May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 1

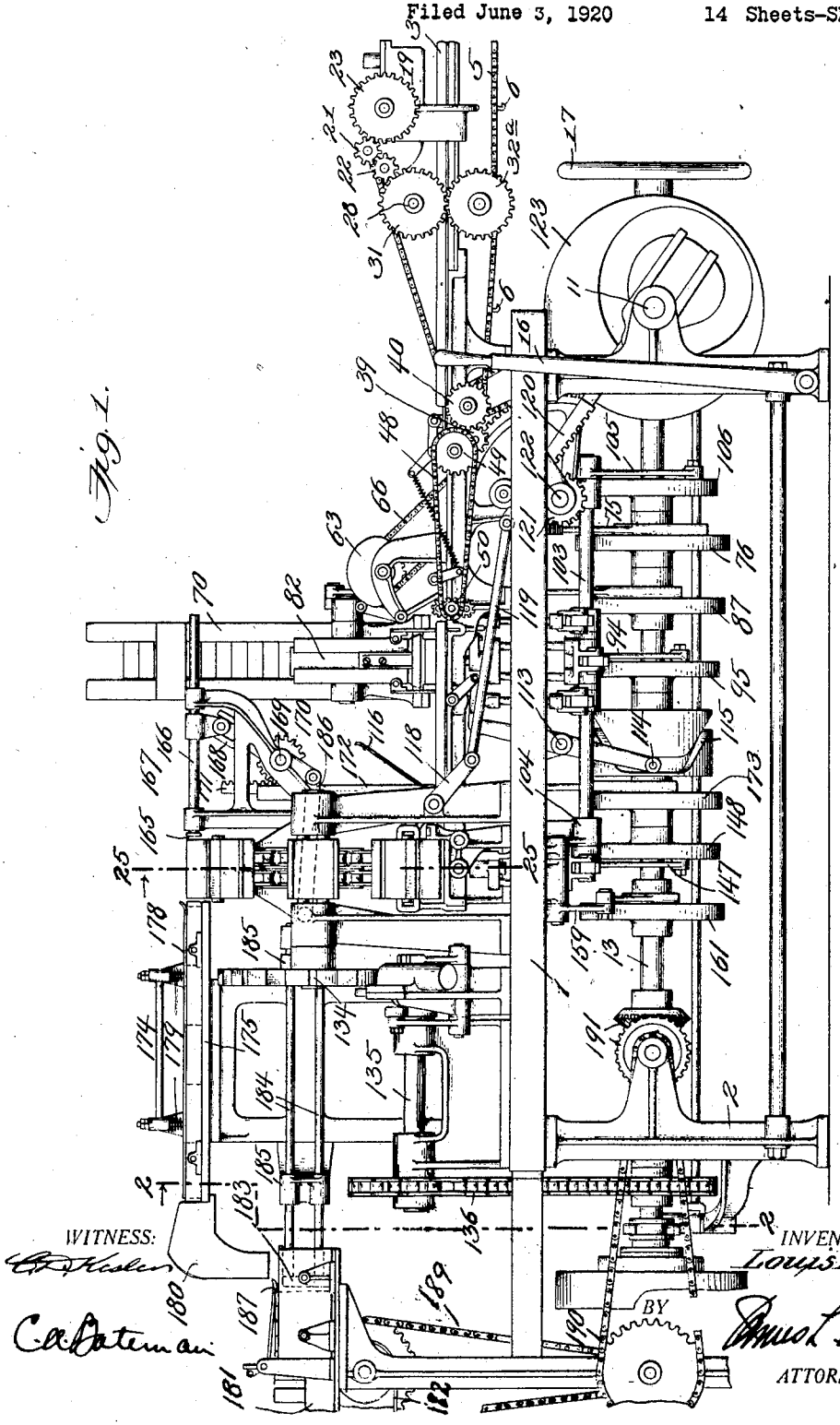


Fig. 1.

WITNESS:

INVENTOR,
Louis Fischer

BY

ATTORNEY.

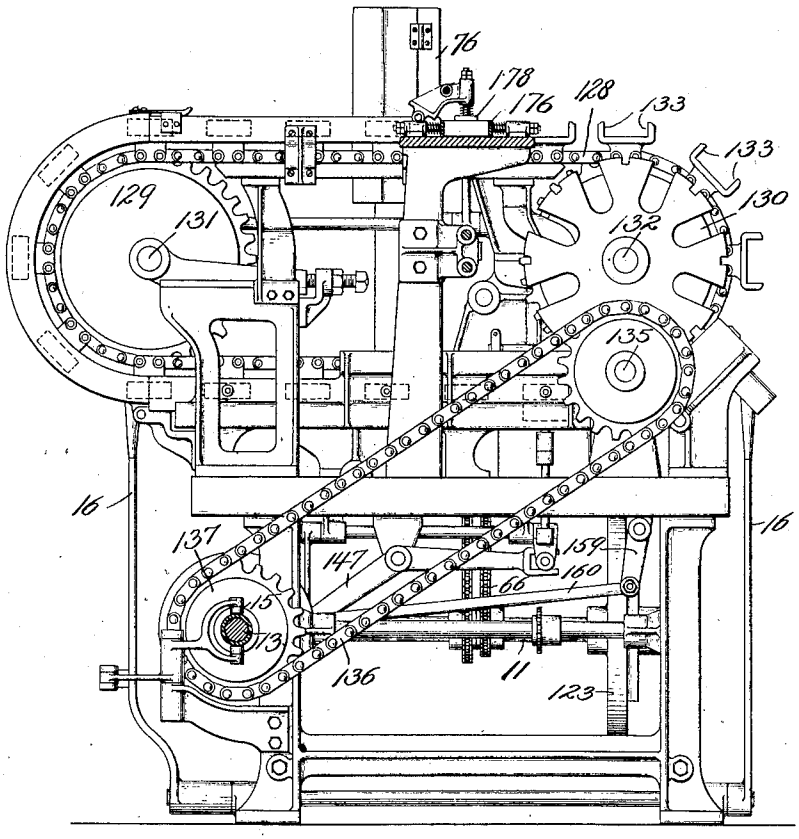
May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 2

Fig. 2.



WITNESS:

C. C. Bateman

INVENTOR.

Louis Fischer

BY Albert L. Norris

ATTORNEY.

May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 3

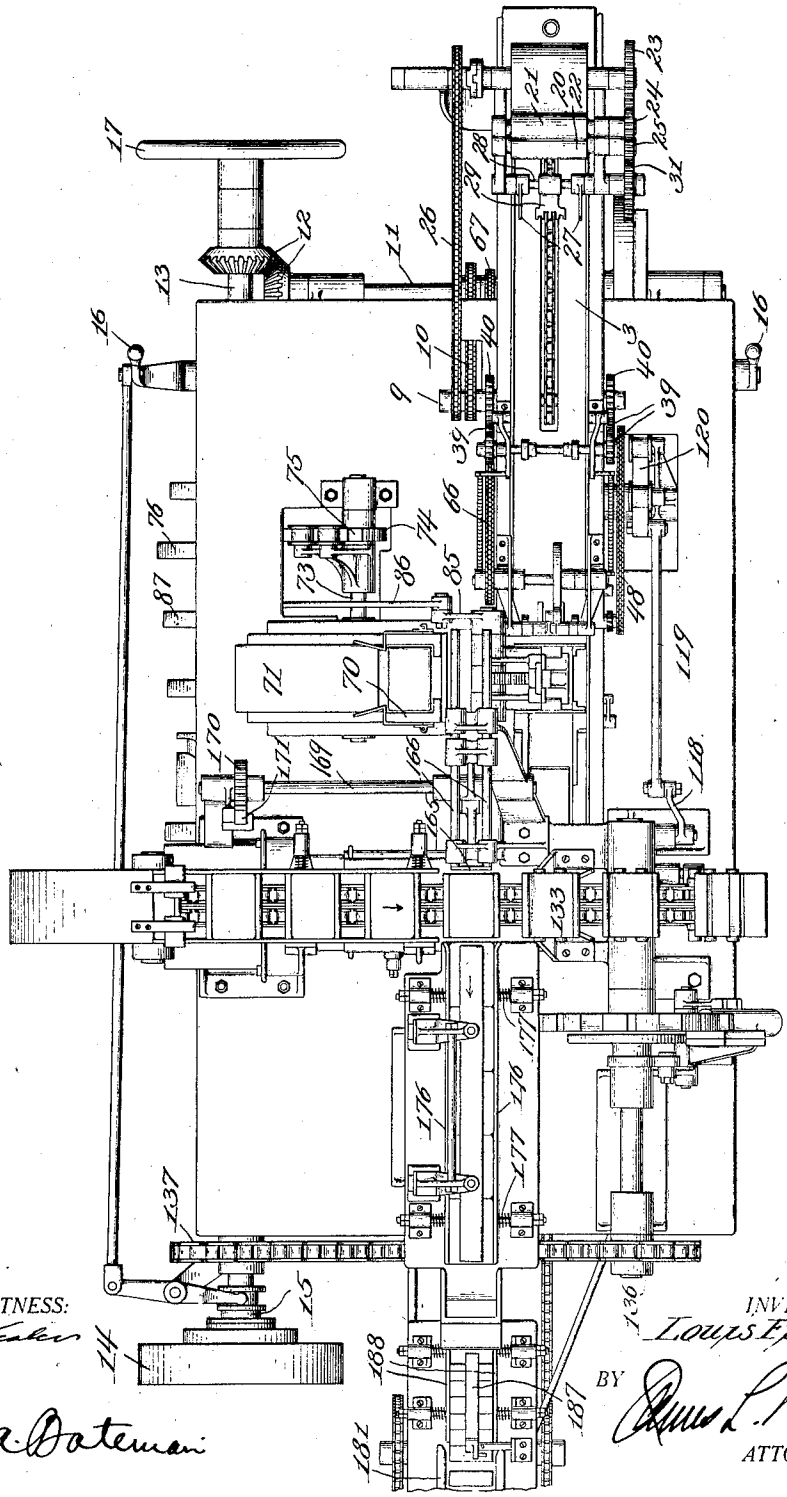


Fig. 3.

WITNESS:

C. A. Bateman

INVENTOR.
Louis Fischer

BY James L. Norris

ATTORNEY.

May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 4

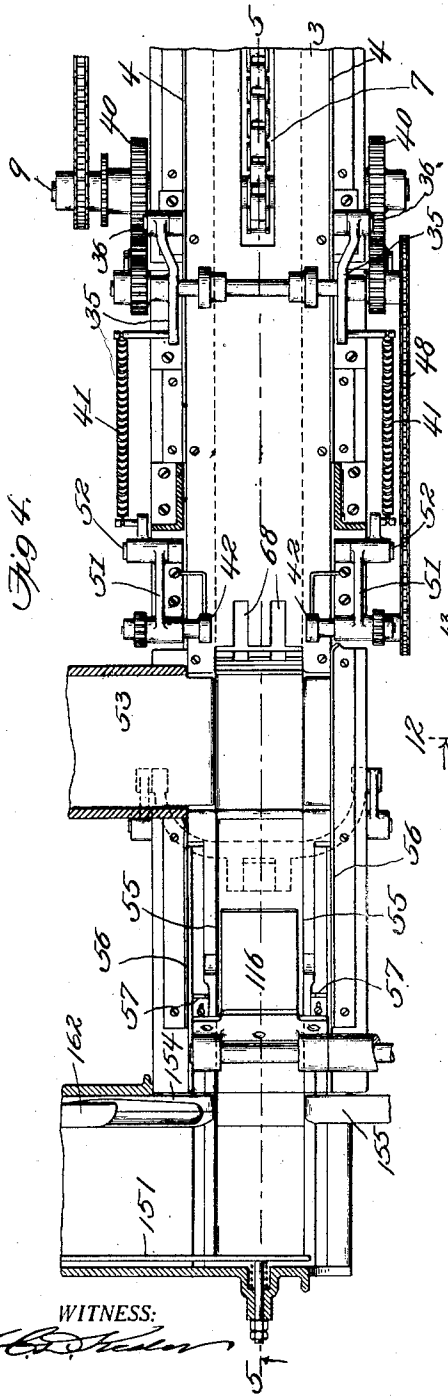


Fig. 4.

