No. 890,114. PATENTED JUNE 9, 1908.

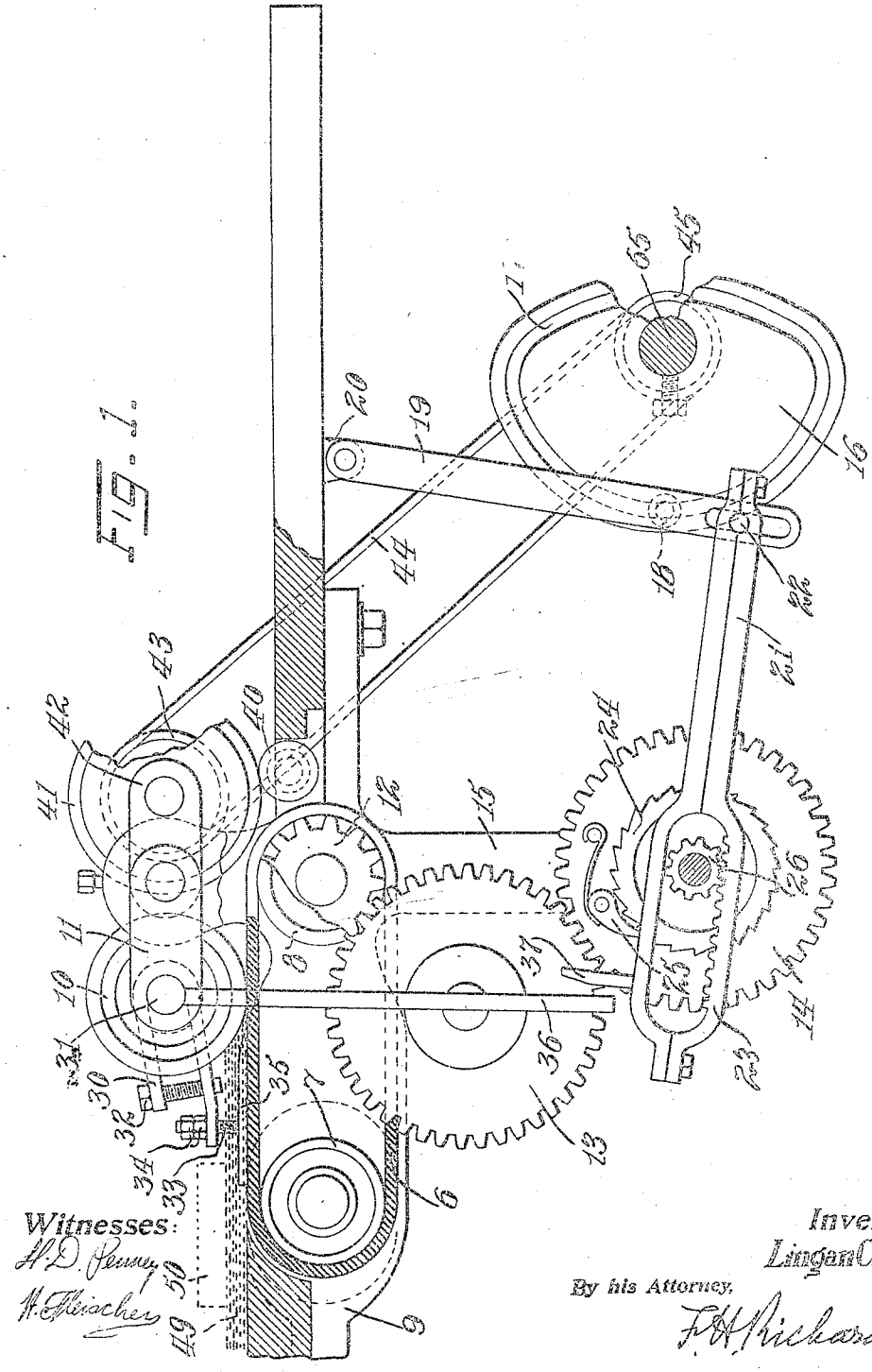
L. C. WING.

MACHINE FOR FEEDING STRIPS.

APPLICATION FILED MAR. 26, 1907.

2 SHEETS—SHEET 1

Fig. 1.



