Oct. 22, 1935. C. G. MAXWELL 2,018,373

BAND, STAMP, OR LABEL MAGAZINE AND HANDLING MECHANISM

Filed May 2, 1933 3 Sheets-Sheet 1

Fig. 2.

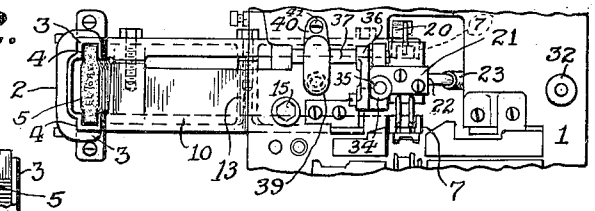


Fig. 6.

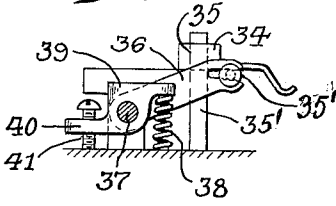


Fig. 1.

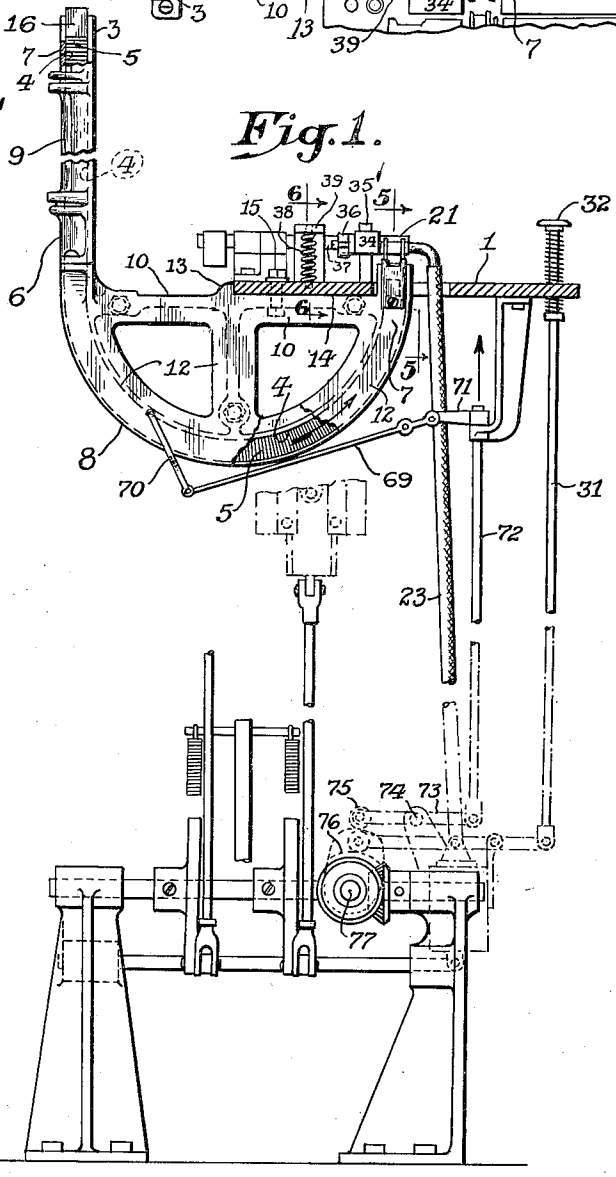


Fig. 5.

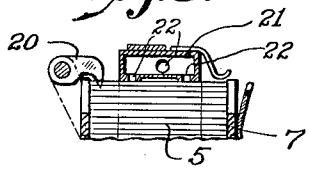


Fig. 4.

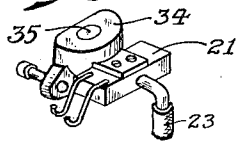
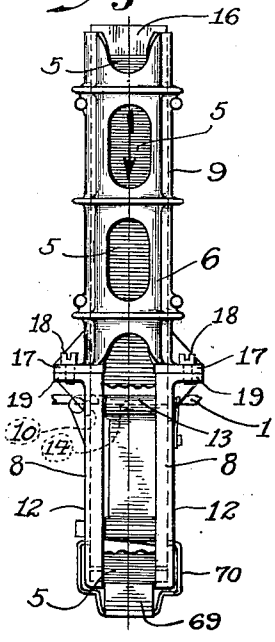


Fig. 3.



