

(No Model)

R. N. ADAMS.
PAPER TRIMMING MACHINE.

No. 585,998.

Patented July 6, 1897.

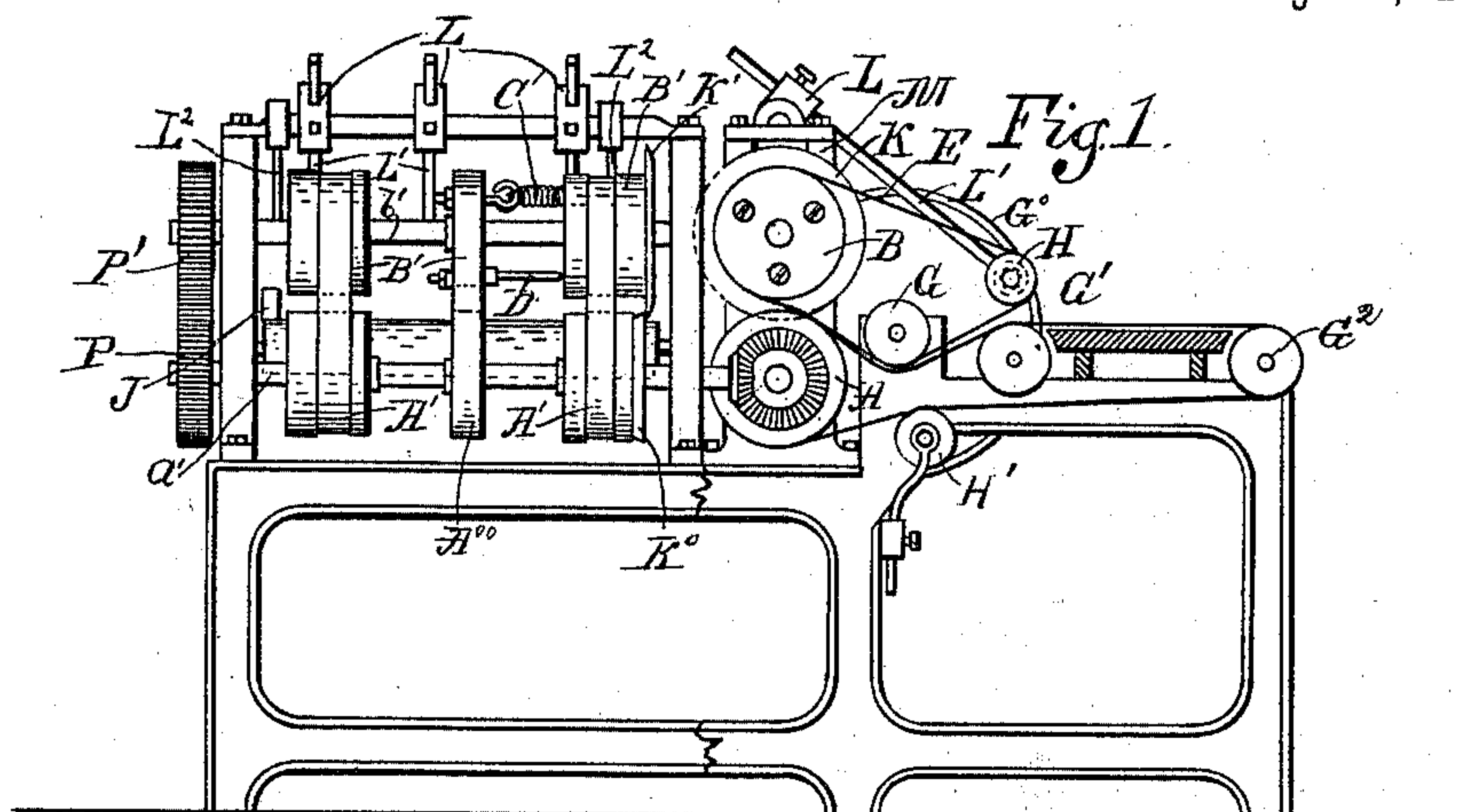


Fig. 2.

