

B. O. FANSLOW.
REPRODUCING AND IMITATING MACHINE.
APPLICATION FILED MAR. 18, 1907.

989,239.

Patented Apr. 11, 1911.

4 SHEETS—SHEET 1.

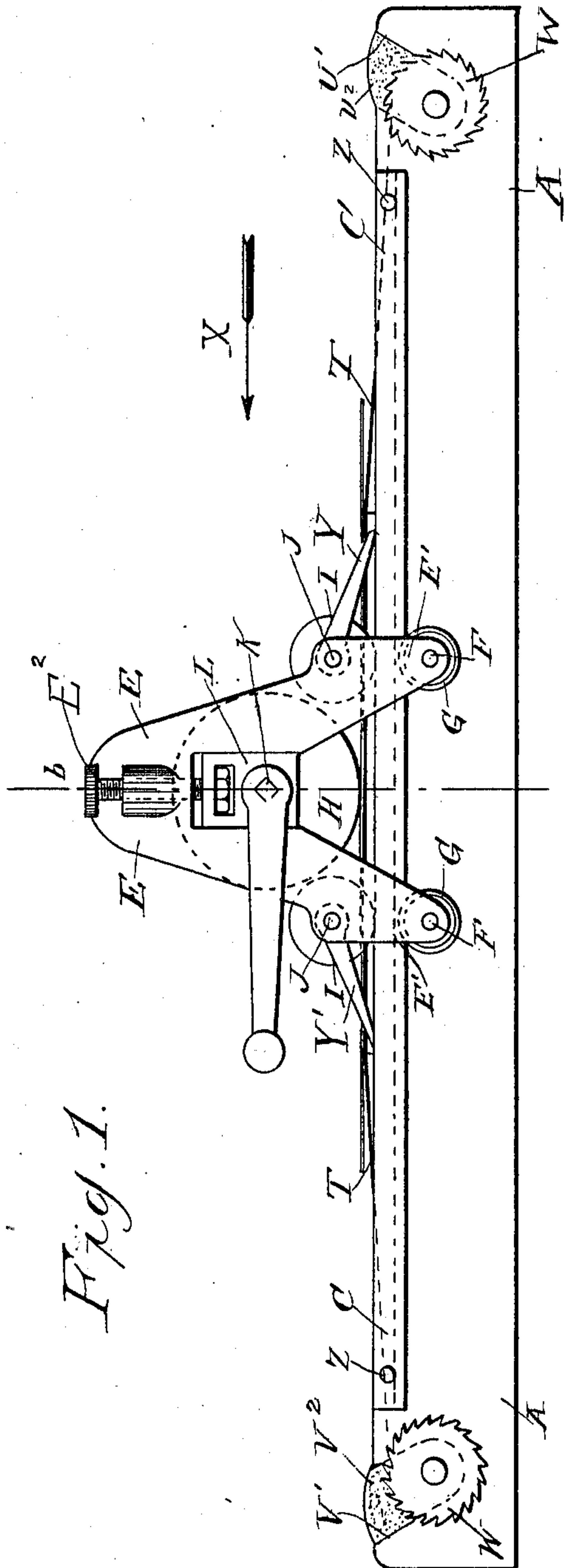


Fig. 1.