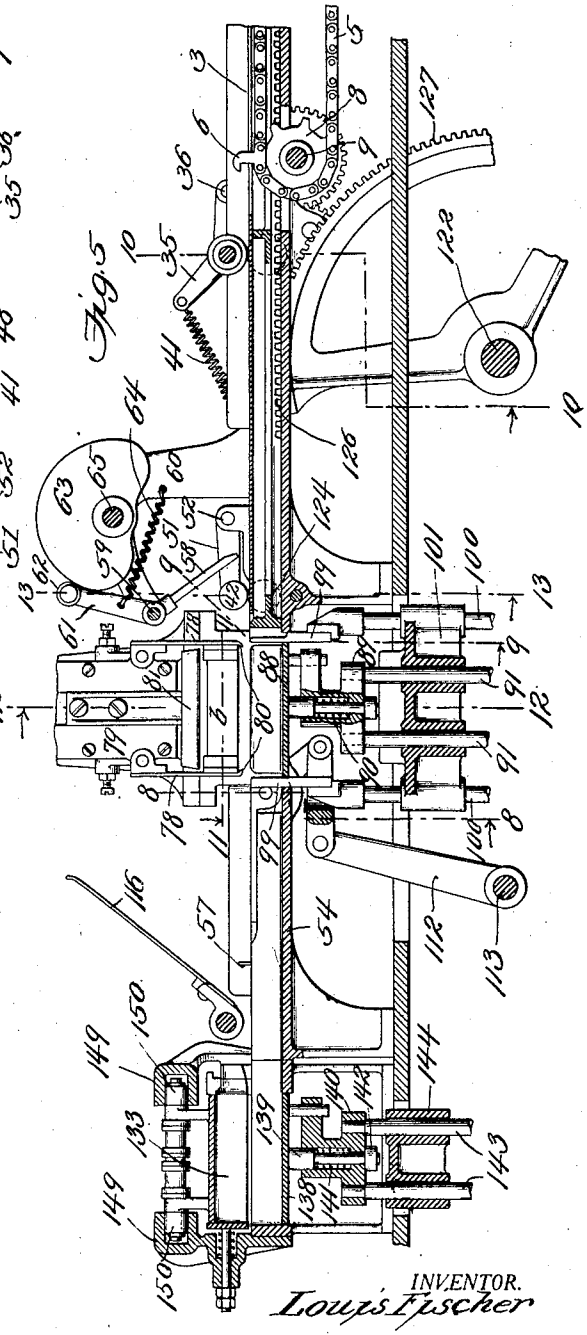


Fig. 5.

WITNESS:

C. A. Bateman

INVENTOR.

Louis Fischer

BY

ATTORNEY.

May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 5

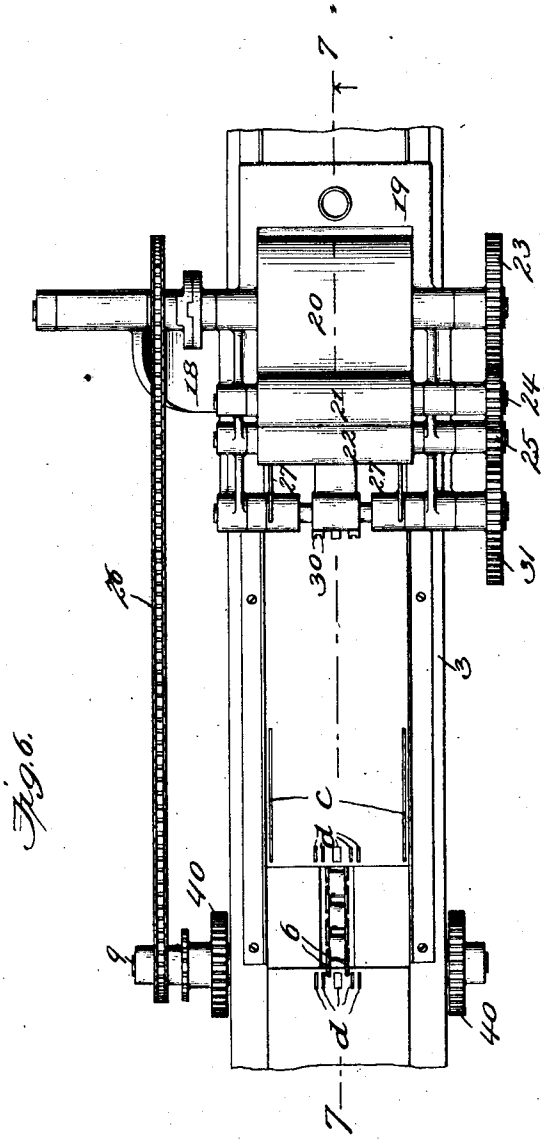


Fig. 6.

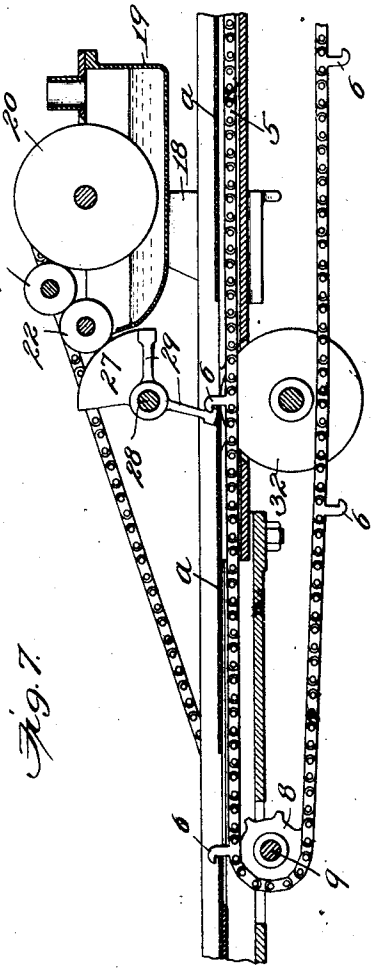


Fig. 7.

WITNESS:

C. A. Bateman

INVENTOR.

Louis Fischer

BY Charles L. Norris

ATTORNEY.

May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 6

Fig. 8.

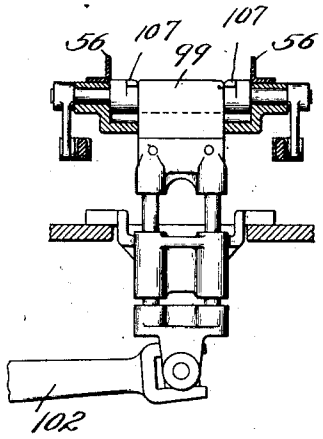


Fig. 9.

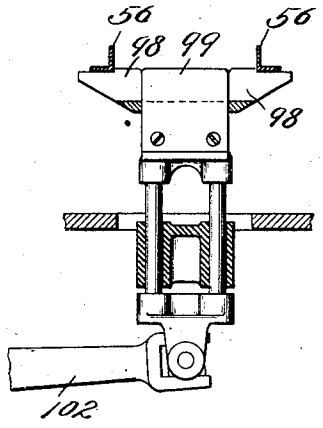


Fig. 10.

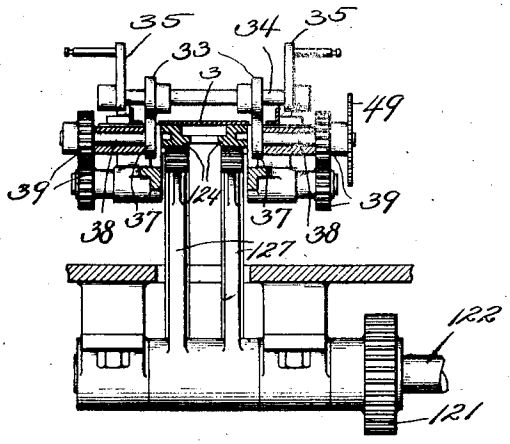
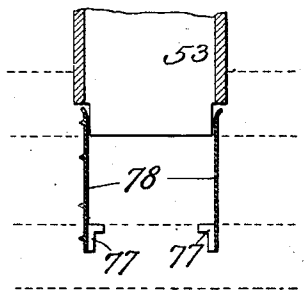


Fig. 11.



WITNESS:

C. D. Bateman

INVENTOR.

Louis Fischer

BY

ATTORNEY.

May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 7

Fig. 12.

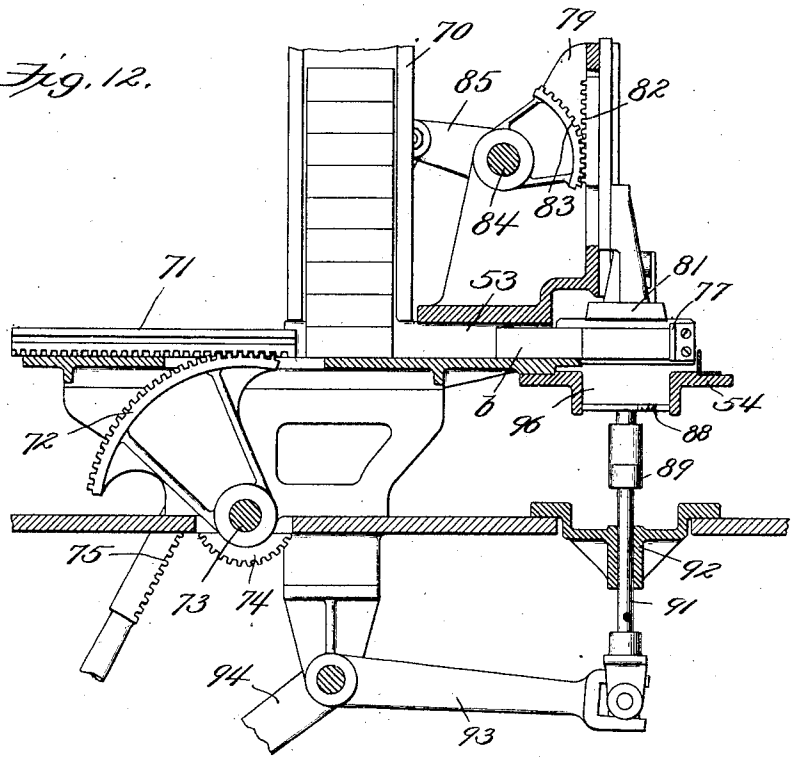
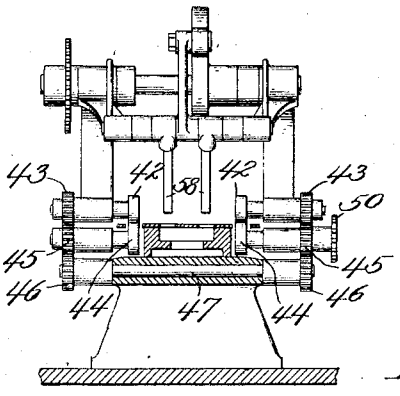


Fig. 13.



WITNESS:

C. A. Bateman

INVENTOR.

Louis Fischer

BY

ATTORNEY.

May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 8

Fig. 14.

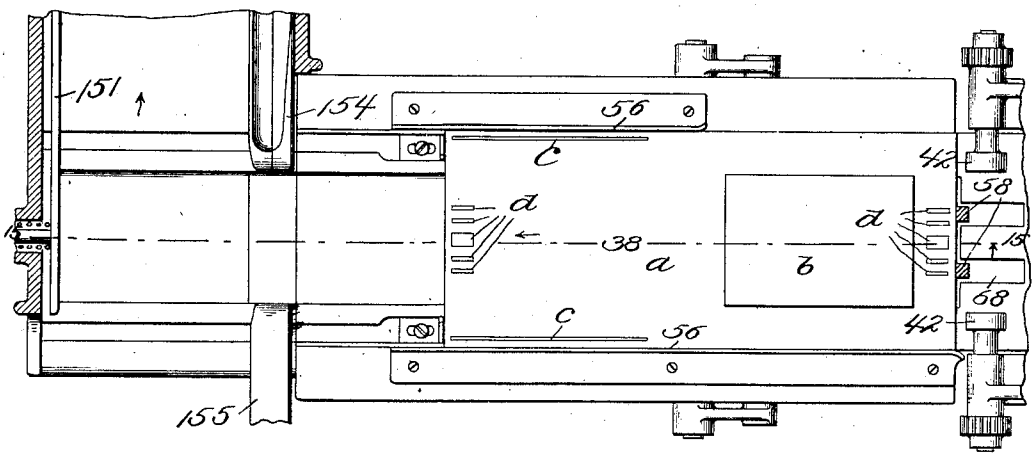
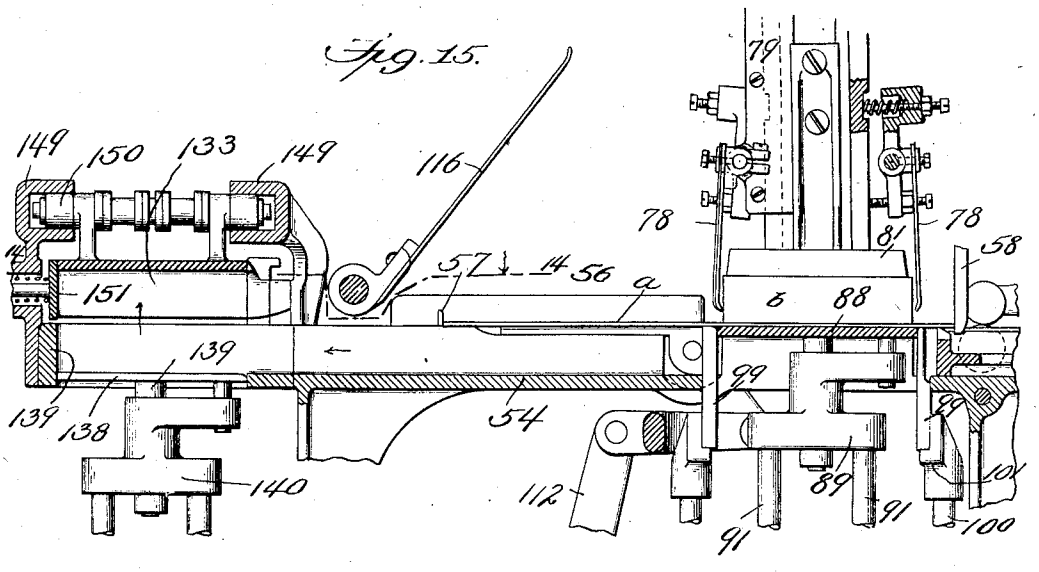


Fig. 15.



