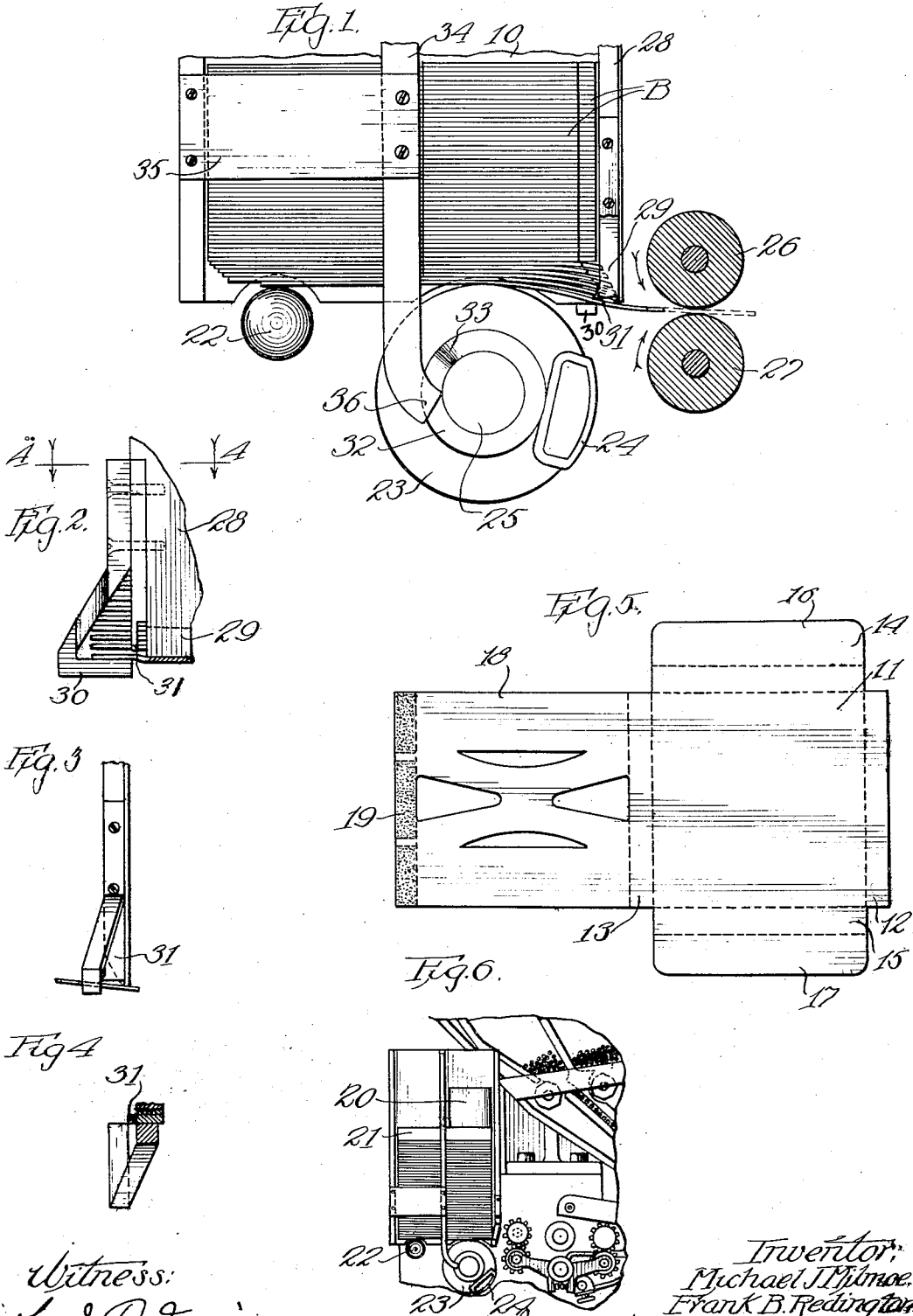


M. J. MILMOE & F. B. REDINGTON.
 BLANK FEEDING DEVICE.
 APPLICATION FILED MAR. 10, 1916.

1,291,074.

Patented Jan. 14, 1919.



