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FEED MECHANISM FOR BLANK TREATING MACHINES.

APPLICATION FILED MAY 15, 1916.

1,238,790. Patented Sept. 4, 1917.

Fig. 1.

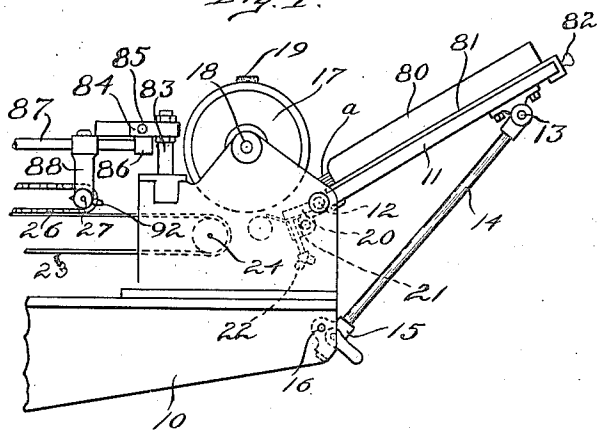
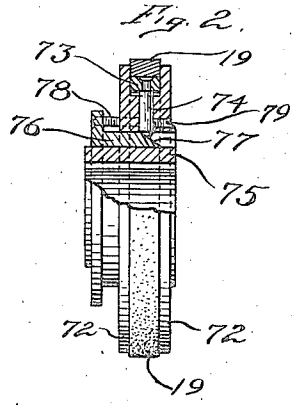



Fig. 2.



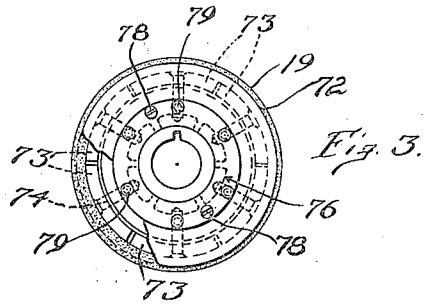
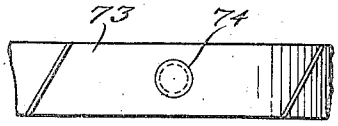




Fig. 3.

Fig. 4.




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# UNITED STATES PATENT OFFICE.

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## FEED MECHANISM FOR BLANK-TREATING MACHINES.

1,238,790. Specification of Letters Patent. Patented Sept. 4, 1917.

Original application filed June 5, 1913, Serial No. 771,848. Divided and this application filed May 15, 1916. Serial No. 97,573.

*To all whom it may concern:*

Be it known that we, LEON E. LA BOMBARD, (who formerly spelled his name LEON E. LABOMBARDE,) and MELVIN H. SIDEBOTHAM, of, respectively, Chelsea, in the county of Suffolk and State of Massachusetts, and of Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Feed Mechanism for Blank-Treating Machines, of which the following is a specification, the same being a division of our application Serial No. 771,848, filed June 5, 1913, for envelop machines.

This invention relates to means for feeding blanks of paper or pasteboard, the blanks being taken singly from a pile on a table and forwarded to mechanism which acts upon the blanks to fold or otherwise treat them.

One of the objects of the invention is to provide an improved feed mechanism which is adjustable to compensate for wear.

Another object is to provide a feeder of the type known as "combing wheel" which itself will act as a gage to prevent passage of more than one blank of a given thickness, at a time.

Another object is to provide a rotary feeder which is convertible for timed feeding or continuous feeding.

With these and other objects in view, our invention consists in the improvements which we will proceed to describe and claim.

Of the accompanying drawings:

Figure 1 is an elevation of so much of a machine embodying our improvements as is necessary to illustrate the same.

Figs. 2, 3 and 4 are detail views of the combing feed roll or wheel.

Similar reference characters indicate similar parts in all of the views.

A portion of the frame of the machine is indicated at 10, said frame having at one end an adjustable inclined table 11 for the blanks, which may be of any desired and practicable quality and thickness of paper. The table is pivoted at 12 to the frame and at 13 to the upper end of a strut or rod 14, the lower end of which is slidably clamped in a sleeve 15 pivoted at 16. A pile of blanks *a* placed on the table will be fed one at a time by mechanism practically the same as in U. S. Patent 540,131, granted May 28, 1895, to Allen, said mechanism comprising one or more wheels 17 secured to a continuously operating shaft 18, each wheel having a section of friction material 19, such as rubber, to draw off and feed the top blank of the pile, the blanks below the top one having their front edges in contact with one or more retarding devices such as sections of rubber 20 carried by hinged members 21 adjustable by screws 22.

Each blank, as it is fed by the wheel or wheels 17, is deposited upon forwarding tapes or belts 23 running on elongated rolls or shafts, one of which is indicated at 24. Above the tapes 23 are chains 26 mounted upon sprocket wheels carried by shafts one of which is indicated at 27. Instead of the tapes or belts 23 being traveling belts, they might be stationary, if of frictionless material such as smooth metal. Further description of means for advancing the blanks from the feeding mechanism will be unnecessary since any forwarding or carrying means may be employed according to the character of the machine with which our improved feed mechanism is employed.

