

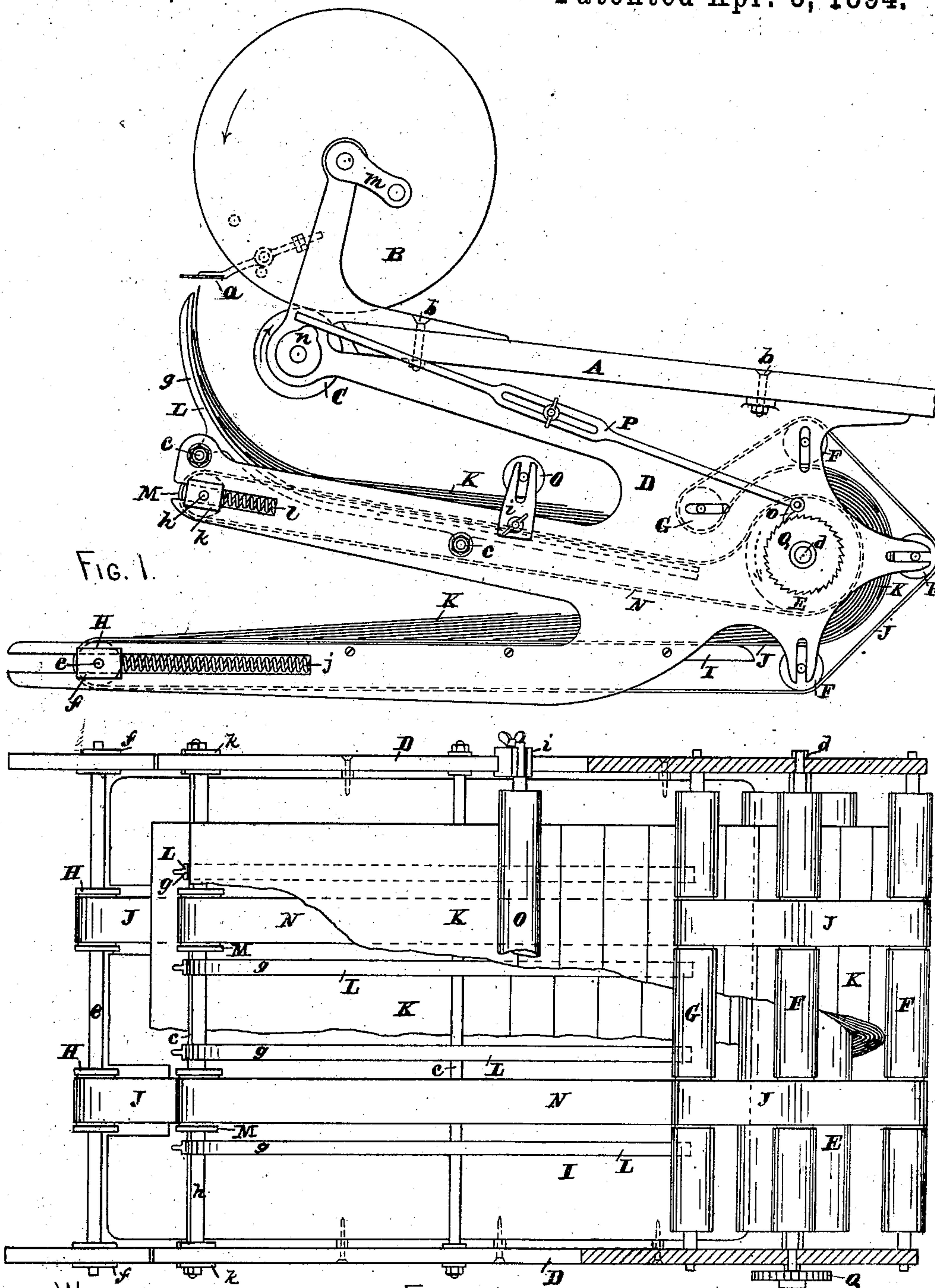
(No Model.)

2 Sheets—Sheet 1.

E. DUMMER.
PAPER FEEDING MECHANISM.

No. 517,518.

Patented Apr. 3, 1894.



WITNESSES:

Edward Wyman,
Walter S. Rice.

FIG. 2.