INVENTOR.
CHARLES G. MAXWELL
BY J. Granville Meyers
ATTORNEY.

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Fig. 7.

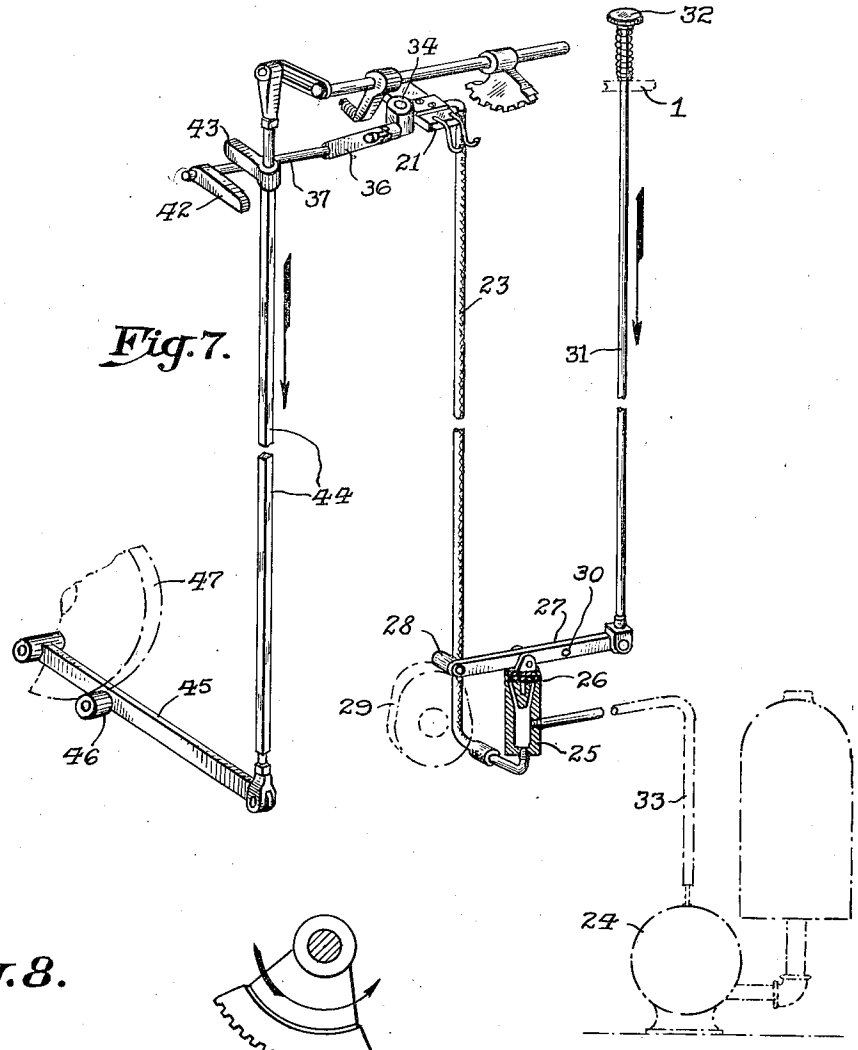
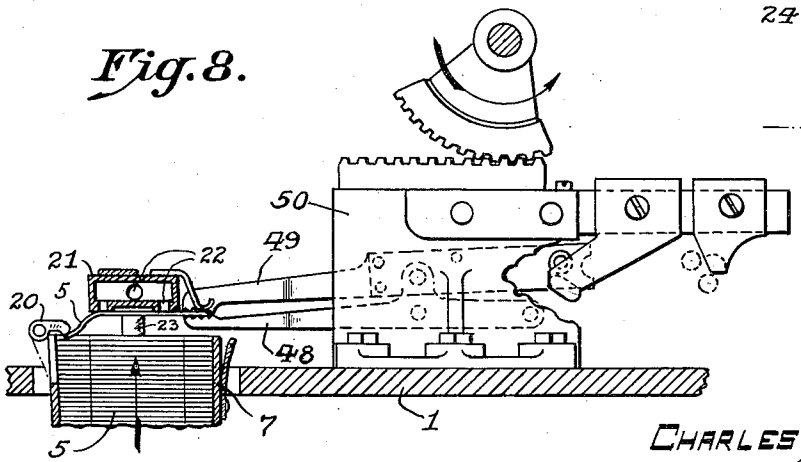


