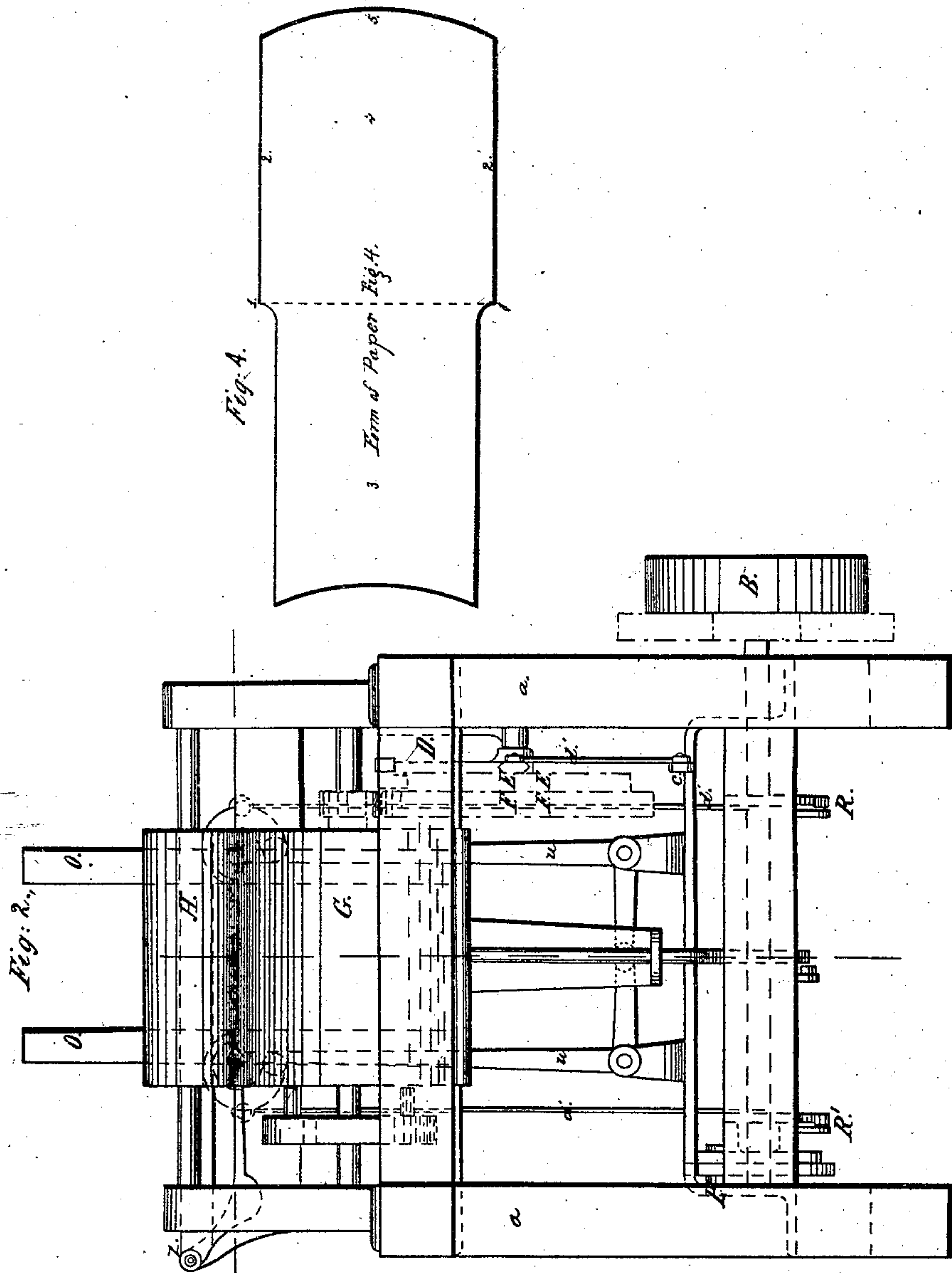
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