Aug. 4, 1931. W. E. MOLINS ET AL 1,817,831

MACHINE FOR SEALING CONTAINERS

Filed July 23, 1928 4 Sheets-Sheet 1

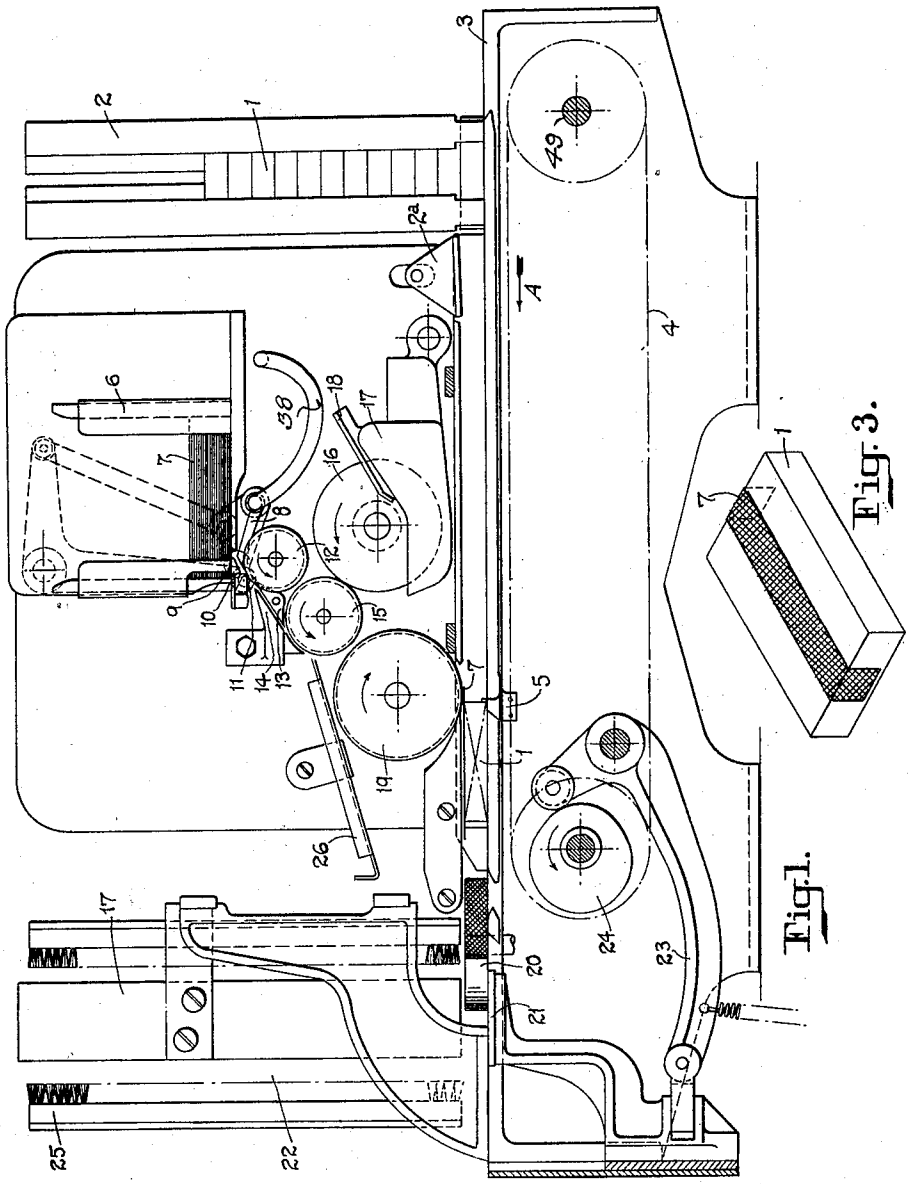


Fig. 1.

Fig. 3.