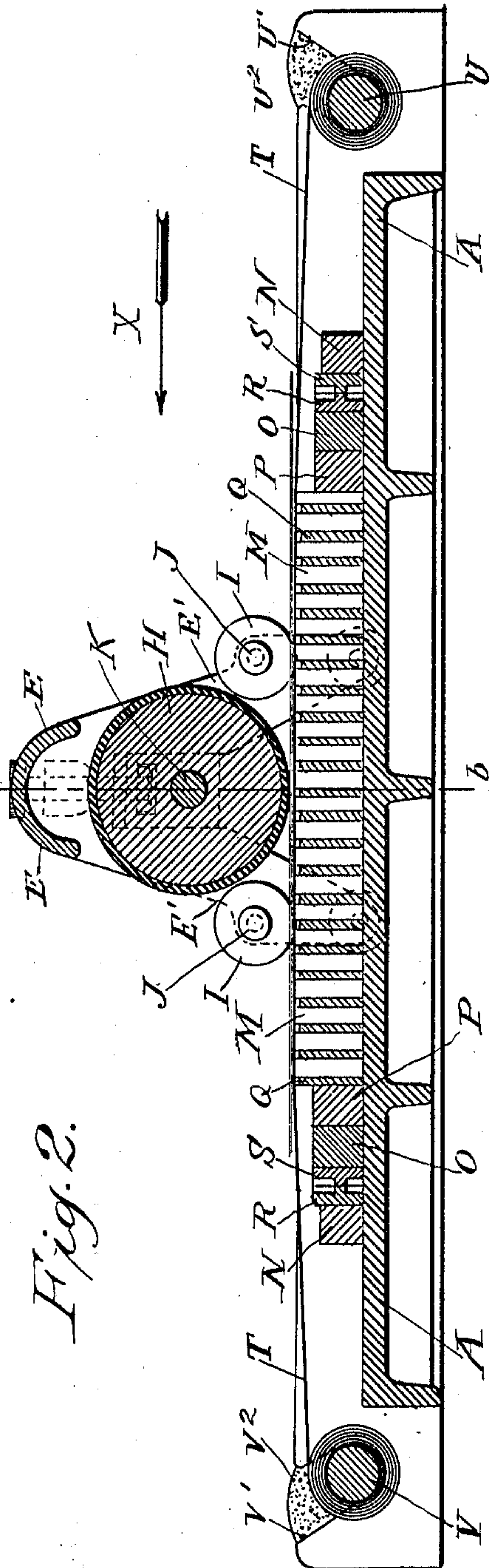


Fig. 2.

WITNESSES:

Dean +
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