WITNESS:

C. A. Bateman

INVENTOR.

Louis Fischer

BY

ATTORNEY.

May 5. 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 9

Fig. 16.

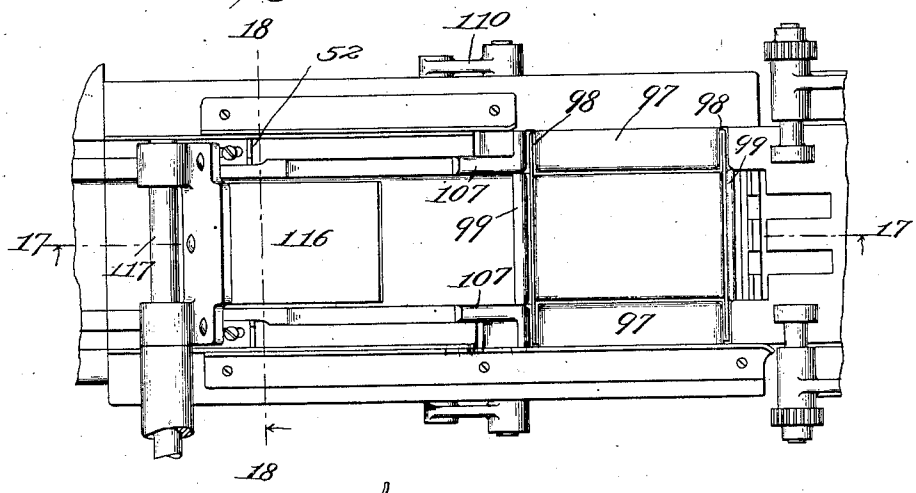


Fig. 17.

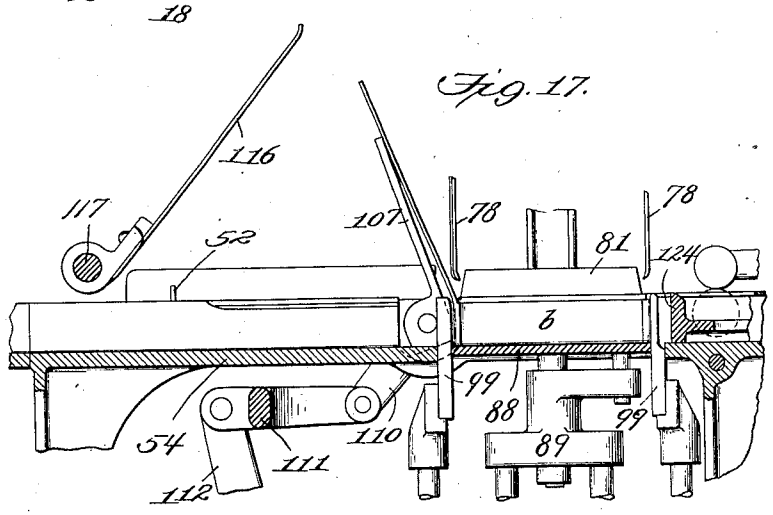


Fig. 18.

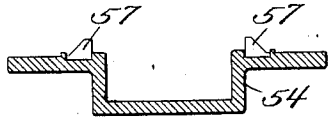
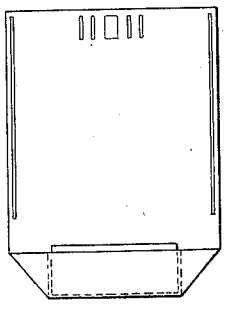


Fig. 19.



WITNESS:

C. A. Bateman

INVENTOR.

Louis Fischer

BY James L. Norris,

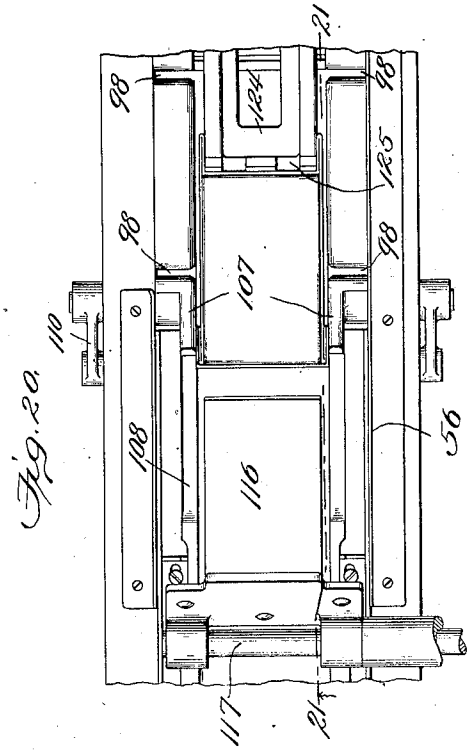
ATTORNEY.

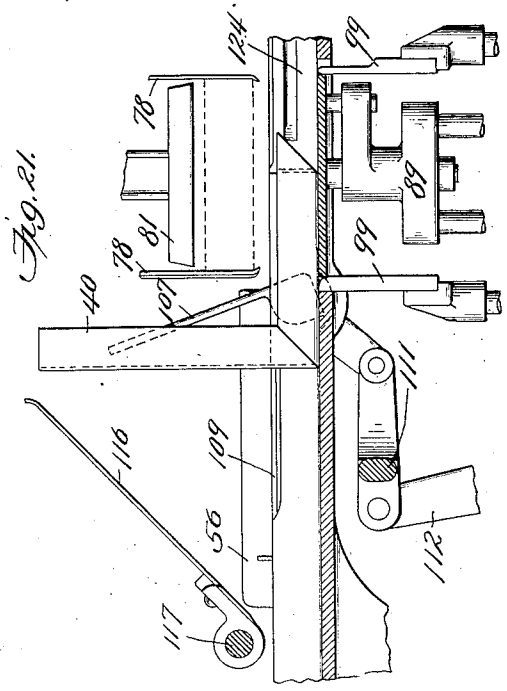
May 5, 1925. 1,536,781

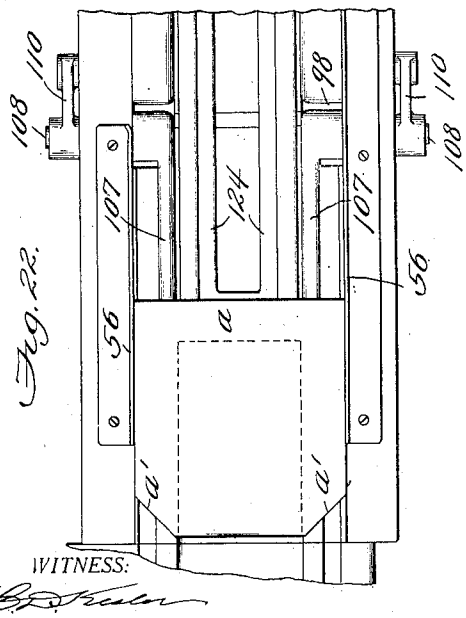
L. FISCHER

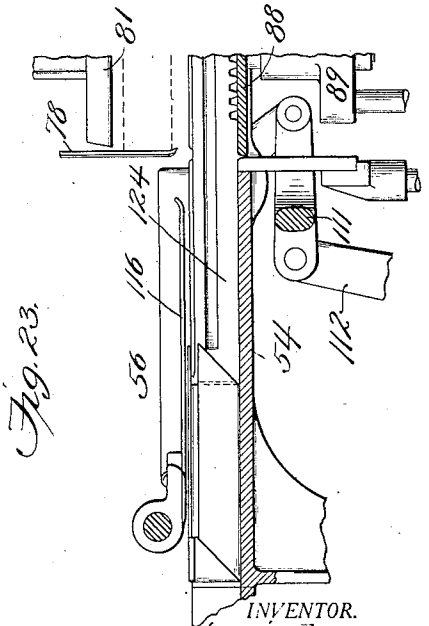
LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 10









WITNESS:

C. A. Bateman

INVENTOR.

Louis Fischer

BY James L. Norris

ATTORNEY.

May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 11

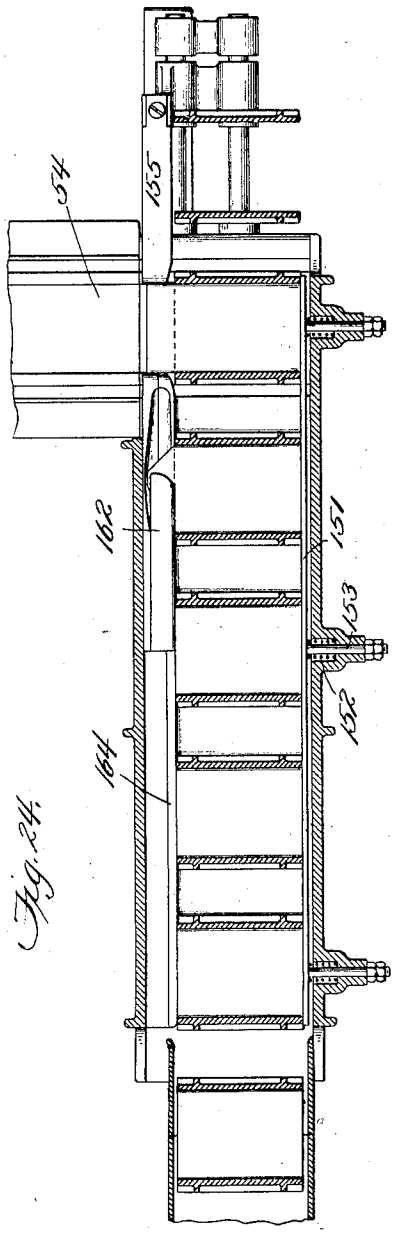


Fig. 24.

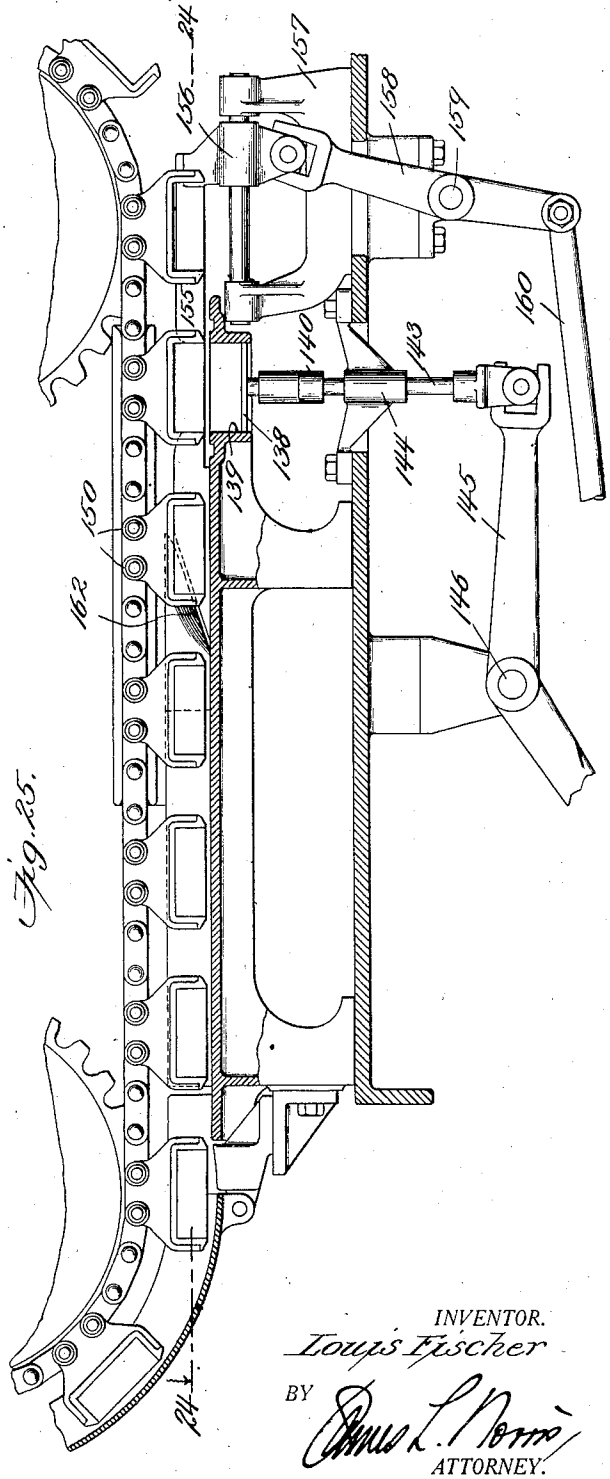


Fig. 25.