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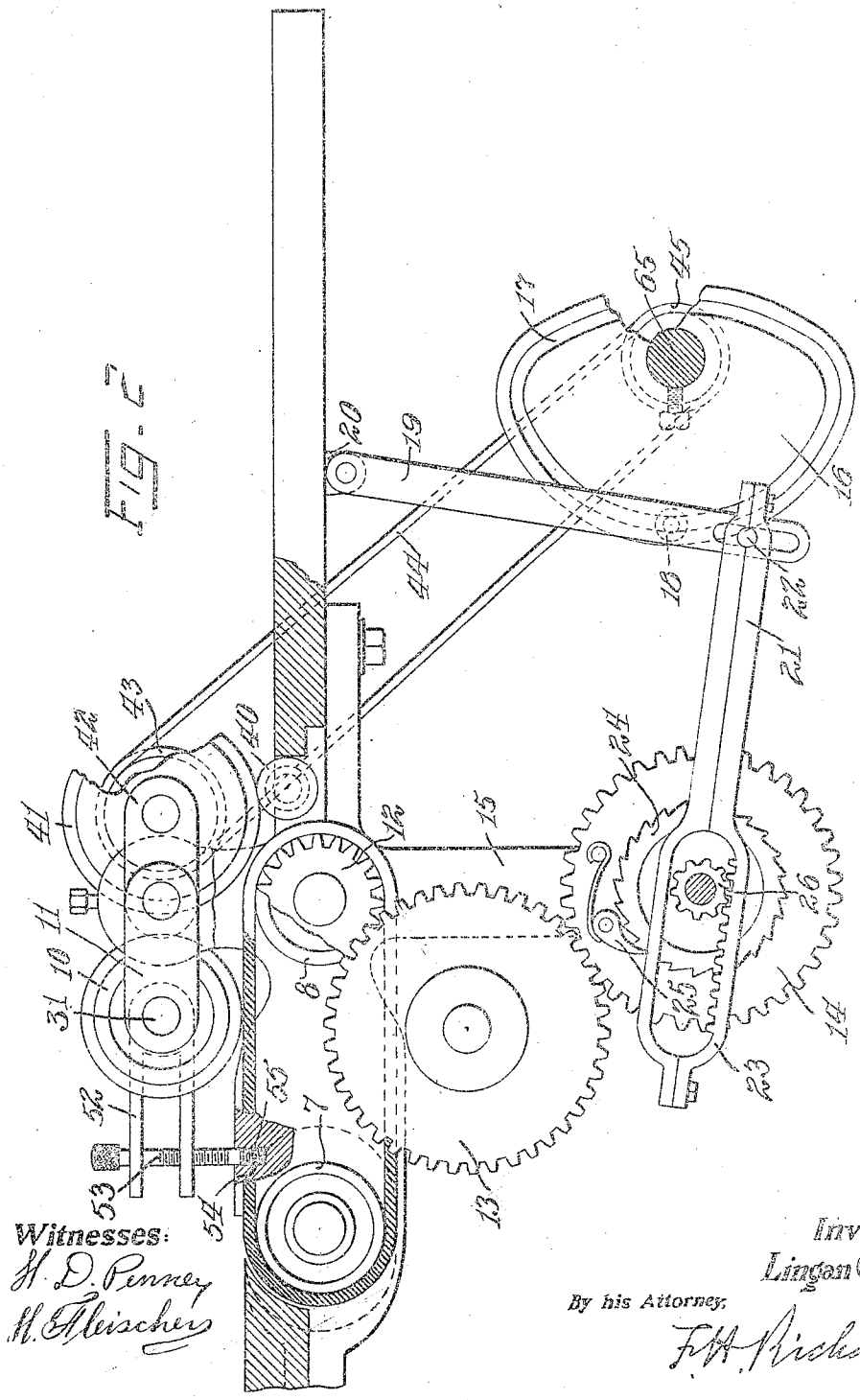
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

LINGAN C. WING, OF NEW YORK, N. Y.

MACHINE FOR FEEDING STRIPS.

No. 890,114. Specification of Letters Patent. Patented June 9, 1908.

Application filed March 26, 1907. Serial No. 364,570.

To all whom it may concern:

Be it known that I, LINGAN C. WING, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Feeding Strips, of which the following is a specification.

This invention has reference to mechanism for positively and efficiently feeding strips of very thin material such as paper labels or the like, from a superposed pile or package, so that strips will be fed successively one at a time, and delivered to a certain desired place for various uses, such as to be attached to or secured around various articles.