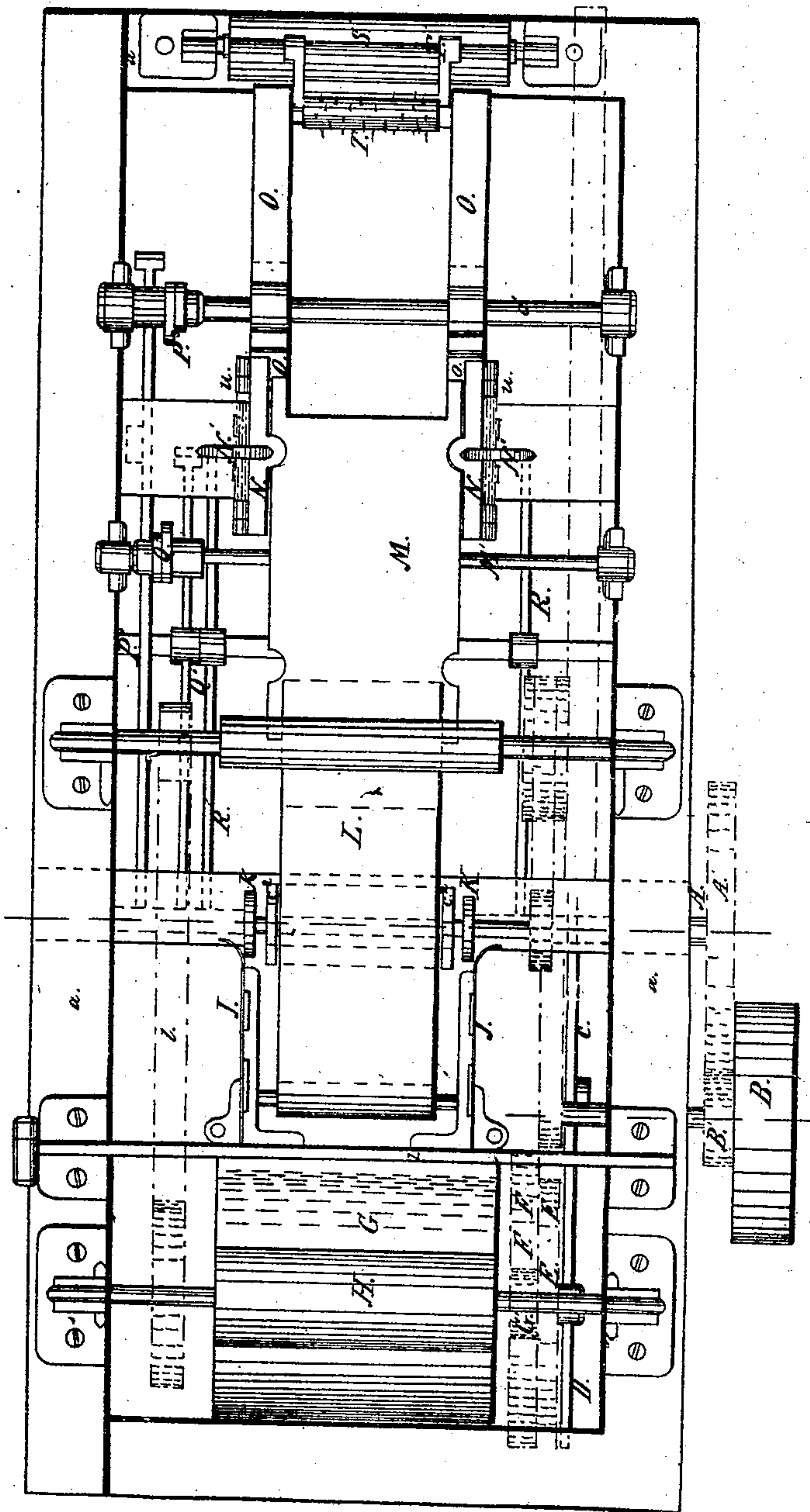