Fig. 8.



INVENTOR.
CHARLES G. MAXWELL
BY J. Granville Meyer
ATTORNEY.

Oct. 22, 1935. C. G. MAXWELL 2,018,373

BAND, STAMP, OR LABEL MAGAZINE AND HANDLING MECHANISM

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Fig. 10.

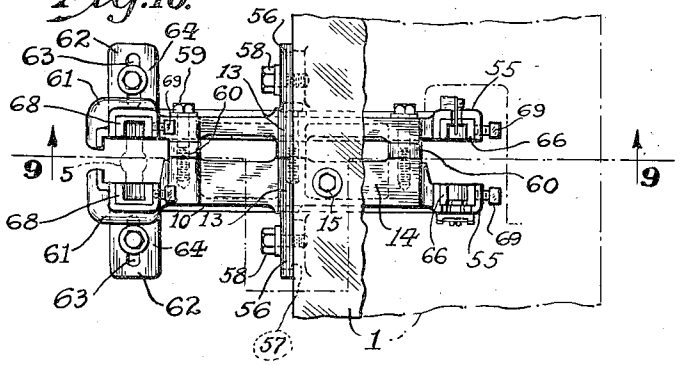


Fig. 11.

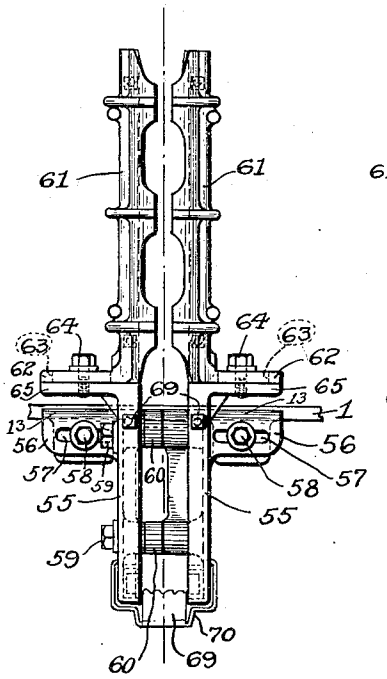


Fig. 9.

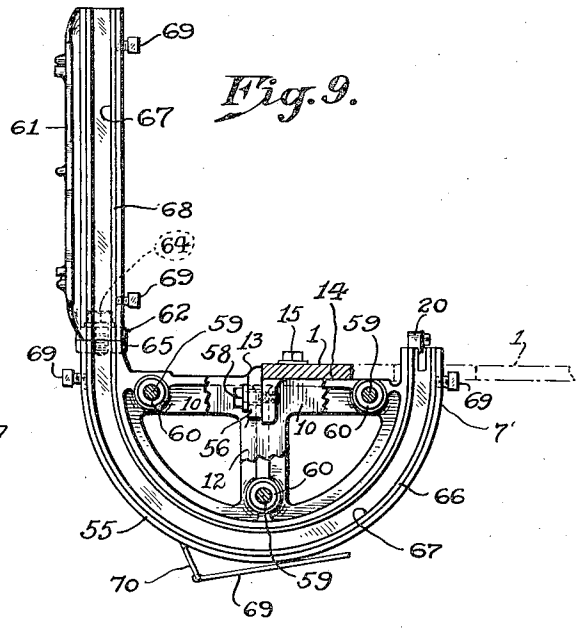


Fig. 12.

