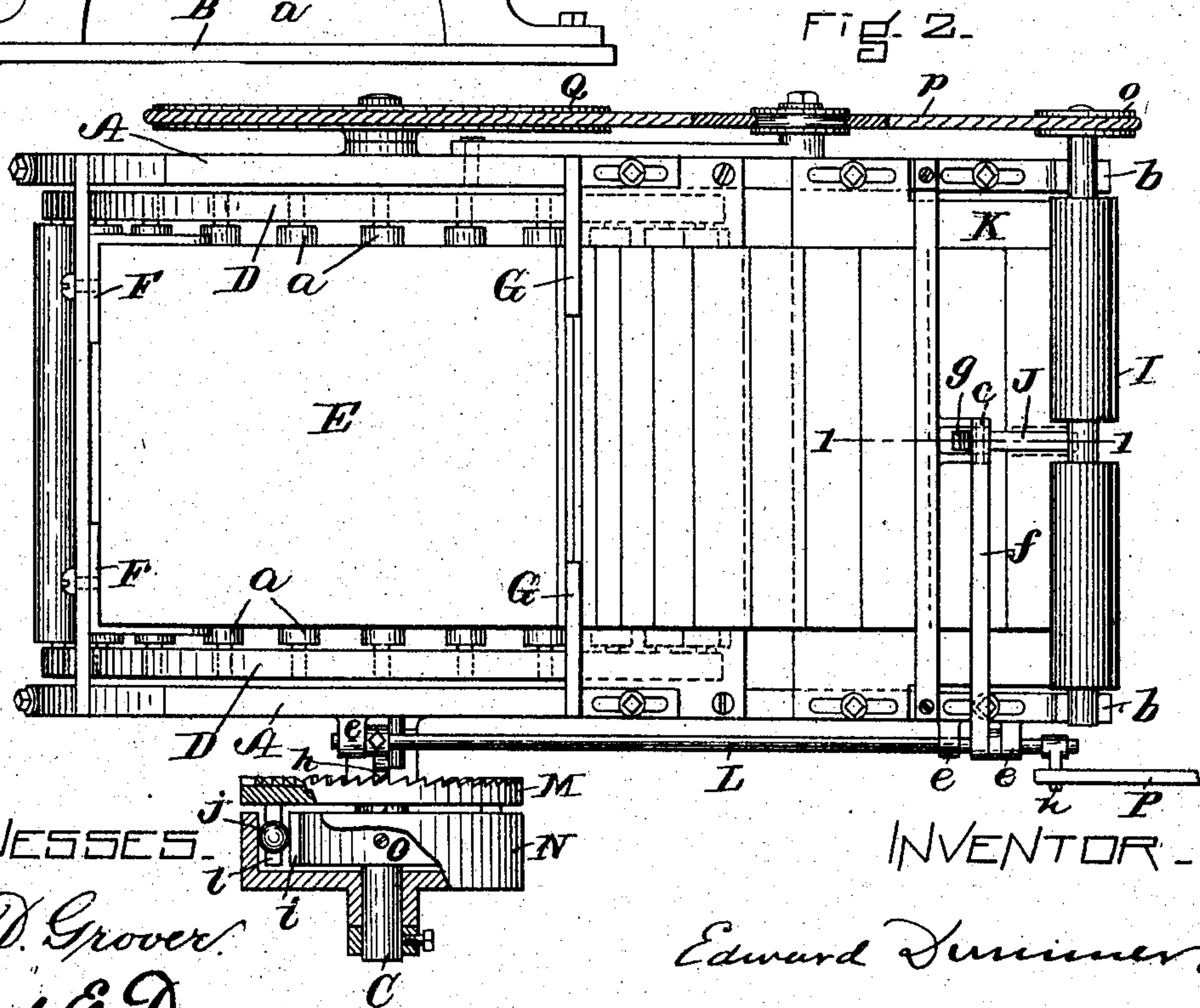
