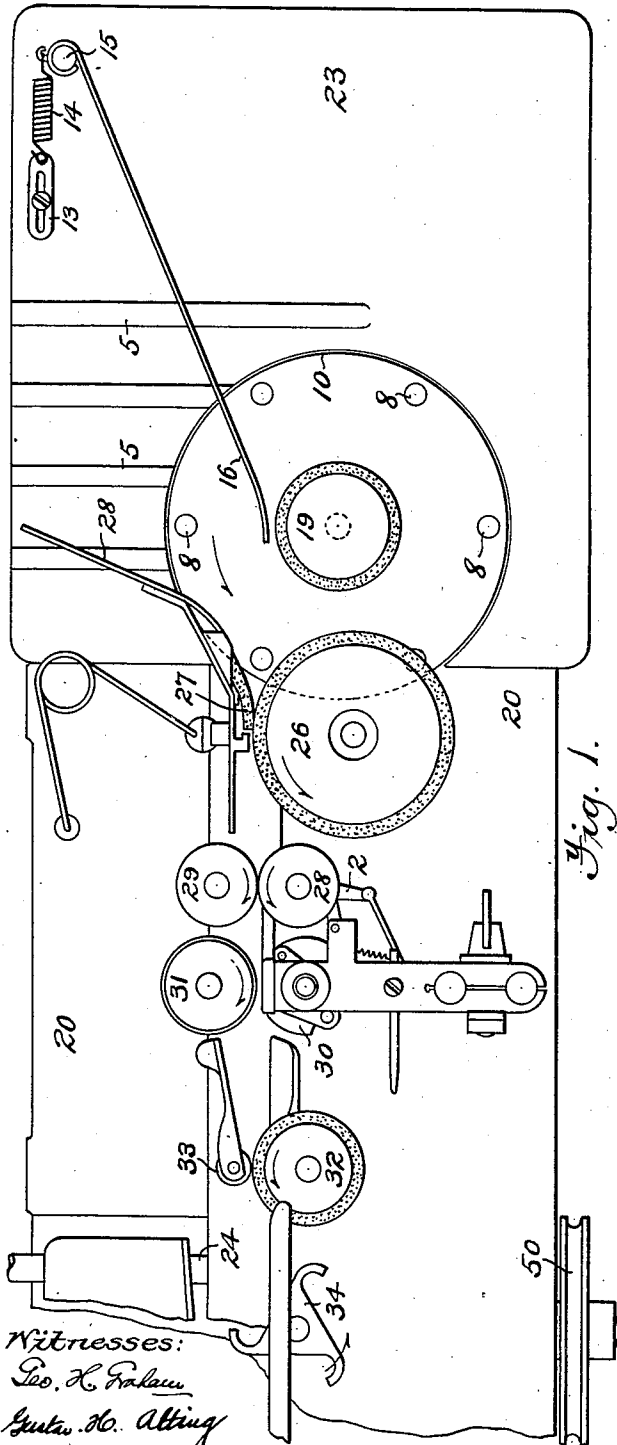


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FEEDING MECHANISM.
APPLICATION FILED SEPT. 21, 1907.

1,018,058.

Patented Feb. 20, 1912.



Witnesses:
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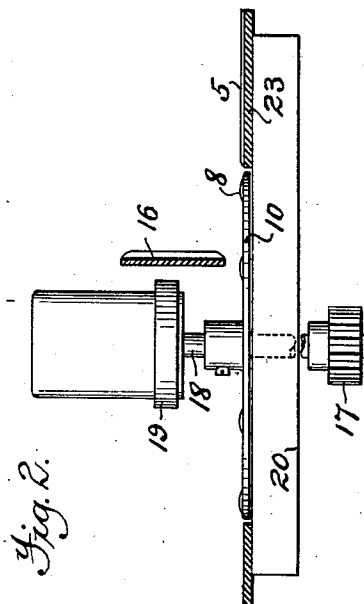


Fig. 4.