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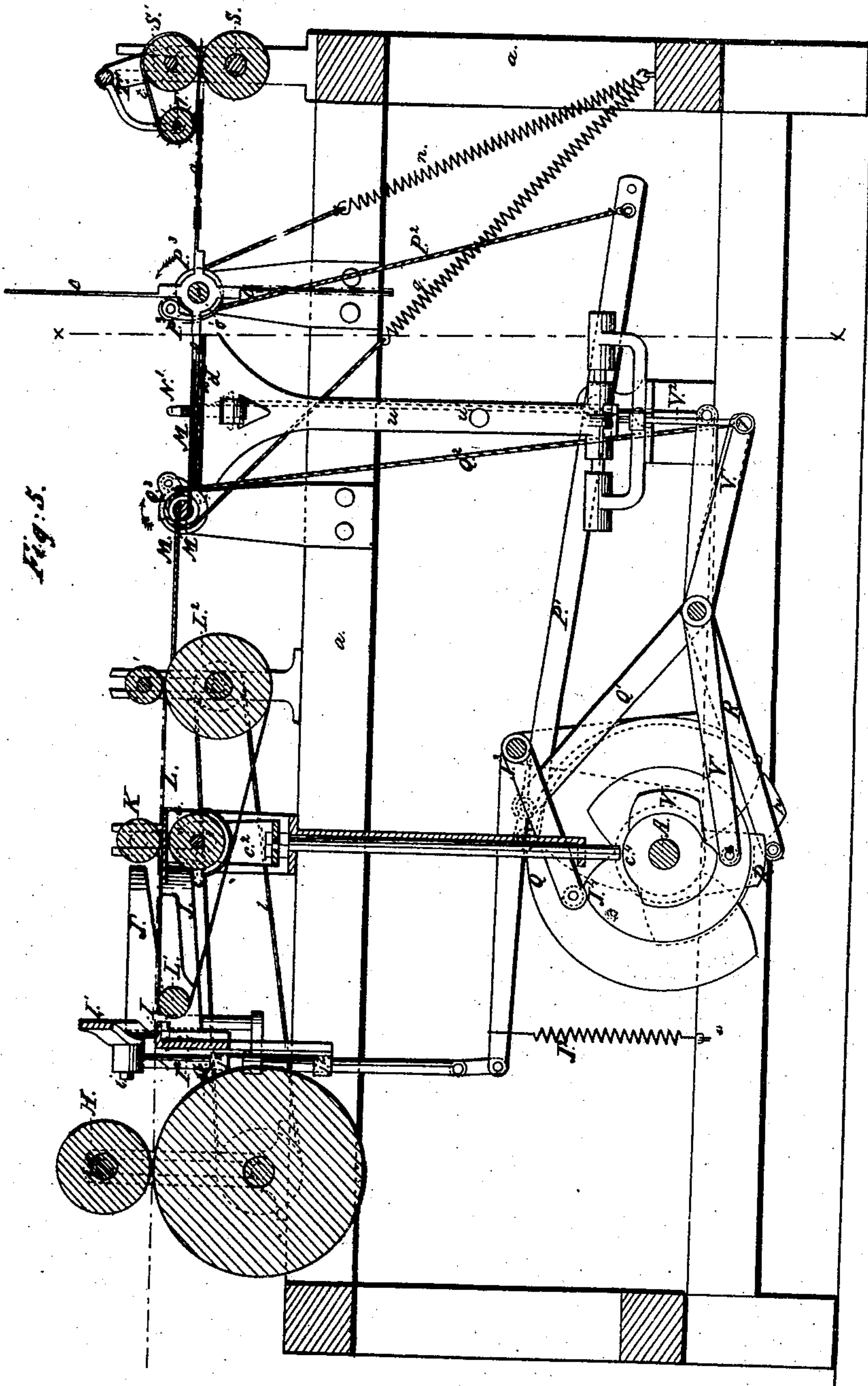
Fig. 3.