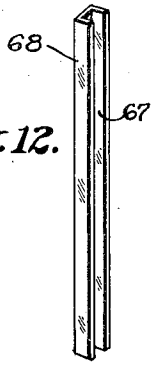
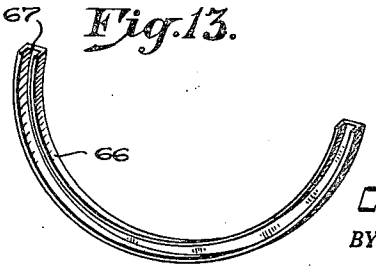


Fig. 13.



INVENTOR.
CHARLES G. MAXWELL
BY J. Daniels Meyer
ATTORNEY.

Patented Oct. 22, 1935 2,018,373

UNITED STATES PATENT OFFICE

2,018,373

BAND, STAMP, OR LABEL MAGAZINE AND HANDLING MECHANISM

Charles G. Maxwell, Durham, N. C., assignor to International Banding Machine Company, New York, N. Y., a corporation of New York

Application May 2, 1933, Serial No. 669,062

13 Claims. (Cl. 271—30)

My present invention relates generally to banding, stamping or labeling machines and more particularly to a novel construction of magazine adapted for use in connection with such machines, to hold a stack of the bands, stamps or labels to be applied one at a time to the article to be stamped or banded, and this application is a continuation in part of my co-pending application, Serial #619,160, filed June 24, 1932.

A prime object of the invention is to provide a magazine of the kind referred to and into the top of which successive supplies of the bands, stamps or labels may be fed without stopping the operation of the machine, and also from the top of which the labels may be selected and removed, one at a time, for application to the article or object to be banded, stamped or labeled. So far as I am aware, I am the first in the art to provide a magazine, the construction of which is such that the bands or labels may be fed into and removed from the top thereof.

In all prior magazines with which I am familiar provision is made for selecting and removing the bands or labels either from the top or the bottom of the magazine. When removal is from the top the supply of bands is fed up thru the bottom of the magazine, and when removed from the bottom they are fed into the top of the magazine. Both types are open to objections.

Another object of the invention is to provide a magazine into which the bands, stamps or labels may be placed with the printed face positioned "downward" and from which they may be individually selected and removed in a horizontal plane with the printed face positioned "upward", or vice versa, the construction being such that the bands or labels will be turned or reversed during their travel thru the magazine.

Another object of the invention is to provide a magazine of the type referred to that may be readily adjusted to receive bands, stamps, or labels of different lengths or widths.

The above and other objects are accomplished by constructing the magazine with a substantially U-shaped channel to receive a stack of the bands, stamps or labels, successive supplies of which may be fed into the "down-leg" of the channel and into the "up-leg" of which a portion of the stack will always extend, so that the successively exposed top labels or bands in said "up-leg" may be removed one at a time to be transported by suitable mechanism to the article or object to which they are to be applied.

In order to enable others to understand, construct and use my said invention I will now proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings, wherein,—

Fig. 1 is a side elevation, partly in section, of a magazine constructed in accordance with the invention;

Fig. 2 is a top plan view;

Fig. 3 is a rear end view;

Fig. 4 is a detail perspective view of the label selecting or picker mechanism;

Fig. 5 is a vertical section taken on the line 5—5 of Fig. 1;

Fig. 6 is an end elevation taken on the line 6—6 of Fig. 1;

Fig. 7 is a perspective view of the operating mechanism for the suction picker;

Fig. 8 is a side elevation of the label gripping and transporting mechanism, shown in label gripping position, the suction picker and label stack being shown in section;

Fig. 9 is a side elevation, partly in section, of a modified form of the magazine, which is made adjustable to accommodate bands, stamps or labels of various lengths and widths; said view taken on the line 9—9 of Fig. 10;

Fig. 10 is a top plan view;

Fig. 11 is an end elevation of the form of magazine shown in Figs. 9 and 10; and

Figs. 12 and 13 are perspective views of the interchangeable fillers employed in connection with the form of the invention illustrated in Figs. 9 and 10;

In the embodiment of the invention as illustrated, the magazine is shown attached to a bed-plate 1, of a banding, stamping or labeling machine and for convenience I shall hereafter refer to the magazine as a "band" magazine, but I wish it to be understood that the word "band" is used in its broader sense to include a stamp or a label without regard to its size, the magazine here shown being designed for use in connection with a machine for applying "bands" to articles or objects, such as a cigar.