Fig. 3.



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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM.

1,018,058.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed September 21, 1907. Serial No. 393,981.

To all whom it may concern:

Be it known that I, FREDERICK G. JAHN, a citizen of the United States, residing in the borough of Brooklyn, city and State of New York, have invented certain new and useful Improvements in Feeding Mechanism, of which the following is a specification.

The present invention relates generally to feeding mechanism adapted to operate and feed individual pieces of matter from a stack, bunch or pile of such pieces supplied in position to be fed so that each piece shall be separately operated upon or shall individually actuate or cause some instrumentality to operate as for instance in printing or counting each separate piece.

The invention is particularly adapted for use in machines wherein the assembled pieces of matter are arranged on their longitudinal edges and in such conditions are automatically fed one by one through the machine.

In a well known machine employed for canceling and post marking mail matter, as well as for other purposes, the mail or other matter is deposited in bunches upon a horizontal traveling endless band or apron arranged at a slight angle to the line of feed so that the broad surfaces of the matter are brought in contact with one or more rotating feed rollers by which through the action of a reversely rotating separator roller or a wiper, individual pieces are fed in succession into and thence through the machine. This endless feed band is somewhat expensive because of its quickly wearing through on a line parallel to the feed rollers while its major portion is yet unworn but owing to the worn portion must be replaced by a new one. The endless band also takes up considerable space and is required to be supported by drums, needing a bevel drive and a means for adjusting one of the drums to properly stretch the band and keep it from sagging under the weight of the mail or other matter being supported and fed. According to this invention all these parts are dispensed with and their place taken by a simple rotating disk or plate which in itself acts as the support and means for moving the pieces of matter into and keeping them in contact with the feed roller or rollers by which they are carried into the machine. Where there are a plurality of feed rollers acting conjointly to feed the

pieces of matter forward, the rotating plate may be directly associated with one of them, that is to say the plate may be supported by the same spindle which carries that feed roller and hence add nothing but itself to the devices employed in the machine.

The invention embraces the rotating disk or plate in combination with the feed roller or rollers and such other coacting instrumentalities as may be required in the most complete and perfect embodiment thereof for practical service.

Furthermore, in handling uniform material such as cards or slips of paper or other articles liable to become compacted together and hence difficult to feed accurately one piece at a time owing to surface friction between the pieces, it is desirable to provide some automatically acting means for disturbing the compacted arrangement or shaking the assembled pieces in such manner that the bunch or pack is loosened up and each piece is individualized or shaken from its close contact with the next adjoining piece to the end, that less work will devolve on the feeding and separating devices and hence greater accuracy be obtained. The rotary feed disk provides a convenient device for producing this shaking up or disturbing function by forming very slightly raised spots on its ordinary flat and smooth surface which passing under the assembled mass of matter in feeding position subjects the mass and the individual pieces thereof to a rapid blow or repeated blows from beneath. Only a few such raised spots on the surface of the disk will be needed and their number will vary according to the speed of rotation of the disk. And the present invention therefore, embraces broadly means by which a constant shaking-up or disturbance is imparted to the assembled pieces arranged in position to be fed piece by piece through the machine.

As a better understanding of the invention will be had from a detailed description of a practical embodiment thereof, such description will now be given, reference being had to the accompanying drawings, in which:

Figure 1, is a plan view, and Fig. 2, a sectional elevation of a machine provided with the improvements. Fig. 3, is an enlarged section, and Fig. 4, another enlarged section of a portion of the disk showing

modified forms of the means for producing the shaking-up motion of the pieces in feeding position.

The improvements are illustrated in connection with a mail marking machine of the character set forth in my United States Letters Patent No. 657,939, dated September 18, 1900, as improved by the structure described in my Letters Patent No. 856,345, dated June 11, 1907, the reversely rotated separator whereof is substituted by the wiper-separator the subject of my Letters Patent No. 856,347 dated June 11, 1907. The invention, however, is applicable to other forms of machines and to machines adapted to other uses, such as those which are designed to count each piece or article fed through the machine with or without the means for printing the same; and instead of handling mail matter it may be applied to machines for indorsing bank checks and the like, or for affixing any desired inscription on sheets or slips of paper.