INVENTOR:

Edward Dummer.

(No Model.)

2 Sheets—Sheet 2.

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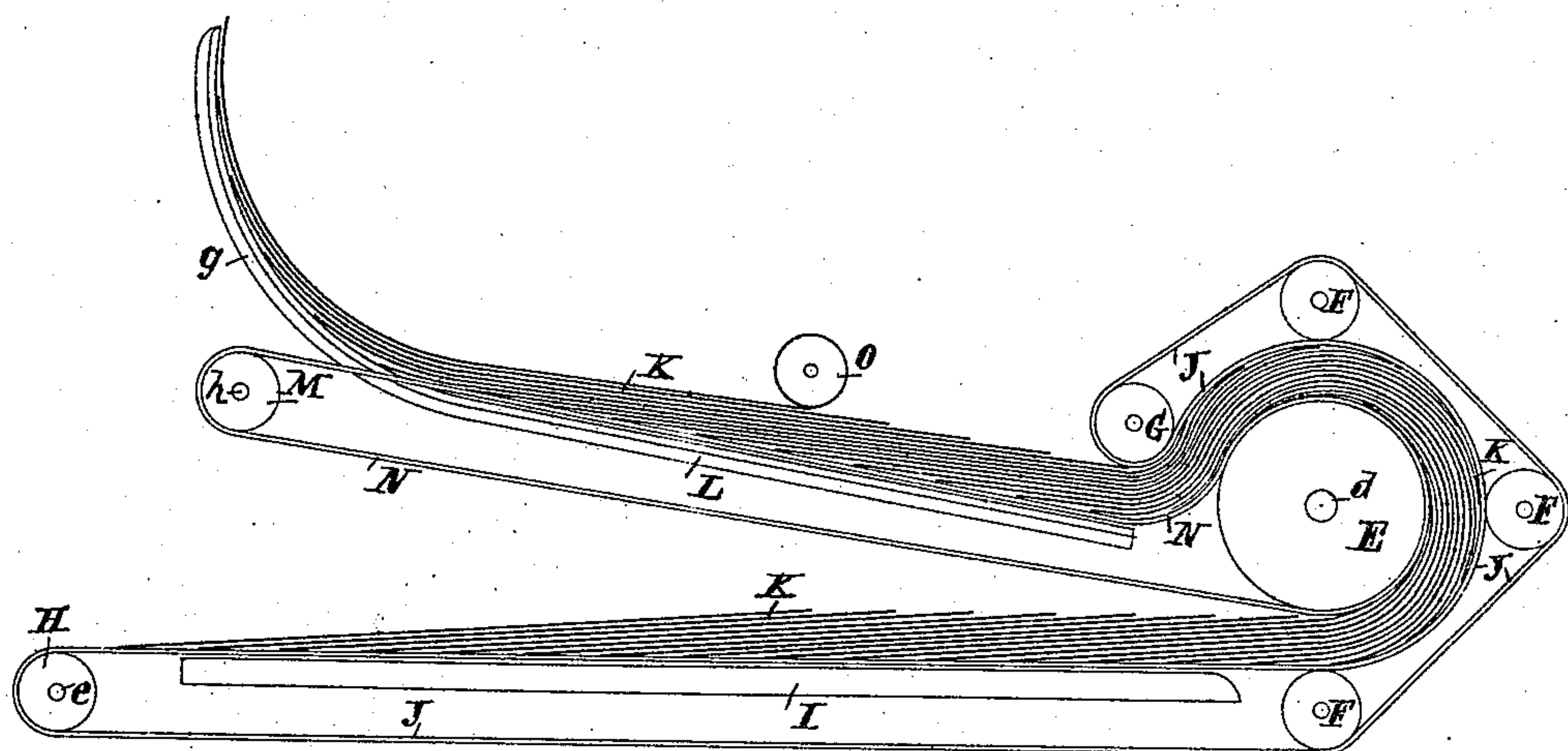


FIG. 3.

WITNESSES:

Edward Wyman,
Walter S. Hill.

INVENTOR:

Edward Dummer.

UNITED STATES PATENT OFFICE.

EDWARD DUMMER, OF AUBURNDALE, MASSACHUSETTS.

PAPER-FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 517,518, dated April 3, 1894.