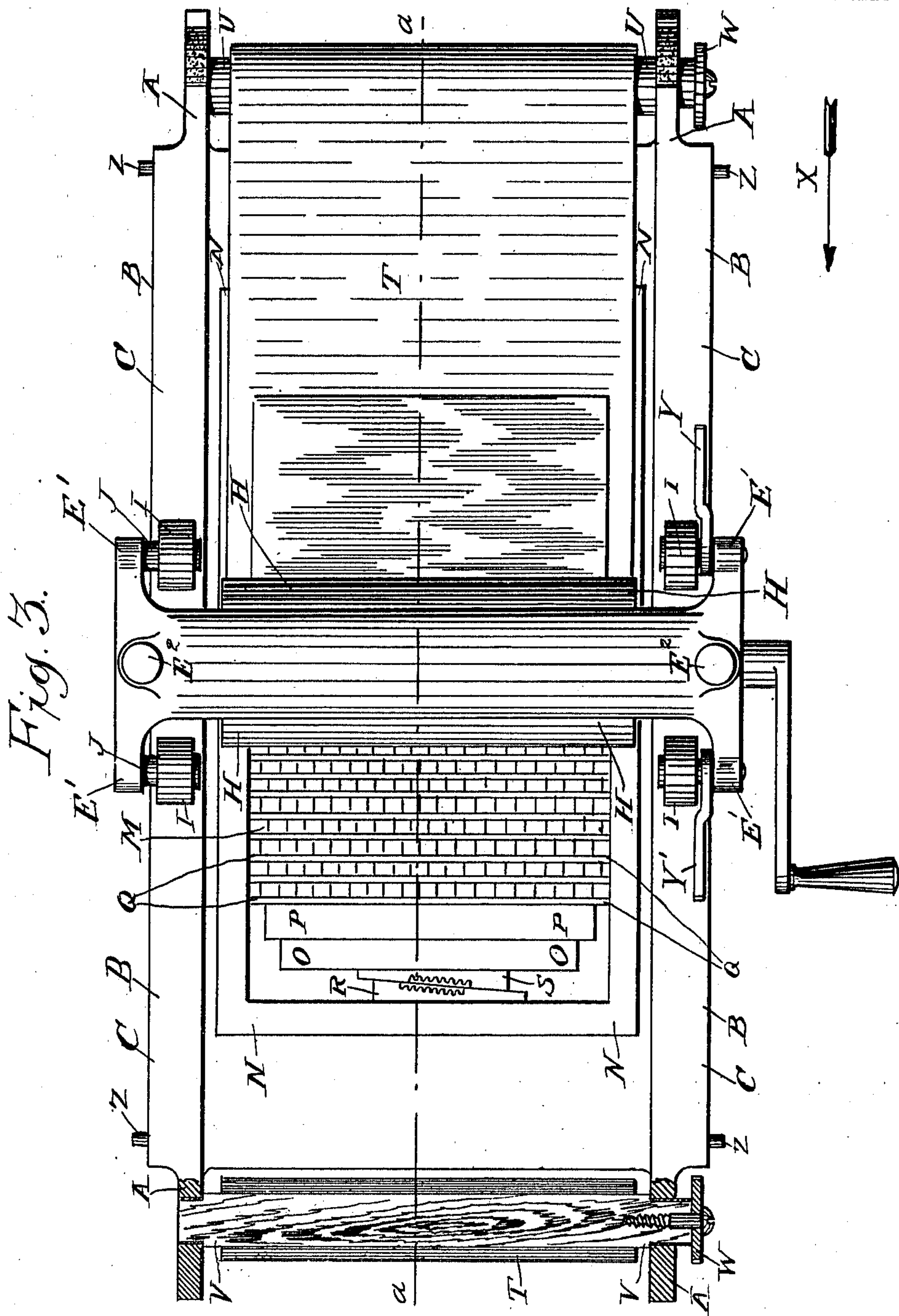
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WITNESSES

