

F. GROVER.
MACHINE FOR WRAPPING AND AFFIXING LABELS AROUND RECTANGULAR TABLETS.
APPLICATION FILED MAY 6, 1910.

976,567.

Patented Nov. 22, 1910.

4 SHEETS—SHEET 1.

Fig. 1

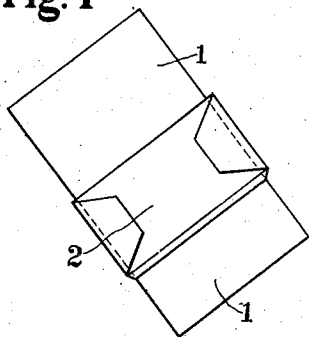


Fig. 2

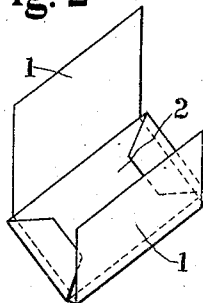


Fig. 3

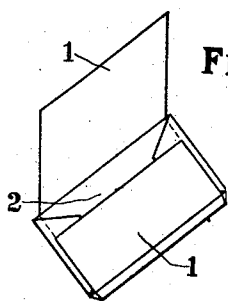
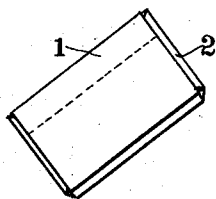


Fig. 4



Witnesses

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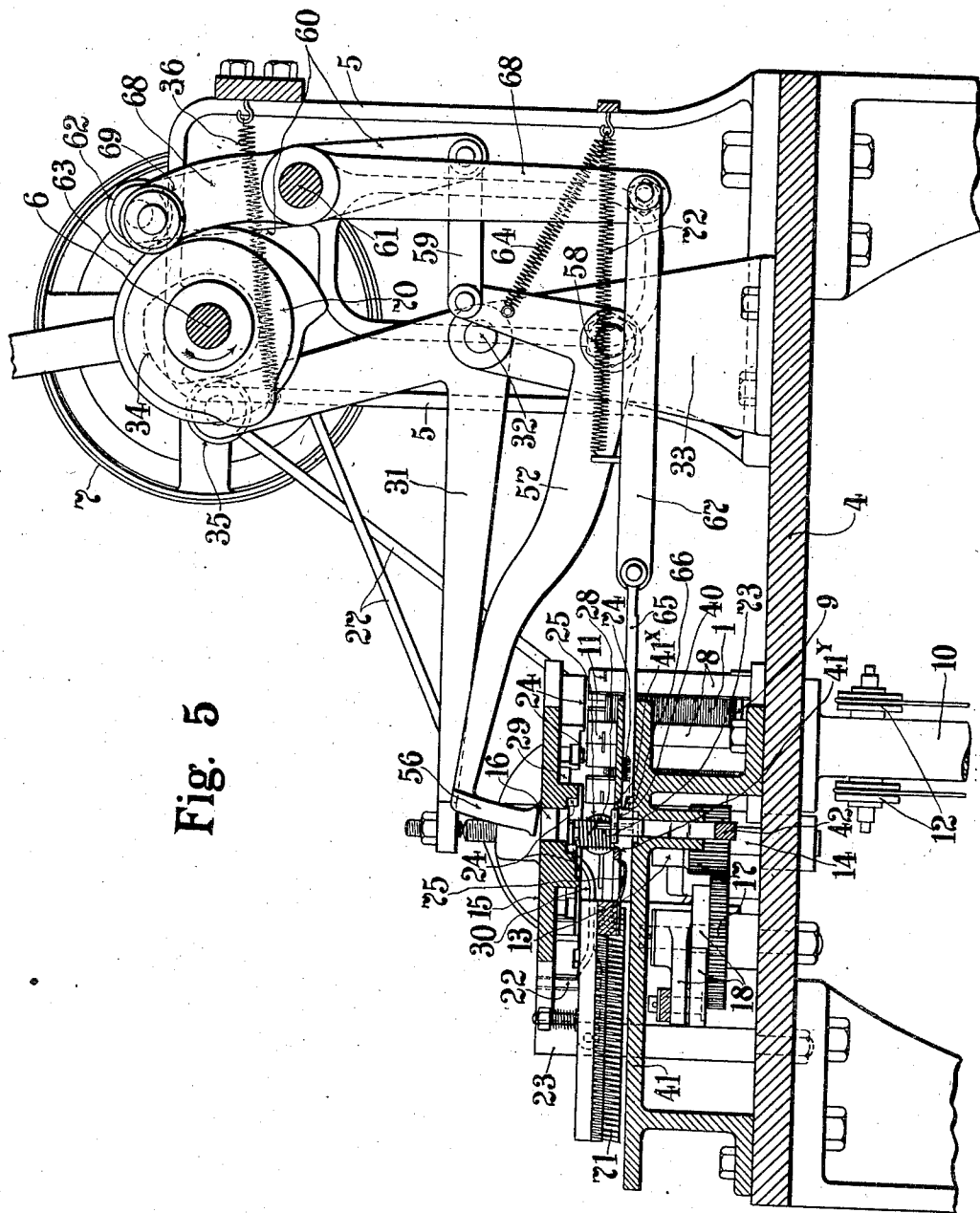