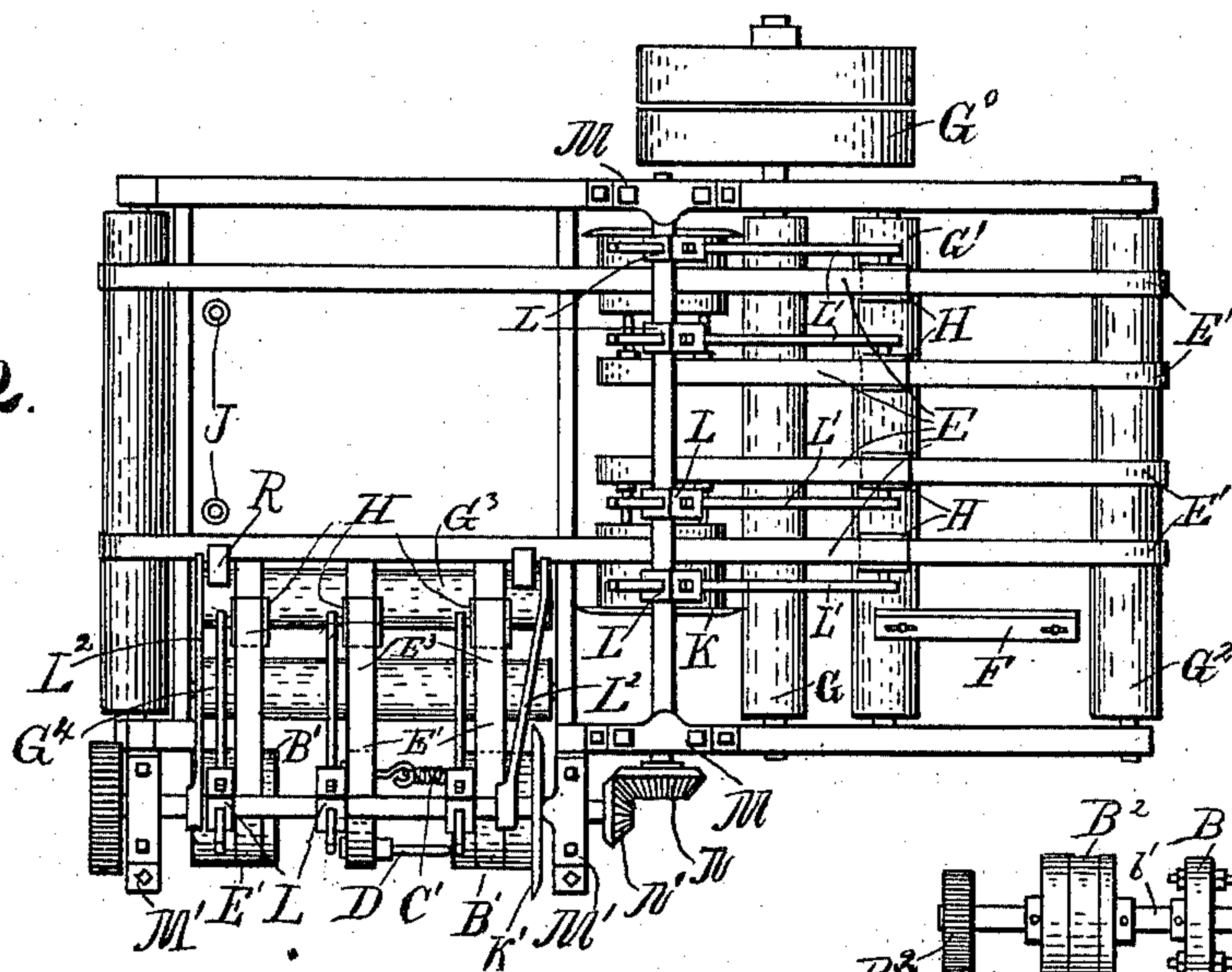


Fig. 3.