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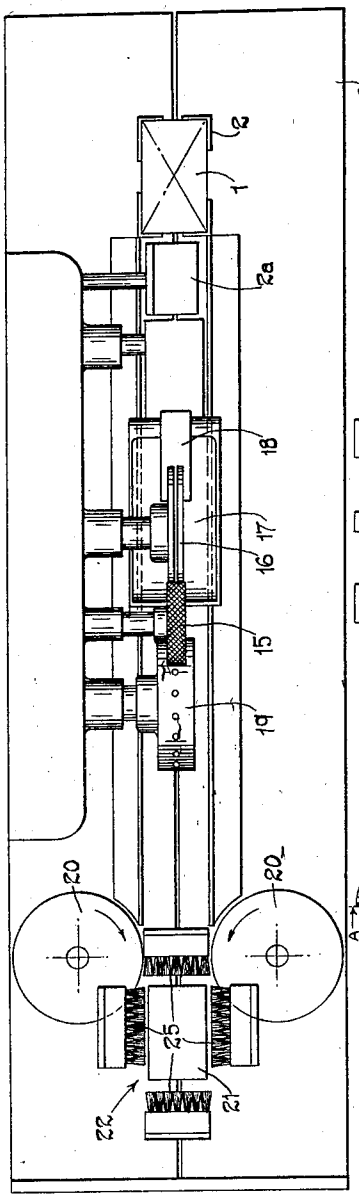


Fig. 2.

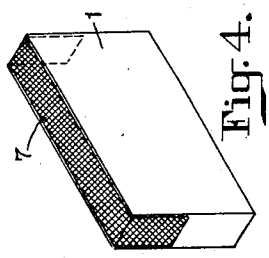


Fig. 4.

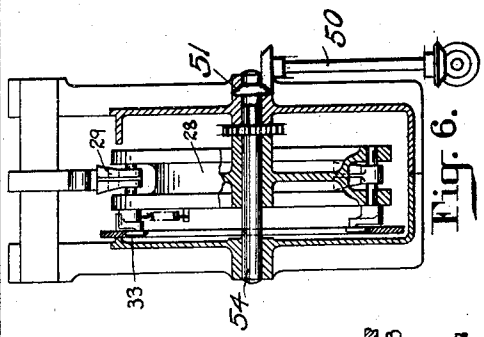


Fig. 6.

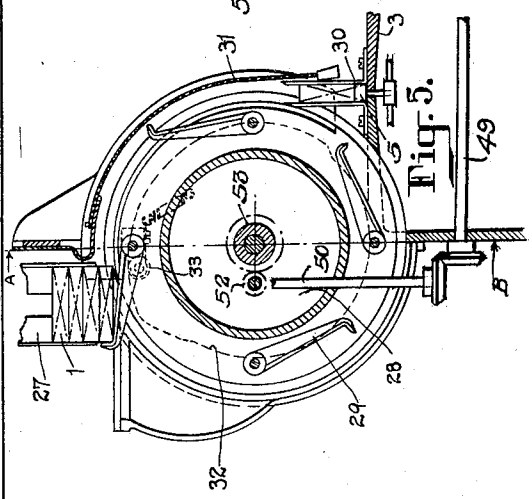


Fig. 5.

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MACHINE FOR SEALING CONTAINERS