Fig. 5

Witnesses
Charles Smith
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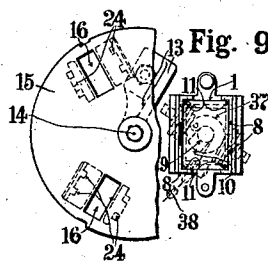
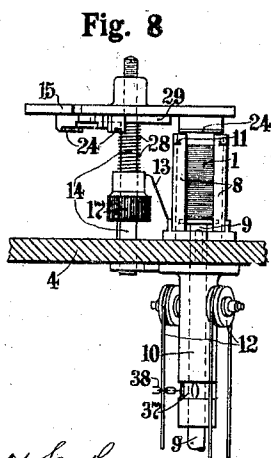
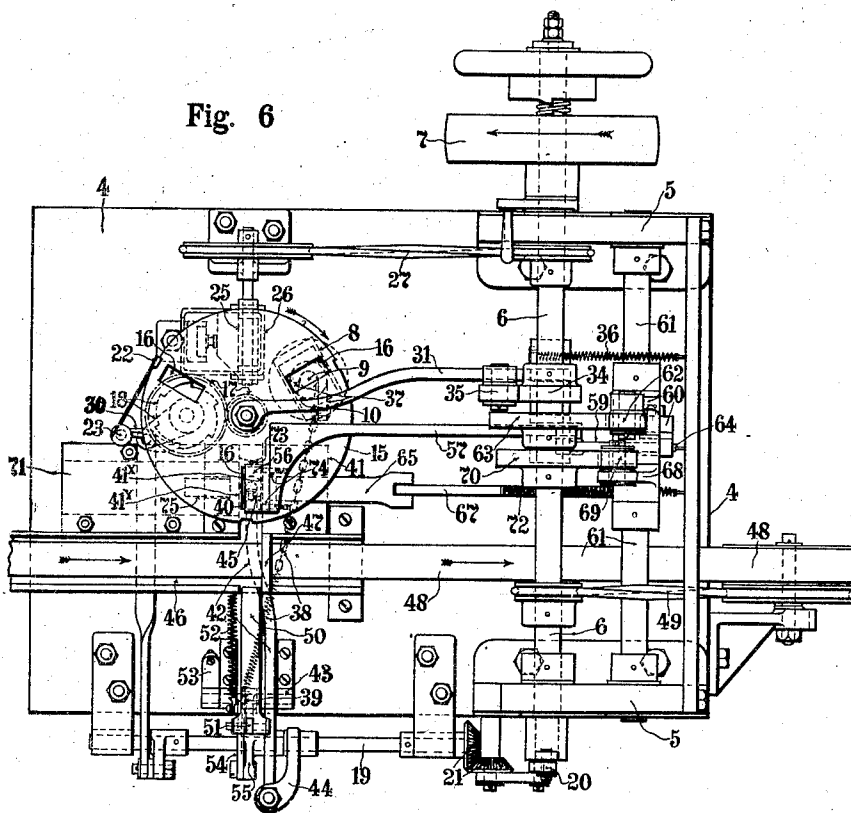
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4 SHEETS—SHEET 3.