Witness:
 Leo. DuMars

Inventor:
 Michael J. Milmo.
 Frank B. Redington.
 Brown & Sprinkle, Attys.

UNITED STATES PATENT OFFICE.

MICHAEL J. MILMOE AND FRANK B. REDINGTON, OF CHICAGO, ILLINOIS, ASSIGNORS TO
F. B. REDINGTON COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BLANK-FEEDING DEVICE.

1,291,074.

Specification of Letters Patent.

Patented Jan. 14, 1919.

Original application filed May 13, 1914, Serial No. 838,234. Divided and this application filed March 10, 1916. Serial No. 83,238.

To all whom it may concern:

Be it known that we, MICHAEL J. MILMOE and FRANK B. REDINGTON, citizens of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Blank-Feeding Devices, of which the following is a specification.

This invention relates to mechanism for feeding sheets of paper, and especially paper blanks from which cartons are to be formed, the blanks being fed one at a time from a hopper or container. This application is a division of our copending application Serial No. 838,234, filed May 13, 1914, Patent No. 1,179,448, issued April 18, 1916. The invention is exemplified in the combination and arrangement of parts shown in the accompanying drawing and described in the following specification, and it is more particularly pointed out in the appended claims.

In the drawing—Figure 1 is a fragmentary side elevation of a feeding device embodying the present invention; Fig. 2 is a front elevation in detail of a portion of the carton blank feeding mechanism shown in Fig. 1; Fig. 3 is a side elevation of one of the parts shown in front elevation in Fig. 2 and broken away in Fig. 1; Fig. 4 is a section taken on line 4—4 of Fig. 2 with the carton blanks omitted for the sake of clearness; Fig. 5 is a plan view of one form of carton blank which the device is designed to feed; and Fig. 6 is a fragmentary side elevation showing the blank feeding mechanism in relation to a carton forming and filling device such as that shown in our patent of which this is a division.

At 10 in the drawing, is indicated generally a container for carton or other blanks to be fed one at a time to a machine in which such blanks are used, the carton blanks being indicated generally by the letter B. These blanks may be cut as shown in Fig. 5 to form, when folded, a container or carton such as is used for holding various forms of merchandise, and the blanks are usually scored as indicated by dotted lines. The blanks comprise each a bottom portion 11, a forward end piece 12, a rearward end piece 13, side pieces 14 and 15, side flaps 16 and 17, a top 18, and a rear flap 19. The bending of the various parts of the carton blank upon the scored lines

indicated by the broken lines in the drawing, forms a complete carton. The mechanism for so bending the parts of the blank is shown in our patent referred to above, and forms no part of the invention claimed 60 in this application.

A stack of the blanks B, horizontally positioned, is placed in the container 10 and preferably a weight 20 (Fig. 6) is provided to rest upon a plate 21, which in turn rests 65 on the top of the stack of blanks. The bottom of the container is open and the stack of blanks is supported at their rear ends by a polished bar 22 and at their forward ends upon a polished steel roller 23 provided 70 at its periphery with a segment 24 of rubber. The roller 23 rotates upon a shaft 25 which receives its power from any suitable source, preferably from the driving mechanism of the machine to which the blanks are being 75 fed, the roller being driven to feed the blanks in timed relation with the operation of the machine to which the blanks are fed. The roller 23 rotating on a horizontal axis, feeds the lowermost blanks B forward from 80 the bottom of the container 10 to a pair of feed rolls 26 and 27 by means of contact between the rubber segment 24 and the lowermost blank of the stack. At its bottom, the inner surface of the forward web 28 of the 85 container 10 is beveled as at 29, and the forward web terminates at a point somewhat below the normal level of the stack of blanks, for the purpose of partially separating the forward edges of the blanks during 90 the process of discharge from the container. As the rubber segment 24 strikes the lowermost blank of the stack it urges that blank forward, and because of the slight friction between the blanks, it urges forward also 95 a number of the blanks just above the bottom one, as shown in Fig. 1. By means of the long beveled surface 29, the forward edges of the cartons are somewhat separated from each other, as shown in Figs. 1 and 2. 100 A guide member 30 is provided at the outer edge of the forward web 28 of the container and over it the side pieces 15 of the blanks pass. For the purpose of preventing the discharge of more than one blank at a time, 105 a detent 31, Figs. 1, 2, 3, and 4, is provided, preferably fixed to the forward web 28 between the guide 30 and the web. This detent contacts with the forward edge of the side piece 15 of the blank just above the lower- 110