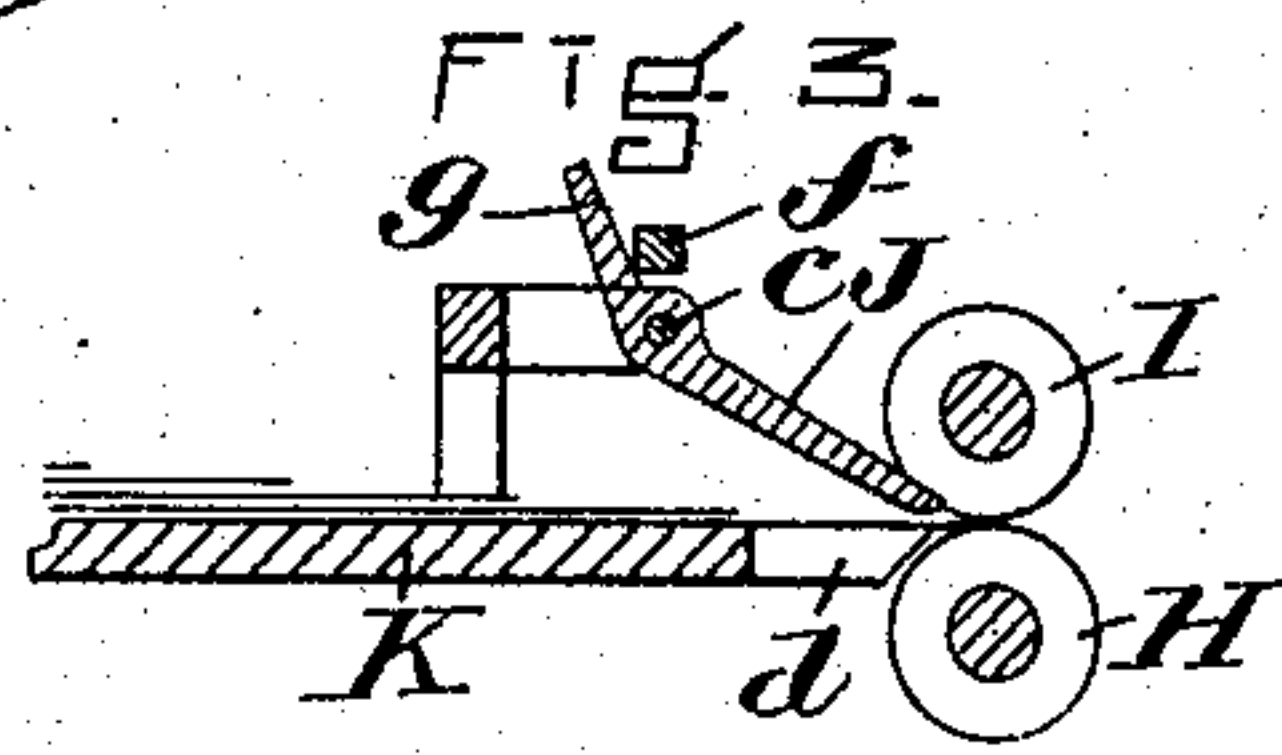
