

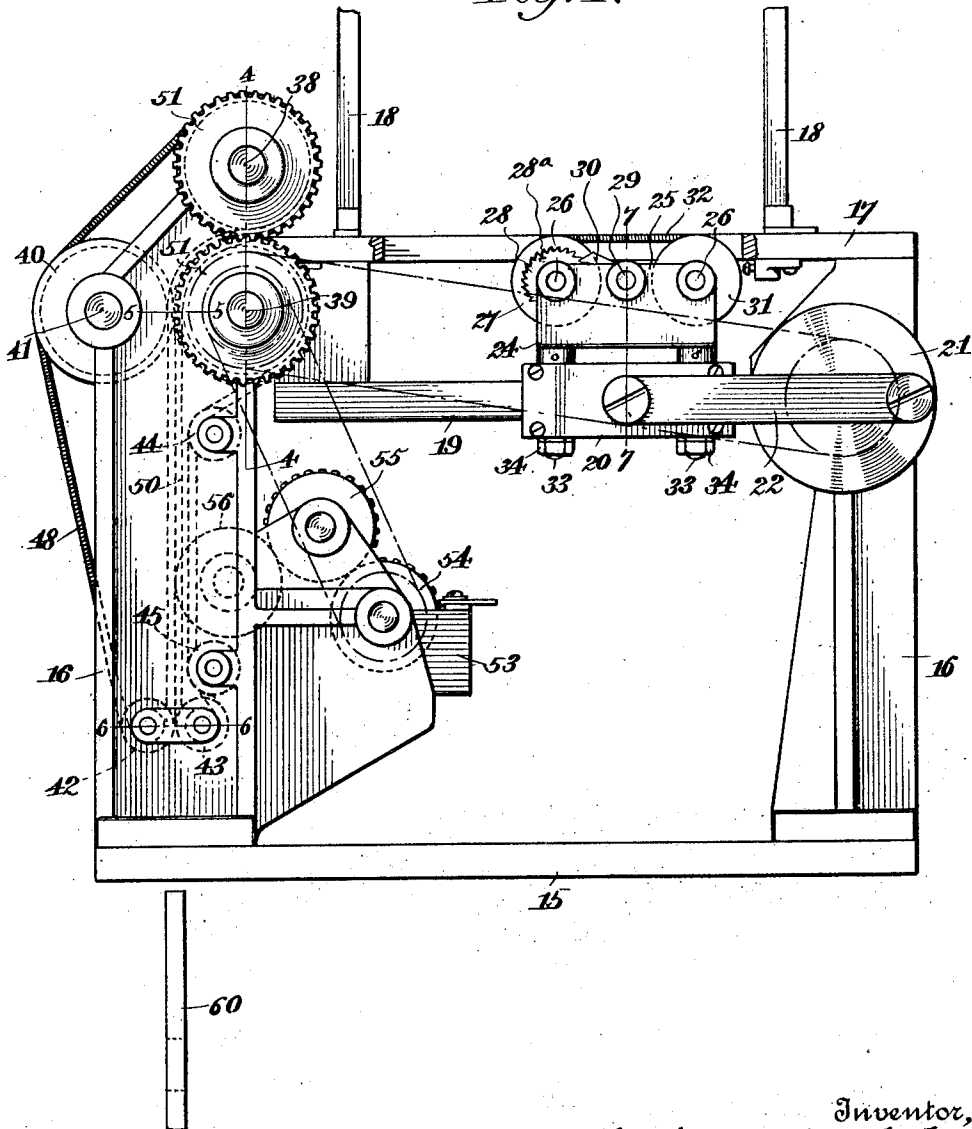
H. DE ESCOBALES.
PAPER FEEDING MECHANISM.
APPLICATION FILED MAR. 13, 1917.

1,383,267.

Patented June 28, 1921.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 2.