Referring especially to Figs. 2, 3 and 4, the wheel 17 has an annular recess presenting two edge portions 72 between which the elastic rubber ring or periphery 19 is mounted, said ring projecting slightly beyond or outside of the edges 72. The rubber of which the ring 19 is made is preferably softer than the retarder or retarders 20 (Fig. 1). Inside the ring 19 are metal segments 73, the adjacent edges of the segments being beveled and slightly spaced, as shown in Fig. 4. Each segment is carried by a radially adjustable pin 74 (Fig. 2) having a cone-shaped inner end. Mounted slidably on the hub 75 of the wheel is a ring 76 having a series of projections 77 provided with beveled or cam faces. For convenience, these projections are referred to as cams. The wheel is formed with transverse apertures along which the cams can be adjusted by means of two or more screws 78 passing through the ring 76 into the body of the wheel, so that the cams 77 can be adjusted to force the pins 74 radially out-

ward, increasing the diameter of the circle formed by the segments and stretching the ring 19 to compensate for wear.

In practice, the wheel 17 is so mounted and the retard 20 so adjusted, that the space between the retard and the edges 72 of the feed wheel will permit but one blank at a time to pass, the retard being of material sufficiently hard (as relatively hard rubber) to not yield and let the edge of a second blank enter the space. The ring 19 is expanded just enough to project beyond the edges 72 and perform its combing or feeding action. As it wears, the ring is expanded, and this can be done until the ring is worn down to an eighth of an inch or less.

By removing all but one of the segments, the ring will project in but one place, the rest of the ring lying in the recess from which the segments are removed, thus providing an intermittently operating feeder which will comb off a blank only each time the projecting portion of the ring acts on the pile of blanks. Or only the one remaining segment can be faced with rubber and such segment or its pin provided with means, as a set screw, for preventing it from escaping from the wheel. In Figs. 2 and 3, such a set screw is indicated at 79 for each pin 74. Such set screws are desirable to prevent the segments from dropping out when the ring 19 is removed, or if it should be worn down so as to break during the running of the machine. Such set screws will, of course, be loosened when the ring 76 and its cams are to be adjusted. Whether one or all segments are used, there will be one or more edge portions 72 to constitute a gage to prevent the entry of a second blank between the wheel or segment and retard until the first has passed.

It will thus be seen that we have provided a feed wheel which is convertible so as to constitute an essential portion of timed feed mechanism, or straight top feed mechanism. If the yielding peripheral portion of the wheel be caused to project in but one place, as indicated in Fig. 1, a blank will be taken from the top of the pile on the table only once for each rotation of the shaft of the combing wheel, the blanks then being sent through the machine being spaced according to the circumference of the combing wheels. If the yielding peripheral portion be caused to project at two diametrically opposite places, then the combing wheels are adapted to operate on smaller blanks so as to remove two blanks from the pile for each rotation. If the yielding peripheral portion be presented uniformly, as shown in Fig. 3, then a feed of a blank will occur from the top of the pile each time that a preceding blank is removed. In other words, the blanks will follow each other with the front edge of one close behind the rear edge of the preceding one, this being known as the straight top feed, instead of a timed feed.

The table 11 is preferably provided with guides such as the flanges 80 Fig. 1 rising from straps 81 which are adjustable laterally of the table and held as by means of set screws 82.

To guide each blank which is advanced over the retarders 20, indicated in Fig. 1, on to the supporting surface 23, we employ one or more idle wheels or rolls underneath the combing wheels 17, said idle wheels having smooth peripheries and having no feeding action. They constitute anti-friction devices to hold each blank in position to be operated upon by the feed 19 carried by the wheels 17. As hereinbefore stated, after each blank is started into the machine by the wheels 17, any suitable mechanism may be employed for insuring their being carried to position to be engaged by other mechanism.

We claim:

1. A rotary feeder for blanks having a gage and a friction member adjustable relatively to said gage, and a relatively stationary surface adjacent said rotary feeder.

2. A combing wheel feeder having an annular gage and a radially adjustable friction member adjacent said gage, in combination with a relatively stationary surface spaced from the feeder to permit the passage of blanks one at a time.

3. A combing wheel feeder comprising a pair of disks and a radially adjustable friction member between said disks, in combination with a relatively stationary surface spaced from the feeder to permit the passage of blanks one at a time.

4. A combing wheel feeder having a plurality of adjustable segments and an elastic ring having a friction surface mounted on said segments, in combination with a relatively stationary surface spaced from the feeder to permit the passage of blanks one at a time.

5. A combing wheel feeder having a plurality of adjustable segments, and an elastic ring having a friction surface mounted on said segments, said wheel having edge portions at the sides of the ring of less diameter than said ring.

6. A rotary feeder for blanks, said feeder having a friction periphery adjustable to present an irregular surface or a cylindrical surface whereby it is convertible for timed feeding or continuous feeding, in combination with a relatively stationary surface spaced from the feeder to permit the passage of blanks one at a time.

7. A rotary feeder having a friction periphery for blanks, said feeder having means whereby either a predetermined portion of its periphery, or the entire periphery thereof, is adapted to contact with and advance

a blank, in combination with a relatively stationary surface over which the blank is advanced by the feeder.

8. A combing feed wheel having adjusting means for causing its periphery to present a circular feeding surface or to project one portion of said periphery, whereby the wheel may be converted for timed or straight feeding, in combination with a relatively stationary surface to support blanks fed by said wheel.

9. A combing wheel comprising a pair of disks, segments mounted between said disks and radially adjustable, and an elastic ring having a friction surface mounted on said segments.

10. A combing feed wheel comprising a pair of disks, segments mounted between said disks, radially movable pins for adjusting said segments, an elastic ring having a friction surface mounted on said segments, and an adjustable ring having cam projections engaging the inner ends of said pins.

In testimony whereof we have affixed our signatures.

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