Filed July 23, 1928 4 Sheets-Sheet 3

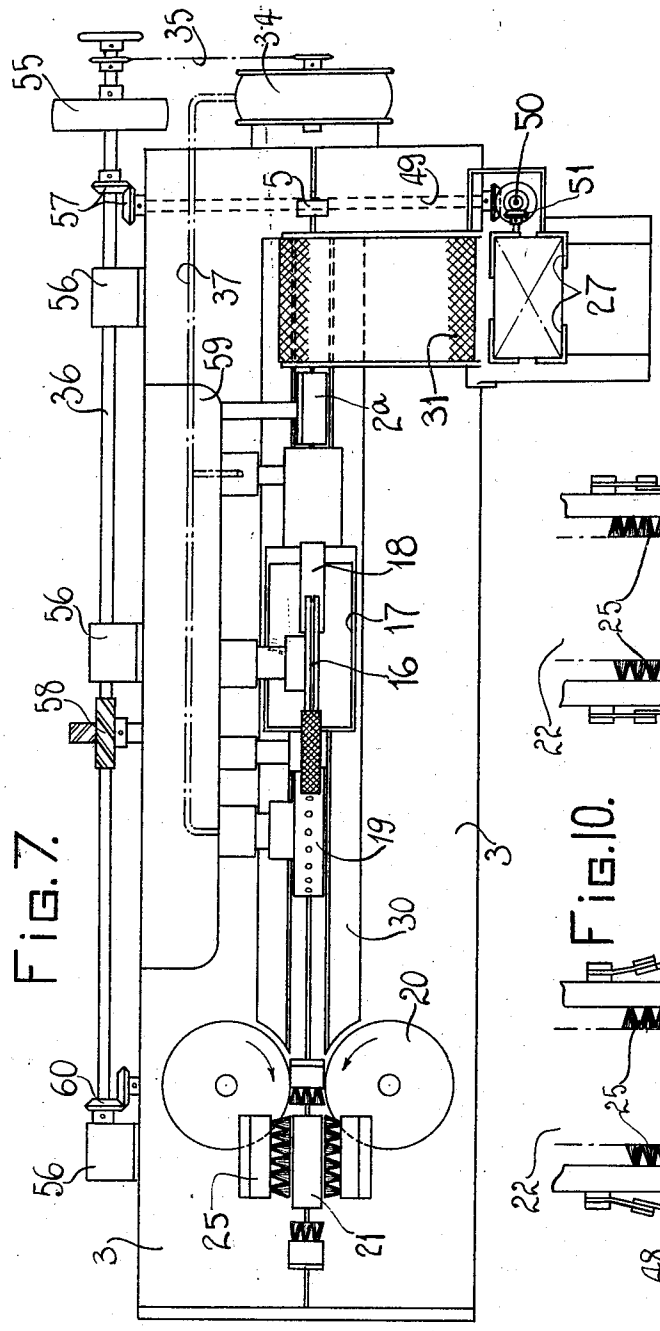


Fig. 7.

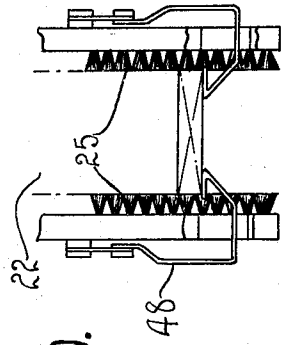


Fig. 11.

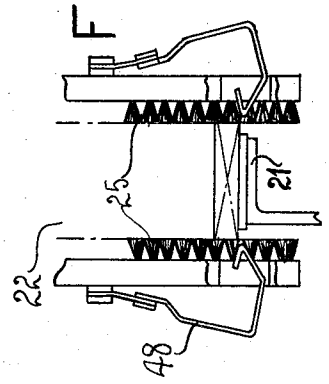


Fig. 10.

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MACHINE FOR SEALING CONTAINERS