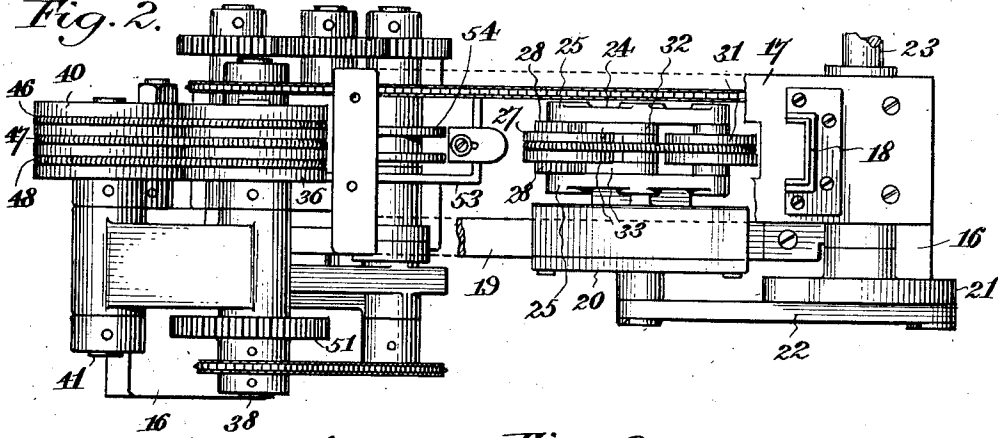
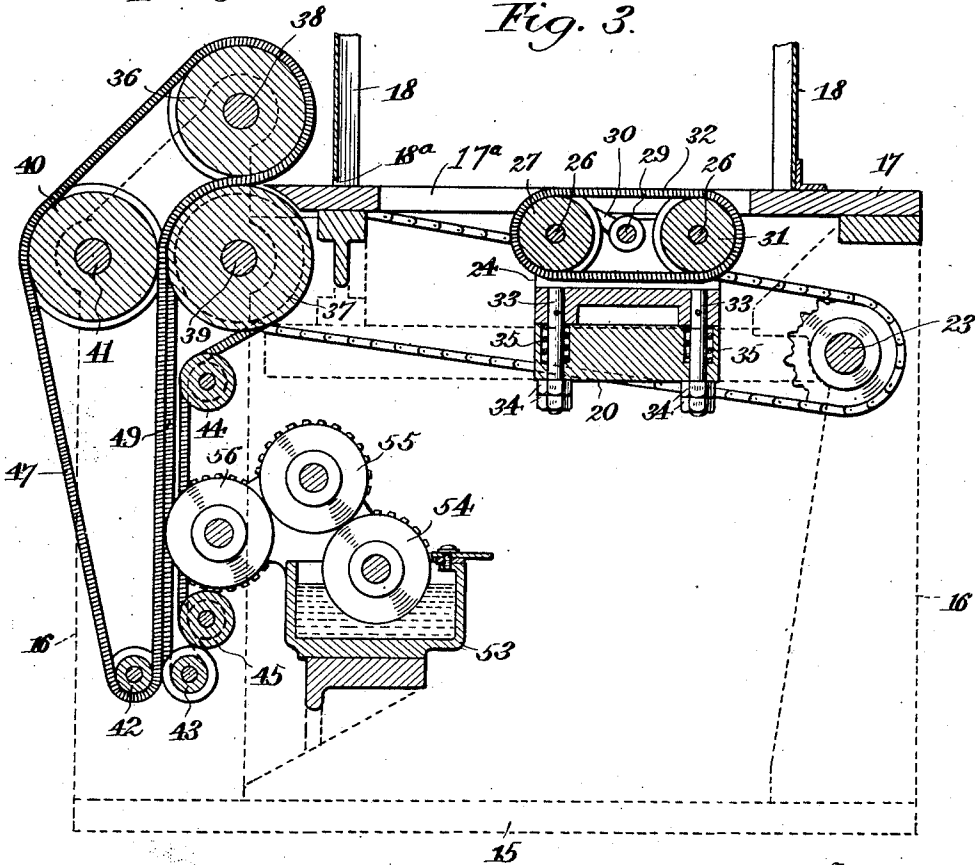


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

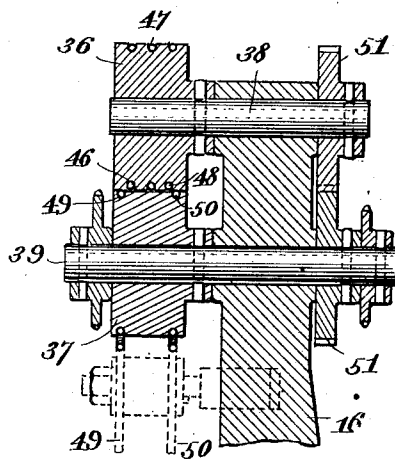


Fig. 5.