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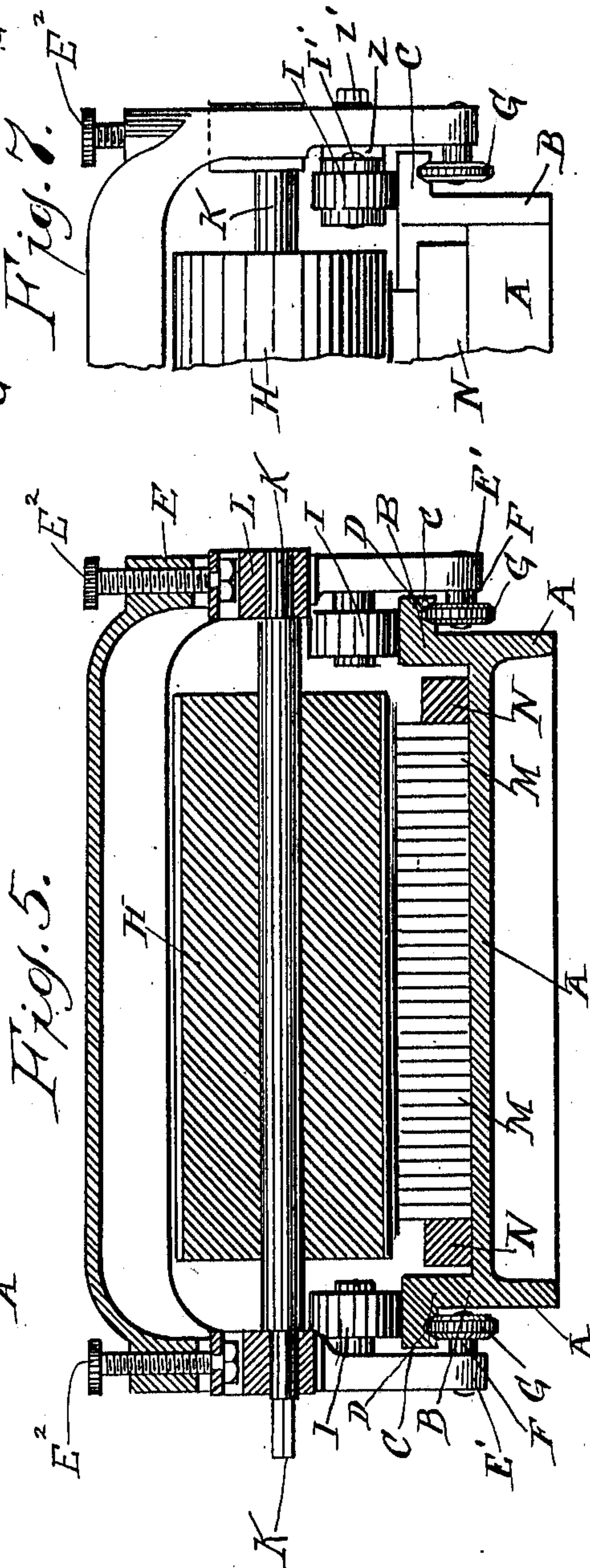
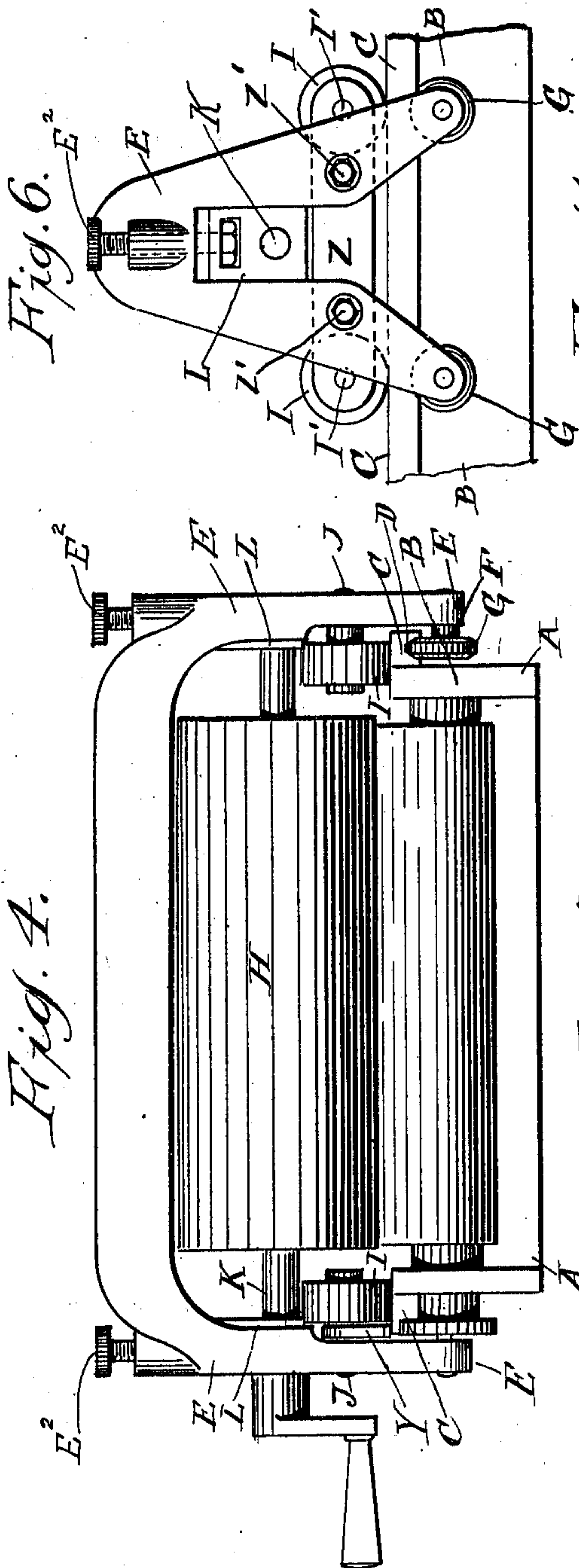
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4 SHEETS—SHEET 3.