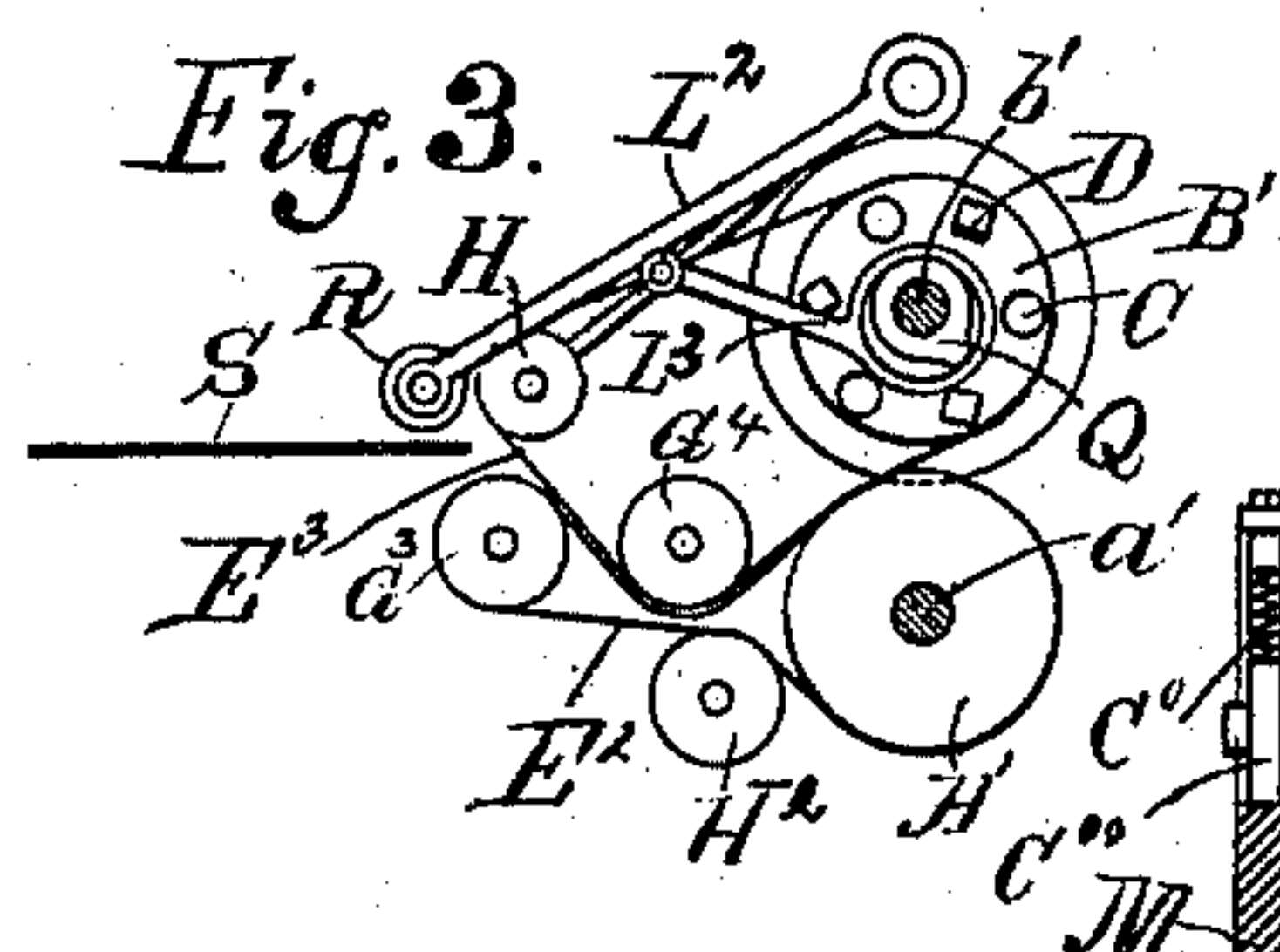


Fig. 4.