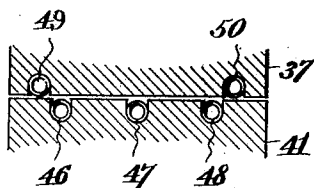


Fig. 6.

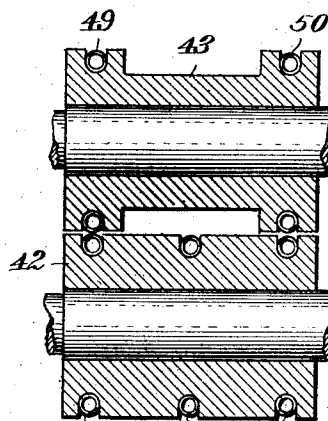


Fig. 8.

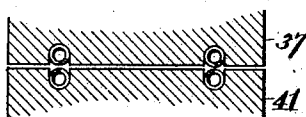


Fig. 7.

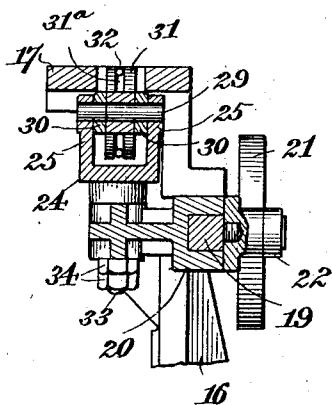
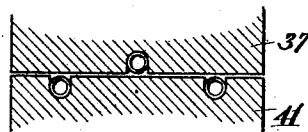


Fig. 9.



Inventor,
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UNITED STATES PATENT OFFICE.

HILARIO DE ESCOBALES, OF NEW YORK, N. Y., ASSIGNOR TO H. ESCOBALES CO. INC.,
OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PAPER-FEEDING MECHANISM.

1,383,267.

Specification of Letters Patent.

Patented June 28, 1921.

Application filed March 13, 1917. Serial No. 154,447.

To all whom it may concern:

Be it known that HILARIO DE ESCOBALES, a citizen of the United States, residing at New York, in the county of New York and State of New York, has invented certain new and useful Improvements in Paper-Feeding Mechanism, of which the following is a specification.

My present invention relates to improvements in paper feeding mechanism, pertaining more particularly to mechanisms adapted to feed sheets, labels, stamps, etc., individually.

The objects of the invention are to provide a mechanism which will segregate individual sheets from a pile and deliver the sheets to mechanism for manipulating the sheet, such manipulating mechanism being located at a point remote from the pile, the delivery presenting the sheets in proper condition for manipulation; to provide a structure which is simple and efficient in operation, durable in construction, of relatively low cost of manufacture, and which can be readily installed to cooperate with sheet manipulating mechanism.

The invention also contemplates the application of adhesive stripes to the sheet during sheet travel, the mechanism being so arranged as to permit such application without affecting the sheet travel or sheet condition.

The invention, although not limited to such use, is designed more particularly for the feed of sheets of elongated strip-form, such for instance, as labels and revenue stamps, or other sheet forms which are relatively narrow in width as compared to the length.

For instance, in the packaging of tobacco products, it is required to apply a revenue stamp to the package after the wrapper has been placed in position, the stamp being comparatively narrow but of considerable length. As the stamp is applied in such manner as to prevent opening of the package without stamp mutilation, the stamp must be positioned at predetermined points of the package. Where therefore, packaging is the result of mechanism operations, and it is desired to apply the stamp as a part of the operation of such mechanism or in cooperation therewith, it is essential that the delivery of the stamps be in such manner as to present the stamp in proper and un mutilated condition—mutilated stamps cannot be employed—to prevent loss of stamp value. De-

livery should be in practically uniform succession to present the stamp ready for application to each package as it is produced; and the delivery must be made in proper relation to the applying mechanism to insure that the latter mechanism will apply the stamp in proper position and without mutilation, it being understood that applying mechanisms are generally designed to operate under uniform registration conditions. As stamps, etc., are generally supplied without adhesive, requiring the application of sufficient adhesive to insure proper securing to the package, such adhesive application is generally provided during travel of the stamp to the applying mechanisms. Obviously, this adhesive application must be had without disturbing the condition or travel of the stamp to the applying mechanism.