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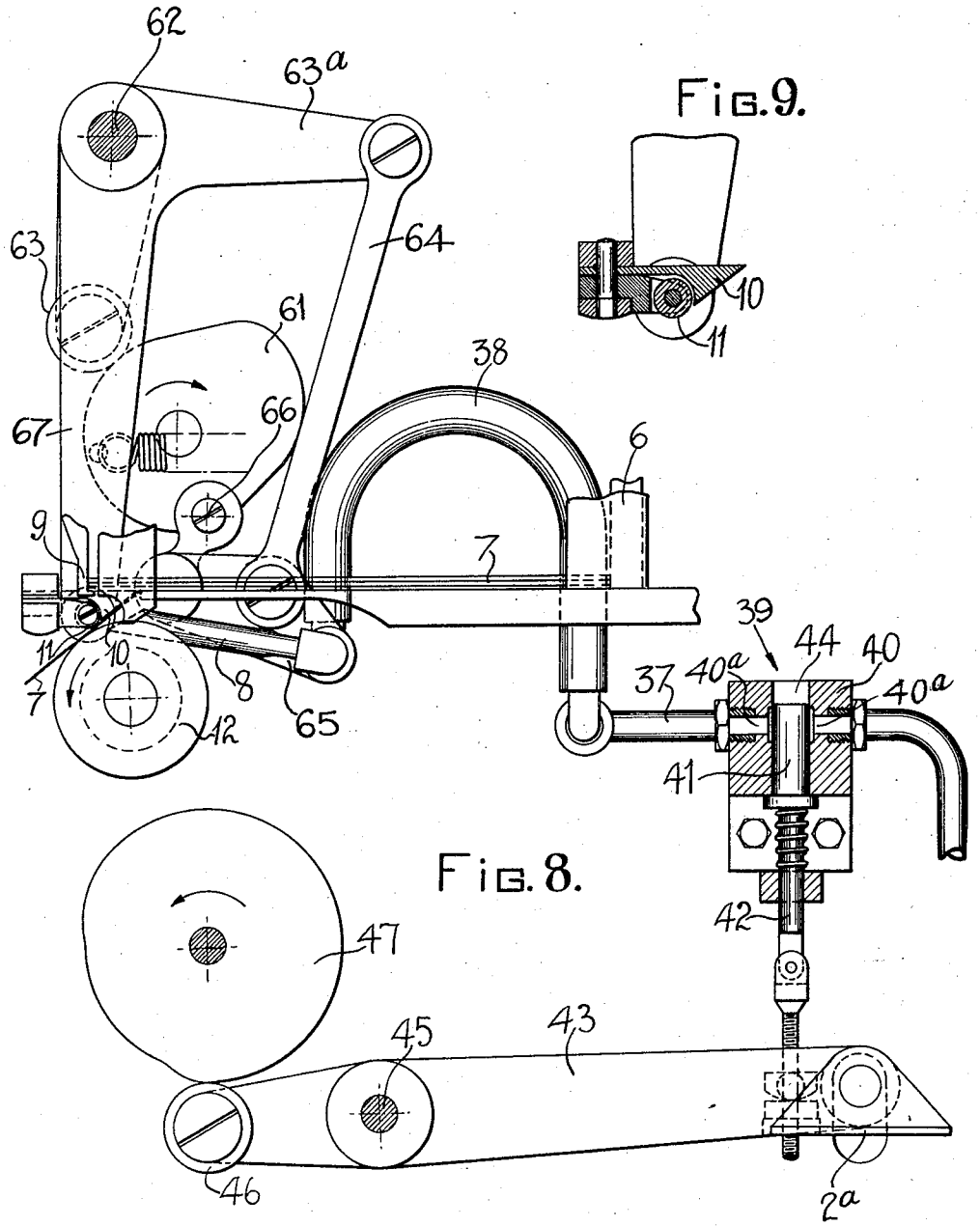


Fig. 9.

Fig. 8.

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UNITED STATES PATENT OFFICE

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MACHINE FOR SEALING CONTAINERS

Application filed July 23, 1928, Serial No. 294,845, and in Great Britain August 10, 1927.

This invention is for improvements in or relating to machines wherein bands, stamps or the like are automatically wrapped around or partly around packets, for example packets of cigarettes, and has for its object the provision of a machine wherein bands or stamps may be applied to the packets at a greater speed and more efficiently than has been the practice hitherto.

The present invention consists of a machine for applying bands, stamps or the like which comprises means (for example, an oscillating sucker) for removing a band or the like from a pile, a gum roller for receiving said band or the like from the suckers and applying adhesive to one side thereof, means (for example a suction roller) arranged to receive the band or the like from the said gumming roller and present the gummed surface thereof to the surface of a packet movable beneath the said suction roller, and means arranged to fold the said band around or partly around the said packet.

The invention is more particularly described in the accompanying drawings, in which:—

Fig. 1 is a side elevation, partly in section of a machine adapted to apply labels to the broad side of a packet.

Fig. 2 is a plan of Fig. 1 with the upper portions of the stamp feeding apparatus removed.