most one to prevent forward travel of all but the lowermost blank. The spacing between the bottom of the detent 31 and the top of the guide 30 is sufficient to allow the passage of one blank, but not sufficient to allow the passage of two. The lower extremity of the forward web 28 of the container terminates approximately level with the upper surface of the guide 30 by means of which construction the forward end of the side piece 15 is positively positioned upon and in contact with the upper surface of the guide 30, as each blank passes out. As shown in Figs. 3 and 4, the guide 30, although supported by the forward web 28, is offset backwardly to place it in proper position for the support of the side piece 15. The rotation of the roller 23 when the segment 24 strikes the lowermost blank, forces the forward edge of the lowermost blank to the bottom of the bevel 29 in which position the forward end of the side piece 15 lies in contact with the upper surface of the guide 30, the segment 24 being of sufficient length to feed the lowermost carton blank forward toward the dotted position shown in Fig. 1 and between the feeding rolls 26 and 27. Contact between the forward end of the side piece 15 of the blank next to the bottom of the stack and the detent 31, prevents the feeding forward of the blank next to the bottom, and obviously the blanks above this one are retarded should friction carry them forward against the detent. That part of the periphery of the roller 23 not covered with rubber, is of polished steel and has no feeding effect upon the blanks in the container 10, by reason of which construction one blank is fed forward to the feeding rolls 26 and 27 for each rotation of the roller 23, the feeding function being performed only when the rubber segment 24 contacts with the lowermost blank.

Upon the outer end of the roller 23 is formed a cam track 32 provided with a raised cam portion 33. A tapper 34 supported by means of a piece of spring metal 35 secured to the body of the magazine, extends vertically along the side of the stack of blanks B in the container 10 and is pressed against the sides of all of the blanks by means of the supporting spring 35. At its lower end, the tapper 34 is formed into a cam finger 36 which rides upon the cam track 32. At each passage of the elevation 33 the tapper 34 is removed a short distance from the stack of blanks and subsequently brought back forcibly against it by means of the spring support 35, for the purpose of maintaining the blanks in a proper superposed position within the container.

We claim:

1. In combination, a magazine for holding a plurality of superimposed blanks, a feed roller arranged to rotate in contact with the lowermost blank in said magazine, said

magazine having its front wall arranged to engage the forward edges of said blanks and positioned to form an opening at the bottom thereof to permit the lowermost blank to be fed from said magazine, a detent arranged to engage blanks not being fed and to cooperate with said front wall to prevent blanks other than the lowermost one from escaping through said opening, and a frictional surface on a portion of the periphery of said roller arranged to contact with the lowermost blank in said magazine to move said blank through said opening at each revolution of said roller.

2. In combination, a magazine for holding a plurality of blanks to be fed one at a time therefrom, mechanism for bending over a number of said blanks adjacent one edge thereof to separate the edges of said blanks, said mechanism comprising means for supporting said blanks at a point in the rear of the forward edges thereof, and an inclined surface against which the forward edges of said blanks engage and by which they are pressed downwardly to separate said edges from one another, said surface having its lowermost edge unobstructed to permit free passage of the blanks and positioned below the foremost portion of the support for the parts of said blanks which engage said inclined surface.

3. In combination, a magazine for holding a plurality of blanks to be fed therefrom, a roller for supporting said blanks at a point removed from their forward edges, means for rotating said roller to feed said blanks one at a time from said magazine, and an inclined deflector arranged in front of said roller to engage the forward edges of a number of the lowermost blanks in said magazine, said deflector having its lowermost edge positioned in advance of the remaining portion of the deflecting surface thereof and below the upper surface of said roller, said roller being arranged to constitute the foremost support for the parts of said blanks which engage said deflector.