To these and other ends, therefore, the nature of which will be readily understood as the invention is hereinafter disclosed, said invention consists in the improved construction and combination of parts hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings in which similar reference characters indicate similar parts in each of the figures:—

Figure 1 is a side elevation of one form in which my invention may be employed, the view showing a fragmentary portion of an applying mechanism to illustrate the general location of the feeding mechanism.

Fig. 2 is a plan view of the mechanism shown in Fig. 1.

Fig. 3 is a longitudinal sectional view.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

Figs. 5, 6 and 7 are detail sectional views taken on lines 5—5, 6—6 and 7—7 respectively of Fig. 1.

Figs. 8 and 9 are diagrammatic views indicating various arrangements in number and position of the conveying members.

For the purpose of illustrating the invention I have shown it as of a type adapted to feed revenue stamps to applying mechanisms by which the stamps are applied to packages. It is to be understood, however, that the invention is not limited to such use, being adapted to feed paper sheets of this type as well as of other types such as labels, and is also adapted to feed comparatively large

sheets such for instance as wrappers, etc., by changing the size, etc., of mechanism parts, the general arrangement being practically preserved.

5 In the embodiment of the drawings the mechanism is shown as located above the stamp applying mechanism, to illustrate one way of meeting a condition where compact arrangement of the general packaging and
10 stamp applying structures requires the location of the feeding mechanism at a point where the stamp must travel downwardly in a vertical direction in reaching the applying mechanism. The invention, however, is
15 not limited in this respect, since its general principles may be employed in installations where the feeding or conveying mechanism is adapted to carry the sheet in other directions, as for instance horizontally or in an
20 upward vertical direction, or in directions inclined to the vertical.

15 designates a base carrying frame members 16 in which the various parts are mounted. 17 indicates a table to receive the sheets, labels or stamps—designated generally as
25 blanks—the table carrying suitable guides 18 for retaining the blanks in the form of a pile. Suitable means may be provided for limiting the blank delivery. In the drawings this is indicated by a slot 18^a at the
30 bottom of the advance guides 18 this being a well-known form of segregating structure. Obviously, other well-known structures may be employed for the purpose.

35 19 designates a slide positioned below the table and secured to the frame member 16. Mounted on slide 19 is a carriage 20 operatively connected to a crank wheel 21 by a pitman 22, rotation of wheel 21 reciprocating the carriage back and forth on the slide.
40 Crank wheel 21 is mounted on shaft 23 driven in suitable manner.

Mounted on carriage 20 is a frame 24 having bearings 25 in which are mounted a pair
45 of studs 26, one of said studs carrying a roll 27, having a peripheral groove, and having one or more ratchet wheels 28. I preferably employ a pair of ratchet wheels 28, one at each side of the roll, the wheels and roll being
50 operatively connected to move in unison in suitable manner, as by pins 28^a carried by the wheels and projecting into openings, carried by the roll. 29 indicates a stud carried by frame 24, said stud carrying pawls 30
55 adapted to cooperate with ratchet wheels 28. Obviously, one of the pawl and ratchet structures may be omitted, if desired.

The rear stud 26 carries a roll 31 also having a peripheral groove 31^a.

60 Rolls 27 and 31 extend into a slot 17^a of table 17, said rolls having their grooves in alinement and adapted to receive an endless band 32, preferably in the form of a closely wound coil spring. The grooves of rolls 27
65 and 31 are each of a depth to receive the

band 32, the latter lying substantially flush with the face of the rolls.

As will be understood, the rolls and band are located beneath the pile of blanks which may be within the guides 18, contacting with
70 the under face of the lowermost blank and tending to form a support for the blanks. When crank wheel 21 is rotated, carriage 20 will be reciprocated on slide 19, carrying the rolls and band (constituting what may be
75 termed a carrier) with it during the advance movement of the carriage (a direction which would tend to rotate rolls 27 and 31 clockwise through contact of the rolls with the
80 bottom blank). Pawls 30 prevent such rotation of roll 27, the result being that both rolls and the band—the carrier—will be held from movement excepting in the advance
85 direction. Hence, these elements through the frictional engagement with the blank tend to carry the blank forward through slot 18^a, the remaining blanks being retained within
90 the guides. During movement of the carriage in the reverse direction, friction between the rolls and the blanks will rotate the rolls and band in a counterclockwise direction, a direction in which the ratchet wheels
95 are not affected by the pawls, so that the rolls and bands will move to starting position without affecting the arrangement of the blanks.