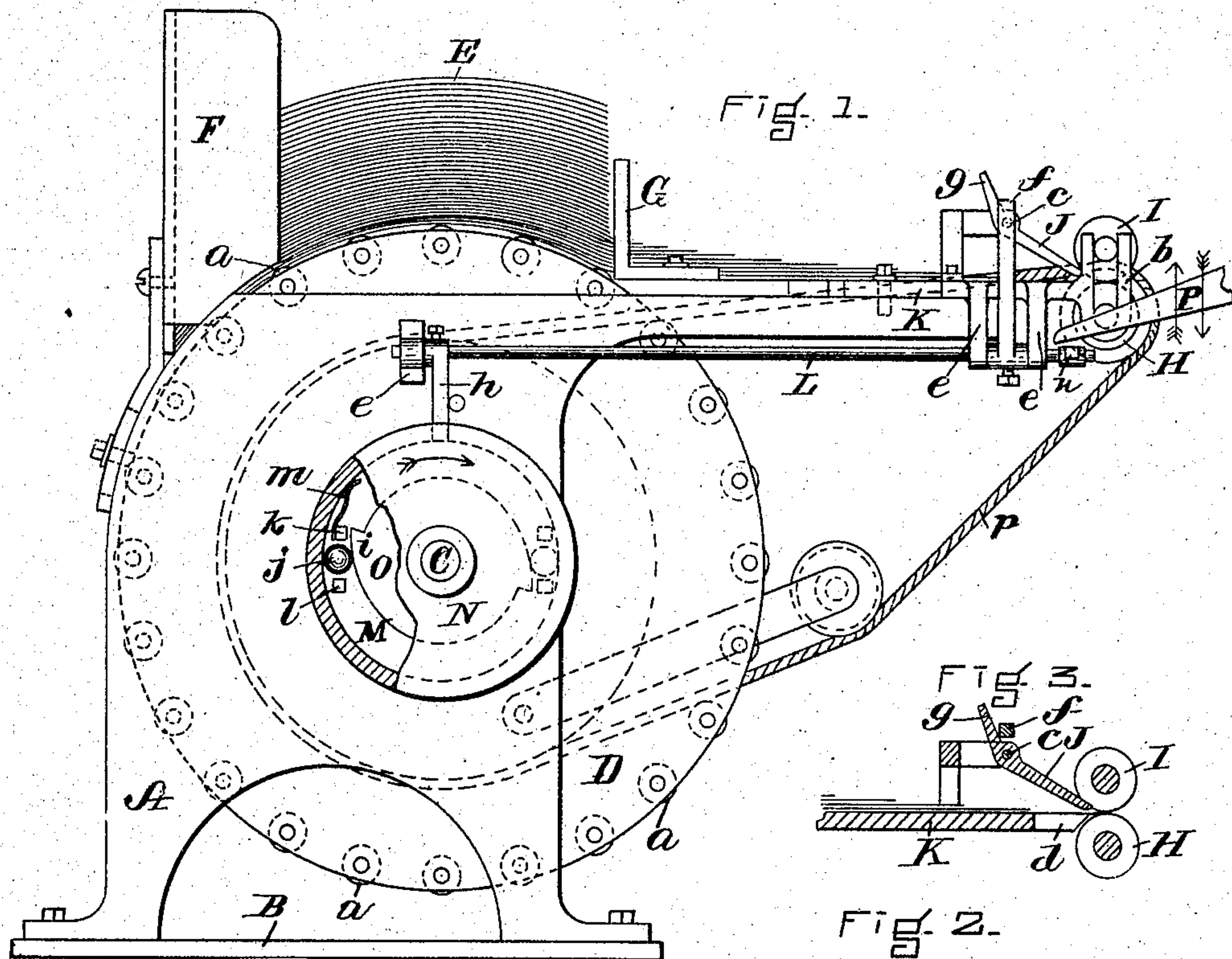