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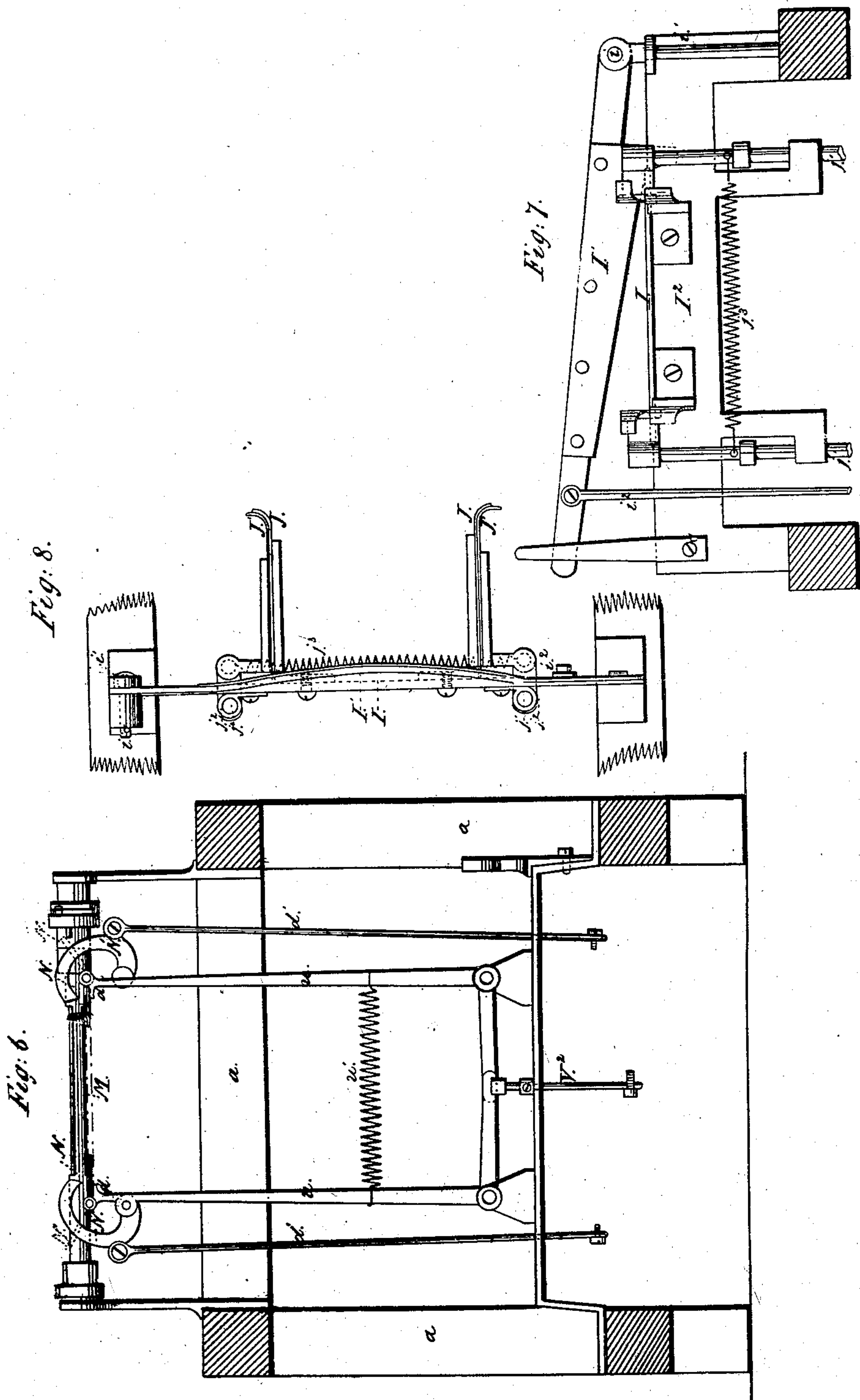
E. W. Goodale's Paper Bag Machine.



