Jan. 4, 1938. L. J. ZAHN 2,104,630

SEPARATOR FOR CANCELING MACHINES

Filed April 20, 1937

Fig. 1.

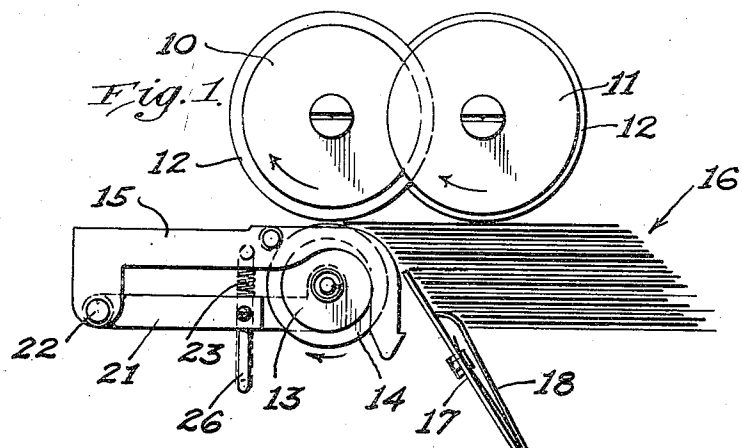


Fig. 2.

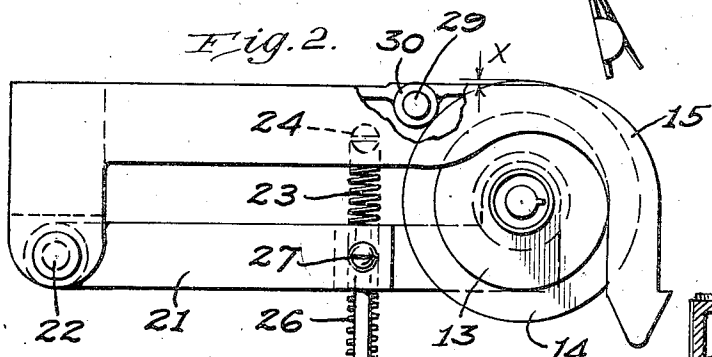
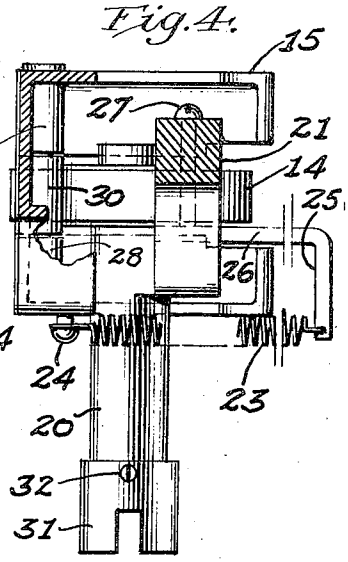


Fig. 4.



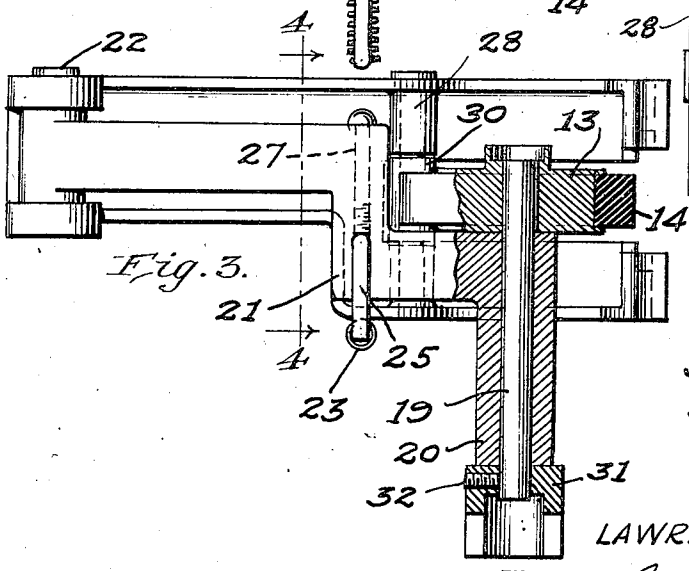


Fig. 3.