Application filed August 1, 1892. Serial No. 441,865. (No model.)

To all whom it may concern:

Be it known that I, EDWARD DUMMER, a citizen of the United States, residing at Auburndale, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Paper-Feeding Mechanism, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to mechanism for feeding sheets of paper, individually, from a pile or bank of sheets, to a printing or other machine, the object of the invention being to provide for a continuous supply and presentation of the pile or bank to the device or instrument for removing each sheet from the pile or bank.

In the drawings, two sheets, Figure 1 shows a side elevation of so much of a paper-feeder embodying my invention as is sufficient for illustration of the same. Fig. 2 shows a plan, and Fig. 3 a side view, of certain parts of the feeder.

The board A may be the feed-board of a printing machine, onto which is delivered, by means of a cylinder B and roller C each sheet of paper, the sheet having been seized at its edge by means of an instrument *a* called a "finger," and removed from a bank of sheets by said cylinder and roller, as explained in Patent No. 414,147, granted to me October 29, 1889.

The frame of the feeder is represented as fastened to the feed-board A by means of bolts *b*, and composed of parallel side pieces D held in suitable relation to each other by transverse rods *c*. Having bearings supported by the frame is a shaft *d* on which is secured a drum E. Parallel to this drum are rollers F, F, F, and G, as many as may be deemed desirable. Parallel with the drum is a shaft *e*, having rollers or pulleys H thereon. This shaft has bearings *f* at the rear of a stationary support or table I, which table is, preferably, horizontal. Extending around each pulley H and the rollers F, G, is an endless band J, which will also extend over the upper surface of the table I and as near to that surface as practicable, and bear against the drum E, or against that part of the bank of paper K between the band and the drum. Held by the rods *c* are stationary strips L

provided with bows *g*, thus forming a support having a curved portion. There are rollers or pulleys M on a shaft *h*, also parallel with the drum E. An endless band N extends between the bows *g* around each of the pulleys M and the drum E, the upper part of the band being about on a level with the upper surface of the straight parts of the strips L. A roller O has journals each of which is in a slot in a stand *i* which is adjustable at side of the frame. Each of the rollers F, G has journals in slots whereby the rollers may move toward or away from the drum E. Each of the bearings *f* for the shaft *e* is a block so supported and guided that this shaft and the pulleys thereon may move toward or away from the drum E, the block being pressed to move the pulleys in the latter direction by a spring *j*. The shaft *h* has movable bearings *k*, and there are springs *l* whereby the slack of the band N is taken up.

In operation, a pile or bank of paper is first formed so that the edge of each sheet will project beyond the corresponding edge of the adjacent sheet. This may be done by manipulating the bank in a manner well understood by those skilled in the art. The bank is then laid on the table I and bands J. The drum E being revolved, the bank is wound partially around the drum, since it is pinched by and between these bands and the drum. Another bank is prepared and laid upon the bevel of the first bank, and on the table and bands, and the drum revolved, and so on till the outer edge of the first or outer sheet is brought within range of the "finger" *a*. Thus the bank extends on the table I around the drum E and on the strips L and bands N. The feeder being now set in motion, that is, the cylinder B and roller C, as by means of a crank *m*, the drum E will be revolved, as required for movement of the bank to bring the sheets successively within range of the "finger" *a*, by means of a lever P, cam *n* on the shaft of the roller C, ratchet-wheel Q on the shaft of the drum E, and pawl *o* pivoted to the lever. This lever has an adjustable pivot *p* so that the motion of the drum and hence of the bank may be gaged. At suitable and convenient intervals during the operation of the feeder, and, therefore, during the operation of the printing or other ma-