To produce proper action I preferably provide a yielding engagement between the blanks and the rolls and band of the sheet segregating and advancing mechanism thus
100 described. One way in which this result may be obtained is by mounting frame 24 on the carriage with a vertical movement of desired range, pins 33 extending from frame 24 through the carriage and having adjusting
105 nuts 34 below the latter, springs 35 being mounted in pockets within the carriage and tending to move frame 24 upward. By properly adjusting nuts 34 the limit of upward travel of the rolls may be controlled to
110 provide a proper frictional engagement with the blank, springs 35 permitting sufficient yielding action under operating conditions. As at least one of the rolls remains under the pile of blanks throughout the travel of
115 the carriage, it will be readily understood that proper action will be had. It will also be understood that the yielding action may be omitted, if desired, or it may be restricted to but one end (preferably the advance end)
120 of the frame.

This arrangement of blank advancing mechanism is of advantage in that the contact between the blank and the mechanism is fixed throughout the length of advance
125 movement. Since the contact zone is of considerable length there is provided an efficient advancing structure of simple design, and operative in connection with comparatively long strip-like sheets or blanks without
130

liability of damaging the strips or shifting the strips laterally, thus avoiding an incorrect feed. In addition, the increase in width at the extreme ends of the zone—provided by the use of the rolls—aid in producing this result and at the same time eliminates the necessity for producing a band structure of considerable width, or the use of intermediate rolls.

The structure of the sheet segregating mechanism is not claimed specifically herein, as the same forms part of the subject-matter of the companion application filed Sept. 13, 1917, Ser. No. 191,259, forming a continuation of the present application as to all matter common to the two applications.

The advancing movement of the mechanism thus described carries the advance end of the blank into the path of travel of feed mechanism by which it is fed or conveyed to the desired point, preferably receiving an adhesive during this feed movement. The feed mechanism is in the form of rolls and bands which act to transfer the blank in its proper form and condition.

The feed mechanism particularly shown in the drawings comprises a pair of rolls 36 and 37 mounted on shafts 38 and 39, a roll 40 mounted on shaft 41, a pair of guide rolls 42 and 43, a pair of idlers 44 and 45, and endless bands 46, 47, 48, 49 and 50.

The preferred arrangement generally employs five bands, arranged in two sets, one having two bands, the other three bands. As shown, rolls 36, 40 and 42 carry a set of three bands—the outer bands—each of these rolls having peripheral grooves to receive the bands. Rolls 37 and 43 and idlers 44 and 45 carry the inner set of two bands, these rolls and idlers also having peripheral grooves to receive the bands. Each band is preferably of the closely-wound spring coil type with the peripheral grooves of the rolls of a depth which preferably brings the band flush with the face of the rolls.

In the arrangement shown in Fig. 1 the feed mechanism is designed to receive the blanks in a horizontal plane and deliver them in a vertical plane. This necessitates providing a band flight which extends vertically. This vertical flight has its entrance provided by the bands in passing over that portion of the face of roll 37 which forms an arc connecting the points where rolls 36 and 40 are in direct opposition to roll 37—a distance of approximately 90° of the circumference of roll 37 in the particular form of installation shown. As the entrance to the mechanism is located on the plane of the top of table 17, the blank delivered by the advancing mechanism is introduced into the entrance in proper condition for feeding.

The several feed rollers are driven from shaft 23 by a sprocket chain connection between that shaft and shaft 39. Shafts 38

and 39 are operatively connected by gears 51 preferably of equal diameter, thus causing both sets of bands to travel at the same speed.

At the time the blank is approaching the entrance to the feed mechanism, the travel speed of the advancing mechanism is not greater than the speed of travel of the bands—it may be less without affecting the advancing movement, due to the fact that should the travel speed of the feed bands cause a drawing effect on the blank being fed, the carrier (rolls 27 and 31 and band 32) is free to move under the friction of the blank during and independent of the advancing movement provided by the carriage.