No. 781,504.

PATENTED JAN. 31, 1905.

E. DUMMER.
PAPER FEEDING MACHINE.
APPLICATION FILED OCT. 18, 1899.

2 SHEETS—SHEET 1.



WITNESSES.
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2 SHEETS—SHEET 2.

FIG. 4.

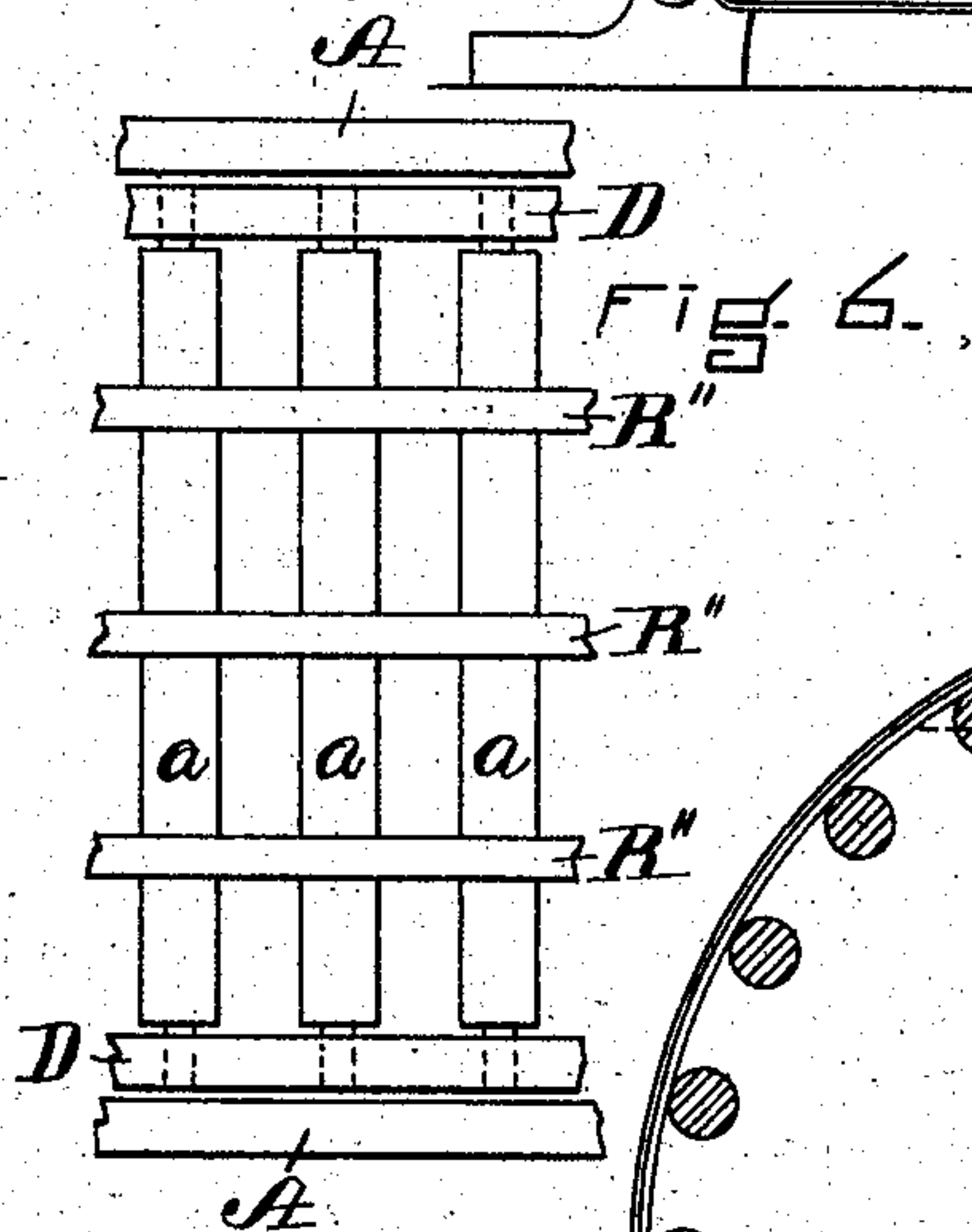
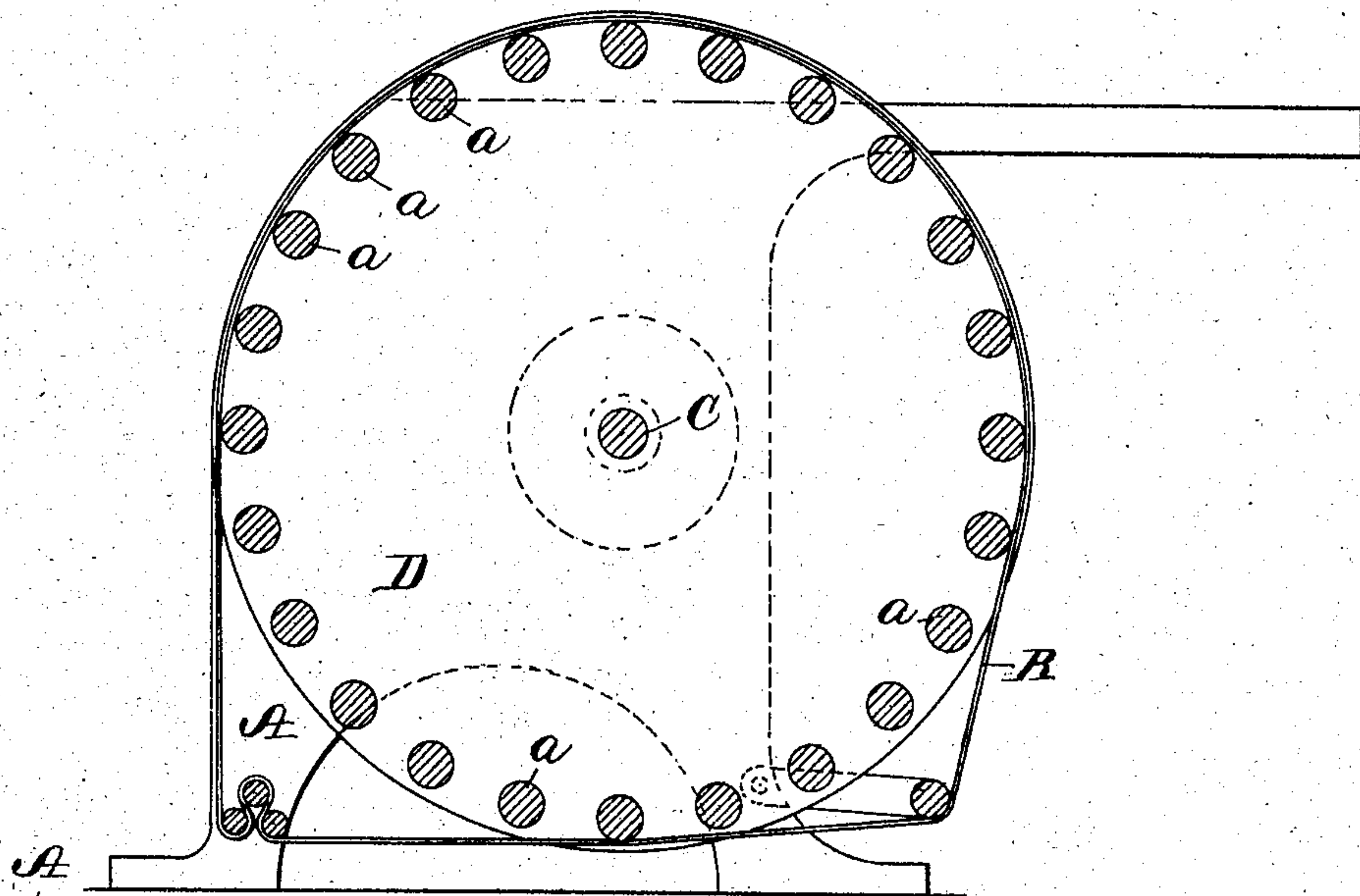
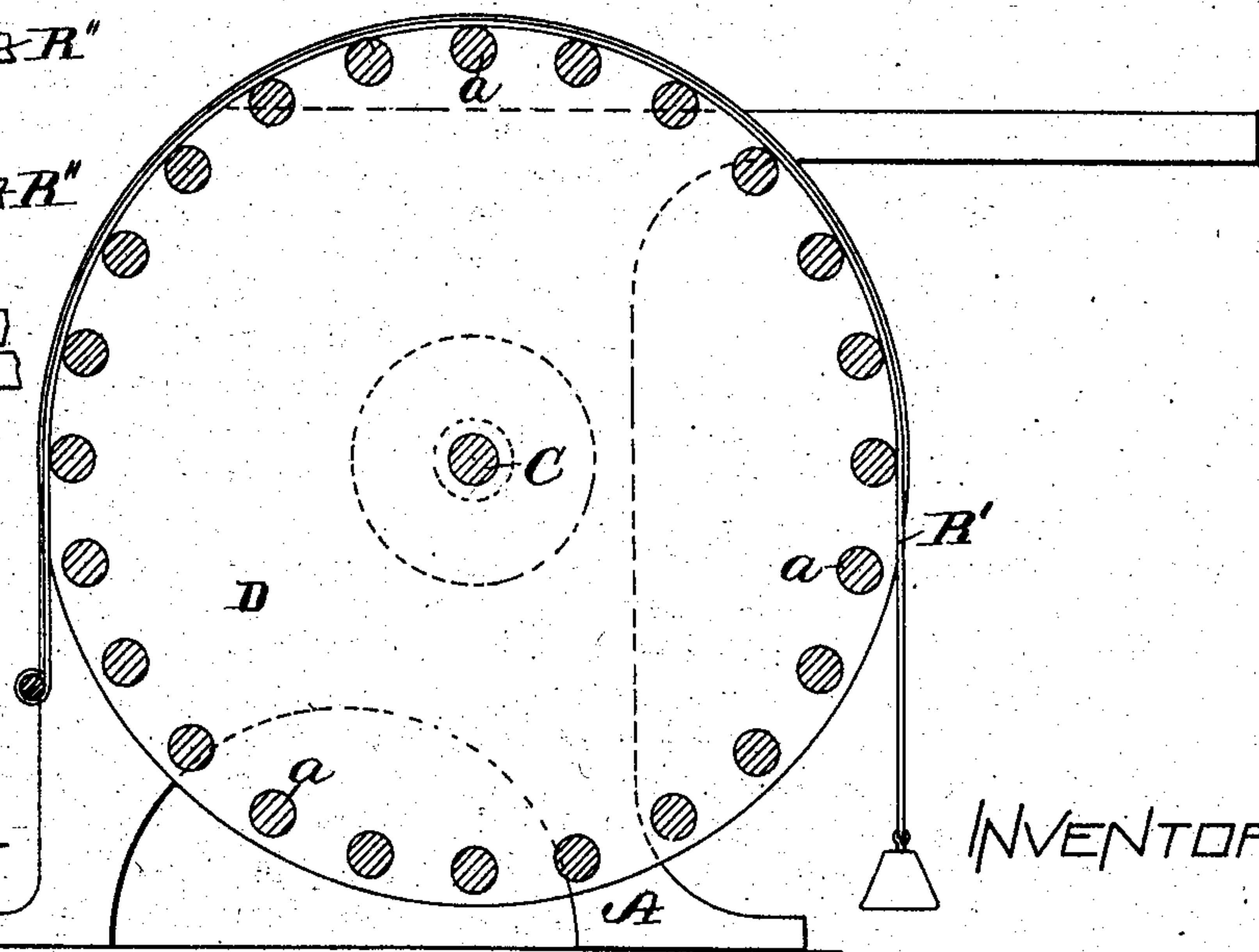