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SEPARATOR FOR CANCELING MACHINES

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5 Claims. (Cl. 271—39)

The present invention relates to separators and feed rollers for mail canceling machines. More particularly the invention pertains to the adjustment of the separator roll, these means automatically positioning the separator roll when the diameter of the latter diminishes due to wear and insuring proper separation of the mail matter as it is fed to the printing device constituting the means for marking the mail and canceling the postage thereon.

Heretofore adjustment of the separator has been accomplished by manually operated means, such, for instance, as a screw, and the proper positioning thereof with respect to one of the feed rollers was left to the judgment of the operator. While the wear on the separator and feed rollers, usually faced with rubber, is relatively small, nevertheless, in spite of the infrequent necessity for adjustment, the separator roller did not always function properly. It has been found from experience that the average piece of mail matter could be separated from a stack by setting the distance between the separator and feed roller at a predetermined distance. It is obvious that, to maintain this spacing, considerable skill would be required on the part of the operator properly to adjust the separator and maintain a fixed relation between the separator and the feed roller.

It is an object of the present invention to provide means for maintaining a predetermined spacing of the separator and feed rollers in the type of machine to which reference has been made, and, with this object in view, a preferred mechanism for efficiently separating mail matter has been devised. The following description of this mechanism will enable those skilled in the art readily to understand the automatic adjustment, particularly with reference to the accompanying drawing, in which:—

Fig. 1 is a top plan view of the separating mechanism;

Fig. 2 is an enlarged view, partly broken away, of the separator roll and spacing means;

Fig. 3 is a front view, partly in section, of the separator shown in Fig. 3; and

Fig. 4 is a section taken on line 4—4 of Fig. 3.

Referring to the drawing, there is shown a separating mechanism comprising the usual feed rollers 10, 11 arranged in juxtaposed relation and rotating in the direction indicated by the arrows thereon. These rollers are positively driven and geared to each other in such a manner that the angular velocity of roller 10 is greater than that of roller 11.

Each of these rollers is provided with a facing 12 in the form of an annular rubber ring fitting snugly on the roller and adapted to frictionally engage the mail matter passing through the canceling machine. Disposed forwardly of roller 10 is a separator roller 13 driven in a direction opposite that of roller 10. Roller 13 is likewise provided with a rubber facing 14.

As will be seen in Fig. 2, the periphery of the facing on roller 13 projects slightly beyond the face of a bifurcated guard member 15 forming part of the separator plate, the latter being fixed to the frame of the machine. The function of the rubber faced roller 13 and the guard 15 is to prevent more than one piece of mail matter from entering the feed. This will be evident from Fig. 1 in which is shown a stack of mail, indicated at 16, and forced against an inclined feeding finger 17 and stop plate 18 so as to project the edges of successive pieces beyond the edge of the next piece of mail. Usually a feed belt (not shown) forces the mail against the finger 17, stop plate 18, and guard 15.

As shown in the several views, roller 13 is pinned to a shaft 19 journaled in a depending projection 20 on arm 21, the latter being pivotally connected to guard 15 at 22. This arm and the roller 13 carried thereby are normally urged toward roller 10 by spring 23 secured at one end to guard member 15 by means of screw or pin 24 and at its other end to the depending portion 25 of an arm 26 adjustably secured to arm 21 by a screw 27. Journaled in bosses 28 on guard member 14 is a shaft or pin 29 which rotatably supports a positioning sleeve or roller 30 between the furcations of the guard member.