The invention comprehends means whereby strips of paper or other thin material will be withdrawn one at a time from the bottom of a superposed pile; and the strips intermittently advanced and deposited at a certain place. The mechanism includes means whereby the strips are fed at regular intermittent periods bearing a certain relation to a continuously moving driving shaft.

Two embodiments of this invention are illustrated in the accompanying drawings, in which

Figure 1 is a side elevation, partly in section of one embodiment; and Fig. 2 is a similar view of a slightly modified form of the invention.

Referring now to the structure set forth in Fig. 1 the mechanism comprises essentially a movable feed-surface upon which the bottom one of a pile of strips or a portion thereof, is pressed by any suitable means, such as a weight. Above the feed-surface is arranged a coöperating member. The feed-surface is actuated intermittently in one direction, its surface speed being that required to advance the strip the desired distance. The coöperating member that engages the opposite face of the strip is permitted but a very slight movement in the direction of the feed, and is prevented from further movement in such direction, whereby the strip, except at the initial portion of its movement between said members, passes between a movable feed surface and a stationary coöperating member. The purpose of such slight advancing movement of the coöperating member is for the purpose of selecting the lowermost strip from the pile to cause it alone to enter between the movable feed surface and the coöperating member; while the superposed strips are retarded and prevented from advancing by the immediate arrest of the motion of the coöperating member; the continued motion of the movable feed-surface serving to carry the selected strip along and present it beyond these members. Thereupon, the movable feed-surface is stopped, and the coöperating member is given a reverse movement by suitable means, to return it to its former position, therefore, it being moved backwards the slight distance that it was advanced by the engagement therewith of the strip fed forward by the movable feed-surface. This latter motion of the coöperating member will also serve to move the strips immediately above the lowermost strip, somewhat rearward and facilitate the selection of the next strip to be fed, so that upon the next advancement of the movable feed-surface, this latter strip will be advanced between the members. And the arrest of the forward movement of the coöperating member will serve to keep back the upper strips, while the movable feed-surface during its next intermittent advancement will carry this trip through between the two members. This return movement of the coöperating member may be effected in several ways. Its forward movement may be retarded by a resilient member, whereby, as soon as the strip has passed beyond the coöperating members, and this member is free, the reaction will return such member to its former position. Another means for effecting such movement is to have a positively acting reciprocating device that at the proper period will positively engage with the coöperating member and move it back to its former position.

Referring now to Fig. 1 the movable feed-surface is formed by an endless belt 6 carried by two parallel rollers 7 and 8, rotatably supported in suitable bearings in a frame 9. The coöperating member is shown as formed of a single cylindrical roller 10, whose periphery is preferably formed of a resilient material such as soft rubber. And the belt 6 is also preferably formed of soft rubber, or has its engaging surface so constituted, to cause sufficient friction with the strip to advance the same without danger of slip. The roller 10 is pivotally supported by suitable arms 11, only one of which is shown, the arms being suitably supported from the frame 9. The roller 10 is located above an