WITNESSES
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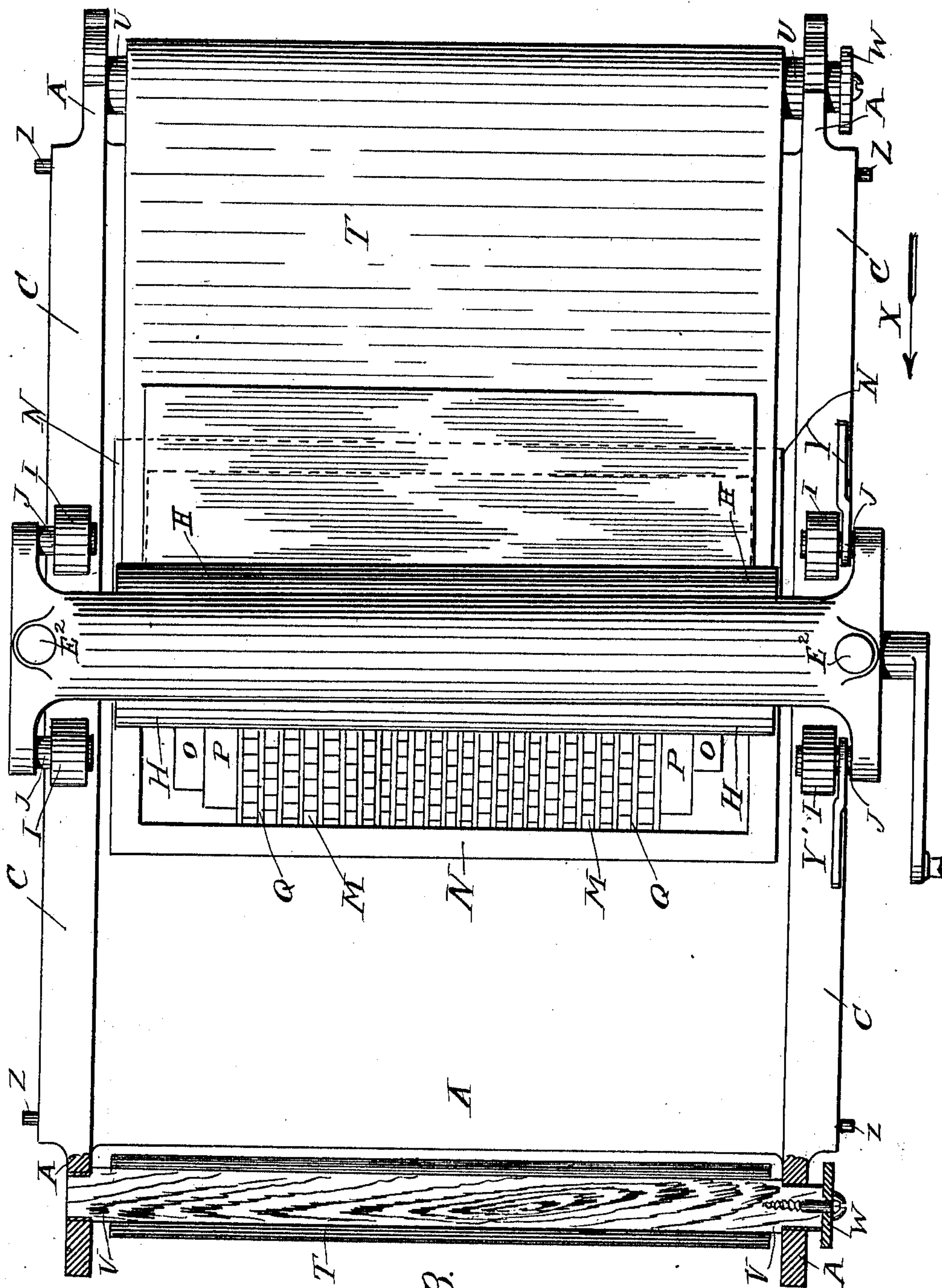
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4 SHEETS-SHEET 4.