As will be evident from the drawing, sleeve 30 acts as a limiting stop for roller 13, its position being such that the periphery of the frictional facing 14 projects beyond the guard a distance indicated by X in Fig. 2. This distance remains constant, regardless of wear on the rubber facing, because, as the diameter of the roller diminishes, the spring 23 urges the roller against the sleeve at all times and maintains relation between the projecting periphery and the guard substantially constant. Thus, it is apparent that, once the roller and sleeve have been so positioned to permit roller 13 to project the proper distance beyond the face of the guard, the roller is automatically urged against stop sleeve 30 when the facing 14 wears. Hence, no manual adjustment is necessary.

As stated hereinbefore, separator roller 13 is reversely driven with respect to feed roller 10.

The means for driving roller 13 is shown as a coupling 31 fastened to shaft 19 by means of a set screw 32. Other means may be employed, however.

In operation, the separator prevents the passage of more than one piece of mail at a time. The stack of mail, resting on the lower edges of the pieces, is urged toward the guard and the edge of the piece nearest the feed rolls projects beyond the edge of the next succeeding piece. The piece of mail nearest the feed rolls is frictionally engaged by rolls 10, 11, the former of which rotates relatively rapidly and carries the piece past the separator. Until this piece has passed beyond the feed rolls, the next piece is urged away from the feed rolls by the separator until such time as it is presented to the friction faces of the feed rolls, that is, when the preceding piece has passed the rolls. By providing a stop device and means always urging the separator roll against this stop, the projecting portion of the separator facing remains constant at all times.

While a preferred form of the invention has been illustrated and described, it is not intended that the invention be limited to the precise arrangement of parts shown, but may be modified within the definition of the invention as expressed in the appended claims.

What I claim is:

1. In a separating mechanism of the class described, a feed roll, a separator roll opposite said feed roll the periphery of said separator roll having a frictional wearable surface, a guard member, an arm pivotally connected to said member and carrying said separator roll, said separator roll being adapted to project beyond the face of said member in the direction of the feed roll, means on said guard engageable with said peripheral surface to limit movement of the separator roll with respect to said member in the direction of said feed roll, and means normally urging said arm in said direction whereby a fixed relation is maintained between the periphery of the separator roll and the face of said member.

2. In a separating mechanism of the class described, a feed roll, a separator roll opposite said feed roll, a guard member, an arm pivotally connected at one end thereof to said member, said separator roll being journaled in the other end of said arm and adapted to project beyond the face of said member, a rotatable stop member mounted on said guard to engage the periphery of the separator roll for limiting movement of said separator roll and arm in the direction of said feed roll, and spring means normally urging said separator roll against said stop member whereby a fixed relation is maintained between the periphery of said separator roll and the face of said member.

3. In a separating mechanism of the class described, a feed roll, a separator roll, the periphery of said separator roll having a frictional wearable surface, a guard member, means for supporting said separator roll in movable relation to said member, stop means on said member and engageable with said surface to position said separator roll with respect to the face of said guard member whereby only a predetermined portion of said periphery projects beyond said face, and means normally urging said separator roll into engagement with said stop means.

4. In a separating mechanism of the class described, a feed roll, a separator roll, the periphery of said separator roll having a frictional wearable surface, a bifurcated guard member, means for supporting said separator roll between the furcations of said guard member in movable relation to said member, stop means on said member between said furcations and engageable with said surface to position said separator roll with respect to the face of said guard member whereby only a predetermined portion of said periphery projects beyond said face, and means normally urging said separator roll into engagement with said stop means.

5. In a separating mechanism of the class described, a feed roll, a separator roll, the periphery of said separator roll having a frictional wearable surface, a guard member, means for supporting said separator roll in movable relation to said member, stop means on said member and engageable with said surface to limit movement of said separator roll in one direction and to position said separator roll with respect to the face of said guard member whereby only a predetermined portion of said periphery projects beyond said face, and yieldable means normally urging said separator roll into engagement with said stop means.

LAWRENCE J. ZAHN.