intermediate part of the belt between the supporting rolls 7 and 8 to have a slight frictional engagement with the belt. Suitable means are provided for intermittently rotating one of the rolls supporting the belt, in one direction. In the present instance the roll 8 is driven by a pinion 12 fast to the roll, that meshes with a gear 13 suitably pivoted on the frame of the machine. Another gear 14 carried by an arm 15 depending from the frame 9, meshes with the gear 13; on a driving shaft 65 is mounted a disk 16 provided with a cam slot 17 into which latter projects a roller 18 pivoted on a lever 19; the latter swinging from a lug 20 beneath the frame 9. The rotation of the cam disk will evidently oscillate the arm 19, and the latter serves to reciprocate a rack-bar 21 pivoted to the arm at 22. This rack-bar has a slotted portion at its other end containing a rack 23 on the lower side. Concentric with the gear 14 is loosely mounted a ratchet wheel 24 whose teeth engage a pawl 25 pivoted on the gear 14. A pinion 26 is fast on one face of the ratchet wheel 24, and operates in the opening in the rack-bar, its teeth engaging the rack therein. The swinging of the lever and rack-bar by the cam member will thereby rotate the gear successively in opposite directions, which will carry the ratchet wheel 24 around with it. When moving in one direction, the ratchet wheel will not engage the pawl 25, but when the lever is advanced toward the ratchet wheel, the latter will engage the pawl and carry the gear 14 around therewith. And the latter gear through the intermediate gear 15 will operate the gear 12 and rotate the roller 8. By this means the belt is given an intermediate movement, always in the same direction. The lever, rack-bar and gears are so relatively proportioned that at each reciprocation of the lever the belt will be given a sufficient movement to properly advance the length of strip desired to be operated upon. The coöperating member or roller 10 is prevented from rotating in the direction of the feed by means of a stop mechanism, in the construction shown comprising a U-shaped bent strip 30 passed around one end of the spindle 31 on which the roller 10 is secured, and clamped in such position by bolt 32. One end of such strip is extended and contains a threaded bore in which is screwed a threaded pin 33, that is adjustable therein by means of jam nuts 34. This bolt engages a strip 35 on the table 9 and prevents further movement of the roll in the direction of the feed, that is, the direction in which the roll 10 will be rotated by engagement with the belt 6, or by the strip passing between the belt and the roller 10 and advanced by the belt. At the conclusion of the intermittent motion of the gears advancing the belt, when the strip has emerged from between the belt and the roller 10, the latter is given a slight backward rotation. In the form shown in this figure, it is positively actuated by means of an arm 36 fast on the spindle 31 of the roller 10, that projects into the path of movement of a detent 37 extending upward from the rack-bar 21. But this engagement of the detent with the arm is only at the extreme limit of the swing of the rack-bar, and hence will effect a very small reverse movement of the roller 10; which movement will slightly elevate the stop bolt 33 from strip 35 on the table.

The strips advanced from between the belt and roller are shown as passed between two advance feed rolls, that in the present construction are continuously driven, and which are operated at a surface speed slightly greater than that of the belt 6, whereby the strip is given a small amount of tension tending to draw it between the belt and roller 10. The advancing rolls are shown as comprising a small roll 40 mounted on the table in suitable bearings, not shown, that engages a superposed roll 41 rotatably supported on suitable arms 42 only one of which is illustrated. The roller 41, may be driven by a pulley 43, fast thereon, around which passes a belt 44 that is actuated by passing around a pulley 45 fast on the driving shaft 65. The rolls 40 and 41 are preferably faced with soft rubber or similar friction material; and, as stated, the pulley 41 is driven at a surface speed slightly greater than that of the belt 6. But the roll 41 is continuously driven, while the belt 6 is intermittently operated; whereby as soon as each strip is passed in between the rolls 40 and 41 by means of the belt 6, the strip being engaged by the latter rolls before being disengaged by the belt and cooperating roll 10, the strip will be further advanced without any stoppage as soon as it disengages the roller 10.

The operation of the construction described is as follows, a superposed pile of strips 49 are placed on the table 9 with their end portions resting on the belt and the ends are advanced to project in the angular space between the belt and the forward portion of the roller 10 as shown in the drawing. The strips are pressed against the belt by suitable means, such as a weight 50. The first movement of the belt, supposing the roller 10 to be in the position with the strip elevated, will tend to draw the advanced strips at the lower portion of the pile, between the belt and roller. But the motion of the roller is immediately arrested by the stop pin 33, while the movement of the belt continues. The belt will be in engagement with a large portion of the end face of the lowermost strip, and the considerable friction thereby obtained will serve to advance this strip. But this movement will be retarded because of the now stationary upper roller 10. Yet this retarding will be overcome by the far greater

tendency of the belt to advance this lower strip. The forward and upper portions of the adjacent upper strips will strike the stationary roller 10 and prevent their advancement, which retarding influence will be facilitated by reason of the comparatively small friction between the next upper strip and the bottom strip. By this means, the lower strip will be advanced by the belt while the upper strips will be retarded; and the belt is operated until the whole length of strip passes the roller 10. But before the end of the strip reaches the roller 10, its forward end is passed between and engaged by the coöperating rolls 40 and 41. Just as soon as the strip passes from between the roller 10 and the belt, the belt is arrested, by reason of the reverse movement of the rack-bar. It is at this stage that the detent 37 strikes the arm 36 and moves the roller 10 backward for the engagement of the next strip, that is now lowermost, which strip is selected in like manner from the other strips and advanced.