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Fig. 8.

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UNITED STATES PATENT OFFICE.

BENJAMIN OTTO FANSLOW, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO POLYGRAPH DUPLICATING TYPEWRITER COMPANY, A CORPORATION OF NEW YORK.

REPRODUCING AND IMITATING MACHINE.

989,239.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Application filed March 18, 1907. Serial No. 363,310.

To all whom it may concern:

Be it known that I, BENJAMIN OTTO FANSLOW, of the city of Los Angeles, in the county of Los Angeles and State of California, have invented a new or Improved Reproducing and Imitating Machine, of which the following is a full, clear, and exact specification, reference being had to the annexed drawings and to the figures and letters marked thereon.

My said invention which relates to a new or improved machine for reproducing copies of documents, drawings, and pictorial representations, has for its object to effect such reproduction by printing operations, and by a machine having the special features hereinafter described.

The machine constituting my present invention consists of a flat stationary base upon or within which there is carried either printing type or other printing body or block, having upon its upper surface a reproduction of any drawing, writing or pictorial representation in the state capable of producing impressions from. At the upper parallel edges at opposite sides of this flat stationary base a flange projects outward for a sufficient length of the base for the carriage of the impression roller, and the impression roller to travel, and to be operated upon, in the manner and by the means hereinafter described. In the under face of each of these flanges, a groove of various transverse sectional shapes is situated, and in these grooves, rollers constituting parts of the movable carriage which engage with the flanges, and which carriage also contains an impression roller, are retained in permanent operative relationship, as hereafter set forth. The upper faces of these opposite parallel flanges, one at each side of the base, are smooth, and constitute level parallel guides or rails upon which rollers carried on studs from the inner face of each side of the impression roller carriage press and operate as next to be described. The carriage of the impression roller, and the impression roller, are operated to and from end to end of the machine at each printing operation, by means of a crank handle on the impression roller shaft, which being turned, causes the impression roller to roll upon the paper upon one side of which the impressions or reproductions of

type or other surface capable of being printed from are to be made. The paper is pressed by the impression roller in the course of each successive travel upon the upper surface of the printing ribbon, and the printing ribbon simultaneously pressed upon the type or other surface in the base of the machine capable of being printed from.

The arrangement of my new or improved machine is generally such that it may be operated rigidly, with ease, certainty, and economy in the production of copies of original documents, drawings or other representations.

Upon the annexed drawings Figure 1, is a side elevation of the machine constituting my invention. Fig. 2, is a longitudinal section thereof upon the line *a, a*, Fig. 3. Fig. 3, is a plan partly in section, corresponding to Figs. 1, and 2. Fig. 4, is an end elevation of the machine looking in the direction of the arrow X, Figs. 1, 2, and 3. Fig. 5, is a transverse section on the line *b, b*, Figs. 1, and 2. Fig. 6, is an end elevation of a modification of the carriage showing the rollers which bear upon the smooth upper face of the flange of the base, these rollers being carried adjustably as hereinafter described. Fig. 7, is an end elevation of a portion of the machine corresponding to Fig. 6. Fig. 8, is another plan of a modification of the machine in which the rows of printing type are contained in the chase, or type holder, in a position at right angles to the position shown in Fig. 3, the machine being in all other respects identical with that shown in Fig. 3, excepting that the entire machine is of greater width than that shown in Fig. 3, so as to accommodate the chase, or type holder to be placed with the rows of type in either of the directions shown at Figs. 3, and 8, respectively.

In Figs. 1, 2, 3, 4, and 5, of the drawings, the horizontal base portion is marked A, and it is shown as consisting of a flat plate of cast iron or equivalent material, whose upper surface is planed true and level, having a vertical upward projection B, at each side thereof. The upper part of the projection B, is formed with a longitudinal flange portion C, as shown more particularly at Figs. 1, 4, and 5. In the under part of each flange portion C, of the sides of the base A, there is a groove D, preferably