The magazine shown in Figs. 1, 2 and 3 is made in the form of a generally U-shaped casting 2, the opposite side members 3 of which are provided with a band-receiving channel 4, which channel is of U-shape to receive a stack of bands 5, which are fed into the "down-leg" 6, and which extends around the bend or curve of the U and up into the "up-leg" 7, thereof, and from which the uppermost bands in said "up-leg" may be successively removed by suitable gripper mechanism as hereinafter described. The lower portion or bend 8 of the U is preferably curved as shown,

so that a stack of labels located in the U-shaped channel of the magazine may move freely therethru as they are removed from the "up-leg", and to enable the magazine to carry a substantial supply of bands, I prefer to construct the "down-leg" 6 longer than the "up-leg" 7. This additional length is provided by attaching to the upper end of the "down-leg" 6 a magazine extension 9 having oppositely disposed channels in its sides corresponding to and forming a continuation of the channel 4 in the magazine proper.

The casting 2, which carries the U-shaped channel, is provided with horizontal and vertical webs 10 and 12, the web 10 being provided with a cut-away portion forming a shoulder 13, and a flat face 14 to fit up against the bottom and an end of the bed-plate 1, the magazine being attached thereto by suitable bolts 15 passing therethru and into the web 10, depending from the bed-plate, as more clearly shown in Figs. 1 and 2.

I prefer to provide the bottom or curved portion of the magazine 8 with a slot or opening, as shown in Figs. 1 and 3, to expose the lower edge of the stack of bands, for a purpose presently to be described.

In attaching the magazine to a banding, stamping or labeling machine, the "down-leg" of the magazine may be conveniently arranged at one side of the machine to position the open mouth thereof so that successive supplies of the bands may be easily inserted in the band channel, whereas the open end or mouth of the "up-leg" 7 may be positioned close to the bed of the machine so that the uppermost band will lie in a substantially horizontal plane, and may be selected and removed therefrom to be positioned upon or across the article or object to be banded or labeled. If the bands are to be applied over the top of the article to be banded, then the stack of bands will be inserted into, the "down-leg" of the magazine with the printed faces of the bands positioned "downward", so that in passing from the "down-leg" thru the U-bend into the "up-leg" the bands will be turned or reversed so that at the mouth end of the "up-leg" of the magazine they will appear with the printed face "upward"; and conversely, if the bands are to be positioned beneath the article or object to be banded, then they will be fed into the "down-leg" of the magazine with their printed faces upward, so that the unprinted face will appear at the mouth or delivery end of the "up-leg".

Ordinarily, the weight of the stack of bands in the "down-leg" 6 of the channel and its extension 9 is sufficient to cause the stack to be fed freely thru the band channel, so as to always keep the "up-leg" filled, with the top band exposed at the mouth end of said "up-leg"; but should there be any sluggishness in the feed, as in case the weight of the stack of bands is not sufficient to bring about proper feeding of the stack, I may add an additional removable weight 16, by positioning the same upon the upper end of the stack located in the "down-leg", as more clearly shown in Figs. 1 and 3.

The lower end of the magazine 9 is preferably provided with laterally-extending flanges 17 which may be positioned upon and secured by screws 18 to corresponding flanges 19, projecting outwardly from the upper end of the "U-bend" of the magazine where it joins the down-leg, as more clearly shown in Fig. 3.

I prefer to provide the open mouth of the "up-leg" 7 of the magazine with a pointed member, such as a blade 20, the sharpened point of which overlies one end of the band channel and is positioned to engage the upper band of the stack so as to retain it in position until it is engaged by a suitable band transporting device, such as the gripper mechanism shown in Fig. 8.