Referring to said drawings and my said Letters Patent Nos. 856,345 and 856,347, the various instrumentalities are supported by a machine table 20, which carries at the feeding position a plate 23. The instrumentalities include a feeding mechanism consisting of a rubber faced rotating roller 26 with which is associated another rubber faced rotating roller 19 for starting or aiding the feed of the pieces through the machine; and a wiper-separator 27 coacting with the feed roller 26 to insure the feed of individual pieces or articles in succession; they also include other feed rollers 28, 29, an article operated trip 2, which controls the effective operation of the printing couple, and, it may be, a counter; the printing couple consisting of a die roller 30 and impression roller 31; a stacker feed roller 32 with its companion idler roller 33, and a stacker star-wheel 34 for causing the delivery and orderly collection of the marked pieces on the delivery tray or table 24.

The pieces or articles for passage through the machine are assembled in bulk resting on their lower longitudinal edges on the table plate 23 with their leading ends projected toward the wedge-like entrance formed by the feed roller 26 and the wiper-separator and in such position each individual piece or article is fed one at a time into and through the machine. As thus organized it was necessary to hold the bunch of pieces or articles up with the hand with a slight pressure against the rubber face of the feed roller 19 with a tendency of the pressure toward the roller 26. The personal equation in such method of feeding was likely to be attended with irregularities in the feed being faster or slower according to the degree of pressure exerted, and undue pressure exerted with the object of increas-

ing the rapidity of feed was liable to cause the feed of more than one piece or article at a time which resulted in skips or misses of pieces, that is to say, pieces unprinted or not counted.

In the present improvements with the feeding mechanism is associated a horizontal rotating feed plate or disk 10, with its horizontal surface arranged very slightly above the surface of the table plate 23 which is shaped to receive the disk and partially surround its narrow periphery, as seen in Figs. 1 and 2. The disk is fastened to the spindle 18 of the rotating feed roller 19 and rotates with it through power applied to its toothed wheel 17, seen in Fig. 2, which forms one of the train of gearing for properly rotating the various instrumentalities of the machine. The plate or disk 10, is of sufficient diameter to support the leading portion, and in some instance the major portion, of a bulk or collection of pieces or articles assembled in feeding position, so that on rotation of the disk the pieces will have a constant tendency to move forward and bear toward both of the feed rollers 19 and 26 with the result that the pieces in successive contact with rollers will, owing to their forwarding action be fed automatically and without the aid of the attendant into and through the machine, the wiper 27 acting to permit only one piece at a time to pass. The table plate 23 may be formed with laterally extending and slightly raised ribs 5 to lessen the friction between the longitudinal edges of the assembled pieces and the plate and making the pieces slide easily from said ribs on to the rotating disk.

The assembled pieces or articles may be supported vertically by hand, but it is preferred to obviate the use of the hand entirely and to substitute therefor a bearer 16 in the form of a metal finger loosely pivoted at upper end of a stud 15 projecting from the table plate 23 with its free end tending toward the feed roller 19 so that pressure may be applied against the assembled pieces or articles to bear against that feed roller. Gentle and sufficient pressure of the finger 16 may be had by providing a suitable spring 14, one end connected to the pivotal end of the finger and the other to an adjusting plate 13, carried by the table plate 23, by which the pull of the spring may be raised to suit the character of the pieces or articles being fed.