Fig. 3 is a perspective view of a packet with a stamp applied to the broad face and ends thereof.

Fig. 4 is a perspective view of a packet with a stamp applied to the narrow face and ends.

Fig. 5 is a sectional side elevation of an apparatus for feeding packets to the machine so that they stand on one narrow side.

Fig. 6 is a section of Fig. 5 on line A—B.

Fig. 7 is a similar view to Fig. 2 showing the machine adjusted for applying stamps to the narrow face of the packet.

Fig. 8 is a front elevation to a larger scale of the suction apparatus shown in Fig. 1 and the associated parts. In this view the frame of the machine has been omitted for the sake of clearness.

Fig. 9 is a detail of Fig. 8, and Figs. 10 and 11 show a device for folding the ends of the stamp around the bottom side of the packet.

Referring to Figs. 1, 2 and 3, the packets 1 are stacked in a vertical magazine 2 mounted on the bed 3. A continuous conveyor 4 is arranged to carry a plurality of pusher pieces 5 and convey the same in the direction of the arrow A beneath the magazine 2. Each pusher piece 5 is arranged to remove a packet from the magazine and carry the same beneath a device which is adapted to apply a band to one broad side of the packet. As the packet passes from the magazine to the stamping apparatus the same passes beneath a gravity operated arm 2^a which is adapted to control the air extracted from an oscillating sucker in such a manner that when the said arm is not raised by a packet the oscillating sucker hereinafter described is rendered inoperative. The operation of the arm 2^a will be described later with reference to Fig. 8 of the drawings.

The device for applying the band comprises a stacker 6 in which a pile of bands, for example revenue stamps 7, are located as shown in Figs. 1 and 8 of the drawings. Mounted at the lower end of the said stacker is an oscillating sucker 8 which is adapted to move periodically into engagement with the lowermost band of the pile. The sucker 8 is connected to a rotary pump 34 of ordinary construction. The pump is driven by a chain 35 from the main shaft 36 of the machine, and the suction pipe 37 is connected to the sucker 8 as shown, and to the suction wheel 19 hereinafter described. The suction tube 37 is connected to the sucker 8 by a flexible tube 38. If a packet is moved beneath the gravity operated arm 2a hereinbefore referred to, the release valve 39 of the oscillating sucker is closed and the sucker adheres to the lowermost band of the pile. This valve is shown in Fig. 8 and is constructed and operated in the following manner:

The valve comprises a body 40 provided

with vents 40a and having a sliding piston 41 mounted therein and connected by a rod 42 to a lever 43 which carries the detector arm 2a at the front of the machine. The valve is placed in the suction tube as shown and has an orifice 44 through which air can pass into the pump when the piston 41 is lowered. The lever 43 is pivoted to the frame at 45 and has a cam roller 46 which engages with a cam 47 which is driven by the main drive of the machine and timed to synchronize with the movement of the conveyor. When a packet reaches the position immediately beneath the detector 2a, the roller 46 is about to drop down the depression in the cam 47. If a packet is in position beneath the detector the lever 43 cannot drop and the suction in the pipe 37 causes a stamp to be fed, which stamp will eventually be applied to the packet at present beneath the detector. If, however, there is no packet beneath the detector the lever 43 will turn on the pivot 45 and pull down the piston 41, thus breaking the vacuum and preventing the feed of the stamp. Due to the fact that the bands are supported at their leading corners upon a ledge 9, the initial movement of the sucker is to bow the leading edge of the first band downwardly whereupon a support 10 is automatically moved between the bowed edge of the band and the remaining bands in the pile as shown in Fig. 18, so as to support the same against any further movement of the displaced band. The support 10 is wedge shaped and is provided at the thickest portion of the wedge with a roller 11 as shown in Figs. 8 and 9 which, as the support passes between the separated band and the remaining bands of the pile, forces the separated band into engagement with a continuously rotating roller 12 and the band is fed down a narrow slot between fixed guides 13 and 14. The sucker 8 and the wedge 10 are operated by the link work shown on Fig. 8.