WITNESS:

C. C. Bateman.

INVENTOR.

Louis Fischer

BY

James L. Norris

ATTORNEY.

May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

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Fig. 26.

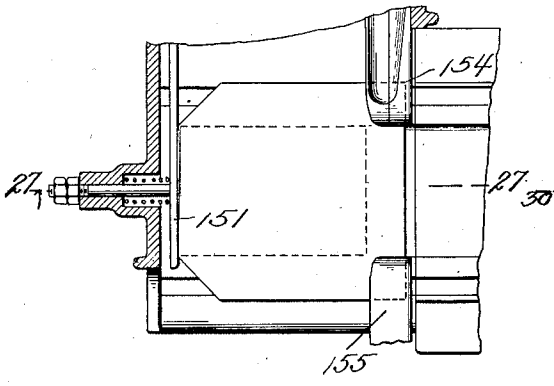


Fig. 29.

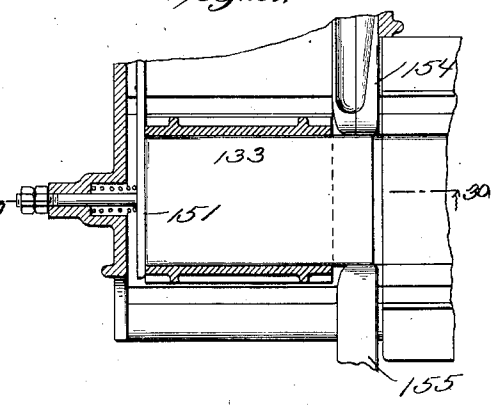


Fig. 27.

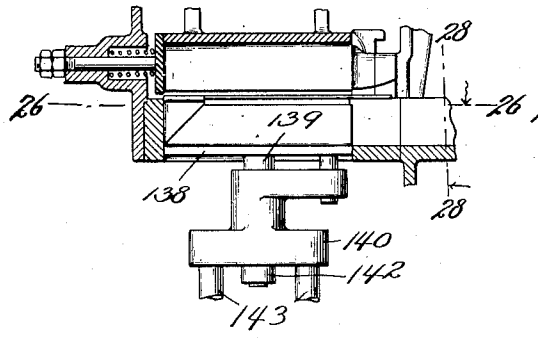


Fig. 30.

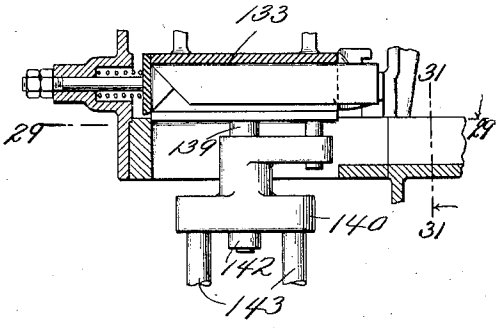


Fig. 28.

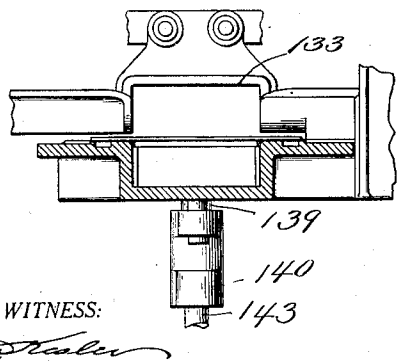
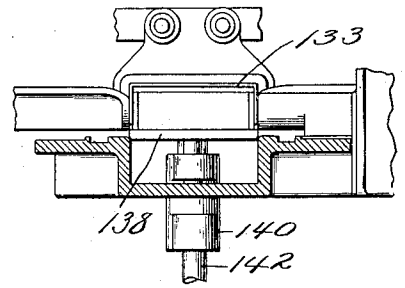


Fig. 31.



WITNESS:

C. A. Bateman

INVENTOR.

Louis Fischer

BY James L. Norris

ATTORNEY.

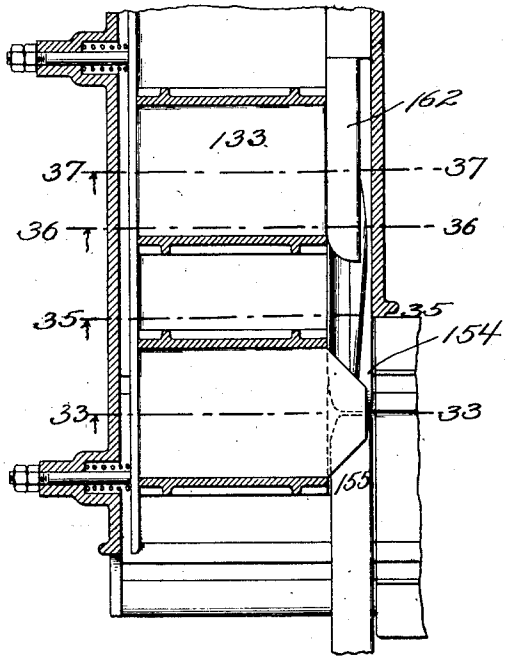
May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 3, 1920 14 Sheets-Sheet 13

Fig. 32.



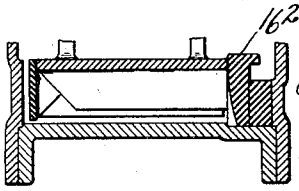


Fig. 37.

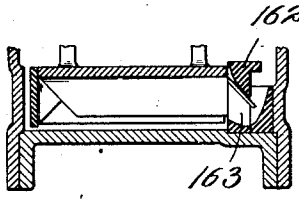


Fig. 36.

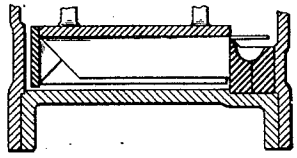


Fig. 35.

Fig. 33.

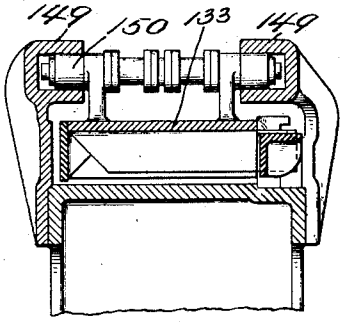
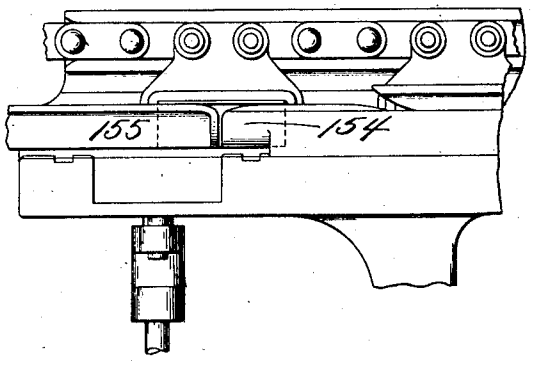


Fig. 34.



WITNESS:

C. A. Bateman

INVENTOR.

Louis Fischer

BY

Louis L. Norris

ATTORNEY.

May 5, 1925. 1,536,781

L. FISCHER

LABELING MACHINE

Filed June 5, 1920 14 Sheets-Sheet 14

Fig. 38.

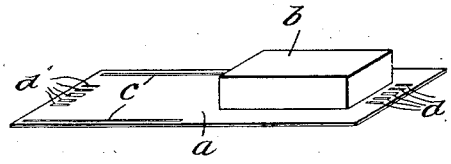


Fig. 40.

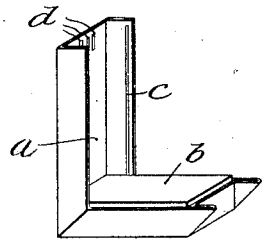


Fig. 39.

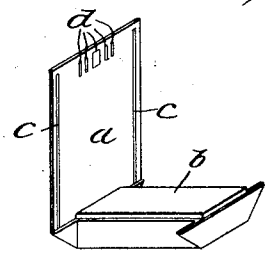


Fig. 42.

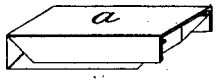


Fig. 41.

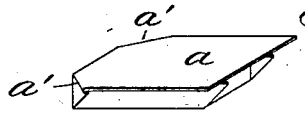


Fig. 44.

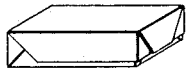
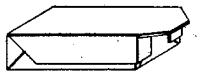


Fig. 43.



WITNESS:

C. A. Butterman

INVENTOR.
Louis Fischer

BY

ATTORNEY.

Patented May 5, 1925. 1,536,781

UNITED STATES PATENT OFFICE.

LOUIS FISCHER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WRIGHT'S AUTOMATIC TOBACCO PACKING MACHINE COMPANY, OF DURHAM, NORTH CAROLINA, A CORPORATION OF WEST VIRGINIA.

LABELING MACHINE.

Application filed June 3, 1920. Serial No. 386,299.

To all whom it may concern:

Be it known that I, LOUIS FISCHER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Labeling Machines, of which the following is a specification.

My present invention relates to improvements in apparatus for applying labels or wrappers to packages or articles of a generally or approximately rectangular form, it being particularly applicable to the labeling or wrapping of packages of tobacco, cigarettes and the like, although it is obviously applicable to other uses which will suggest themselves to those familiar with apparatus of this class.

The primary object of the invention is to provide a novel and generally improved apparatus of this kind which is capable of operating with certainty, rapidity and efficiency in the applying, folding and affixing of the labels or wrappers to the packages or other articles to be labeled or wrapped. To this end, the invention provides novel means for feeding the labels or wrappers and registering them with the packages to insure correct and uniform application of the labels or wrappers, improved means for feeding the packages and for manipulating them in conjunction with the labels or wrappers to cause application of the labels or wrappers to the packages, and novel and improved means for making the successive folds to cause enveloping of the package by the label or wrapper, these successive folds being made in a simple manner and rapidly, by virtue of the fact that they are made mainly by movements of the packages through the machine. A further object of the invention is to provide relatively simple and efficient means for ejecting the labeled or wrapped packages from the machine into a conveyer from which the packages may be removed, or otherwise handled, as circumstances may require.

The present invention provides a machine which is especially adapted to make a label or wrapper which is doubled around one end of the package and is folded to form flaps at the other end of the adjacent sides of the package, the label or wrapper being particularly adapted for use in connection with packages which form pouches to contain tobacco, cigarettes and the like. It will be understood, however, that the invention is applicable to other uses which, in some instances, may involve modification of the folding mechanisms, but will be within the scope of the invention as defined by the claims.

To these and other ends, the invention consists in certain improvements and combinations and arrangements of parts, all as will be hereinafter more fully described, the features of novelty being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing—

Figure 1 is a front elevation of a labeling or wrapping machine constructed in accordance with the preferred embodiment of the invention;

Figure 2 represents a cross section through the machine on the line 2—2 of Figure 1 and looking in the direction of the arrow;

Figure 3 is a top plan view of the machine as shown in Figure 1;

Figure 4 is a detail view partly in plan and partly in horizontal section showing the label or wrapper folding mechanisms and part of the mechanism for feeding the labels or wrappers to the folding mechanisms;

Figure 5 represents a vertical section taken on the line 5—5 of Figure 4 and looking in the direction of the arrow;

Figure 6 is a detail view showing in top plan a portion of the label or wrapper feeding mechanism and the gumming device;

Figure 7 represents a section on the line 7—7 of Figure 6 looking in the direction of the arrow;

Figure 8 represents a section on the line 8—8 of Figure 5, looking in the direction of the arrow and illustrating in detail the left hand first folder;

Figure 9 represents a section on the line 9—9 of Figure 5 looking in the direction of the arrow and showing in detail the right hand first folder;

Figure 10 represents a section on the line 10—10 of Figure 5, looking in the direction of the arrow and showing in detail a part of the label or wrapper feeding mechanism and the package advancing mechanism;

Figure 11 represents a partial section on the line 11—11 of Figure 5, showing in detail a trough or channel through which the packages are fed to the label receiving point and the stops for arresting the advance of the packages;

Figure 12 represents a section on the line 12—12 of Figure 5, looking in the direction of the arrow and showing in detail the package feeding mechanism;

Figure 13 represents a section on the line 13—13 of Figure 5, looking in the direction of the arrow and illustrating in detail a part of the label or wrapper feeding mechanism and the device which registers the label or wrapper with the package;

Figure 14 is a detail view partly in top plan and partly in section on the line 14—14 of Figure 15 showing the package and a label or wrapper registered and in readiness for the first folding operation;

Figure 15 represents a vertical section on the line 15—15 of Figure 14, looking in the direction of the arrow;

Figure 16 is a detail view showing in top plan the folding mechanism which effects the first folds;

Figure 17 represents a vertical longitudinal section on the line 17—17 of Figure 16, looking in the direction of the arrow and showing the package and the label or wrapper after the first folding operation has been performed;

Figure 18 represents a cross section on the line 18—18 of Figure 16, looking in the direction of the arrow and showing in detail the stops which serve to register the label or wrapper when the same is fed to the package.