FIG. 5.



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EDWARD DUMMER, OF NEWTON, MASSACHUSETTS.

PAPER-FEEDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 781,504, dated January 31, 1905.

Application filed October 18, 1899. Serial No. 734,030.

To all whom it may concern:

Be it known that I, EDWARD DUMMER, of Auburndale, in the city of Newton, county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Paper-Feeding Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to paper-feeding machines in which the sheets are first fanned out from a pile of sheets, as set forth in my Patents Nos. 566,670 and 566,671, dated August 25, 1896.

My invention consists, first, in a separating mechanism by which the sheets are fanned out from a pile of sheets located on a convex support formed of a number of transverse rollers which are caused to roll opposite and in conformity to said convex surface, and, second, in means for regulating the movement of said rollers to gage the delivery of the sheets individually, as required by the folding, printing, or other machine to be fed.

In the drawings, (two sheets,) Figure 1 is a side elevation, and Fig. 2 a plan of so much of a paper-feeding machine as is sufficient to illustrate my invention, certain parts being broken away. Fig. 3, a vertical section on line 1 1, Fig. 1, shows certain details. Figs. 4 and 5, vertical sections, and Fig. 6, a plan view, show certain features referred to hereinafter.

The sides A A, held in suitable relative position, as by means of the base B, form the frame of the machine. On a transverse shaft C, free to revolve in bearings supported by said sides, are fastened two plates or disks D, concentric with said shaft and supporting at or near their peripheries transverse rollers α , each roller being free to revolve on its own axis. There are so many of these rollers and each roller is of such diameter as may be necessary to provide a suitable support for the pile of sheets E. Adjustable abutments F at the rear and G at the front are shown in Figs. 1 and 2.

At the forward end of the machine are two transverse rolls H and I, their bearings b be-

ing adjustably secured on the frame. Pivoted at c is a drop J, which is swung up by a sheet thereunder, but will fall down so that its lower end will enter a slot d in the table K when the sheet is removed. Supported in fixed bearings e is a rod L, having an arm f adjustably secured thereon. The inner end of this arm will rest on a projection g of the drop J when the lower end of the drop is below the surface of the table, but will fall down and partially rotate the rod L when the end of the drop J is raised by the sheet. At the rear end of the rod L is adjustably secured an arm or pawl h , the lower end of which will engage with a tooth of a ratchet-wheel M when the inner end of the arm f falls down. The ratchet-wheel M is on the shaft C and may freely revolve thereon. The driving-pulley N is on the shaft C and may also revolve freely thereon. Fastened on this shaft is a plate or disk O, having as many inclined projections i on its periphery as may be required, (two as shown,) making tapering spaces between the disk and pulley. Between the periphery of the disk O and the interior surface of the flange of the pulley N are rolls or balls j to enter said tapering spaces. The ratchet-wheel has two projections k and l , between which each ball j is loosely maintained, these projections extending into the annular space between the disk O and flange of the pulley N. A spring m of slight tension is secured to the disk O or a projection k thereof and has a frictional contact with the pulley N. On the rod L is fastened another arm n , with which engages an arm P, (or other attachment of the machine to be fed,) which has the required periodic movement, (shown here as having an up-and-down movement, indicated by the arrows,) so as to press the outer end of the arm n downward when required.

The abutments for the pile and the rolls H and I having been adjusted as required and the pile of sheets placed on the convex support formed by the rollers α , on rotation of the pulley N (in the direction of the arrow) the balls j will engage with the pulley and the projections i , thus causing rotation of the

disk O and shaft C, and hence causing the rollers *a* to roll against the under surface of the pile and the sheets at said under surface to be fanned out, so that the front edge of the undermost of said sheets will extend beyond the corresponding edge of the adjacent sheet sufficiently to be seized between the rolls H and I and by these rolls drawn out from under the remaining sheets and carried to the machine to be fed, the roll H being driven by means of a pulley Q on the shaft C, a pulley *o*, secured to the roll, and a belt *p*. The fanning out will continue until the undermost sheet has reached the drop J and rolls H and I, because this drop is down, and hence the pawl *h* is out of engagement with the ratchet-wheel; but when the sheet lifts the drop J the projection *g* will be swung from under the arm *f*, which will fall down, and thus the pawl *h* be brought into engagement with the ratchet-wheel. This wheel by means of the projections *k* will then hold the balls *j* backward against the motion of the pulley, and thus throw the balls out of engagement with the pulley and disk, so that while this pulley continues to revolve the shaft C, and hence the rollers *a*, will cease action and there will be no movement of the sheets. At the time each sheet is required by the machine to be fed by action of the attachment P on the arm *n* the pawl *h* will be thrown out of engagement with the ratchet-wheel and the feeder will be set again in motion, causing the sheet to be drawn out and carried as required by the rolls H and I and the fanning out of the sheets to go on as before. The spring *m* will insure a quick engagement of the balls *j* with the disk O and pulley, because by it the ratchet-wheel when released by the pawl will be revolved in the forward direction to bring the balls by means of the projections *l* into engagement, as above set forth.