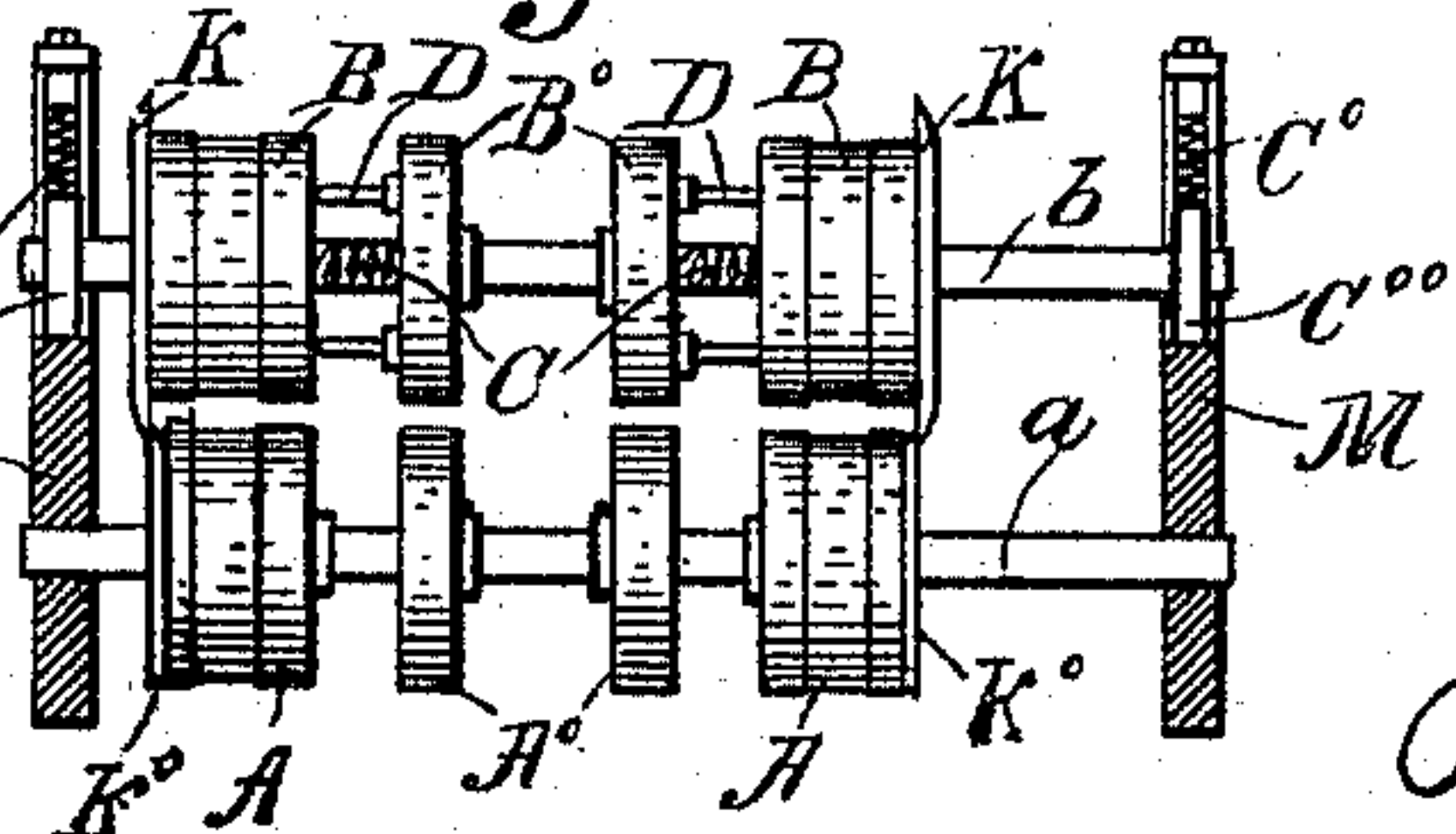