Figure 19 shows the appearance of the package and the label or wrapper as viewed from the right in Figure 17 after the first folding operation has been performed;

Figure 20 is a detail view in top plan, showing the package and the label or wrapper after the same have been partially advanced to perform the second folding operation;

Figure 21 is a view partly in elevation and partly in section on the line 21—21 of Figure 20, showing the parts in the position which they occupy in Figure 20;

Figure 22 is a view similar to Figure 20 but showing the package and its label or wrapper in a further advanced position at which the third folding operation is performed;

Figure 23 is a view partly in elevation and partly in section showing the package and its label or wrapper, and also the folding mechanism in the position shown in Figure 22;

Figure 24 represents a section on the line 24—24 of Figure 25, looking downwardly and illustrating in detail the mechanism which performs the final folding operations;

Figure 25 represents on an enlarged scale a partial section on the line 25—25 of Figure 1;

Figure 26 represents a section on the line 26—26 of Figure 27, showing the package with its label or wrapper advanced to a position to be received by the conveyer which performs the final folding operations upon the label or wrapper;

Figure 27 represents a section on the line 27—27 of Figure 26;

Figure 28 represents a section on the line 28—28 of Figure 27, looking in the direction of the arrow;

Figure 29 represents a section on the line 29—29 of Figure 30, looking downwardly and showing the appearance of the label or wrapper after the package, together with its label or wrapper, has been transferred to the conveyer and the final side folds have been made;

Figure 30 represents a section on the line 30—30 of Figure 29;

Figure 31 represents a section on the line 31—31 of Figure 30, looking in the direction of the arrow;

Figure 32 represents on an enlarged scale a partial section on the line 24—24 of Figure 25, showing one of the packages and its label or wrapper, after the same have been partially advanced by the conveyer and two of the end folds have been made;

Figure 33 represents a cross section on the line 33—33 of Figure 32;

Figure 34 represents an elevation of the structure shown in Figure 32, as viewed from the right;

Figure 35 represents a cross section on the line 35—35 of Figure 32;

Figure 36 represents a cross section on the line 36—36 of Figure 32;

Figure 37 represents a cross section on the line 37—37 of Figure 32;

Figure 38 is a diagrammatic view showing the package and its label or wrapper assembled and registered preparatory to the first folding operation;

Figure 39 is a diagrammatic view showing the package and its label or wrapper after the first folding operation has been performed;

Figure 40 is a diagrammatic view showing the package and its label or wrapper after the package and wrapper have been advanced a step and the next or second folding operation has been performed;

Figure 41 is a diagrammatic view showing the package and its label or wrapper after the package and its label or wrapper have been advanced one step further and the third folding operation has been performed;

Figure 42 is a diagrammatic view showing the appearance of the label after the

package and its label or wrapper have been transferred to the conveyer and the final side folds have been made;

Figure 43 shows the appearance of the label or wrapper after the two corners of the finally folded end of the label or wrapper have been folded; and

Figure 44 shows the appearance of the finished label or wrapper after the final end fold has been made.

Similar parts are designated by the same reference characters in the several views.

The machine which is shown in the accompanying drawings and will be hereinafter described in detail, is especially adapted for the labeling or wrapping of packages of tobacco, cigarettes and the like. It is to be understood, however, that the machine shown in the present instance is but one embodiment of the invention, that the invention may be applied to other uses for the labeling or wrapping of packages of other kinds and to the labeling or wrapping of articles of various kinds, and that the invention is not confined to the particular construction shown, nor to the particular use described, as equivalent constructions and other uses of the invention are contemplated and these will be included within the scope of the claims.

The machine comprises preferably a table 1 supported on a suitable framework or base 2, the table serving to support the various mechanisms of the machine, on its upper side, and providing space beneath it for the necessary cams and other operating devices for the different mechanisms. The labels or wrappers are fed to the machine, from any suitable sheet feeding mechanism, by a table 3 along which the labels or wrappers are adapted to travel, while resting flatwise on the label feeding table, between a pair of suitably spaced flanges or guides 4, the labels or wrappers being advanced in the present instance by an endless chain 5 which has hooks 6 thereon, which project upwardly through and operate longitudinally in a slot 7 formed in the label feeding table 3. The chain 5 passes over a sprocket wheel 8, fixed to a shaft 9, the latter being journalled in a part of the stationary frame of the machine and this shaft 9 is driven by a chain 10 which in turn is driven from the shaft 11, the latter being preferably journalled in suitable bearings in the lower frame of the machine and, as shown, it is driven by the gearing 12 from the main shaft 13, the latter being also preferably journalled in the lower frame of the machine and being provided with a pulley or equivalent means 14, by which it receives power for the operation of the various mechanisms of the machine. This main shaft 13 preferably carries a number of the cams which serve to actuate different mechanisms of the machine and all mechanisms of the machine are actuated either directly or indirectly from this main shaft 13. The main shaft is preferably provided with a clutch 15, which may be of any suitable form to enable the machine to be started and stopped at will, the clutch in the present instance being controlled from a clutch lever 16 and a hand wheel 17 is preferably fixed on the main shaft to enable it to be rotated by hand into any desired position while the clutch is disengaged.

The chain 5, the hooks of which engage behind the labels or wrappers as they are delivered to the label feeding table 3 from a suitable sheet feeding mechanism, or in any other suitable way, conducts the labels beneath or past a gumming device which is shown in detail in Figures 6 and 7. By referring to Figure 38, wherein a represents a label or wrapper and b a package or article to be labeled or wrapped, it will be understood that the gumming device applies the longitudinal lines of gum c and the spots of gum d to the upper side of each label or wrapper during its advance past the gumming device. Preferably, and as shown in Figures 6 and 7, the gumming device is mounted above the label or wrapper feeding table 3, it being shown in the present instance as mounted on a bracket 18 fastened to the label feeding table, or other suitable support, the bracket supporting a gum pot 19 and the cooperative devices which receive the gum from the pot and apply it to the appropriate parts of the label or wrapper. As shown, a main gum roll 20 is journalled in or above the gum pot, its periphery being constantly emersed in the gum contained in the pot and in contact with a gum distributing roll 21, this roll 21 serving to transfer the gum from it to a second gum roll 22. The gum rolls 20, 21 and 22 are preferably driven in unison with their contacting peripheries moving in the same direction and at the same peripheral speed by a gear 23 fixed on the shaft of the gum roll 20, intermeshing pinions 24 and 25 fixed on the shafts of the gum rolls 21 and 22 and a chain or equivalent driving device 26 which connects the shaft for the main gum roll 20 to the shaft 9, the latter being driven, as previously described, from the shaft 11. The gum or adhesive which is applied to the labels or wrappers is removed from the gum roll 22, the gum applying device comprising preferably a pair of segmental plates 27 which are fixed on and concentric with a shaft 28, the peripheral lengths of these plates being equal to the lines of gum c which are to be applied to the longitudinal edges of the label or wrapper. The gum applying device also comprises a pair of arms 29, which are also fixed to the shaft 28 and are provided with projections 30 on their

peripheries, which are adapted to contact with the periphery of the gum roll 22 to take up gum therefrom and to contact with the upper surface of the label or wrapper to apply the gum spots *d* thereto adjacent to its ends. The shaft 28 carrying the gum applying devices is driven in the present instance by a gear 31 which meshes with the gear 25 of the gum roll 22, and the speed of rotation of the shaft 28 is such that the peripheral speed of the gum applying plates 27 and arms 29 will be equal to the speed at which the label or wrapper is advanced. In order to facilitate the application of the gum to the labels or wrappers without retarding, or otherwise interfering with the advance of the labels, the surface of the label feeding table on which the labels or wrappers rest during their advance, may be cut away at the point where the gum is applied, and a smooth surfaced roller 32 may set opposite to the gum applying device to support the label and to sustain the pressure applied to it by the gum applying device. This roller 32 is preferably mounted to rotate at the same speed as that of the gum applying device, it being driven from the shaft 28 by the gear 32^a which engages the gear 31. It will be understood that during the advance of each label or wrapper along the label feeding table, the same will be supplied with the longitudinal lines of gum *c* and the gum spots *d* adjacent to its ends.

The label feeding table is provided with devices which pick up the labels or wrappers and advance them to the package receiving position. These label advancing devices, as shown in Figures 4, 5, 10 and 13, consists of pairs of friction rollers between which the labels or wrappers pass. One pair of friction rollers comprises the upper rollers 33 which are fixed on the common shaft 34, the end of this shaft being journalled in arms 35 which are pivoted to the opposite sides of the label feeding table by the pivot pins 36, so that these upper rollers 33 are capable of moving vertically, and these upper rollers 33 bear upon lower friction rollers 37, the latter being fixed on shafts 38 journalled in fixed bearings at the underside of the label feeding table and are connected at their outer ends by gearing 39, which gearing is driven by gears 40 on the shaft 9. By this arrangement, the lower friction rollers 37 are driven at the same peripheral speed and in the proper direction to advance a label or wrapper inserted between them and the upper rollers 33, and the necessary pressure between the upper and lower feed rollers is produced and maintained by tension springs 41, which are connected to the arms 35 on which the upper rollers 33 are carried. The meeting peripheries of the upper and lower rollers 33 and 37 are located at approximately the plane of the upper surface of the label feeding table 3, in consequence of which the forward end of a label advanced by the chain 5, will enter between the upper and lower rollers and by virtue of the rotation of these rollers, the label will be picked up from the chain 5 and it will be advanced by the friction rollers 33 and 37. At a further point along the length of the label feeding table is located another pair of upper and lower feed rollers which receive the label or wrapper from the feed rollers 33 and 37 and effect the further advance of the label. As shown in detail in Figure 13, these latter feed rollers comprise upper friction rollers 42, the outer ends of the shafts of which are provided with pinions 43, and lower friction rollers 44, the outer ends of the shafts of which are provided with pinions 45 which mesh with the pinions 43, whereby the upper and lower feed rollers 42 and 44 respectively, will be driven in unison, the pinions 45 meshing with pinions 46 fixed on the opposite ends of a common or connecting shaft 47. Motion may be transmitted to the feed rollers 42 and 44 by a chain 48 which cooperates with sprocket wheels 49 and 50, the feed rollers 42 and 44 being driven at the same peripheral speed as the feed rollers 33 and 37, and the requisite pressure between the upper feed rollers 42 and the lower feed rollers 44 is produced and maintained preferably by the springs 41, which, as shown in Figure 4, are connected to brackets 51 which are pivoted on pins 52 at opposite sides of the label feeding table and carry the upper feed rollers 42.

The feed rollers 42 and 44 advance the labels or wrappers to the point where the package or article to be labeled or wrapped is introduced. This point is beyond the end of the label feeding table and at the delivery end of a trough or channel 53 (Figure 4) along or through which the packages or articles to be labeled are advanced successively. A channel 54 along which the packages and their labels are advanced, after the labels have been applied to the packages, forms preferably a continuation of the label feeding table, it having side walls 55 which form the channel through which the package advances, and upstanding flanges 56 which are in effect continuations of the flanges 4 of the label feeding table, these flanges 56 serving to guide the labels by their longitudinal edges as they are finally brought into the label applying position, and stops 57 are provided on the table 54 to engage the forward edge of the label and to register the label with the packages so that during the subsequent folding operation, the labels will be correctly and uniformly folded upon or around the packages. The final feeding movement of each label or wrapper against the stops 57 to secure

this registration, is effected by arms 58 which are fixed to a shaft 59, journalled in a suitable stationary bracket 60, this shaft having an arm 61 fixed thereto, which carries a roller or projection 62, which cooperates with a cam 63. The roller or projection 62 is held against the cam 63 by a spring 64, and the cam shaft 65 is driven at appropriate speed by a chain 66, this chain being driven from a sprocket wheel 67 on the shaft 11 (Figure 3). The cam 63 is so shaped and it rotates in such timed relation to the feed of the labels or wrappers, that the fingers 58 will be elevated or above the path of the label during its advance along the label feeding table until the label has completely passed between the feed rollers 42 and 44. The rotation of the cam 63 will then permit the fingers 58, acting under the influence of the spring 64, to move forward and downwardly in an arc which carries them to or slightly below the surface of the label feeding table, the label supporting surface of the latter being slotted, as at 68, to permit the tips of these fingers to pass slightly below the surface of the label supporting table and to assume positions behind the rear edge of the label. These fingers 58 then swing forward under the influence of the spring 64 and under the control of the cam 63 which acts as a gage to limit the extent to which these fingers may advance the label or wrapper. When the label or wrapper has been advanced to this extent, its forward edge will rest against the stops 57, the label will, therefore, be accurately positioned in an endwise direction between the stops 57 and the fingers 58, and it will also be accurately positioned laterally between the upstanding flanges 56. The stops 57 may be adjustable to accommodate labels or wrappers of different lengths or to facilitate adjustment of the machine to secure proper registration between the labels and the packages. As shown, these stops are secured in position by slotted portions through which fastening screws extend.