As shown more particularly by comparing Figs. 4 and 6, bands 46 and 48 of the outer set are spaced apart a distance less than bands 49 and 50 of the inner set at the entrance end of the flight (Fig. 4), the grooves being arranged to place these outer bands between the bands of the inner set. This arrangement places each band at the entrance in direct opposition to a roller face; the outer set of bands thus being maintained out of direct opposition to the inner set at such point and during the travel of the band through the 90° arc heretofore referred to as leading to the vertical flight. Consequently, the blank is caused to travel on the flat surface of roll 37 which may be considered as the main feed roll, rolls 36 and 40 being then considered as supplemental feed rolls by the action of the outer set of bands all traveling at a uniform speed and at the same speed as said roll. As will be seen, the axes of rolls 36, 37 and 40, in the particular embodiment shown, are positioned in substantial correspondence with the angles of a right-angled triangle, rolls 36 and 40 being spaced apart on the periphery of roll 37, the periphery of the latter extending between rolls 36 and 40 and intersecting a plane tangent to the peripheries of this latter pair of rolls, the structure being such as to provide for the change in direction of the entered sheet and at the same time produce proper feeding action on the single sheet which is entered. As a result, the integrity of the blank is not affected by any pressures which may be provided by the outer set of bands; at the same time the blank has its direction of travel changed from the horizontal to the vertical. Furthermore, the blank is not shifted in direction laterally although it passes from one advancing or feed mechanism to another, it being readily understood that the elongated surface contact of the carrier of the advancing mechanism, with its increase of width at the opposite ends of the contact zone will maintain the blank in its proper feeding position until it passes into the fixed control of the bands and roll structures of the feed mechanism. The

blank, therefore, has its direction of travel into the feeding mechanism controlled directly by the carrier of the advancing mechanism which delivers the blank to the feed mechanism and retains control until the blank has passed into the feed mechanism a sufficient distance to insure the latter taking the control, thus insuring the proper delivery of the blank to the vertical flight.

As shown in Fig. 6, the spacing between bands 46 and 48 is preferably increased at the discharge end of the flight so as to bring these bands in direct opposition to bands 49 and 50, the opposed relation of the bands being ineffective to damage the blank at this point, the bands passing in opposite directions from rolls 42 and 43 so that undue pressure is not placed on the blank. Obviously, the spacing may be similar to that at the entrance to the flight. However, it is preferred to vary the spacing of bands 46 and 48, since this provides a slight divergence of these bands in the direction of advanced movement of these bands in the flight; the divergence is relatively of small amount in the length of the flight, but such divergence, in connection with the parallel runs of bands 49 and 50 has a tendency to maintain the blank, traveling between the bands, in flat condition, the gradual outward creeping of the outer bands tending to produce this effect. Under certain conditions, this particular arrangement will be sufficient to properly convey the blank past the adhesive-applying mechanism without requiring the use of the middle band 47. However, I prefer to employ the additional band 47 in which case the arrangement aids in supplying the proper resistance to insure the application of the adhesive.

The particular embodiment shown in Fig. 1 is designed for the segregation and feeding of revenue stamps for packages, these stamps being of a length in excess of six inches and comparatively narrow in width. The vertical flight, in the embodiment shown, is preferably of a length less than the length of a stamp, thus practically insuring that the advance end of the stamp will have entered between rolls 42 and 43 before the rear end of the stamp has left rolls 37 and 40, this arrangement increasing the ability of the stamp to maintain its proper condition while passing the gumming mechanism.

The adhesive applying mechanism comprises a container 53 for the adhesive, a roll 54 extending into the container, a roll 55 in surface contact with roll 54, and a roll 56 in surface contact with roll 55, rolls 55 and 56 preferably having a surface configuration adapted to produce stripes. Rolls 54, 55 and 56 are preferably geared together to provide positive movements, roll 54 being

driven by a drive connection, as for instance a sprocket wheel and chain structure connection with shaft 39. The striping zones of roll 56 are preferably positioned to contact with the blank at points intermediate the several bands, thus preventing any liability of adhesive being placed on the bands during travel of the latter, when bands are exposed between successive stamps. As shown in Fig. 6, rolls 42 and 43 are arranged so that their surfaces will not contact with the stripes contained on the stamp.

As heretofore pointed out the structure is designed more particularly to operate in connection with a mechanical applying mechanism. In Fig. 1 I have shown diagrammatically a portion of a member which is adapted to receive the gummed blank, this member being indicated at 60.

As will be understood, the use of a vertical flight in the feeding mechanism is illustrative, it being clear that the particular direction of length of the flight will depend on the direction in which the blank is to travel to the succeeding mechanism, and the invention is not specifically limited to the particular direction of flight indicated. As will be understood, however, the difficulties which are present in attempting to feed a blank downwardly in a vertical direction and apply adhesive stripes thereto during the passage are overcome by the particular arrangement shown. Where the direction is such that the blank lies on one or the other set of bands, the difficulties are lessened since the tendency of the blank to drop or shift position is less under those conditions.