A cam 61 rocks a shaft 62 through a cam roller 63. A bell crank lever is also fixed to the shaft 62 and the short arm 63a of this lever is connected by a link 64 to another link 65 carrying the sucker 8.

The other end of link 65 is pivoted to the frame at 66 and as the cam 61 rotates, the sucker swings up and down about this centre. The long arm 67 of the bell crank lever carries the wedge 10 and roller 11 at its lower end and consequently these parts move in time with the sucker 8. The band then passes over a roller 15 which is supplied with gum from a gum wheel 16 rotating in a gum bath 17. A scraper 18 is fitted to the gum wheel 16 in the usual manner.

The band is carried forward by the adhesion of the gum on the wheel 15 through one half of a revolution, whereupon a rotating suction wheel 19 strips the band, by means of suction, from the wheel 15 and carries it through at least one half of a revolution of the suction wheel and presents the gummed surface of the band to the broad side of the packet which is moved along the bed of the machine by the conveyor 4 hereinbefore referred to. The band is presented to the packet so that a portion thereof extends beyond at least one end of the broad side of the packet.

The packet is then gripped by means of a pair of continuously rotating rollers 20 which carry the same forward at a speed greater than that at which the conveyor is moving and deliver the same on to a platform 21 beneath a vertical stacker 22. The platform is reciprocated vertically by means of a lever 23 operated by a cam 24. The sides of the vertical stacker are formed by brushes 25 and as the packet is moved vertically upwards the projecting ends of the band are brushed downwards on to the ends of the packet. When the packets reach the top of the stacker the bands are firmly secured to the packet and the packets may be removed by hand or by a reciprocating plunger or the like.

If necessary, the band may be arranged to extend below the lowermost face of the packet as the same is moved through the vertical stacker and folders may be provided in the vertical stacker so as to fold the extensions of the band around the fourth side of the packet so that the band completely envelops the packet or the extension may be folded upon the underside of the packet by the next oncoming packet. A suitable device for this purpose is shown in Figs. 10 and 11 which show sections of the vertical stacker 22.

Referring to Fig. 10, it will be seen that two spring fingers 48 are mounted at the sides of the stacker, and when the platform 21 rises up with the packet the spring fingers are pushed outwardly, and when the platform 21 descends, the fingers 48 snap inwardly as shown in Fig. 11 and bend the remaining folds of the stamp around the bottom of the packet.

In order to prevent wastage of bands particularly in the case of revenue stamps, there is mounted adjacent to the gum wheel 15 a chute 26 which is arranged to receive a band should the same fail to be carried by adhesion around the surface of the gum wheel. Thus for example, if the oscillating sucker 8 removes the two lowermost bands from the pile and presents the same to the rotating gum wheel the band which is in contact with the gum wheel will be carried around by adhesion, but due to the natural resiliency of that band which is not in contact with the gum on the wheel, the same will move in a path tangential to the gum wheel and be located upon the chute 26 hereinbefore referred to.

In some cases it is desired to place the stamp on the narrow edges of the packet as shown in Fig. 4 and in order to do this it is necessary to feed the packet to the bed of the machine so that it stands upon one narrow edge. The apparatus for feeding the packet in this manner is shown at Figs 5, 6 and 7. Referring to Fig. 7 the mechanism indicated in Figs. 5 and 6 is fitted to the bed of the machine as shown, and the guides 30 are adjusted inwards to suit the narrow width of the packet. The packets are placed in a magazine 27 which is similar in construction to the magazine shown in Fig. 1. A rotating wheel 28 carries a series of pawls 29 which take the packets one at a time from the bottom of the magazine 27 in the manner indicated in Fig. 5. The packets are then conveyed on the rim of the wheel 28 and fall down into the guides 30 of the labelling machine. A fabric band 31 is fitted which keeps the packets under proper control. A cam 32 is fixed to the casing in which the wheel 28 is mounted and cam rollers 33 on each of the pawls 29 run on this cam which is shaped to give the pawls the necessary movements for feeding the packets and passing clear of the guides. The wheel 28 is driven from the main drive of the machine through the conveyor spindle 49 (Fig. 7) and a vertical shaft 50 which has bevel gears mounted at its ends. The upper gear gears with another gear 51 mounted on a small horizontal shaft, and the other end of this shaft has a spur 52 mounted thereon which meshes with another spur gear 53 fixed to the spindle 54 of the wheel 28.