The shaft C corresponds to the shafts by which the chains and fanning-out rollers (shown in my above-named patents) are driven. It will be apparent without further explanation how the stop mechanism of the present application may be applied to the machines described in said patents.

In Figs. 1 and 2 the pile is shown in direct contact with the fanning-out rollers. For some kinds of paper this may not only be possible, as stated in Patent No. 566,670, but even desirable. In such cases the forward abutment G will be required to prevent a forward movement of the pile bodily.

In Fig. 4 is shown an endless flexible apron R, which may intervene between the fanning-out rollers and the pile. This apron may move freely, serving to protect the sheets, as explained in Patent No. 566,670, or it (R', Fig. 5) may be restrained from a movement bodily, as shown in Patent No. 566,671, or controlled

in such movement, as and for the purposes set forth in my application for Letters Patent filed December 27, 1898. This apron may extend throughout the width of the pile or be composed of strips (R'', Fig. 6) of any suitable number and width, as set forth in said patents and application.

I claim as my invention—

1. In a paper-feeding machine several transverse rollers arranged to form a convex support for a pile of sheets, and means for carrying said rollers under said pile, said rollers acting against said pile to fan out the sheets, substantially as set forth.

2. Several rollers forming a support for a pile of sheets, each of said rollers being free to revolve on its own axis, in combination with a shaft and intermediate disks or the like, maintaining said rollers under the pile and, when revolving, carrying said rollers to fan out the sheets, substantially as set forth.

3. The combination of a revoluble shaft, disks or plates fastened on said shaft, several rollers each pivoted in said disks or plates to revolve on its own axis, and abutments for a pile of sheets supported by said rollers, substantially as set forth.

4. In combination with several rollers opposite the surface of a pile of sheets, and means for supporting said rollers and causing them to roll against said surface to fan out the sheets, stop mechanism embodying a pulley, a plate concentric with said pulley and provided with inclined projections, and rolls or balls in the tapering spaces between said pulley and plate, and a device operated by an advancing sheet for causing action of said stop mechanism, substantially as set forth.

5. In combination with several rollers supported in position opposite a pile of sheets, and revoluble individually to fan out the sheets as specified, and an apron to intervene between the rollers and the pile, stop mechanism embodying a pulley, a plate concentric with said pulley and provided with inclined projections, and rolls or balls in the tapering spaces between said pulley and plate, and a device operated by an advancing sheet, substantially as set forth.

6. In a paper-feeding machine the combination of a drop in position to be lifted by a sheet of paper, an arm released by said drop, a pawl connected with said arm, a ratchet-wheel with which said pawl engages, a pulley concentric with said ratchet-wheel, a shaft on which said ratchet-wheel and pulley are free to revolve, inclined plate fixed to said shaft, a roll or ball between said plate and pulley, and a projection on said ratchet-wheel to meet said roll or ball, substantially as set forth.

7. The combination of rollers forming a support for a pile of sheets, means for causing movement of said rollers to fan out the

5 sheets, a support for the sheets when fanned out, means for stopping the action of said rollers embodying a drop raised by each sheet from below the surface of said support, substantially as set forth.

8. In a machine for feeding sheets of paper, a transverse shaft carrying transverse

rollers against the under surface of a pile of sheets, said rollers and pile being supported by said shaft, substantially as specified.

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Witnesses:

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