The closely wound coil spring band structures are of advantage in that they present a relatively narrow surface contact with the blank as compared with a wide belt structure, thus providing the proper feeding action, with a minimum surface contact and are advantageous over the small round belt structures in that the bands practically insure a maintenance of the proper tension in the blank feeding portions of the band runs, a result which such belt structures are unable to provide in service owing to the tendency of the leather to stretch or deteriorate in use, an effect which necessarily results in effecting the feed of the blank.

As shown in Figs. 8 and 9 the arrangement of the bands may be varied, Fig. 8 employing four bands (omitting band 47), a structure which is applicable for use for certain purposes, while the arrangement of Fig. 9 employs three bands, a single band forming the inner run of the flight. This latter arrangement is also usable with certain types of blanks. It is to be understood that these changes in the number of bands are permissible within the scope of the present invention.

As will be seen, the structure and arrange-

ment of parts is simple and efficient in operation, durable in construction, and capable of manufacture at a relatively low cost.

While I have herein shown and described a preferred way in which the invention may be carried out, it will be readily understood that changes and modifications therein may be required or desired to meet the various exigencies of use, and I desire to be understood as reserving the right to make any and all such changes or modifications as may be found necessary or desirable, in so far as the same may fall within the spirit and scope of the invention as expressed in the accompanying claims.

Having thus described my invention, what I claim as new, is:—

1. In mechanism for delivering blanks individually and successively from a pile of blanks and with each delivered blank having an adhesive-containing face, and wherein each blank is advanced by a continuous movement, feed mechanism in the path of a blank advancing from the pile, said mechanism including rolls and bands positioned to form band-runs cooperating to support and carry the blank throughout a flight of predetermined length, and adhesive-applying mechanism including an applying face operative on an advancing blank intermediate the ends of the flight, said runs being positioned to support the blank against the pressure of adhesive-applying activity and the runs and applying face being mutually arranged and formed to maintain the band formations free from contact with the applying face in the absence of a blank.

2. In mechanism for delivering blanks individually and successively from a pile of blanks and with each delivered blank having an adhesive-containing face, and wherein each blank is advanced by a continuous movement, feed mechanism in the path of a blank advancing from the pile, said mechanism including rolls and bands positioned to form band-runs cooperating to support and carry the blank, said runs including a vertically-extending flight of predetermined length, and adhesive-applying mechanism including an applying face operative on the blank intermediate the ends of the flight, said runs being positioned to support the blank against the pressure of adhesive applying activity and the runs and applying face being mutually arranged and formed to maintain the band formations free from contact with the applying face in the absence of a blank.

3. In mechanism for delivering blanks individually and successively from a pile of blanks and with each delivered blank having an adhesive-containing face, and wherein each blank is advanced by a continuous movement, feed mechanism in the path of a blank advancing from the pile, said mechanism

including rolls and endless bands positioned to form band-runs cooperating to produce a band-formed flight extending vertically and an entrance to such flight adapted to receive the advancing blank during travel of the latter in a plane intersecting the plane of such flight, and adhesive-applying mechanism including an applying face operative on the blank intermediate the ends of the flight, said runs being positioned to support the blank against the pressure of adhesive-applying activity and the runs and applying face being mutually arranged and formed to maintain the band formations free from contact with the applying face in the absence of a blank.

4. In mechanism for delivering blanks individually and successively from a pile of blanks and with each delivered blank having an adhesive-containing face, and wherein each blank is advanced by a continuous movement, feed mechanism in the path of a blank advancing from the pile, said mechanism including gear-connected rolls and bands carried by the rolls, said bands and rolls being positioned to form band-runs cooperating to support and carry the blank throughout a flight of predetermined length, and adhesive-applying mechanism including an applying face operative on the blank intermediate the ends of the flight, said runs being positioned to support the blank against the pressure of adhesive-applying activity and the runs and applying face being mutually arranged and formed to maintain the band formations free from contact with the applying face in the absence of a blank.

