

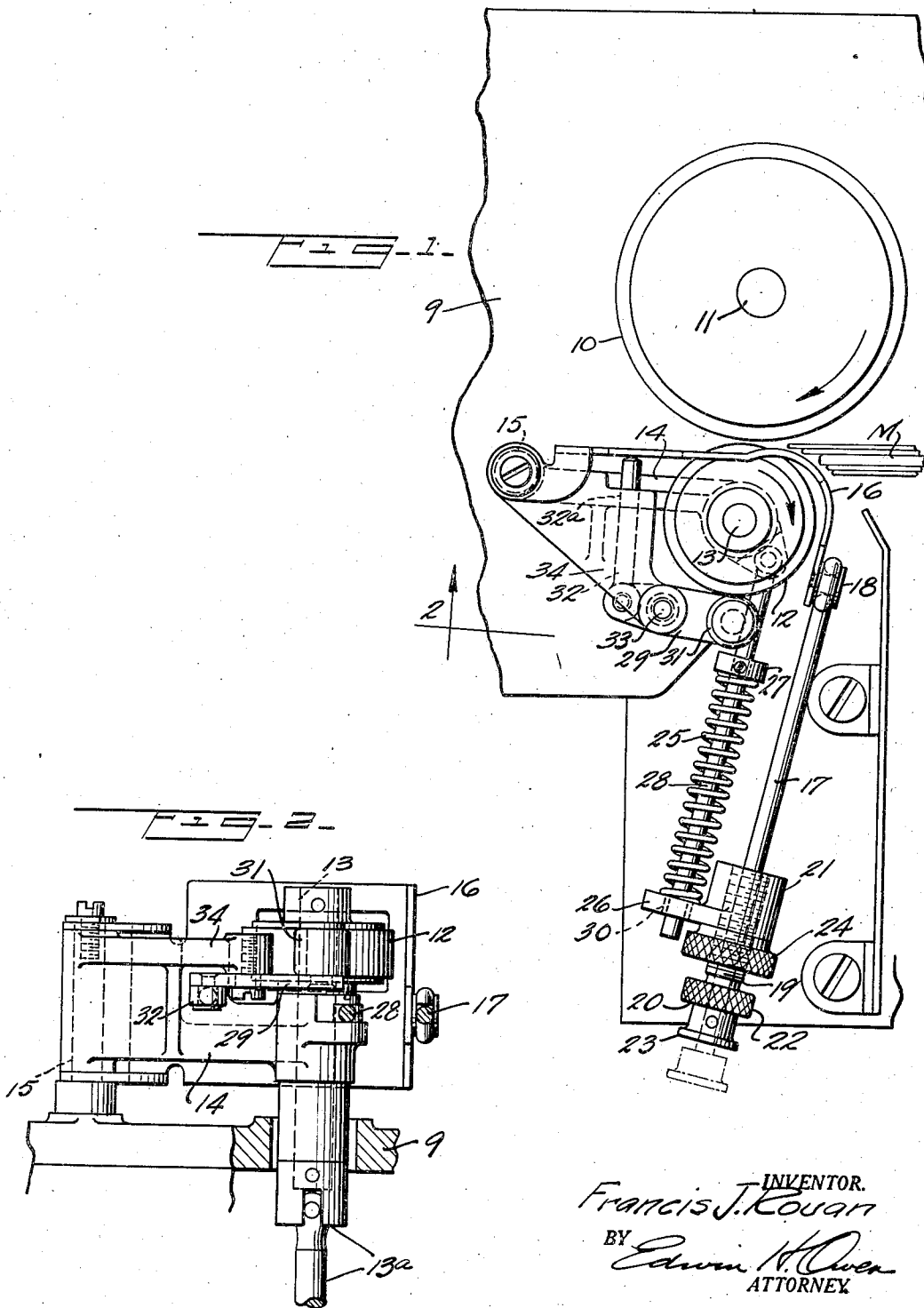
Dec. 13, 1938.

F. J. ROUAN

2,140,170

SEPARATOR ROLLER WEAR COMPENSATOR

Filed Feb. 25, 1938



UNITED STATES PATENT OFFICE

2,140,170

SEPARATOR ROLLER WEAR COMPENSATOR

Francis J. Rouan, Stamford, Conn., assignor to
Pitney-Bowes Postage Meter Co., Stamford,
Conn., a corporation of Delaware

Application February 25, 1938, Serial No. 192,586

5 Claims. (Cl. 271—39)

This invention relates to a letter feeding device for use with mail handling machines and more particularly to means for automatically maintaining a predetermined normal spaced relation between the adjacent surfaces of a separator roller and a feed roller.