The packages or articles to be labeled are advanced to the label applying position through the trough or channel 53, as shown in Figures 4 and 12. The trough or channel 53 leads from a hopper or magazine 70, in which the packages or articles to be labeled are stacked, the magazine shown being adapted to receive a stack of the packages resting by gravity, one upon another with their flat sides in contact, the trough or channel 53 leading from the bottom of the magazine and being in the plane of the lowermost package in the magazine. Removal of the packages from the magazine and the advancing of the packages to the point where the labels or wrappers are applied thereto, is effected by a plunger 71 (Figure 12), which is mounted to reciprocate longitudinally in the trough 53 and transversely across the bottom of the magazine. This plunger, as shown, is provided with a rack with which a gear segment 72 cooperates, this gear segment being fixed on a shaft 73 to which a pinion 74 is fixed, and a rack 75 cooperates with the pinion 74 to transmit a to-and-fro movement to the plunger 71, as the rack 75 is reciprocated by its cam 76 on the main shaft 13. Each time the plunger 71 is retracted into its position shown in Figure 12, the stack of packages in the magazine 70 will drop, bringing the lowermost package upon the bottom of the trough 53; and each forward stroke of the plunger 71 will cause it to engage the lowermost package in the magazine, push this package from beneath the stack in the magazine to bring this package up to the package in the trough 53 which occupies the position represented by the package *b* (Figure 12), and the final portion of the forward stroke of the plunger will cause the package *b*, which is ahead of the package engaged by the plunger, to be advanced to the label applying position. The advancing movement of this package to the label applying position is limited by a pair of stops 77, which are located beyond the trough or channel 73, as will appear from Figures 11 and 12, and during the final movement of the package into the label applying position, the package is guided laterally by a pair of spaced plates 78. The plates 78 preferably support the limit stops 77 for the package, and these plates are mounted on a stationary bracket or support 79 which overhang the path of the label or wrapper. Preferably, and as shown, these plates 78 are capable of yielding to some extent and have a tendency to move toward one another, in order that they may accommodate themselves to the packages which are received between them and support the packages between them. The lower edges of the plates 78 are also preferably inturned, as at 80, (Figure 5), so that the package may be supported between these plates without danger of dropping.

A plunger 81 (Figures 5 and 12) is mounted in a position above the package, while the same is supported by the plates 78, this plunger being mounted to reciprocate vertically between the plates 78, it being guided by the bracket 79 and provided with a rack 82 which meshes with a gear sector 83, the shaft 84 on which the gear sector is fixed being rocked at appropriate intervals to cause vertical reciprocation of the plunger 81, by the arm 85 which is fixed to the shaft 84 and is operated by a rod 86, the latter being actuated from a cam 87 on the main shaft 13. A companion plunger or platen 88 is mounted opposite to the plunger 81 and it occupies a position beneath the pack-

age when the same is supported by the plates 78. The plunger 88 is supported yieldingly from a cross head 89, by a spring 90, this cross head being connected by rods 91 which extend through a guide 92 to an actuating arm 93, the latter being actuated by an arm 94 which cooperates with a cam 95, which is fixed on the main shaft 13. The lower plunger or platen 88 operates through an opening or passage-way 96 which is formed in the table 54, this opening or passage-way being directly beneath the package supported by the plates 78 and beneath the plane in which the label or wrapper lies. This opening or passage-way 96 for the plunger 88 also intersects the channel in the table 54 through which the package advances after the label or wrapper has been applied thereto.

In the operation of the machine, the upper plunger 81 descends into engagement with the package held by the plates 78 and the lower plunger 88 concurrently ascends until it comes against the underside of the label or wrapper *a*, as will appear particularly from Figure 15, the upper plunger 81 moving into sufficiently close proximity to the lower plunger 88 as to cause the lower plunger 88 to yield downwardly to some extent relatively to its supporting cross head 89, whereby the package *b* and the label or wrapper *a* are pressed firmly together, the label or wrapper at this time being held in accurate registration with the package by the stops 57 and registering fingers 58, as well as by the side flanges 56. Thereafter the upper and lower plungers 81 and 88 respectively descend in unison, the package being forced downwardly from its position between the plates 78 and during this movement of the package the first folding operation is performed. These first folds in the package are produced by a pair of relatively fixed folders 97 (Figures 16 and 17) which, as shown, are in the form of abutments fixed at opposite sides of the opening 96, these folders having recesses 98 at their ends which receive ears which are produced at the four corners of the package incidental to the first folding operation, the folders 97 serving to fold upwardly the longitudinal edges of the label or wrapper during the descent of the package and label, and a pair of end folders 99 concurrently fold the wrapper up against the ends of the package. The end folders 99, however, are movable. During the descent of the package incidental to the first folding operation, these end folders are held in elevated position, as shown in Figure 17, but after the package has descended and the first folding operation has been completed, these end folders 99 descend to points at or below the level of the bottom of the package channel in the table 54, in order to permit unobstructed transfer of the package and the partially folded label thereon from its position between the cooperating plungers. These end folders may be actuated at appropriate intervals in any suitable way, they being mounted in the present instance on rods 100 which reciprocate through a guide 101 which also serves as a guide for the rods 91 of the cross heads 89, and the lower ends of the rods 100 of the end folders are connected by arms 102 to a rock shaft 103 (Figure 1), this rock shaft being journalled in suitable bearings 104 on the underside of the main table 1 and provided at one end with an arm or crank 105 which cooperate with a cam 106 which is arranged on the main shaft 13.

It is to be observed that the package *b* (Figures 14 and 15) is placed on the label or wrapper toward one end thereof. In consequence, the first folding operation wraps or folds substantially one-half of the label or wrapper upon the package, leaving the remainder of the label free or unfolded. Means is preferably provided for moving this free or unattached end of the label or wrapper into upstanding position to correspond with the upward fold produced at the respective end of the package, such means, according to the present invention, also performing the function of creasing or bending the vertical or longitudinal edges of this upstanding portion of the label or wrapper, as indicated in Figure 21, preparatory to the folding down of this portion of the label or wrapper onto the top of the package, as indicated in Figures 22 and 23. Preferably and as shown, this device comprises a pair of fingers 107 which are fixed on shafts 108 journalled in the table 54 at opposite sides of the package channel therein, these fingers being spaced apart a distance slightly greater than the width of the package so that when these fingers project upwardly, as shown in Figure 21, the upstanding end of the label or wrapper will be forced between these fingers, and in passing between these fingers, the longitudinal or vertical edges of the upstanding portion of the label or wrapper will be creased or folded on lines corresponding substantially to the corners or edges of the package to which they are to be applied. These fingers are adapted to fit into recesses 109 formed in the tops of the side walls of the package channel in the table 54 and they are folded down into these recesses at the time the label or wrapper is fed into a position to receive the package. The fingers are provided with means for swinging them upwardly into substantially the position shown in Figure 21, while the package is forced downwardly by the concurrent descent of the plungers 81 and 88, the upward swing of the fingers 107 carrying the flat unattached or unfolded end of

the label upwardly to conform substantially with the upward folding of the label or wrapper at the left hand end of the package (Figure 21) as caused by the left hand end folder 99. These fingers 107 remain in their upwardly projected position, preferably at a slight inclination, as shown in Figure 21, while the package with the partially folded label or wrapper thereon is advanced, as a consequence of which the vertical or longitudinal edges of this upstanding portion of the label or wrapper will be bent or creased along lines corresponding substantially with the top edges of the package. During the further advance of the package and the partially folded label, these fingers 107 descend into their recesses 109. Different means may be provided for operating the fingers 107 at appropriate times and in unison. Preferably and as shown, the shaft 108 which carry the fingers, are provided with crank arms 110 and these crank arms are connected to a common yoke 111. The yoke is connected to a lever 112 which is pivoted at 113 to a fixed bracket on the underside of the main table and is provided with a roller or projection 114 which cooperates with a cam 115 on the main shaft 13.

Means is provided for folding this upstanding unattached end of the label or wrapper down upon the package. Such means consists in the present instance of a plate 116 which is fixed to a shaft 117 located at a point beyond the pivotal mounting for the fingers 107, the plate being somewhat narrower than the distance between the fingers so that the plate may descend without interference between it and the fingers. The plate 116 is preferably mounted so that it can descend into a position in parallelism with and slightly above the tops of the said walls of the package channel in the table 54. During this descent of the plate 116, the upstanding unattached end of the label, as shown in Figure 21, is engaged and folded downwardly upon the top of the package, as shown substantially in Figures 22 and 23. During this folding operation, the label or wrapper is creased along the diagonal lines a' (Figure 22), the remainder of this end of the label, however, being flattened out so that its margins overlap the side walls of the package channel. The plate 116 remains in its lowered position, as shown substantially in Figure 23, during the advance of the package, the marginal portions of this end of the label or wrapper passing the registering stops 57 without difficulty, because the plate 116 presses down only the central portion of the top fold of the label. Different means may be provided for actuating the plate 116 at appropriate intervals. As shown, the shaft 117 for this plate is provided with a crank arm 118 and this crank arm is connected by a rod 119 (Figures 1 and 3) to a reciprocatory rack 120, the latter meshing with a pinion 121 fixed on a shaft 122 and also being actuated by a cam 123 which is fixed on the shaft 11.

The means preferably employed for advancing the package from its position between the plungers 81 and 88 and through the package channel in the table 54 comprises preferably a slide 124, shown clearly in Figure 5, which reciprocates in a guideway beneath the label supporting surface of the label feeding table 3, this slide having an end 125 (Figure 20) which is slightly smaller than the end of the package and is adapted to fit squarely against the right hand end of the package (Figure 20). The slide in the present instance is provided with a rack 126 with which a gear segment 127 cooperates, this gear segment being fixed on the shaft 122. During the descent of the package, under the control of the upper and lower plungers 81 and 88, this slide 124 is in retracted position, as shown in Figure 5. After the descent of the package has taken place, and the end folders 99 have been retracted or lowered, the slide 124 is caused to advance or shift toward the left in Figure 5, its end 125 fitting against the right hand end of the package against which one fold of the lower portion of the label has been made, as is shown in Figure 20. At the completion of the first folding operation, the corners of the label or wrapper will form ears which project laterally into the recesses 98, as is shown in Figure 16. The initial part of the advance of the package, under the influence of the slide 124, however, will cause these ears to be drawn out of the recesses 98 and to be folded or bent into positions longitudinally of the package, the ears at the left end of the package being folded against the sides of the package, while the ears at the right hand end of the package will be folded against the opposite sides of the slide 124, as is shown in Figures 20 and 21. These ears remain substantially in such positions during the advance of the package and wrapper through the channel in the table 54, and when the upper half of the label or wrapper is folded down upon the top of the package, by the plate 116, as previously described, the label or wrapper is creased or folded on the diagonal line a' (Figure 22).