Witnesses

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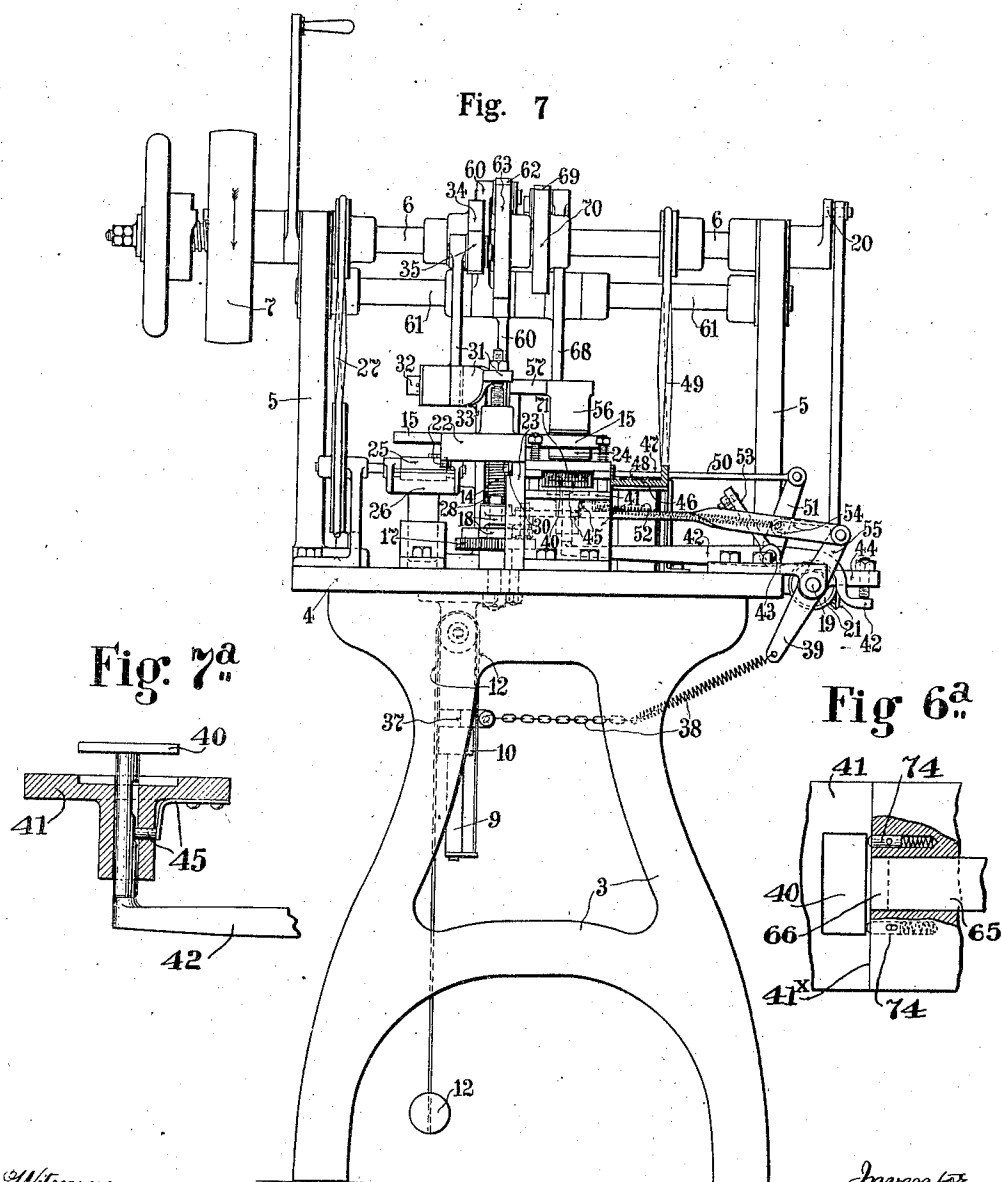
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