In feeding individual pieces of mail from a stack of mail which is to be cancelled, stamped or sealed for example, each piece of mail passes between a feed roller and a separator roller. To assure perfect separation, the separator roller, which is a reverse driven roller, is provided with a wearable frictional surface such as rubber, which when wear occurs, will reduce the diameter of the separator roller and consequently will increase the space between the separator roller and feed roller.

The rollers are normally spaced apart a distance slightly greater than the thickness of the thinnest piece of mail matter which distance must be maintained to restrict the passage to only a single piece of mail.

The object of the present invention is to provide means to automatically adjust the position of said separator roller to compensate for the wear of said roller and thereby maintain a substantially fixed distance between the separator and feed rollers.

A further object is to control the compensating device by means of a member which is adapted to engage the separator roller at a position diametrically opposite the mail engaging surface of said roller and which through the medium of a pressure applying member will effect a change in the position of the separator roller support.

A further object is to provide means whereby said compensating device may function in cooperation with a yieldable separator roller.

With the foregoing and other objects in view which will appear as the description proceeds the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

A preferred embodiment of the invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a plan view of a mail handling machine showing a feed roller, separator roller,

and a compensating device for the separator roller; and

Fig. 2 is an end view taken in the direction of the arrow 2 of Fig. 1.

Referring to Fig. 1, the machine which includes a feed table 9, is provided with a driven feed roller 10, which roller is supported upon a shaft 11 having preferably a fixed axis. A separator roller 12, mounted adjacent the feed roller 10, is carried by a shaft 13 which shaft is supported within a movable support member 14, and is driven by means of a flexible coupling 13a. The support member 14 has one end pivotally mounted upon a stud 15 secured within the feed table 9.

A guard member 16, which is provided for the purpose of directing the course of the mail M to the separator and feed rollers, also has one end pivotally mounted upon said stud 15, while the opposite or mail directing end thereof is secured to a rod 17 by means of a stud 18.

The rod 17 is slidably mounted within a sleeve 19, adjustably supported within a fixed bracket 21. Sleeve 19 has a screw threaded exterior and a knob 22 forming an integral part thereof, whereby said sleeve is adapted to be adjusted within the bracket 21. The outer face 20 of said knob 22 is also adapted to provide an abutment for a stop collar 23, which collar is fixed to the free end of the rod 17. A lock nut 24 is provided on the screw sleeve 19. When making the initial setting of the separator roller with relation to the feed roller, the sleeve 19 is adjusted within the bracket 21 and the lock nut 24 is adjusted to a locking position on sleeve 19.

The separator roller support member 14 is normally urged in the direction of the feed roller 10 by means of a spring 25, which spring is compressed between a fixed arm 26, extending from the bracket 21, and a collar 27 on a rod 28. Said rod 28 has one end fixed to the free end of the separator roller support member 14, and the opposite end passes freely through an opening 30 in said arm 26.

Also forming a part of the separator support member assembly, is a rocker lever 29, which is pivotally mounted upon a pin 33 fixed within an extension 34 of the separator support 14, and which has a roller 31 rotatably mounted at one end thereof. An abutment pin 32, which is freely mounted at the other end thereof, extends perpendicularly outward from the rocker lever 29 and is guided within an opening 32a within the separator roller support 17. The roller 31 is maintained in constant engagement with the

surface of the separator roller 12 at a position substantially diametrically opposite to the mail engaging surface of said separator roller. The abutment pin 32 has its free end maintained in engagement with the lower surface of the guard 16.

It will be seen from the foregoing that the pressure of the spring 25 will urge the rod 28, the separator roller support 14, and separator roller 12, toward the feed roller, and since the rocker lever 29 is mounted upon the separator roller bracket 14, the pressure of the spring 25 will effect a pressure between the abutting end of the pin 32 and the guard 16. The guard however, will act as a stop since the collar 23 at the end of the rod 17 is urged against the knob 22.

The abutment afforded by the engagement of the collar 23 with the knob 22, will limit the movement of the guard member 16 in one direction. Thus, through the combined action of the roller 31 and the abutment pin 32, the effective pressure of the spring 25 will urge the separator roller 12 in the direction of the feed roller 10 to the limit of the adjustment afforded by the stop knob 22.

As wear occurs on the separator roller 12, the roller 31 will change its position accordingly, which change will effect a change in position of the rocker lever 29 and pin 32. Then, since the pressure of the spring 25 directly affects the position of the rocker arm mounting pin 33, and since the guard member 16 provides a stop for the pin 32, the result is a pressure upon the surface of the separator roller which causes said roller to be forced in the direction of the feed roller to the limit of the stop as effected by the guard member 16.