V-shaped as shown at Figs. 4, and 5. The carriage E, of the impression roller at its lower part is bi-furcated, each bi-furcation E', and E', respectively, having a pin F, therein upon each of which is carried an anti-friction roller G. Each of these anti-friction rollers G, engages with the groove D, in the under part of each flange portion C. Higher up in the bi-furcated portions E', of each of the ends of the carriage of the impression roller H, there are situated rollers I, I, each of which rollers is carried upon a pin J, fastened into each side or end of the carriage E. As shown by Figs. 1, 2, 3, and 4, the pins F, upon which the lower rollers G, are carried, and the pins J, upon which the upper rollers I, are carried, are held rigidly in the bi-furcated portions of each end of the carriage E, but they may be provided with means for adjustment of the rollers in relationship to the grooves D, and the upper flat surface of the flange C, as hereinafter described. As will be obvious on inspecting the drawings, Figs. 1, 2, 3, 4, and 5, the carriage E, is wholly supported by the lateral upwardly projecting portions B, and the flanges C, at each side of the base A, while guidance to prevent the carriage E, from shifting laterally, or out of parallel with the length of the base A, is obtained by reason of the lower rollers G, being engaged with the V-shaped or equivalent grooves D, in the under part of the flanges C.

From the arrangement and construction hereinbefore described, it will be seen that the impression roller H, in no respect bears upon the sides B, and the flanges C, projecting upward at each side of the base A, and that the impression roller is carried wholly upon its shaft K, in the adjustable bearing blocks L, one at each side or end of the carriage E, so that while the impression roller H, rolls freely in its bearings in the carriage E, it has no contact whatever with the rails or guides constituted by the flanges C, and grooves D, with which the rollers G, and I, engage, and by which alone the carriage E, is operatively connected with the base of the machine which carries the type M, or other printing surface in the central, level and lower part of the base A.

The type M, shown in Figs. 2, and 3, is held in the chase N, by means of the furniture O, and P, respectively, being pressed against the end plates Q, which are situated between the rows of types M, when set in the chase N. The furniture O, and P, is pushed against the types M, so as to tighten them within the chase N, by the wedges R, and S, in the usual manner by inserting the teeth of a quoin key, (not shown in the drawings, but well understood) into and between the toothed racks of the wedges R, and S, which toothed racks are shown in Figs. 2, and 3. The inking ribbon T, is

carried upon the rollers U, and V, respectively, in the inclined bearings U', and V', formed one in each end of the base A, and these rollers are maintained in their places in the inclined bearings U', and V', by means of the rubber plugs U², and V², which are inserted and pressed into their place by hand, one in the upper part of each of the inclined bearings U', and V'. The under part of the rubber plugs U², and V², is formed circular so as to more or less correspond with the bearings of the inking ribbon rollers U, and V, and when pressed into their inclined spaces in the ends of the base A, as shown at Figs. 1, 2, and 3, not only act as the upper part of the bearings for the inking ribbon rollers U, and V, but by being pressed into the inclined spaces with sufficient force they are caused to bear and remain with the requisite pressure upon the journals of the inking ribbon rollers U, and V, so as to produce the requisite drag upon the printing ribbon rollers necessary to maintain the requisite tightness of the inking ribbon T, in its operation, and stretch the same over the surface of type or other printing surface at any time when being used in my said machine.

The ratchet wheels W, one on one end of each inking ribbon roller U, or V, are operated by the pawls Y, and Y', pivotally carried and pointing in opposite directions by each bi-furcation of the carriage E, and at one side thereof as shown at Figs. 1, 3, and 4. Each pawl Y, or Y', as it engages with the teeth of each ratchet wheel W, causes the necessary rotation of the corresponding printing roller U, or V, at the termination of each stroke of the carriage E, and impression roller H, so as to wind on, or off, either printing ribbon roller U, or V, a requisite length of printing ribbon T, to present a fresh surface of printing ribbon to the type or other surface being printed from at each to and fro traverse of the carriage and printing roller. So that the extent of winding and unwinding of the ribbon T, off, and on, to the ribbon rollers U, and V, may be varied from time to time, as required each of the machines as constructed according to my invention is provided with a set of pawls Y, and Y', of different lengths so that their outer ends may engage with the teeth of the ratchet wheels W, at any regulated distance before each to and fro travel of the carriage and impression roller terminates; this distance being determined by the lengths of the pawls Y and Y', at the time in use, a longer pawl moving the ratchet wheels W, through a greater angle of rotation than a shorter pawl can; the movement caused by the longer pawl being sufficient to unwind a length of ribbon more than that which is necessary to provide a fresh surface of rib-