Another means of causing the reverse movement of the roller 10 is shown in Fig. 2, and is in the nature of a resilient member that is put under tension when the roller is given its forward movement by coöperation with the belt 6 and the strip being fed, whereby, as soon as the strip emerges from between the belt and roller 10, the reaction of the resilient member will move the roller 10 back to its former position. In the construction shown, a U-shaped bent strip 52 is passed around the spindle 31 of the roller 10, and secured by means of a bolt 53. The lower end of this bolt enters a socket 54 in the table and engages a coil spring 55 therein. When the strip is first advanced and the roller 10 starts to rotate, the bolt 53 will be moved downward and compress the spring. But this movement will be obviously very limited and as soon as the strip passes the roller 10, the spring will expand and elevate the bolt, returning the roller 10 to its former normal position. In other respects the construction shown in Fig. 2 is identical with that set forth in Fig. 1.

Having thus described my invention, I claim:

1. In a device for feeding strips from a pile, the combination of a movable feed-surface arranged to engage the lower strip, a movable member coöperating with the feed-surface to engage the strip, and a movable stop device permitting a comparatively slight movement of the coöperating member in the direction of the feed.

2. In a device for feeding strips from a pile, the combination of a movable feed-surface arranged to engage the lower strip, a movable member coöperating with the feed-surface to engage the strip, a stop device permitting a comparatively slight movement of the coöperating member in the direction of the feed, and means for moving such member in the reverse direction.

3. In a device for feeding strips from a pile, the combination of a movable feed-surface of soft rubber arranged to engage the lower strip, a movable member of soft rubber coöperating with the feed-surface to advance the strip, a stop device permitting a comparatively slight movement of the coöperating member in the direction of the feed, and means for moving the stop device in the reverse direction.

4. In a device for feeding strips from a pile, the combination of a movable feed-surface operating in a plane to engage the lower strip, a movable member having a convex portion coöperating with the feed-surface to advance the strip, a stop device permitting a comparatively slight movement of the coöperating member in the direction of the feed, and means for moving the stop device in the reverse direction.

5. In a device for feeding strips from a pile, the combination of an endless belt of soft rubber arranged to engage the lower strip, a roller of soft rubber coöperating with the belt to advance the strip, and a stop device permitting a comparatively slight movement of the roller in the direction of the feed.

6. In a device for feeding strips from a pile, the combination of a movable feed-surface arranged to engage the lower strip, a cylindrical roll rotatably mounted above the feed-surface to coöperate therewith to advance the lower strip, a shaft secured to the roll, a detent secured to such shaft and arranged to permit the slight movement of the arm and swinging of the roll in the direction of the feed, a lever secured to said shaft, and a member arranged to intermittently strike the lever to move the roll in the reverse direction.

7. In a strip feed mechanism, the combination of a movable feed-surface, a roll coöperating therewith to advance a strip, means for intermittently advancing the feed-surface in one direction, comprising a rotatable member for advancing the feed-surface, a driving shaft, a disk provided with an eccentric groove, a lever carrying a roller operating in the groove of the disk whereby the lever is oscillated, a rack-bar pivoted to the lever, a gear wheel oscillated by said rack-bar, and ratchet connections between the gear wheel and the member operating the feed-surface, whereby the latter is intermittently advanced.

8. The combination of an endless belt, a roller arranged to operate the belt, a roller coöperating with the belt to advance the strip, a driving shaft, a disk provided with an eccentric groove, a pivoted lever having a roller operating in the groove of the disk, a slotted bar having one end pivotally con-

nected with said lever, the bar having at its other end an elongated slot provided with gear teeth at one side, a gear operating in the slot of the bar, a ratchet-wheel secured to gear wheel, a driving wheel operatively connected with the roller operating the belt, a ratchet pivoted on the driving wheel and engaging said ratchet wheel, an arm secured to said coöperating roller, and a detent on the bar arranged to engage said arm and move the roller in the reverse direction.

9. In a device for feeding strips, the combination of an endless belt, a movable member having a convex portion coöperating with the belt to advance a strip, means organized to move the convex member in one direction a comparatively slight distance and also to permit free movement of the member in the opposite direction, and means for limiting the movement of the convex member in the opposite direction.

10. In a device for feeding strips, the combination of a movable feed-surface for engaging the lower strip, a movable member cooperating with the strip surface to engage the strip, means organized to move the latter member backward a comparatively slight distance and to permit its free movement in the opposite direction, and means for limiting the movement of the said member in the said opposite direction.

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