It will also be noted that the particular arrangement of the structure as described, also provides for flexibility to permit mail of varying thickness to pass between the feed and separator rollers without affecting the adjustment of the structure. When mail which is thicker than the separation between the feed and separator rollers, passes between said rollers, the rods 17 and 28 will move within the sleeve 19 and opening 30 respectively, thereby permitting the free and unrestricted movement of the separator roller unit. The dot and dash position of the collar 23 indicates the flexed position of the rod 17.

Having described the invention, what is claimed is:

1. In a mail handling machine, the combination with a letter feed roller having a relatively fixed support means and a separator roller having a wearable surface and a movable support means; of means to adjust the position of the separator roller with relation to the feed roller; including a movable guard member, means to urge one end of the guard member and separator roller support in the direction of the feed roller, means to limit the movement of the guard member in the direction of the feed roller, a compensating member engaging the periphery of the separator roller at a position substantially opposite the mail engaging surface thereof, and a movable support for said compensating member, having a portion thereof maintained in engagement with said guard member, whereby a decrease in the diameter of the separator roller, due to wear, will effect a proportionate change in the position of the separator roller support and consequently said separator roller to compensate for the wear of said separator roller.

2. In a mail handling machine, the combination with a letter feed roller having a relatively fixed support means and a separator roller having a wearable surface and a movable support means; of means to adjust the position of the separator roller with relation to the feed roller; including a movable guard member, means to urge one end of the guard member and separator roller support in the direction of the feed roller, means to limit the movement of the guard member in the direction of the feed roller, a compensating member including a roller engaging the periphery of the separator roller at a position substantially opposite the mail engaging surface thereof, and a rocker arm arranged to provide a support for said compensating member and having a portion thereof maintained in engagement with said guard member, whereby a decrease in the diameter of the separator roller, due to wear, will effect a proportionate change in the position of the separator roller support and consequently said separator roller to compensate for the wear of said latter roller.

3. In a mail handling machine, the combination with a letter feed roller having a relatively fixed support means and a separator roller having a wearable surface and a movable support means; of means to adjust the position of the separator roller with relation to the feed roller; including a movable guard member, means to urge one end of the guard member and separator roller support in the direction of the feed roller, means to limit the movement of the guard member in the direction of the feed roller, a compensating member including a roller engaging the periphery of the separator roller at a position substantially opposite the mail engaging surface thereof, a rocker arm carried by the separator roller support and arranged to support said compensating roller at one end thereof, and a stop member carried by the opposite end of said rocker arm and maintained in engagement with said guard member, whereby a decrease in the diameter of the separator roller, due to wear, will effect a proportionate change in the position of the separator roller support and consequently said separator roller to compensate for the wear of said latter roller.

4. In a mail handling machine, the combination with a letter feed roller having a relatively fixed support means and a separator roller having a wearable surface and a yieldable support means; of means to adjust the position of the separator roller with relation to the feed roller; including a movable guard member, spring means to urge one end of the guard member and separator roller support in the direction of the feed roller, means to limit the movement of the guard member in the direction of the feed roller, a compensating member engaging the periphery of the separator roller at a position substantially opposite the mail engaging surface thereof, a support for said compensating member pivotally mounted on said separator roller support, and means projecting from said compensating member support and maintained in engagement with said guard member, whereby a two point contact is provided, one point establishing a fixed position as determined by the limited movement of the guard, and the other point establishing a movable position through its engagement with the changing surface of the separator roller as provided by the pressure of the spring means to thereby effect a proportionate change in the position of the separator roller support and consequently said

separator roller to compensate for the wear of said latter roller.

5 5. In a mail handling machine, the combination with a letter feed roller having a relatively fixed support means and a separator roller having a wearable surface and having a yieldable support means; of means to adjust the position of the separator roller with relation to the feed roller; including a guard member, a common anchorage for one end of said guard member and one end of the separator roller support, spring means to jointly urge the free end of the support and guard member in the direction of the feed roller, an adjustable stop member connected with the guard to adjustably limit the movement of

10

15

the guard in the direction of the feed roller, a compensating device including a pivotal member carried by said support and having a roller engaging the periphery of the separator roller at a point substantially opposite a point where the separator roller engages the mail, and a stop member arranged to be maintained in engagement with said guard member, whereby the effective pressure of said spring means through said compensating device will move the separator roller toward the feed roller in proportion to the decrease in the diameter of the separator roller resulting from wear.

5

10

FRANCIS J. ROUAN. 15