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E. W. Goodale's Paper Bag Machine.

Patented May 29, 1855.



UNITED STATES PATENT OFFICE.

E. W. GOODALE, OF CLINTON, MASSACHUSETTS.

MACHINE FOR MAKING PAPER BAGS.

Specification forming part of Letters Patent No. 12,945, dated May 29, 1855; Reissued September 4, 1860, No. 1,033.

To all whom it may concern:

Be it known that I, E. W. GOODALE, of Clinton, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machinery for Making Bags of Paper or other Material; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a side elevation of a machine constructed according to my invention; Fig. 2, an end view of the same; Fig. 3, a plan of the same; Fig. 4, shows the shape to which the paper is cut, and also the manner in which it is folded to make the bag. Fig. 5, is a longitudinal vertical central section of the machine; Fig. 6, a transverse vertical section of the same, in the line x, x , of Fig. 5. Fig. 7, is a detached elevation of the shears by which the paper is cut to the required shape, and Fig. 8, is a plan of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in certain novel devices and novel arrangements and combinations of old devices constituting a machine by which paper is cut from a roll folded, pasted and lapped to form a bag of better quality than has been heretofore made by machinery.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

a, a , represents the framing of the machine, A , is the main shaft carrying a number of cams for giving motion to the different parts of the machine, and also carrying a spur wheel A^1 , gearing with a pinion B^1 , attached to the driving pulley B .

G , is a feed roll and H , a pressure roll the former receiving an intermittent motion to feed at proper intervals a suitable length from a roll of paper (supposed to be conveniently hung on a reel, but not shown), to form a bag, the said intermittent motion being derived from a cam C , on the main shaft, and a lever C^1 , see Fig. 1, which is acted upon by the said cam, and connects by a rod c , with one arm of a ratchet lever D , which carries a pawl c^1 , engaging with a ratchet wheel E , which is made fast to a gear F , which works on a fixed axle F^1 , and

engages with a smaller gear G^1 , on the shaft of the feed roll G .

I , Figs. 5, 7 and 8, is the stationary blade and I^1 , the vibrating blade of a pair of shears arranged transversely in the machine for cutting off the paper after it has been delivered by the feed rollers on to an endless apron L . These shear blades are shown in Figs. 5, 7, and 8. Their cutting edges are of such curved form as to leave a convex margin on the roll of paper and a corresponding concave margin to the piece they cut off thus giving the two ends of every bag piece the form shown in Fig. 4.

J, J , are the stationary blades and J^1, J^1 , the movable blades of two pairs of shears arranged longitudinally in the machine to cut out corresponding portions of one half of each side of the bag piece, so that when the piece is folded in the line 1, of Fig. 4, to bring the part 3, on top of the part 4, the side parts 2, 2, of the other half, may lap over it to close the sides of the bag. The edges of the side shear blades J, J, J^1, J^1 , are straight along the greater portion of their length but near their extremities they are curved outward as shown in Figs. 3, and 8, in order to cut out the sides of the bag piece at one operation. Without such bent or curved form two shears would be required on either side of the machine to cut the sides of the piece to the proper form, one arranged longitudinally and the other transversely. The stationary blades of all the shears are attached to a bridge piece I^2 , standing across the frame a, a . The shear blade I^1 , is pivoted at one end by a pivot i , in a fixed stand i^1 , and at the opposite end is connected by a rod i^2 , with a lever I^3 , see Fig. 1, which is operated upon by a cam I^4 , on the main shaft for the purpose of drawing down the blade to cut off the bag piece. After the action of the cam, the lever is raised for the purpose of raising the blade, by a spring i^3 . The blades J^1, J^1 , are attached to vertical shafts j^1, j^1 , see Figs. 5, 7 and 8, which slide up and down in guides j^2, j^2 , secured to the bridge and are connected to levers J^3 , which are acted upon by a cam J^4 , on the shaft A , the action of the said cam, being such as to keep the blades always raised except at the proper time for the cutting operation when it allows them to be drawn down by a spring or springs J^2 , connected