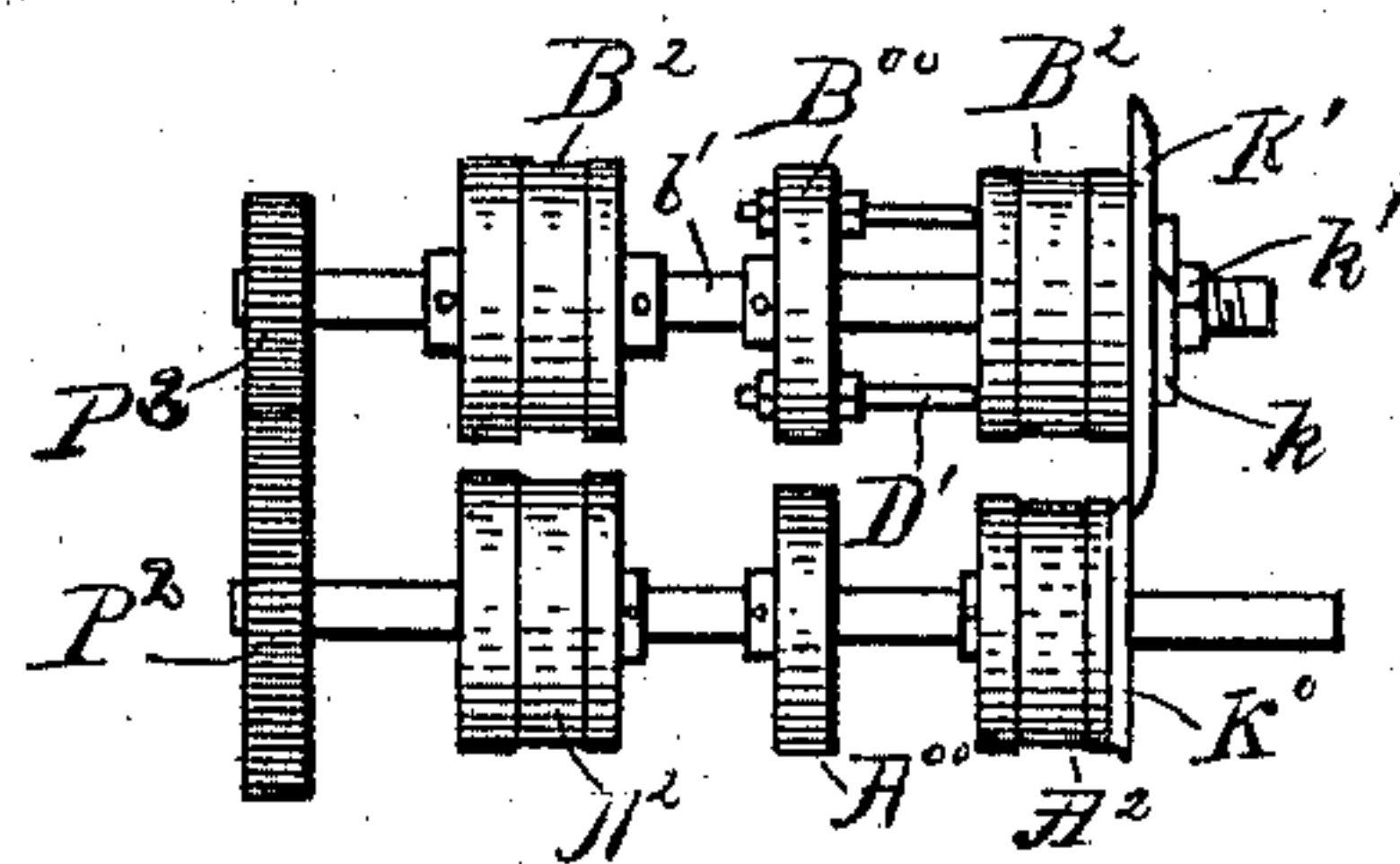