The final folding of the label or wrapper is preferably effected after the packages with the partially folded labels or wrappers thereon have been transferred to a conveyer which is provided with molds or pockets to receive the packages. The conveyer shown in the present instance and which is preferably used, is in the form of an endless chain 128 which passes over a pair of sprocket

wheels 129 and 130, these sprocket wheels being mounted on shafts 131 and 132, the axes of which are parallel and arranged respectively toward the front and rear of the machine beyond the table 54. The conveyer carries a number of longitudinally spaced molds or pockets 133 which conform substantially in shape and size to the finished packages to be produced. The conveyer is provided with suitable means for advancing it step-by-step or intermittently, in order to position the molds or pockets thereon successively in position to receive the packages. As shown, the conveyer is operated through a Geneva movement 134 which may be of any well known construction, the Geneva movement being driven from a shaft 135, which shaft in turn is driven by a chain 136 which cooperates with a sprocket wheel 137 on the main shaft 13. The conveyer is so positioned that the molds or pockets are movable in a direction transversely of the package channel in the table 54 and the molds or pockets are in inverted position at the time they receive the packages with the partially folded labels or wrappers, in consequence of which the step of transferring the packages from the channel of the table 54 to the mold or pocket in the conveyer performs one of the folding operations. As shown in Figures 4, 5, 14, 15, 24 to 34 inclusive, the conveyer is mounted so that the molds or pockets on the understretch thereof pass in inverted position across the end of the package channel in the table 54, it being understood that the Geneva movement advances the conveyer step-by-step, in the direction indicated by the arrow in Figure 25, bringing the molds or pockets on the conveyer successively into registration with the package channel in the table 54. The packages having their partially folded labels thereon are pushed to the end of the package channel in the table 54, as illustrated in Figures 26 and 27, by the slide 124, after which the slide is retracted to its normal position, as shown in Figure 5. The package is transferred from the channel in the table 54 to a mold or pocket on the conveyer by a plunger 138 (Figures 5 and 25), this plunger reciprocating vertically through an opening 139 formed in the bottom of the table 54, the plunger being in its lower position and substantially flush with the bottom of the channel in the table 54 at the time the package is brought into a position beneath the conveyer, after which the plunger is caused to ascend, thus forcing the package upwardly into the mold or pocket of the conveyer, which at this time is properly positioned to receive it. Owing to the fact that the mold or pocket 133 of the conveyer, is of a width substantially equal to the width of the package and that the longitudinal edges of the upper half of the label at the time the package is brought into position beneath the mold or pocket of the conveyer, are in outstanding position, as shown in Figures 26 and 28, the forcing of the package upwardly into the mold or pocket 133 of the conveyer causes these outstanding longitudinal edges of the label or wrapper to be folded down against the opposite longitudinal sides of the package, as shown in Figures 30 and 31. After the plunger 138 has transferred the package to the conveyer, this plunger descends to its normal position, as shown in Figure 5. The plunger 138 preferably operates upon the package with a yielding pressure. As shown in Figure 5, this plunger has a stem 139 which is fitted into the top of the cross head 140 and is pressed upwardly by a compression spring 141, the movement of the plunger relatively to the cross head being limited by a collar 142 which is fixed to the lower end of the stem below the cross head. The cross head is connected to rods 143 which operate through a guide 144 and the lower ends of these rods are connected to a lever 145 which is pivoted to a bracket on the underside of the main table, the lever 145 having an arm 147 which is actuated at appropriate intervals and to the proper extent by a cam 148 fixed on the main shaft 13. In order to insure proper registration between each mold or pocket and the package channel of the table 54 and to sustain the thrust imposed upon the conveyer by the plunger 138, and furthermore, to insure the correct movement of the package past the end folding devices, as the conveyer advances, a pair of rails or tracks 149 are provided which are secured in fixed relation to the table 54 and receive rollers or projections 150 on opposite sides of the conveyer, two pairs of these rollers or projections being preferably provided for each mold or pocket to steady and to maintain a correct relation between each mold and the end folding devices, while the conveyer carries packages past these end folding devices. Means is also provided for pressing the packages in the molds endwise or toward the end folding devices, such means comprising preferably a bar 151 (Figure 24) which is pressed against the molds or pockets, and the packages contained therein by a suitable number of springs 152, the bar being held in proper position and its movement limited by a suitable number of studs 153 which may be provided with adjusting nuts, as shown.

The corners of the wrapper, at the unfolded end thereof are folded by a pair of end folders 154 and 155 (Figures 4, 24, 26, 28, 29, 31 and 32). The end folder 154 is composed of a projection, which is preferably bevelled, as shown, and is located at or immediately beyond the end of the package

channel in the table 54 so that when the conveyer advances toward the left in Figure 25, the left hand corner of the wrapper will be folded by this stationary end folder. The folder 155 however, is reciprocatory, it being connected to a slide 156 guided on a stationary bracket 157, the slide being reciprocated by the lever 158 which is pivoted on a fixed axis 159 and is connected by a rod 160 to a cam 161 on the main shaft 13. This corner or end folder 155 is shifted toward the left in Figures 24 and 25 or into the position shown in Figures 32 and 34, after the package has been introduced into the mold in the conveyer, one corner of the label or wrapper at the unfolded end of the package being thereby folded, and this movable corner or end folder 155 remains in its actuated position in close proximity to the stationary corner or end folder 154, as shown in Figures 32 and 44 during the subsequent advance of the conveyer. This advance of the conveyer causes the folder 154 to fold the other or complemental corner of the label or wrapper during the movement of the package, after which the folder 155 is retracted to its normal position, as shown in Figures 24 and 25. The remaining outstanding or unfolded end of the label or wrapper, which appears in Figures 32, 33, 35, is folded by a stationary folder 162 (Figures 24, 25, 32, 36 and 37), which overlies a recess 163 into which this flap of the label is received during its folding.

It will be understood that the left hand gum spots *d* (Figure 8) will cause the respective end of the label, when folded against the corresponding end of the package, to adhere thereto, that the longitudinal lines of gum *c* will cause the longitudinal edges of the upper portion of the label to adhere to the longitudinal folds of the lower portion of the label, and that the gum spots *d*, applied to the right hand end of the label, will cause the finally folded end portion of the label to adhere to the previously folded end portion of the label. While the packages are contained in the molds or pockets on the conveyer, the longitudinal folds of the label or wrapper will be maintained under pressure and this will cause affixing of these folds, due to setting of the gum. The finally folded end portion of the label is similarly maintained under pressure to secure affixing thereof by a bar or rail 164, against which this finally folded part of the label is pressed by the bar or rail 151. Permanent adherence of the folds is thereby insured.

The labeled or wrapped packages may be removed from the conveyer by any suitable means. Preferably an ejector 165 is employed which removes the labeled packages as they pass along the upper stretch of the conveyer. The ejector, as shown, comprises rods 166 which reciprocate in guides formed by a stationary bracket 167, and the ejector is actuated by a forked arm 168 which is mounted on a shaft 169, the latter being provided with a pinion 170 which cooperates with a vertically movable rack 171, the rack being actuated at appropriate intervals by a rod 172, the lower end of which is acted on by a cam 173 on the main shaft 13. This ejector occupies its retracted position, as shown in Figures 1 and 3, during the advancing movements of the conveyer and it is operative longitudinally through the molds or pockets 133 on the conveyer, whereby the labeled packages therein are forced into a suitable receptacle. As shown, the packages are transferred from the conveyer into a trough or passage-way 174, which is so constructed as to impose and maintain pressure upon the package to assist in the affixing of the gummed or folded portions of the packages. This trough or passage-way, as shown, consists of a table 175 across the top of which the packages are shifted endwise by the ejector 165, a pair of side plates or bars 176, which bear against the longitudinal sides of the packages under the influence of springs 177, thereby pressing the gummed longitudinal flaps of the label or wrapper into firm contact, and the tops of the packages are acted on by a pressure plate 178, which is depressed under the action of springs 179. Owing to the friction afforded to the movement of the packages between these spring pressed plates, pressure will be produced and maintained not only upon the longitudinal flaps of the label or wrapper, but also upon the gummed and folded end flaps, owing to the endwise abutting relation between the packages during their travel through this trough or passage-way. The packages upon reaching the end of this trough or passage-way pass through a chute 180 which serves to stand the packages on end with their last folded ends uppermost. These packages are received and are preferably caused to travel in this position through a channel 181, the bottom of which is provided with a belt or other equivalent conveyer 182, the packages during their travel through this channel being positioned for the easy application of revenue or other stamps across their tops, in the cases where the packages contain tobacco, cigarettes or the like, although it is to be understood that the packages, when delivered from the chute 180, may be conveyed by any suitable means to a point where they are to be otherwise handled or packed. In the present instance, the packages from the chute 180 are introduced into the conveyer channel 181 by a reciprocatory plunger 183 having rods 184 which slide in guides 185, these rods being connected by a link 186 to the shaft 169, which serves to actuate the

ejector 165, so that the same mechanism which operates the ejector 165 may be utilized to actuate the plunger 183. The plunger 183 is retracted during the delivery of each package from the chute 180, so that this package will drop into a position in front of the plunger, and the following forward stroke of the plunger will push this package into the conveyer channel 181. A pawl 187 may be provided for receiving and holding the packages as they are introduced into the conveyer channel 181, by the plunger, and these packages also preferably pass between a pair of spring pressed plates 188 situated at the entrance to the conveyer channel, in order that the packages may be properly received by the conveyer belt. The conveyer belt may be driven conveniently by the chains 189 and 190 and the gearing 191 which in turn is driven from the main shaft of the machine.

The general mode of operation of the machine may be described briefly as follows:—

A label or wrapper is positioned, as shown in Figures 14 and 15, and a package or article to be labeled or wrapped is positioned in proper registration with the label or wrapper. The package and the label or wrapper are shown in the position which they occupy at this time by Figure 38. The descent of the plungers 81 and 88 performs the first folding operation, as is illustrated in Figures 16 and 17, Figure 19 showing the appearance of the package and the label or wrapper when the first folding operation has been completed. Immediately following the first folding operation, the slide 124 advances, pushing the package and the partially folded label or wrapper thereon toward the conveyer and carrying the upstanding or unfolded portion of the label or wrapper between the elevated fingers 107, as is illustrated in Figures 20 and 21. Figure 39 shows the appearance of the package and the label or wrapper when the first folding operation has been completed, and Figure 40 shows the appearance of the package and the label or wrapper when the slide 124 has commenced to advance the package and its label toward the conveyer, the laterally projecting corners or ears, which were produced as a result of the first folding operation, as will be understood from Figure 39, being folded or bent so that they extend in a direction longitudinally of the package or in the direction in which the package is advanced, and the longitudinal side edges of the upstanding or unfolded portion of the label or wrapper being bent or folded, as shown in Figure 40. During the further advance of the package and its partially folded label or wrapper, by the slide 124, the plate 116 swings down into the position shown in Figure 23, this operation causing the upper portion of the label or wrapper to be creased or folded on the diagonal line a' (Figure 22), while the upper portion of the label is flattened and folded down upon the top of the package, as appears in Figure 41. The transfer of the package and its partially folded label or wrapper causes the longitudinal margins of the upper portion of the label or wrapper to be folded down against the previously folded longitudinal flaps forming the lower part of the label or wrapper, as will appear from Figure 42. The end folders 154 and 155 next operate to turn or fold the corners or the flaps at the narrow sides of the package, leaving the final fold outstanding, as will appear in Figure 43, and the folder 162 finally folds this outstanding flap against the adjacent end of the package, as shown in Figure 44.

The present invention provides a machine capable of applying labels, wrappers or like coverings to packages or articles with efficiency, rapidity and uniformity, the various folding operations being performed largely as an incident to the various movements of the package or article through the machine; the result of which is, that the folding mechanisms are not only simplified but rapidity of operation and hence an increased capacity for the machine is attained. Correct registration between the package or article and the label or wrapper blank, at the time these parts are initially brought together, is provided for, in consequence of which all labels or wrappers will be applied uniformly and correctly to the packages. Moreover, the packages or articles, during their passage through the machine are so handled that they are always under control, and hence failure of the machine to function properly is reduced to a minimum or avoided.

It will be understood that the machine is adapted to apply and fold a label, wrapper or any other kind of covering upon or about a package, article or the like, and hence where reference is made either in the foregoing description or the following claims to a label, such terms shall be intended to include a wrapper or covering of any equivalent kind, and also where reference is made to package, such term shall be intended to also include any articles or other objects capable of being labeled, wrapped or otherwise covered or enclosed by a machine embodying some or all of the features of the present invention.

The label or wrapper made in accordance with the present invention supplies a covering for the package or article which is substantially air tight, and furthermore, it is in the form substantially of a pouch which can be used with facility as a container from which the contents of the package may

be removed as required, thus particularly adapting the invention for use in the labeling or wrapping of tobacco, cigarettes and the like.

I claim as my invention:—

1. In a machine for labeling packages, the combination of means for feeding a label to a predetermined position means for feeding a package to a label occupying said position, means for gripping the label and package and displacing the package and the gripped portion of the label, pairs of side and end folders cooperative with the portions of the label adjacent to the sides and ends of the package to produce simultaneous folding operations on said portions of the label concurrently with said displacement of the package and label, one of said pairs of folders being withdrawable to permit movement of the package and label in a direction transverse of its movement of displacement.

2. In a machine for labeling packages, the combination of a package-guiding channel, means for feeding a label to a predetermined position above said channel, means for bringing a package into superposed relation with a label occupying said position, means for bodily displacing the package and the portion of the label engaged by it in a direction transversely of said channel to bring the package and said engaged portion of the label into the channel, means operable simultaneously upon the peripheral portions of the label to fold the same concurrently against the sides and ends of the package as an incident to said displacement, recesses being provided in the sides of the channel to receive laterally projecting ears formed in the label by such folding thereof, and means for shifting the package and label longitudinally of said channel to remove them from said displacing means and to cause folding of said ears.

3. In a machine for labeling packages, the combination of means for bringing the end portion of a label and a package into superposed relation, means for pressing said end portion of the label and package together and displacing them bodily in a direction transversely of the label while held in fixed relation by the said pressing means, and means cooperative with said end portions of the label which project beyond the opposite sides and ends of the package in consequence of such displacement to perform simultaneous folding operations thereon.

4. In a machine for labeling packages, the combination of means for bringing the end portion of a label and a package into superposed relation, means for pressing said end portion of the label and the package together and displacing them in a direction transversely of the plane of the label, while held in fixed relation by said pressing means, and relatively fixed folders located in the same plane transversely of and adjacent to the path of movement of the sides and ends of the package during its displacement and operative upon the portions of the label which project beyond the package to fold such portions against the respective sides and ends of the package.