with the lever J^3 , as shown in Fig. 5. In addition to the upward and downward cutting movement of the blades J^1 , J^1 , they have a slight lateral, vibrating movement on the shafts j^1 , j^1 , and to produce this movement they are set slightly out of parallel with the blades J , J , and are connected by a spring j^3 , which tends to draw them together, and while cutting to throw their edges slightly across those of J , J , but their downward movement in contact with J , J , forces them gradually apart. The above method of hanging the shear blades is the only one I have found, after many unsuccessful experiments, to operate satisfactorily with the bent blades such as J^1 , J^1 , the operation of the bent parts of the blades being very imperfect with all other arrangements.

The endless apron L , on which the cut bag piece is received is carried by two rollers L^1 , and L^2 , the latter of which receives an intermittent rotary motion from the feed roller G , through a band l , running over pulleys on their respective shafts, the speed of the apron corresponding with that of the periphery of the said feed roller. While on the apron the under faces of the side margins of the part 3, of the bag piece are pasted, ready to receive the lapping pieces 2, 2, by means of two rollers c , on a shaft c^1 , working below or within the apron the said rollers receiving a rotary motion for the purpose by a band (not shown) from the roller L^2 . The rollers c , are intended to take up paste from a trough or troughs below them and give it to the bag piece, and for this purpose their shaft c^1 , is hung in a rising and falling carriage c^2 , resting upon a cam c^4 , on the shaft A , see Fig. 5, by which it is lowered and raised at suitable intervals to take up paste and give it to the paper. The paper is confined to the paste rollers during the pasting operation by means of pressure rollers K , which are grooved so as only to present a number of sharp edges to the paste roller so that after the paper has passed the paste roller the said pressure roller will not take up any paste.

In close proximity to the apron L , is placed an "intermittently revolving folder" indicated by M , in Figs. 1, 3, 5 and 6, which may consist of one perfectly flat plate secured at the middle of its length to a shaft M^1 , or of two plates as shown in Fig. 5, parallel with each other but a little apart so that there is a slight step between them. The shaft M^1 , is parallel with the feed roller and rollers of the apron. The whole length of the folder is nearly equal to the length of the bag piece but it must be considerably narrower. The bag piece is deposited upon the folder while the latter is stationary in a horizontal position. Parallel with the folder shaft M^1 , is the inter-

mittently revolving creaser shaft O^1 , carrying several pairs of creasers O , O , consisting of light radial arms of flat metal plate of such length and at such distance apart that each pair form a mold upon which to fold and produce a bag. Between the folder shaft M^1 , and the creaser shaft O^1 , are placed two folding stands d , d , which are carried by the upright arms of two elbow levers u , u , see Figs. 5 and 6, which receive a vibrating motion to give the folding stands a lateral movement. As soon as the piece is properly deposited on the folder, the creaser shaft makes a portion of a revolution in the direction of the arrow shown near it in Fig. 5, and brings down a pair of creases upon the part 3 of the bag piece and immediately after this, the folder makes half a revolution in the direction of the arrow shown near it in Fig. 5, and folds the part 4, over on to the part 3. During the folding operation, the pair of creasers which is in operation has been supported by the folding stands d , d , and these remain below the creasers after the folding operation, and during the operation of lapping the sides which is performed by means of lappers N , N , hinged to the folding stands. These lappers during the preceding operations have been thrown back to the position shown dotted in Fig. 6, and the lapping pieces 2, 2, of the paper lay upon them, but as soon as the paper has been folded in the line 1 by the folder, the lappers are thrown over on to the creasers and thus lay the lapping pieces 2, 2, over on to the pasted margins of the part 4. A transverse section of the bag in the state now described is represented in red color in Fig. 6, and a longitudinal section in Fig. 5.