chine fed thereby, banks of paper may be laid on the table I to join and move with the bank being moved as above described. Thus neither the feeder nor the printing or other machine need be stopped in order to supply paper thereto but the action may be continuous and uninterrupted. The springs *j* provide for movement of the rollers F, G, to and from the drum E, that is, for different thicknesses of the bank, while causing sufficient pressure by the bands J on the bank that it will be carried by the drum and bands when the drum is revolved as above set forth. The bands N will also aid in causing the required motion of the bank, while partially supporting that part of the bank over the strips L. The roller G serves a double purpose. Not only are the bands J maintained in position thereby with reference to the drum, but it also counteracts any curvature made in the sheets caused by bending the bank around the drum. In other words, a sheet, having been curved in one direction by the drum E, is curved in the opposite direction by the roller G. It will be noticed that the bank is reversed in passing from the table I or lower support onto the strips L or upper support, so that the under-sheet of the bank on the table becomes the upper-sheet of the bank on the strips. Hence a bank may be simply laid on the table I as a continuation of the bank already thereon at one end, while the sheets are being removed from the other end of the bank, such removal being readily done since each sheet is taken from the top or outer part of the bank. Furthermore, by providing for a long continuous bank, the distance which each sheet projects beyond the adjacent sheet, or the "offset," so called, may be great and yet there be a large quantity of paper in the feeder. Owing to the degree of offset which may thus be obtained, each sheet may be brought into position to be grasped by any suitable instrument other than the "finger" shown.

The main office of the roller O is to prevent the slipping back of the upper sheet or sheets, particularly when the upper sheet is under pressure by the "finger," or other instrument, this roller being adjusted, according to the length of the sheets, so that revolving, on movement of the bank, by friction against the bank, it will always bear on the bank at or near the edge of the uppermost sheet.

Though the bands J, together with the shaft *e* and pulleys M, were dispensed with the bank would be carried around the drum E by means of this drum and the rollers F, G, around the drum, located as shown provided the bank be entered between the drum and a roller. The bands are desirable, however, since a greater quantity of paper may be placed in the machine at one time and the paper may be supplied at times when most convenient for the operator. The bands N might, in certain cases, also be of such mate-

rial and of sufficient number as to serve the purpose of the table I so that the latter might be dispensed with. So also the paper operated upon might be such that the bands N would not be necessary, since the bank would be pushed along the strips by action of the drum and rollers thereat.

I claim as my invention—

1. In a paper-feeder the combination of an upper and a lower support for a bank of paper, a drum in suitable position with reference to the supports, and rollers parallel to the drum, whereby on revolution of drum and rollers the bank will be carried around said drum from the lower to the upper support, said feeder being open at the rear above the lower support whereby paper may be placed on paper in the machine while in operation to effect continuous feeding, substantially as set forth.

2. In a paper-feeder the combination of an upper and a lower support for a bank of paper, a drum, rollers parallel to the drum, and a band extending about said rollers, the position of said supports, rollers and band with reference to each other being substantially as specified, whereby on revolution of drum and rollers the bank will be taken from the lower support and carried around said drum onto the upper support, the machine being open at the rear between said supports whereby paper may be placed on paper in the machine while in operation to effect continuous feeding, substantially as set forth.

3. In a paper-feeder the combination of a drum, rollers parallel to said drum, an upper support, and a lower support, the rollers being parallel to each other and located transversely to the supports and in such relation thereto that on revolution of the drum paper will be carried from the lower support onto the upper support, the upper support being curved, substantially as set forth.

4. In a paper-feeder the combination of a drum, rollers parallel to said drum, a band extending around said rollers, and an upper and a lower support for paper, said drum, rollers and supports being in such relation to each other that paper will be carried from the lower onto the upper support on revolution of the drum, the upper support being curved, substantially as set forth.

5. In a paper-feeder in combination with mechanism for removing a sheet from a bank of paper, an upper curved support, a lower support for said bank, a drum and rollers parallel with each other, and a band extending about said rollers, said drum rollers and band being in suitable relation to each other to reverse the bank, substantially as specified.

6. In a paper-feeder the combination with mechanism for removing the upper sheet of a bank of paper by friction on the edge-face of the sheet and lifting the sheet from the bank, and with mechanism for supporting and conveying said bank, of a roller to bear on

said bank at or near the opposite edge of said sheet to prevent the slipping of the sheet, substantially as specified.

5 7. In a paper-feeder the combination with mechanism for removing the upper sheet of a bank of paper by friction on the edge-face of the sheet and lifting the sheet from the bank, and with mechanism for supporting and conveying said bank, of a roller to bear

on said bank and roll on the bank on movement of the bank, said roller being adjustable whereby it may be secured in position at or near the edge of said sheet, substantially as specified.

EDWARD DUMMER.

Witnesses:

EDWARD WYMAN,
WALTER S. HILL.