5. In a machine for labeling packages, the combination of means for assembling a label and a package, edges of the label projecting beyond the sides and ends of the package, means for displacing the package and the portion of the label which it engages, folders past which the package moves during its displacement, said folders being operative simultaneously upon the edges of the label beyond the sides and ends of the package to fold such edges against the package thus forming ears which project from the adjacent corners of the package, the folders providing recesses into which the ears formed by the folding of the edges of the label project, and means for moving the package and label relatively to said recesses to cause folding of the ears which project therein.

6. In a machine for labeling packages, the combination of means for displacing a package and a label while in engagement and with edges of the label projecting beyond the package, side folders past which the package is movable during its displacement and which operate upon the projecting side edges of the label to fold the same against the side edges of the package, and end folders operative to fold the end edges of the label against the ends of the package, the end folders being capable of retraction from the plane of the package, and means movable past said end folders when retracted for removing the package from the folders.

7. In a machine for labeling packages, the combination of means for gripping together and displacing a label and a package in superposed relation and with the edges of the label projecting beyond the package, folders operative upon the projecting edges of the label, during such displacement, to fold such edges against the sides and ends of the package, said folders providing recesses into which the ears formed by the folding of the projecting edges of the label enter and project in a direction laterally, and means for shifting the package and label in a direction longitudinally of the package to cause bending of such ears into longitudinal relation with the package.

8. In a package labeling machine, the combination of means for gripping together and moving a package and a label in a direction transversely of the plane of the label, the package engaging the label toward one end of the latter and the edges of one end of the label projecting beyond the periphery of the package, folders past which the pack-

age is movable and cooperative with the edges and end of the label which project beyond the sides and ends of the package to fold the same against the respective sides and ends of the package, and a member operative concurrently with the operation of said folders to swing the projecting end of the label in the direction in which the fold is made at the corresponding end of the package.

9. In a package labeling machine, the combination of a folder for bending and folding a portion of a label against a package, and means operative to concurrently swing a portion of the label extending beyond such folded portion in the direction in which the latter portion of the label is folded.

10. In a package labeling machine, the combination of a folder operative to fold a portion of a label upwardly against an end of a package, and a member operative to concurrently swing the end of the label which projects beyond such folded portion upwardly into substantially the plane of said folded portion.

11. In a package labeling machine, the combination of folders operative to concurrently fold marginal portions of a label upwardly against the side edges and ends of a package, one end of the label extending beyond the folded portions at one end of the package, the folders forming recesses to receive laterally projecting ears caused by the folding of the label against the side edges and ends of the package, a member operative to swing the extended end of the label upwardly to conform substantially with the upwardly folded portion of the label at the respective end of the package, and means for moving the package longitudinally relatively to the folders while said extended end of the label is held upwardly by said member, thereby causing walls of said recesses to bend the laterally projecting ears into longitudinal relation with the package.

12. In a package labeling machine, the combination of means for concurrently folding a label against opposite sides and an adjacent end of a package, means for bending a portion of the label which extends beyond the folded portion at the end of the package into substantially the plane in which portion at the end of the package is folded, the concurrently folding of said label against said sides and ends of the package causing laterally projecting ears to be formed at the junctions of said folds, means for advancing the package and label relatively to the folding means in a direction longitudinally of the package and while the extended portion of the label is maintained in its bent position, and means operative in consequence of such advance of the package and label to cause bending of said ears into longitudinal positions relatively to the package and against the longitudinal sides of the package.

13. In a package labeling machine, the combination of means for folding a label against opposite sides and an end of a package, a pair of spaced fingers operative to bend a portion of the label which extends beyond its adjacent folded portion at one end of the package into substantial alinement with said adjacent folded portion, the folded portions of the label forming laterally projecting ears at their junctions, and means for advancing the package and label longitudinally, and means operative in consequence of such advance of the package and label to cause said ears to be folded longitudinally against opposite sides of the package and to cause the bent extended portion of the label to pass between said fingers and to be bent by said fingers.

14. In a package labeling machine, the combination of pairs of side and end folders, means for feeding a label into cooperative relation therewith, means for bringing a package into superposed relation with an end folder of the label, a pair of plungers movable relatively to one another to grip the package and said end portion of the label between them and subsequently movable in unison to carry the package and label into cooperative relation with the side and end folders to cause the label to be folded concurrently against the sides and ends of the package, and means operative during such folding operation on said end portion of the label to move the other end portion of the label in the direction in which the adjacent portion of the label is folded against the respective end of the package.

15. In a package labeling machine, the combination of side and end folding means providing recesses at their junctions, means for feeding a label into cooperative relation therewith, means for bringing a package into juxtaposition with the label and opposed plungers movable relatively to one another to grip the package and label between them with a yielding pressure, and subsequently movable in unison, while maintaining such pressure to cause the folding means to concurrently fold the label against the sides and ends of the package and to cause ears formed in the label at the corners of the folded portions thereof to enter said recesses and to be shaped thereby.

16. In a package labeling machine, the combination of folding means, means for feeding a label thereto, opposed pivoted plates extending from their pivots toward said folding means and adapted to receive a package between them and to support the package opposite to the label and the folding means, and a plunger operative between said plates to engage the package and to

push the package and the label past the folding means.

17. In a package labeling machine, the combination of folding means, means for supplying a label thereto, opposed pivoted plates mounted opposite to and extending toward the folding means, means for introducing a package, by an edgewise movement laterally of said plates, into a position between said plates whereby said plates support the package in an edgewise position between them, and means for removing the package, by a flatwise movement, from its position between said plates and for bringing the package and the label into cooperative relation with the folding means.

18. In a package labeling machine, the combination of side and end label folders surrounding an opening adapted to receive a package and providing parallel recesses at the corners of said opening, means for feeding a label into a position to overlie said opening, means for feeding a package into a position opposite to said label and in alinement with said opening, means operative to force the package and a portion of the label past said folders and into said opening to cause said folders to concurrently fold the label against the sides and ends of the package and to cause ears formed in the corners of the folded portion of the label to enter said recesses, and a member operative transversely across said opening for removing the package and its label therefrom and for concurrently withdrawing said ears from the recesses and causing folding of the ears.

19. In a package labeling machine, the combination of a table having a channel for the travel of a package therein, folding devices arranged longitudinally and transversely of said channel, the transversely extending folding devices being capable of retraction from the channel, means for feeding a label into a position above the folding devices and the channel, means for supporting a package in a position above the label, means for pushing the package and a portion of the label into cooperative relation with the folding devices and into a position in alinement with said channel, means for subsequently retracting said transversely extending folding devices and a member reciprocable longitudinally of said channel, while the transversely extending folding devices are retracted to remove the package and its label from the folding devices and to advance the same along the channel.

20. In a package labeling machine, the combination of folding devices forming a package-receiving opening, means for pushing a package and a label into said opening whereby the folding devices cause folding of the edges of the label against edges of the package, and a member pivoted on an axis located substantially coincident with an edge of the package and operative to swing a portion of the label engaged by it into a position to correspond substantially with the direction in which the adjacent portion of the label is folded.

21. In a package labeling machine, the combination with means for concurrently folding one end of a label against the sides and ends of a package, and means for holding the other end of the label in partially folded condition, of a member toward which the package and label are advanced, said member being pivoted to swing past said holding means and toward the package and operative to fold the latter end of the label against the package.

22. In a package labeling machine, the combination of means for folding one end of a label against the sides and ends of a package, forming laterally projecting ears at the corners of the folded portion of the label, a member for holding the unfolded end of the label in a position forming substantially a continuation of the adjacent folded portion of the label, a channel along which the package is adapted to advance, means for removing the package and its label from the folding devices and for advancing it along the channel, thereby causing the laterally projecting ears to be bent into longitudinal relation with the package, and a plate beneath which the unfolded end of the package enters, said plate being mounted to swing toward the channel and to thus fold the latter end of the label against the package.

23. In a labeling machine the combination of means for doubling a label upon a package and for folding one end of the label upon one side of the package, the other end of the label being unfolded, a pocket having side walls, and means for pushing the package, with the unfolded end of the label foremost, into said pocket to effect folding of the latter end of the label by the side walls of the pocket.

24. In a labeling machine, the combination of a channel along which is advanced a package having a label doubled thereon, one end of the label being folded upon one side of the package and the other end of the label at the opposite side of the package being unfolded, a conveyer movable transversely of said channel and carrying a pocket having opposed side walls, and means for pushing the package and its label from the channel into said pocket, thereby causing folding of the sides of the unfolded end of the label by the side walls of the pocket.

25. In a labeling machine, the combination of a channel along which is advanced a package having a label doubled over one end thereof with the bottom of the label folded about the package and the other end of the label unfolded upon the top of the package,

a conveyer movable transversely across the top of the channel and carrying a pocket having opposed side walls, means for transferring the package and its label from the channel to the pocket of the conveyer, thus causing the side walls of the pocket to fold a portion of the label upon the upper side of the package against the respective sides of the package, and means for folding the end of the label while the package and label are contained in the pocket of the conveyer.

26. In a labeling machine, the combination of a conveyer carrying a pocket having opposed side walls, means for introducing therein a package having a label folded upon a longitudinal side and projecting from the adjacent longitudinal edges of the package to cause folding of the projecting portions of the label against the longitudinal edges of the package and causing unfolded ends of the label to project beyond an end of the pocket, a folder movable in the direction of movement of the conveyer for effecting an end fold upon the label, and a relatively fixed folder for effecting another end fold upon the label incident to the advance of the conveyer.

27. In a package labeling machine, the combination of a travelling conveyer carrying a pocket, means for introducing a package into the pocket having a label, the ends of which project beyond the end of the pocket, folders for folding opposite portions of the projecting end of the label against the adjacent end of the package, a folder arranged opposite to the end of the pocket and operative to effect the final end folding of the label during the advance of the package and label by the conveyer and means for pressing the package and label endwise against the last-mentioned folder.

28. In a package labeling machine, the combination of a travelling conveyer carrying an open-ended pocket to contain a package and label with unfolded ends of the label projecting from one end of the pocket, end folders arranged at one side of the conveyer to operate upon the projecting unfolded ends of the label, and means arranged alongside of the opposite side of the conveyer and operative to press the package against the end folders.

29. In a package labeling machine, the combination of a travelling conveyer carrying an open-ended pocket to contain a package and label with unfolded ends of the label projecting from one end of the pocket, end folders arranged at one side of the conveyer to operate upon the projecting unfolded ends of the label, and a spring-pressed plate arranged at the opposite side of the conveyer and bearing against the respective end of the package in the pocket thereof.

30. In a package labeling machine, the combination of a travelling conveyer carrying an open-ended pocket to contain a package and label with unfolded ends of the label projecting from one end of the pocket, end folders arranged at one side of the conveyer to operate upon the projecting unfolded ends of the label, and means located beyond the end folders for holding the folded ends of the label in folded condition, and means arranged alongside of the opposite side of the conveyer and operative to press the package toward the end folders and also the holding means for the folded ends of the label.

31. In a labeling machine, the combination of a channel to contain a package having a label folded on one side and unfolded on its opposite side, a linked-conveyer movable transversely of said channel and carrying a pocket having an open side and adjacent opposed walls adapted to receive flatwise a package and label from the channel and operative to fold the edges of the unfolded side of the label against the longitudinal side edges of the package, and guides arranged to cooperate with the pockets to position the pocket in predetermined relation with the channel to insure correct transfer of the package and label from the channel to the pocket.

32. In a labeling machine, the combination with a conveyer having pockets to contain packages with labels folded thereon, of a receiver with which the pockets of the conveyer are adapted to register successively, said receiver having opposed yielding pressure-imposing members, an ejector operative successively through the pockets of the conveyer to transfer the packages endwise from said pockets into said receiver and between said pressure-imposing members, a trough arranged to successively receive the packages from the receiver and to support them in a row while standing on their ends, and means for intermittently advancing the row of packages in said trough.

33. In a labeling machine, the combination of means for gumming and folding portions of labels at the sides and ends of packages, a conveyer having pockets to contain such packages, a receiver having walls which are yieldingly pressed inwardly, an ejector operative to transfer the labeled packages from the pockets of the conveyer to said receiver, the walls of the receiver pressing inwardly against the gummed side folds of the labels and the ends of the packages abutting against one another during their travel through the receiver to hold the gummed side and end folds of the label in folded relation with the sides and ends of the respective packages.

34. In a labeling machine, the combination of means for first folding one end of a label upon one side of a package, forming ears which project laterally from the cor-

ners of the package, means for next folding such ears into positions longitudinally of the package and directed toward the same end thereof, means for next bending the other end of the label upon the other side of the package, means for next folding the side edges of the latter end of the label against the previously folded side edges of the label, means for folding the opposite corners of the label and the longitudinally projecting ears against an end of the package, and means for effecting the final end fold of the label against the end of the package.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LOUIS FISCHER.

Witnesses:
HARRY W. HAHN,
JAMES I. MURPHY.