The movement of the folder is given at regular and proper intervals by means of a cam Q see Fig. 5, on the shaft A , acting on a lever Q^1 , which draws down a cord Q^2 , connected with a pawl and ratchet Q^3 , on the folder shaft. The return movement of the ratchet pawl is effected by a spring q , at the opposite end of the cord Q^2 . The movement of the creaser is given in a substantially similar manner by means of a cam P , acting on a lever P^1 , which draws down a cord P^2 , connected with a pawl and ratchet P^3 , on the creaser shaft. The return movement of this ratchet pawl is effected by a spring p . The movement of the side lappers N , N , to make the laps to form the seams of the two sides of the bag, is given by means of two fingers N^1 , N^1 , which are pivoted to the elbow levers u , u , and connected by rods d^1 , d^1 , with a pair of levers R^1 , operated upon by cams R , on the shaft A . The lappers are thrown back again by means of springs applied to their hinge joints.

I have now described the manner of cut-

ting, folding and lapping the paper to form the bag, which leaves the bag upon the creasers O, O; all that requires to be subsequently done is to take it from the creasers 5 and press it to insure the perfection of the seam. These operations are performed in the following manner. As soon as the side lap has been completed the lappers N, N, are immediately thrown back to the position shown in dotted lines in Fig. 6, and 10 the movement of the creaser shaft to bring another pair of creasers into operation, takes place, but previous to the movement of the creasers the folding stands d, d , must move farther apart to allow them to pass. 15 The movement of the stands d, d , is effected by means of a cam V, on the main shaft operating upon one end of a lever V^1 , at the opposite end of which is a small upright piece V^2 , supporting the short horizontal arms of the elbow levers u, u . The stands are drawn toward each other when the cam V, allows them, by means of a spring u^1 , connecting the upright arms of the elbow 20 levers. Two movements of the creaser shaft carry the bag opposite the pair of continually revolving pressing and delivery rollers S, S^1 , and the removal of the bag is commenced by the sharp teeth of a roller T, which is hung in a gate or frame T^1 , swinging upon the axle of the upper roller S^1 , and is driven by a small band t , running from the said roller. After the bag has been drawn part of the way off the creasers, 30 it is received between the pressing and delivery rollers S, S^1 , and is by them at the same time pressed and discharged from the machine.

I will here remark that instead of the 40 rotary motion of the creaser shaft O^1 , it may have only an alternate or reciprocating circular motion of such extent as to carry the bags from the folding stands to the pressure and delivery rollers. In that

case the lateral motion of the folding stands 45 may be dispensed with.

What I claim as my invention and desire to secure by Letters Patent, is,

1. Giving the blades of the side shears J, J^1 , J, J^1 , a curved angular or irregular 50 form near the point for the purpose of cutting out each by a single cut, the whole piece necessary to leave the lap on that side of the bag.

2. Hanging the movable blades J^1, J^1 , of 55 the side shears on shafts or pivots j^1, j^1 , perpendicular to their faces, for the purpose of allowing them to cut slightly across the fixed blades by a slight lateral movement which they receive simultaneously 60 with the movement usually given to shears substantially as described.

3. The intermittently rotating folder arranged and operating substantially as described to receive the bag pieces from the 65 feed apron L, after the cutting and pasting operations and to support or partly support them until the creasers come into their operative positions and afterward to fold them 70 over the creasers.

4. The combination of the side lappers N, N, and the laterally moving folding stands d, d , operating in conjunction with the creasers substantially as and for the 75 purposes herein set forth.

5. The toothed roller T, hung in a frame T^1 , from the axle of one of the pressing and delivering rollers and operating substantially as described to commence the removal 80 of the bags from the creases.

6. The general arrangement and combination of the several working parts of the machine, substantially as herein described.

E. W. GOODALE.

Witnesses:

JOS. B. PARKER,

CHAS. F. W. PARKHURST.