Fig. 5.



Witnesses

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ROBERT NOBLE ADAMS, OF DUNEDIN, NEW ZEALAND.

PAPER-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 585,998, dated July 6, 1897.

Application filed October 30, 1896. Serial No. 610,598. (No model.) Patented in New Zealand December 10, 1894, No. 7,332.

To all whom it may concern:

Be it known that I, ROBERT NOBLE ADAMS, publisher, a subject of the Queen of Great Britain, residing at 31 Moray Place, Dunedin, in the British Colony of New Zealand, have invented a new and useful Paper-Trimming Machine, (for which I have obtained a patent in the Colony of New Zealand, No. 7,332, bearing date December 10, 1894,) of which the following is a specification.

My invention relates to improvements in machinery for paper-trimming, in which paper in the form of sheets, pamphlets, newspapers, and such are passed between rollers and have their edges trimmed by circular knives revolving with and at the ends of the rollers, which can be adjusted to the required sizes of the paper, as far as the top and bottom edges are concerned, and if the front edge is also to be trimmed, the paper is passed through another pair of rollers fixed at right angles to the first pair by automatic action and is delivered out at the side of the machine.

Referring to the accompanying drawings, Figure 1 is a sectional elevation of the machine with part of the framing removed to show the passage of the paper between the tapes to the knives more clearly. Fig. 2 is a plan of the entire machine, showing the rollers with the circular knives at both ends for trimming the top and bottom edges of the paper and also the rollers at right angles, having one pair of knives for trimming the front edge of the paper. Fig. 3 shows the arrangement of feed-rollers, pulleys, and tapes for the second set of rollers. Fig. 4 represents a detail view of the main rollers and knives, showing a method whereby the top rollers may be released in case the machine is over fed. Fig. 5 is a detail view showing another manner of gearing the shafts together which carry the rollers, as well as another mode of keeping the circular knives in contact with each other.

Similar letters refer to similar parts throughout the several views.

A and B represent broad rollers mounted upon the shafts *a* and *b*, respectively. The rollers A are adjustable on the shaft *a*, being adapted to be fixed in different positions along the length of the shaft in accordance with the size of paper to be cut, while the

rollers B are loose on the shaft *b* and are kept in contact with the studs D, carried by the rollers B⁰ by the springs C. On the outer faces of the rollers A and B are mounted the circular knives K⁰ and K, respectively, the knives K being ground to a more acute edge than knives K⁰. The cutting edges of these knives are kept in contact with each other by the tension of the springs C, which, being attached to the rollers B⁰ and the loose rollers B, tend to pull the latter inward, which accomplishes the desired end. The shaft *b* is mounted in the bearing-blocks C⁰⁰, which are carried by the frame's uprights M.

Above the blocks C⁰⁰ are the springs C⁰, so arranged that when an abnormal upward pressure is exerted on the shaft *b* the same will rise against the tension of the springs and again return to its normal position when the pressure is released. A⁰ represents narrow rollers adjustable on the shaft *a*. The stops or lugs D' prevent the knives K from riding on the rollers A. Power being applied to the pulley G⁰, it is transmitted to the roller G² and thence by the bands E to the rollers B and B⁰. The tension of the belts E is regulated by the rollers H, carried by the arms L', mounted in the adjustable holders L. The power is then transmitted from the roller G² to the bands E, which pass over the rollers G, G', A, and A⁰ and has its tension regulated by the roller H'.