FREDERICK GROVER, OF LEEDS, ENGLAND, ASSIGNOR TO THE FORGROVE MACHINERY COMPANY LIMITED, OF LEEDS, ENGLAND.

MACHINE FOR WRAPPING AND AFFIXING LABELS AROUND RECTANGULAR TABLETS.

976,567.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed May 6, 1910. Serial No. 559,699.

To all whom it may concern:

Be it known that I, FREDERICK GROVER, a subject of the King of Great Britain, residing at Leeds, in the county of York, England, have invented certain new and useful Improvements in Machines for Wrapping and Affixing Labels Around Rectangular Tablets, and of which the following is a specification.

This invention relates to machines for wrapping and affixing labels around rectangular tablets; the primary object of the invention being to provide a machine of an improved construction whereby labels may be rapidly and efficiently wrapped and affixed around rectangular bodies such as chocolate tablets inclosed in a covering material such as tin-foil.

In carrying out this invention, the labels in pile formation are placed upon a vertically movable plunger situated within a provided box-like receiver of rectangular shape in plan and which is of a size about equal to or slightly larger than the labels themselves, said box being open at the top with the exception of the corners which are fitted with angle plates forming stops against which the uppermost label of the pile is pressed by the carrying plunger, the latter for this purpose being suitably weighted or otherwise operated so as to be normally retained in the up position by which the pile of labels is made to contact with the stops. On a provided vertical shaft situated near the label box is mounted a horizontal disk formed with a series of through apertures, say three in number, which disk through the medium of its shaft and provided spur and ratchet gearing is adapted to be moved intermittently through a third of a revolution so as to bring the disk apertures in turn to rest directly over the label box, a spring catch or the like being employed for retaining the disk in the moved position.

To the underside of the disk and at the opposite sides of each of the apertures are formed depending lugs, which during the time the disk is being moved to bring the disk apertures in turn over the label box are caused to take up an adhesive from a roller situated in front of the label box and which may be supplied with say gum from

a provided trough, whereby the depending lugs of each aperture of the disk are effectually gummed before being brought to rest over the label box; and the said disk is mounted on a spring so as to be capable of being depressed through the medium of a provided tappet lever, which latter is operated say from a cam shaft at the moment each of the disk apertures is over the label box, which has the effect of causing the depending lugs of each disk aperture to press upon the pile of labels and take up the uppermost label. The depressing of the disk is such as to cause the plunger with its pile of labels to be lowered slightly in the box, when the plunger is momentarily held in the depressed position by a provided friction grip until the disk again rises with the attached label, the corner stops at the upper end of the box during this operation having the effect of effectually preventing the second or subsequent labels of the pile being lifted out of the box with the uppermost label.

After the disk has been raised by its spring to the normal or up position with the label attached, the said disk is then moved a step forward so as to bring the subsequent disk aperture over the label box and simultaneously therewith the grip on the plunger is released when the pile of labels is again raised in the box up to the corner stops of the said box, while this same movement of the disk brings the carried label over a provided rising and falling table frictionally mounted and which is normally raised to below the carried label by a provided lifting-bar at the moment the disk is depressed to cause the subsequent disk aperture to take up a label from the label box.