Fig. 7 also shows diagrammatically the method of driving the machine. A pulley 55 driven by a belt is fixed to the main shaft 36 carried in the bearings 56 and drives the rear conveyor shaft 49 through bevel gears 57.

The stamp feeding mechanism is driven by the main shaft by spiral gears 58, the various units of the stamp feed being driven by ordinary spur gears mounted in the casing 59.

The tucking wheels 20 are also driven by bevel gears 60 which drive another cross shaft carrying bevel gears (not shown) which drive other bevels on the spindles of the wheels 20.

The forward conveyor shaft shown in Fig. 1 is driven by a conveyor chain itself which is in turn driven by the shaft 49 as previously described.

It will be understood that the guides, the stacker and the stamp applying mechanism will require adjustment from the position shown in Figs. 1 and 2 when the packets are fed edgewise.

What we claim as our invention and desire to secure by Letters Patent is:—

1. In a machine for applying bands to packets, the combination with a gumming roller, of means for delivering bands to said roller, means for receiving the gummed bands from the roller and presenting the same to a packet, and separate means for preventing the delivery of more than one band at a time to said last named means.

2. In a machine for applying bands to packets, the combination with a rotatable member having a surface thereof provided with adhesive, means for feeding bands to said member, means for removing bands which do not adhere to said surface, and means for presenting the adhesive coated bands to packets.

3. A device for removing bands from a pile which comprises a rotatable member having a curved surface to which the lowermost band will adhere, means for feeding bands to said member, and means arranged to receive only the bands which do not conform to the curvature of the said surface by reason of adhesion thereto.

4. In apparatus of the class described, the combination with a rotatable member having a curved surface thereof coated with adhesive, means for feeding bands to said member, and a chute disposed tangentially of the curved surface of said member for removing only such bands therefrom as do not conform to the curvature of the said surface by reason of adhesion thereto.

5. In a machine for applying bands to packets, the combination with a hopper adapted to receive packets stacked face upwardly, of a rotatable member for withdrawing the packets, one at a time, from said hopper and carrying the same through substantially a quadrant of a circle whereby the packets are turned to present one narrow edge of the packet uppermost, and means for depositing adhesive coated bands on the uppermost edge of each packet.

6. In a blank feeding device, the combination with a suction producing device for deflecting a portion of the end blank of a stack of blanks outwardly from the remaining blanks, of conveying means, and means movable between said deflected blank and the stack for thrusting the said blank into operative engagement with said conveying means, said movable means comprising a wedge shaped member and a roller carried by said member and arranged to engage said conveying means.

7. In a blank feeding device, the combination with means for supporting the side edges only of a stack of blanks, of means for engaging the face of the lowermost blank of a stack of blanks to bow the central portion of the same outwardly, and means having a portion thereof movable between the said blank and the stack to convey the blank away from the stack, said last

named means comprising a conveyor roller and a device consisting of a reciprocable wedge shaped member and a roller mounted on said member for thrusting the blank into engagement with said conveyor roller.

8. In apparatus of the class described, the combination with means for removing bands, one at a time, from a pile, said means including a suction device for bowing the end band and a reciprocating member adapted to move into the bowed portion of the end band to support the remaining bands, of a rotatable member having means by which the lowermost band will adhere to a curved surface thereof, and means arranged to receive only the bands which do not contact with and adhere to the said curved surface.

9. A device for removing bands from a pile which comprises a movable member having a curved surface and means by which the lowermost band will adhere to the curved surface, means for feeding bands to said member, and means arranged to receive only the bands which do not contact with and adhere to the curved surface of said member.

In testimony whereof we hereunto affix our signatures.

WALTER EVERETT MOLINS.
JOHN WALKER CHALMERS.