Any suitable mechanism may be employed for lifting the bands from the mouth of the "up-leg" 7 of the magazine to permit them to be taken by the transporting mechanism to the point where they are to be applied to or about the object or article to be banded. In the present instance such means consists of a suction box or head 21, positioned above the open mouth of the magazine and mounted for movement toward and from the uppermost label of the stack of labels in the said "up-leg" of the magazine. The bottom of the suction box 21 is provided with openings 22 as more clearly shown in Fig. 5, and the box is connected by means of a flexible tube 23, Fig. 7, to appropriate exhaust or suction mechanism 24, there being an automatic and manually-operable valve-controlled cut-off mechanism interposed between the suction box 21 and the suction-creating means 24, said valve-controlled means consisting of a hollow casing 25, which may be opened and closed to the atmosphere by a valve 26 mounted upon an arm 27, one end of which carries a roller 28 against which the periphery of the cam 29 moves to move the valve to and from its seat at properly-timed intervals. The arm 27 is pivoted at 30, and one end of said arm may be moved downwardly to open the valve 26 manually by depressing the hand-controlled rod 31, the end 32 of which is disposed adjacent the bed 1 of the machine as shown in Fig. 1, where it will be accessible to the operator so that if at any time it is desired to throw the suction picker out of commission this may be readily accomplished manually and independently of the automatic operating means.

The lower end of the tube 23 is connected to the valve-casing 25 and a separate pipe 33 leads from said casing to the suction apparatus 24.

As more clearly shown in Figs. 5 and 6, the suction box 21 is provided at one side with a boss 34 having a vertically-extending opening 35 thru which a fixed stem 35' passes and upon which it may slide. The boss 34 has an outwardly-extending stem or screw 35'' which is engaged by the fork of an arm 36 secured to and projecting laterally from a rock-shaft 37, so that when said shaft is rocked in one direction or the other, it will cause the suction box 21 to move into and out of contact with the uppermost label of the stack in the "up-leg" of the magazine to lift the band into position to be gripped by the grippers of the transporting mechanism, as more clearly shown in Fig. 8. The rock-shaft 37 is normally urged in an anti-clockwise direction by means of a coil spring 38, the upper end of which bears upon the block 39 secured to the rock-shaft. The block has a tail piece 40 thru which a screw 41 passes to limit the movement of the rock-shaft in one direction or against the action of the spring 38. The rock-shaft 37 carries an arm 42 positioned to be engaged by the end of a corresponding arm 43 mounted upon a vertically-reciprocating rod 44 (see Fig. 7). The lower end of the rod 44 is pivotally connected to a pivoted arm 45 having a roller 46 adapted to be engaged by a cam 47 so that the rod 44 is given regularly-timed reciprocating movements to properly operate the suction-picker 21 and thus lift the bands successively from the mouth of the magazine. When so lifted a free end of each band will be in a posi-

tion to be readily grasped between the gripper mechanism consisting of fixed and movable gripper jaws 48 and 49, which jaws are mounted upon a horizontally reciprocating carriage 50, which carriage may be moved back and forth by any suitable mechanism such as the rack and segment shown in Fig. 8. The gripper jaws are closed and opened at suitable intervals to grip and release the bands by any preferred mechanism such as the mechanism shown and described in my copending application, Serial #619,160, filed, June 24, 1932.

In Figs. 9, 10 and 11, I have shown my improved magazine constructed to accommodate bands, stamps or labels of different lengths and widths, and according to this form of the invention the opposed U-shaped banding channels which receive the ends of the stack of bands, or the like, are formed in separate opposing plates or castings 55, each of which has a laterally projecting bracket 56 having a slot 57 thru which an attaching bolt 58 passes, whereby the said plates or castings 55 may be adjusted laterally toward and from each other thru the medium of the bolt and slot connections. The plates or castings are further joined together by means of transverse bolts 59, and interchangeable filler or spacer blocks or washers 60 are located between the companion plates or castings and fitted over the bolts 59, as more clearly shown in Figs. 10 and 11.