bon to print from, while the movement of the shorter pawl alternating with the movement of the longer pawl winds back the portion of this ribbon which has been last printed from, thus enabling the succeeding printing operation to be effected from the fresh portion of the printing ribbon situated between the portion of the ribbon last printed from and the used portion of the ribbon being wound on the winding up ribbon roller. The termination of the travel of the carriage E, and impression roller H, in either direction is fixed by means of the studs Z, toward each end of each side of the flanges C.

To enable the rollers I, I, and G, G, to be adjusted in their relationship to the grooves in the flange C, and to the upper face of the flange C, respectively, the upper rollers are carried on pins or bearings I', I', in a bar Z, as shown at Figs. 6 and 7. A bar Z, is attached to each end of the carriage E, as shown at Figs. 6 and 7, by adjustment bolts and nuts Z', Z', respectively. By loosening the nuts of the bolts Z', Z', and pressing the rollers I, I, and G, G, as close as possible to the top flat surface of the flange C, and the groove D, in the under part of the flange, any desired adjustment of contact of the rollers I, I, and G, G, with the engaging parts of the flange is effected, and by tightening the nuts Z', Z', this adjusted relationship of the rollers I, I, and G, G, with the flanges C, and the grooves D, is maintained.

My machine as shown at Fig. 8, is in all respects the same as the machines hereinbefore described, and shown at Figs. 1, 2, 3, 4, and 5, excepting that in the machine shown at Fig. 8, provision is made for enabling the rows of type M, to be placed in the chase, or type holder N, at right angles to the position which the rows of type occupy as shown by Figs. 2, 3, and 5, and to enable this change of position of the type to be effected, the base A, of the machine and all parts constituting the base, as well as the flanges C, and the sides B, thereof, are made sufficiently broad to enable the chase, or type holder to be placed within the base A, in Fig. 8, at right angles to the position

in which it is shown as situated in Figs. 2, 3, and 5. The carriage E, and the impression roller H, are correspondingly longer. All the parts constituting my machine as shown in Fig. 8, are lettered corresponding to the same parts in Figs. 1, 2, 3, 4, and 5, and therefore need not be herein further referred to. The operation of the moving parts of the machine being in all respects identical with that hereinbefore set forth respecting Figs. 1, 2, 3, 4, and 5.

I claim as my invention—

1. In combination with the frame of a duplicating machine having parallel tracks with a groove in the bottom of each, a carriage having a plurality of anti-friction rolls on opposite ends thereof, certain of which coöperate with the grooves and certain of which coöperate with the said tracks whereby to embrace the latter and maintain the carriage thereon, an impression-roller journaled in said carriage, ribbon-reels supported one at each end of the tracks, means on the carriage for actuating said reels, and means for rotating the said roller and simultaneously driving the carriage along the frame, whereby also the reels will be actuated by the carriage at each end of its travel.

2. In combination with the frame of a printing machine, provided with parallel tracks, a carriage provided with anti-friction rolls coöperating with said tracks, an impression-roller journaled in the carriage, means for actuating the impression-roller and simultaneously driving the carriage along the frame, ribbon-reels supported at opposite extremes of the travel of said carriage, and driving means of different lengths supported by the carriage for coöperating with the reels at the opposite extremes of travel of the carriage whereby to rotate said reels varying distances, substantially as described.

In testimony whereof, I have hereunto set my hand and seal in the presence of two subscribing witnesses.

BENJAMIN OTTO FANSLAW. [L. S.]

Witnesses:

ST. JOHN DAY,
J. D. CORY.