In some classes of matter, especially that of all one kind or dimensions, it has been found in practice that the pieces cling together and are consequently difficult to automatically separate and feed individually. The present invention provides means for imparting a shaking-up or dancing movement to the assembled pieces or articles, suf-

5 sufficient only to disturb or break their mutual
 clinging action and arrange them so that
 the individual pieces will readily separate
 and move one at a time from the bunch or
 collection. The horizontally rotating disk
 10, provides a convenient device for embody-
 ing this part of the present improvements
 and to this end the upper horizontal surface
 of the disk is formed with a plurality of
 15 very slight projections or protuberances 8,
 see Figs. 1 and 2 which may be provided by
 small disks or buttons 8^a firmly seated in
 the rotating disk 10 as in Fig. 3, or may be
 provided by swaging upwardly a portion
 20 of the material of the large disk as seen at
 8^b in Fig. 4. In practice, the projections
 should extend but slightly above the surface
 of the rotating disk and should be convexed
 in all directions so as to provide as smooth
 25 a protuberance to the longitudinal edges of
 the assembled pieces or articles as is possible.
 The projections, also, should be few in num-
 ber, six, the number shown being quite suf-
 ficient, although of course the number may
 30 be varied. In operation, the fast rotating
 disk with these projections subject the as-
 sembled pieces or articles to a succession of
 sudden upward movements acting against
 the gravity of the pieces, in consequence, the
 35 assembled pieces are being repeatedly
 shaken-up while in position to be fed and
 while being also under the feeding tendency
 of the rotating disk. By reason of locating
 the projections near the edge of the rotating
 40 disk 10, the assembled pieces are struck up-
 wardly from their rear portions as well as
 at their forward portions so that the result-
 ant motion imparted to the pieces or articles
 is oscillatory or rocking, thereby creating a
 disturbance at widely separated points.

45 The operation of the machine will have
 been understood from the foregoing descrip-
 tion; it may be added, however, that the
 bunch of pieces to be fed through the ma-
 chine are placed vertically on edge on the
 table plate 23 and on the horizontal disk
 10 between the feed roller 19, and the bear-
 ing finger 16, with their forward ends pro-
 jected toward the flared entrance formed by
 50 the feed roller 26 and wiper-separator 27,
 and also alined against the inclined guard
 28 of the separator; motion being imparted

to the machine, through say, power applied
 to the drive pulley 50, or by hand, the hori-
 zontally rotating disk tends to press the for- 55
 ward ends of the pieces toward and against
 the feed roller 26, which, acting in conjunc-
 tion with the feed roller 19 feeds the piece
 in immediate contact forwardly past the
 wiper and thence through the machine 60
 where it is printed or counted, or both print-
 ed and counted, and delivered by the stacker
 star wheel 34 on to the table or tray 24 in
 an orderly manner, as is fully described in
 my patents previously referred to. While 65
 being fed forward by the combined action of
 the horizontally rotating disk and the feed
 rollers the assembled pieces are subjected to
 a constant oscillating or shaking-up action
 which sufficiently disturbs their compact ar- 70
 rangement as to insure more accurate feed
 of individual pieces by the feed roller and
 wiper.

While the rotating disk 10, provides a
 convenient means of obtaining the desired 75
 shaking disturbance of the assembled pieces
 or articles it is to be understood that the em-
 bodiment of the invention is not to be limit-
 ed thereto, as skilled mechanics will suggest
 other devices for obtaining a like or similar 80
 action.

What is claimed is:

1. The combination of a feed roller, an
 opposed wiper, a second feed roller, a rotary
 feed plate mounted concentric with said 85
 second feed roller and a plurality of pro-
 tuberances on the surface of said plate.

2. The combination of a feed roller, an
 opposed wiper, a second feed roller, a rotary
 plate having a plurality of protuberances on 90
 its surface and mounted concentric with said
 second feed roller, and a spring pressed
 finger for supporting the articles vertically
 in feeding position and against the second
 feed roller. 95

In testimony whereof, I have signed my
 name to this specification in the presence of
 two subscribing witnesses, this 23d day of
 August 1907.

FREDERICK G. JAHN.

Witnesses:

GEO. H. GRAHAM,
 GUSTAV H. ALTING.