The "down-leg" of the band channel in this construction is, like the constructions previously described, formed with an upward extension 61 to receive an extra supply of bands, said upward extension being formed by two opposed channel castings 61, the lower end of each of which is provided with a laterally extending flange 62 provided with a slot 63 thru which a bolt 64 passes, the lower end of the bolt having a threaded connection with a laterally extending flange 65 carried by the upper end of the "down-leg" of each casting 55 and upon which the lower end of the extension member 61 rests. Obviously, said extension members 61 may be adjusted toward and from each other thru the medium of the bolt and slot connections to accommodate bands of different lengths.

In order to accommodate bands of different widths, I may provide the channel members 55 and 61 with removable and interchangeable channel members 66 and 68, as shown in Figs. 12 and 13. Each channel member 66 illustrated in Fig. 13 is substantially U-shaped and is provided with a channel 67 which is narrower than the channel normally provided in the plates or castings 55, but may be removably inserted therein, it being understood that one such member 66 will be located in each of the channel plates or castings 55.

Similarly, said channel blocks 68 will be removably inserted in the channels of the extensions 61, one in each extension, and when assembled the lower end of the channel block 68 will rest upon the upper end of the "down-leg" of the U-shaped channel 66 so that a continuous channel will be provided. The removable channel members referred to may be held in position in any suitable way, as by the screws 69, and obviously, the channel castings 55 and 61 may be initially provided with channels of extra width to receive any one of a number of interchangeable channel members 66 and 68, so that when bands, stamps or labels of different size are to be used in the machine, it is only necessary to select the appropriate interchangeable channel members to accommodate the selected labels. While it is possible to accommodate a fairly wide range of label sizes with the arrangement above described, it will be obvious of course that the construction has its limitations and for this reason it may become necessary,—where bands or labels of an extra large size are employed, to likewise have U-shaped and channel extension members 55 and 61 of different widths.

In both types of magazine shown and described, the lower edge of the stack of bands located in the curved portion of the magazine is exposed, as more clearly shown in Fig. 1, and in order to resist backward or reverse movement of the stack when the suction picker 21 makes contact with and presses upon the stack at the delivery end, I provide a stack-holding means, which, in the instance shown, consists of a flexible strap 69 of metal or other material, one end of which is attached to a pivoted bail 70, the ends of which are sprung into seats formed in the outer faces of the sides of the magazine. The other end of the strap 69 is pivotally connected to an arm 71 mounted upon the end of a vertically-reciprocating rod 72. The lower end of the rod 72 is connected to a lever 73, pivoted at 74, and the free end of said lever is provided with a roller 75 which rides over a rotating cam 76 mounted upon a driven shaft 77. When in normal position as shown in Fig. 1, strap 69 is adjacent but out of contact with the edge of the band stack. It is brought into contact with the edge of the band stack immediately the rod 72 is moved upwardly, as when the suction picker 21 is brought into contact with the uppermost band of the stack located at the mouth of the upleg of the magazine. The construction and arrangement of the parts is such that whenever the suction picker 21 is moved down upon the stack of bands 5, in the "up-leg" of the magazine channel, the flexible strap 69 will have been moved by the mechanism described, into contact with the exposed lower edge of the stack of bands to hold the stack from reverse or backward movement in the magazine channel, and immediately the suction picker is raised from the stack, the strap 69 will be moved away from the edge of the stack to permit free forward movement of the stack thru the channel.

It will be understood of course that in order to permit the bands to feed by gravity thru the U-shaped channel, they must fit fairly loosely therein, so that the stack may feed freely, and because of this, there is a tendency of the suction picker when it makes contact with the upper end of the stack, to push the stack backward or reversely thru the channel. To prevent this the flexible strap 69 is provided, and this serves as a check or stop for the stack. The cam 76 which operates the rod 72 and thru which the flexible strap 69 is actuated is so timed with relation to the upward and downward movements of the suction picker 21 that the strap 69 will make contact with the edge of the stack of bands just prior to the time that the suction picker makes contact with the upper end of the stack, and said strap will be moved out of contact with the band stack immediately the suction picker begins to rise.

While I have herein shown and described preferred embodiments of the invention, I do not wish to be understood as limiting myself to the specific construction shown, except as I may be limited by the terms of the appended claims, as further modifications will obviously suggest them-

selves to those skilled in the art, without departing from the spirit of the invention.