At one end of the shaft *a* is mounted a beveled gear N, which meshes with a similar gear N', mounted on the shaft *a'* at right angles to the shaft *a*. This shaft *a'* carries the rollers A' and A⁰⁰ adjustable on the said shaft, and one of the rollers A' carries the circular knife K⁰. This shaft *a'* also carries a gear-wheel P, meshing with a second gear-wheel P', the latter being mounted above the former on the shaft *b'*. This shaft *b'* carries the rollers B' and B⁰⁰, one of which rollers B' is loose on the shaft and carries the circular knife K', the cutting edge of which is kept in contact with the more obtusely-ground knife K⁰ by means of the spring C', carried by the roller B⁰⁰ and attached to the roller B'. Stops D are in this case provided, as before explained, for preventing the knife K' from riding on the roller A'.

The paper is fed from a table to the bands

E' against the guide F, thence under the roller G² to the rollers A and B, A⁰ and B⁰, where the edges are trimmed by the circular knives and the paper then carried along until
 5 it reaches the rollers J, when it is stopped. The paper is then in the position as shown at S in Fig. 3, over the rollers G³ and under the roller R. These rollers R are carried upon
 10 arms L', attached to the yokes L³, mounted on the cams Q, so that once in every revolution of the cams the rollers R descend and press the edge of the paper between the bands E² and E³, which then draw the paper in and carry it to the rollers A' B' and A⁰⁰ B⁰⁰ when
 15 the front edge of the paper is trimmed by the circular knives. It will be noticed that the action of these knives is similar to that of scissors and no fragments will be left along the edge of the paper.

20 In Fig. 5 is shown an arrangement whereby the knife K' is driven faster than the lower knife K⁰ by mounting a smaller gear P³ on the shaft b' and a larger one on the shaft a' than P' and P, respectively. In this
 25 same figure is also shown another mode of keeping the knife K' in contact with the lower knife K⁰. This is done simply by inserting a spring-washer k between the knife K⁸ and the nut or adjustable shoulder k', screw-threaded on the shaft b'.

30 Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a paper-trimming machine the combination with a plurality of shafts, of rollers
 35 adjustably mounted thereon, rollers mounted loosely on shafts above certain of said adjustable rollers, a circular knife carried on the outer face of each of the said loose rollers,
 40 a circular knife mounted on the outer face of each of the said adjustable rollers directly beneath the said loose rollers, springs attached to said loose rollers and to the adjustable rollers on the same shaft therewith, means
 45 for preventing the upper knives from riding on the rollers beneath them, a shaft mounted at an angle to one of the aforesaid shafts and geared thereto, adjustable rollers mounted on said shaft, circular knives carried by cer-
 50 tain of said adjustable rollers, a loose roller mounted above one of said adjustable rollers carrying a circular knife, a circular knife carried on the outer face of said loose roller, adjustable rollers carried on the same shaft
 55 with said loose roller, and means for keeping the circular knives in contact with each other and preventing the top knives from riding on the rollers beneath them, rollers and bands for feeding the paper to the said knives and
 60 means for periodically forcing the paper after being cut by the first set of rollers between the bands and rollers for carrying it to the second set, substantially as described.

2. In a paper-cutting machine the combination with the adjustable rollers A and A⁰,
 65 of circular knives carried on the outer faces of the rollers A, the loose rollers B mounted