5. In mechanism for delivering blanks individually and successively from a pile of blanks and with each delivered blank having an adhesive-containing face, and wherein each blank is advanced by a continuous movement, feed mechanism in the path of a blank advancing from the pile, said mechanism including gear-connected rolls and endless bands carried by the rolls, said bands and rolls being positioned to form band-runs cooperating to produce a band-formed flight extending vertically and an entrance to such flight adapted to receive the advancing blank during travel of the latter in a plane intersecting the plane of such flight, and adhesive-applying mechanism including an applying face operative on the blank intermediate the ends of the flight, said runs being positioned to support the blank against the pressure of adhesive-applying activity and the runs and applying face being mutually arranged and formed to maintain the band formations free from contact with the applying face in the absence of a blank.

6. In mechanism for delivering blanks individually and successively from a pile of

blanks and with each delivered blank having an adhesive-containing face, and wherein each blank is advanced by a continuous movement, feed mechanism in the path of a blank advancing from the pile, said mechanism including rolls and bands positioned to form band-runs cooperating to support and carry the blank throughout a flight of predetermined length, and adhesive-applying mechanism including an applying face operative on the blank intermediate the ends of the flight, the course of travel of the respective band runs within said flight providing band opposition at the discharge end of the flight and non-opposition at the entrance end of such flight.

7. In mechanism for feeding individual blanks, feed mechanism including rolls and endless bands positioned to form band runs cooperative to produce a band-formed flight within which the blank is supported and carried and an entrance to such flight, the opposite ends of said flight being formed by opposing rolls over which the bands are led, said rolls having faces adapted to contact with the blank, the bands of one of said runs being in parallelism within said flight, predetermined bands of the other run diverging toward the discharge end of the flight.

8. In mechanism for feeding individual blanks, feed mechanism including rolls and endless bands positioned to form band runs cooperative to produce a band-formed flight within which the blank is supported and carried and an entrance to such flight, the opposite ends of said flight being formed by opposing rolls over which the bands are led, said rolls having faces adapted to contact with the blank, the bands of one of said runs being in parallelism within said flight, predetermined bands of the other run diverging toward the discharge end of the flight, with the said latter bands positioned in direct opposition to the parallel bands at such end.

9. In mechanism for feeding sheets or blanks, a pair of spaced rolls having blank contacting faces provided with band receiving grooves, one or more endless coil spring bands seated in said grooves to form a band run, a second pair of spaced rolls having blank contacting faces provided with band receiving grooves and two or more endless coil spring bands seated in said grooves to form a second band run, the outer surfaces of the bands located in said grooves being substantially flush with the adjacent surfaces of the rolls, said rolls and bands being so arranged that said runs provide a blank

supporting and conveying flight in which a blank may be supported against transverse pressure and carried between said runs, a band included in one of said runs passing about a portion of the periphery of a roller supporting the other run to change the direction of blank progress when passing said roll.

10. In mechanism for feeding sheets or blanks, a pair of spaced-apart rolls having grooves to receive one or more endless bands to form a band-run, another pair of spaced-apart rolls having grooves to receive two or more endless bands to form another band-run, said rolls and bands being relatively positioned to produce a band-formed flight and an entrance thereto with the flight including the two band-runs between which the sheet or blank is supported and carried, the grooves of the rolls at one end of the flight being in direct opposition and the roll grooves at the opposite end of the flight out of such direct opposition.

11. In mechanism for feeding sheets or blanks, a pair of spaced-apart rolls having grooves to receive one or more endless bands to form a band-run, another pair of spaced-apart rolls having grooves to receive two or more endless bands to form another band-run, said rolls and bands being relatively positioned to produce a band-formed flight and an entrance thereto with the flight including the two band runs between which the sheet or blank is supported and carried, the grooves of the rolls at the discharge end of the flight being in direct opposition and the grooves of the rolls at the entrance of the flight out of direct opposition.

12. In mechanism for feeding blanks individually, feed mechanism comprising rolls and endless bands cooperative to produce a band-formed flight and an entrance thereto within which the blank is supported and carried, said flight including a pair of rolls having their respective axes extending in a vertical plane with the bands of the flight extending peripherally of said rolls to provide an entrance extending angularly to the direction of the major portion of the flight, said bands being of the coil spring type, the construction being such that a portion of a band carried by one roll is in contact with a portion of the periphery of the opposite roll, the bands being offset in the region of such contact to prevent the interengagement of the spring coils.

HILARIO DE ESCOBALLES,

Witness:

HORACE G. SEITZ.