What I claim as new herein and desire to secure by Letters-Patent is:—

1. A band magazine consisting of a curved section having an "up-leg" and a "down-leg" both extending vertically to provide a continuous unobstructed channel to receive a stack of bands, a portion of which is in curved formation, the curved section of the magazine having a slot or opening in its lower wall to expose an edge of the band stack.

2. A band magazine consisting of a curved section having an "up-leg" and a "down-leg" extending vertically to provide a continuous unobtructed channel to receive a stack of bands, a portion of which is in curved formation to support the band stack edgewise, the curved section of the magazine having a slot or opening in its lower wall to expose an edge of the band stack, and intermittently operating means acting upon the exposed edge of the stack to prevent backward or reverse movement thereof.

3. A band magazine consisting of a curved section having an "up-leg" and a "down-leg" both extending vertically to provide a continuous unobstructed channel to receive a stack of superposed bands, a portion of which is in curved formation to support the bands edgewise, the curved section of the magazine having a slot or opening in its lower wall to expose an edge of the band stack, and means movable at regular intervals into and out of contact with the exposed edge of the stack to resist backward or reverse movement thereof in the magazine.

4. Band or label-handling mechanism including in combination, a band magazine consisting of a curved section having an "up-leg" and a "down-leg" both opening and facing upwardly to expose the labels horizontally flatwise, a suction picker movable into and out of contact with the open end of the stack of bands in the "up-leg" to lift bands therefrom successively, the curved section having an opening in its lower wall to expose an edge of the stack, and means engageable with said edge to resist backward movement of the stack when the picker contacts with the end thereof located in the "upleg" of the magazine.

5. A magazine of the type described having U-shaped channel members to receive opposite ends of bands or labels arranged in stack formation, said members being adjustable toward and from each other to accommodate bands or labels of different lengths.

6. A magazine of the type described having U-shaped channel members to receive the opposite ends of bands, an upward extension of one of the legs of the U, including opposed channel members, and means for adjustably supporting the channel members toward and from each other to accommodate bands or labels of different widths.

7. A magazine of the type described having U-shaped channel members to receive the opposite ends of bands or labels, said members being adjustable toward and from each other, and removable U-shaped channel blocks interchangeably associated with the said channel members.

8. A band magazine comprising a pair of opposed side members substantially of U-shaped formation, each member having a continuous channel to receive the ends of a stack of bands arranged in U-formation, and means spanning and connecting the legs of the said U members.

9. In band or label handling mechanism, and in combination, a horizontal bed-plate, a U-shaped magazine arranged vertically with relation to said plate, one leg of the magazine terminating adjacent the upper face of the bed-plate and the other leg terminating at a point substantially above the said plate, and a label picker cooperatively associated with the mouth of the shorter leg of the magazine.

10. In label-handling mechanism and in combination, a label magazine having a channel to receive the opposite ends of a stack of labels, said channel being open at both ends and each end facing upwardly, and a label picker co-operatively associated with the open end or mouth of one of said channels.

11. A band feeding magazine, substantially of U-shaped formation on a vertical plane, to support a stack of superimposed bands in U-shaped serial arrangement, the band receiving leg of the U-shaped magazine being provided with a removable extra section to hold an overweight of bands over the other leg, in order to exert a constantly actuating pressure upon the stack of bands toward the delivery end.

12. A band feeding magazine of the type described, comprising a pair of oppositely arranged side members, substantially of U-shaped formation on a vertical plane, each member having a continuous unobstructed channel, said channels facing each other, being open at both ends and adapted to receive the ends of a continuous stack of bands, and means for adjustably joining said members together and to a support.

13. A band feeding magazine of the type described, substantially of U-shaped formation on a vertical plane, consisting of channel members being adjustable toward and from each other and auxiliary means to adapt them for receiving the opposite ends of bands or labels of different sizes and width, said means comprising interchangeably arranged linings of different thicknesses, following the inner contour of said channel members.

CHARLES G. MAXWELL.