4. In combination, a magazine for holding a plurality of blanks to be fed therefrom one at a time, means for urging the end blanks in said magazine laterally, a beveled surface for contacting with the edges of said end blanks to bend over said edges and cause them to be separated from one another, and a detent having a shoulder for contacting with said blanks to prevent more than one of said blanks to be fed from said magazine at a single time.

5. In combination, a magazine for holding a plurality of blanks to be fed therefrom, means for extracting blanks from said magazine, and a spring actuated tapper arranged at the side of the path of movement of said blanks for periodically striking blows upon the edges of said blanks to position

said blanks in said magazine, said tappet being arranged to move through positions parallel with the surface to be struck.

6. In combination, a magazine for holding a plurality of blanks to be fed therefrom, means for extracting blanks from said magazine, a spring pressed tapper arranged to contact with the edges of said blanks, and means for periodically moving said tapper away from said blanks against the tension of said spring and subsequently releasing said tapper to permit said spring to cause said tapper to strike a blow upon the edges of said blanks to position said blanks in said magazine.

7. The combination of a container for a stack of superposed carton blanks having an oblique surface traversing the forward edges of the lowermost blanks of the stack, terminating below the level of the lowermost blank thereof and beneath which blanks may pass, a guide for support of the forward extremity of the lowermost blank, a detent cooperating with said guide to permit the passage therebetween of one carton blank only, and means for projecting the lowermost carton blank below said oblique surface and between said guide and detent, comprising an anti-friction roller supporting the stack of blanks in the container and rotating therebelow, and a segment of friction material positioned in the carton, contacting surface of said roller.

8. The combination of a container for a stack of superposed carton blanks, means for moving forwardly a plurality of the lowermost blanks of the stack, means for separating the forward portions of the moved blanks transversely to the planes thereof, and means for arresting the passage from the container of all blanks except the lowermost one, said separating means comprising a rigid support and a deflector extending to a position out of alinement with the path of movement of said blanks over said support.

9. The combination of a container for a stack of superposed carton blanks, means for moving forwardly a plurality of the lowermost blanks of the stack, comprising an anti-friction roller rotating beneath the stack and supporting it, and a segment of friction material interposed in the carton-contacting surface of said roller, means for separating the forward edges of the moved blanks, comprising a web traversing the forward edges of the moved blanks downwardly beveled away from the stack and terminating below the level of the lowermost blank therein, and means for arresting the passage from the container of all blanks but the lowermost one, comprising a stop projected in the path in the path of movement of the forward edge of all but the lowermost blank.

10. The combination of a container for a

stack of superposed carton blanks, means for moving forwardly a plurality of the lowermost blanks of the stack, comprising an anti-friction roller rotating beneath the stack and supporting it, and a segment of friction material interposed in the carton-contacting surface of said roller, means for separating the forward edges of the moved blanks, comprising a web traversing the forward edges of the moved blanks downwardly beveled away from the stack and terminating below the level of the lowermost blank therein, and means for arresting the passage from the container of all blanks but the lowermost one, comprising a guide for support of one end portion of the forward edge of the lowermost blank, and a detent spaced above said guide a distance greater than the thickness of one carton blank and less than the thickness of two.

11. The combination of a container for a stack of superposed carton blanks, means for moving forwardly a plurality of the lowermost blanks of the stack, comprising an anti-friction roller rotating beneath the stack and supporting it, and a segment of friction material interposed in the carton-contacting surface of said roller, means for separating the forward edges of the moved blanks, comprising a web traversing the forward edges of the moved blanks downwardly beveled away from the stack and terminating below the level of the lowermost blank therein, and means for arresting the passage from the container of all blanks but the lowermost one, comprising a guide for support of one end portion of the forward edge of the lowermost blank, and a detent spaced above said guide a distance greater than the thickness of one carton blank and less than the thickness of two, the carton-supporting surface of said guide lying between the upper extremity of said supporting roller and the lower extremity of said web.

12. The combination of a container for a stack of superposed carton blanks, means for moving forwardly a plurality of the lowermost blanks in the stack, means for separating the forward edges of the moved blanks, comprising a web traversing a portion of the forward edges of said moved blanks, forwardly beveled at its lower extremity and terminating below the normal level of the lowermost blank; and means for arresting the passage from the container of all blanks but the lowermost one, comprising a guide for support of one end of the forward portion of the lowermost blank, and a detent cooperating with the guide and interposed in the path of movement of all blanks but the lowermost one.