above the said adjustable rollers, circular knives carried on the outer faces of the said
 loose rollers, adjustable rollers B⁰ mounted 70
 between said loose rollers, springs carried by said adjustable rollers and connected to the said loose rollers for keeping the knives in contact with each other, stops carried by the
 said adjustable rollers for preventing the 75
 said loose rollers from riding, yielding bearings in which the shaft that carries loose rollers is journaled, a shaft a' mounted at an angle with the aforesaid shafts and geared with
 one of the same, the rollers A' and A⁰⁰ mounted 80
 on the said shaft, a circular knife carried by one of the rollers A', a gear-wheel carried by the shaft a', a second gear-wheel meshing with and mounted above the first, a shaft
 carrying the said second gear-wheel, adjust- 85
 able and loose rollers carried by the said shaft, a circular knife carried by the said loose roller, means for keeping the upper cir-
 cular knife in contact with the lower knife 90
 and for preventing said upper knife from riding the lower knife, a plurality of rollers and bands for feeding the paper to the knives, a plurality of arms L², rollers mounted on
 said arms, yokes attached to said arms, cams 95
 actuating said yokes so as to force the paper to be cut between the feed rollers and bands leading to the second set of knives, substantially as described.

3. In a paper-cutting machine the combination with the adjustable rollers A and A⁰, 100
 of circular knives carried on the outer faces of the rollers A, the loose rollers B mounted above the said adjustable rollers, circular knives carried on the outer faces of the said
 loose rollers, adjustable rollers B⁰ mounted 105
 between said loose rollers, springs carried by said adjustable rollers and connected to the said loose rollers for keeping the knives in contact with each other, stops carried by the
 said adjustable rollers for preventing the said 110
 loose rollers from riding, yielding bearings in which the shaft that carries the loose rollers is journaled, a shaft a' mounted at an angle with the aforesaid shafts and geared with one of the same, the rollers A' and A⁰⁰ 115
 mounted on the said shaft, a circular knife carried by one of the rollers A', a gear-wheel carried by the shaft a', a second gear-wheel meshing with and mounted above the first, a
 shaft carrying the said second gear-wheel, ad- 120
 justable and loose rollers carried by the said shaft, a circular knife carried by the said loose roller, means for keeping the upper cir-
 cular knife in contact with the lower knife 125
 and for preventing said upper knife from riding the lower knife, a plurality of rollers and bands for feeding the paper to the knives, a plurality of adjustable holders mounted above the shafts carrying the loose and ad-
 justable rollers aforesaid, arms mounted in 130
 said holders, rollers carried by said arms for giving tension to the said bands, a plurality of arms L², rollers mounted on said arms, yokes attached to said arms, cams actuating

said yokes so as to force the paper to be cut between the feed rollers and bands leading to the second set of knives, substantially as described.

5 4. In a paper-cutting machine the combination with the adjustable rollers A and A⁰, of circular knives carried on the outer faces of the rollers A, the loose rollers B mounted above the said adjustable rollers, circular
10 knives carried on the outer faces of the said loose rollers, adjustable rollers B⁰ mounted between said loose rollers, springs carried by said adjustable rollers and connected to the said loose rollers for keeping the knives in
15 contact with each other, stops carried by the said adjustable rollers for preventing the said loose rollers from riding, yielding bearings in which the shaft that carries the loose rollers is journaled, a shaft α' mounted at an
20 angle with the aforesaid shafts and geared with one of the same, the rollers A' and A⁰⁰ mounted on the said shaft, a circular knife carried by one of the rollers A', a gear-wheel carried by the shaft α' , a second gear-wheel
25 meshing with and mounted above the first, a shaft carrying the said second gear-wheel, ad-

justable and loose rollers carried by the said shaft, a circular knife carried by the said loose roller, an adjustable shoulder carried upon the shaft with the said loose pulley, a
30 spring - washer inserted between the said shoulder and the circular knife for keeping the upper circular knife in contact with the lower knife and means for preventing said upper knife from riding the lower knife, a
35 plurality of rollers and bands for feeding the paper to the knives, a plurality of adjustable holders mounted above the shafts carrying the loose and adjustable rollers aforesaid, arms mounted in said holders, rollers carried
40 by said arms for giving tension to the said bands, a plurality of arms L², rollers mounted on said arms, yokes attached to said arms, cams actuating said yokes so as to force the paper to be cut between the feed rollers and
45 bands leading to the second set of knives, substantially as described.

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Witnesses:

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