13. The combination of a container for a stack of superposed carton blanks, means for moving forwardly a plurality of the

lowest blanks in the stack, means for separating the forward edges of the moved blanks, comprising a web traversing a portion of the forward edges of said moved
 5 blanks, forwardly beveled at its lower extremity and terminating below the normal level of the lowermost blank, and means for arresting the passage from the container of all blanks but the lowermost one, comprising
 10 a guide for support of one end of the forward portion of the lowermost blank, and a detent cooperating with the guide and interposed in the path of movement of all blanks but the lowermost one, said guide
 15 having its carton-bearing surface approximately on the level of the lower terminus of said web.

14. The combination of a container for a stack of superposed carton blanks, means for
 20 moving forwardly a plurality of the lowermost blanks in the stack, means for separating the forward edges of the moved blanks, comprising a web traversing a portion of the forward edges of said moved blanks, forwardly
 25 beveled at its lower extremity and terminating below the normal level of the lowermost blank, and means for arresting the passage from the container of all blanks but the lowermost one, comprising a guide
 30 for support of one end of the forward portion of the lowermost blank, and a detent cooperating with the guide and interposed in the path of movement of all blanks but the lowermost one, said guide having its carton-bearing surface approximately on the
 35 level of the lower terminus of said web and being spaced from the adjacent side of said web.

15. The combination of a container for a
 40 stack of superposed carton blanks having an open side, and means for maintaining the blanks in said container in superposed position, comprising a tapper traversing the blanks in the container at the open side
 45 thereof, a spring member normally holding the tapper against the blanks in the container and arranged to maintain said tappet in parallelism with this position at all times, and a movable cam contacting with the tapper
 50 to move the tapper periodically out of said normal position.

16. The combination of a container for a stack of superposed carton blanks having an open side, mechanism for selecting a
 55 single blank from said container and passing it to said feeding apparatus and including a stack-supporting feeding roller, a cam carried by said roller and rotating therewith, a tapper positioned in the open side of
 60 said container and traversing the sides of the

blanks therein, a spring member normally holding the tapper against the blanks in said container, and a finger upon said tapper cooperating with said cam to periodically
 65 move the tapper from said normal position.

17. The combination of a container for a stack of superposed carton blanks, frictional means engaging the lowermost blank of the stack to discharge it from the container, and means for arresting the passage from the
 70 container of all but the lowermost blanks comprising a web traversing the forward edges of the blanks and an extension depending therefrom, beveled downwardly and outwardly at its bottom on the stack side, and terminating below the normal level of
 75 the lowermost blank.

18. A device for feeding blanks having laterally extending flaps, comprising a magazine for holding said blanks in superimposed position, means for bending downwardly the forward portion of the lowermost
 80 one of said blanks, and an offset arm for engaging the laterally extending flap of said blank to support said blank.

19. A device for feeding blanks having laterally extending flaps, comprising a magazine for supporting said blanks, means for moving said blanks forwardly one at a time, a beveled surface for engaging the forward
 90 edges of said blanks to bend the forward portions of said blanks downwardly, a detent arranged in the path of the laterally extending flaps of the blanks above the lowermost one, and an offset arm for supporting the laterally extending flaps of the
 95 lowermost blank.

20. In a device for feeding sheets having laterally extending flaps thereon, a sheet-holding magazine having its forward wall
 10 arranged to contact with the forward edges in said magazine and to permit passage of said sheets from said magazine one at a time beneath an edge formed by said wall, said wall having a beveled surface for directing
 10 said sheets beneath said edge of said wall, an arm for supporting the side flaps of said sheets, and a detent having a shoulder for engaging said side flaps to prevent the escape
 11 of the sheets not being fed.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 2 day of March A. D. 1916.

MICHAEL J. MILMOE.
 FRANK B. REDINGTON.

Witnesses:

G. J. BECKER,
 FRED G. BROOKS.