Beyond the table is mounted a receiver-plate on to which the tablets are fed, say from a wrapping machine or from any other source by suitable means; and in conjunction with this receiver-plate is provided a pusher-bar having a horizontal reciprocating movement timing in with the movement of the label-carrying disk, which bar at each reciprocation pushes forward a single tablet off the receiver-plate and delivers it on to the label which has been carried by the depending lugs of the disk over the lifting-table. An intermittently moving plunger

situated over the disk is now operated so as to pass through the disk aperture carrying the label and depress the tablet and its label along with the lifting-table between stationary side projections and bring the said table into the down position, which has the effect of releasing the label from the disk and of simultaneously turning the opposite ends of the label into an upstanding position; and after the tablet and its label have been depressed, the disk is raised and the subsequent disk aperture takes up a label from the label box so as to bring another label forward at the next movement of the disk.

After the tablet and label have been depressed to turn the ends of the latter upward, an intermittently reciprocating slide formed with an overhanging lip is operated, which lip first engages against one upstanding end of the label and causes it to be laid over upon the tablet now resting upon the table, while the continued movement of the said slide has the effect of pushing the partially labeled tablet forward off the table and on to a delivery plate beneath a brush by which the other or opposite upstanding end of the label is laid over upon the first turned down portion of the label; the adhesive on the label causing the same to become firmly affixed to the inner wrapper and around the tablet during its passage beneath the brush.

In the drawings at Figures 1 to 4 there are illustrated the several stages in the wrapping and affixing of a label around a rectangular tablet by the machine herein-after described. At Fig. 1 the label 1 is shown in the position it occupies when carried by the depending lugs of the disk over the lifting table with the wrapped tablet 2 resting upon the said label in the position it occupies after being pushed forward by the pusher-bar. Fig. 2 shows the position of the tablet and label after being carried downward along with the lifting table by the intermittently moving plunger between the stationary side projections, the label being released from the disk and having its opposite gummed ends beyond the tablet turned into an upstanding position. Fig. 3 shows the partially labeled tablet while still resting upon the depressed table, the inner upstanding gummed end of the label having been turned down upon the tablet by the overhanging lip of the intermittently reciprocating slide during the first portion of its forward movement; and Fig. 4 shows the completely labeled tablet, the opposite or outer upstanding gummed end of the label having been turned down upon the first turned down portion of the label due to the tablet being pushed off the table and on to the delivery plate beneath the brush by the continued forward movement of the

intermittently reciprocating slide; the adhesive on the label causing it to become firmly affixed to the inner wrapper and around the tablet during its passage beneath the said brush. To produce this result in wrapping and affixing labels around rectangular tablets, the machine is constructed and operates as will now be described with reference to the accompanying drawings of the mechanism, wherein:—Fig. 5 is a sectional front elevation on an enlarged scale of my improved wrapping machine. Fig. 6 is a plan of the same. Fig. 6^a is a detailed view illustrating the spring studs employed. Fig. 7 is an end elevation of the wrapping machine, and Fig. 7^a is a detailed view of the friction grip employed. Figs. 8 and 9 are respectively a side elevation and a plan of the label box and label-carrying disk, detached from the machine.

Referring to Figs. 5 to 9 of the drawings, the machine consists of standards 3 fitted with a bed-plate 4 provided with end brackets 5 carrying a main shaft 6 which is driven by a belt pulley 7 in the direction indicated by arrows (Figs. 5, 6 and 7). On the bed-plate 4 is mounted a box-like receiver 8 into which the labels 1 in pile formation are placed and which are carried upon the upper end of a vertically movable plunger 9 made slidable in a fixed bracket 10, said box 8 being open at the top with the exception of its corners which are fitted with angle plates 11 forming stops for the pile of labels, which latter is normally pressed upward by the carrying plunger 9 through the medium of a counterbalance-weight arrangement 12 so as to cause the uppermost label of the pile to contact with the said stops 11.

Near the label box 8 and on the bed-plate 4 is mounted a bearing 13 fitted with a vertical shaft 14 carrying a horizontal disk 15 formed with three openings or apertures 16, which disk 15 is rotated intermittently through a third of a revolution in the direction indicated by the arrow (Fig. 6) through the medium of its shaft 14, spur gearing 17 and ratchet-mechanism 18 actuated by a rock-shaft 19 operated from the main shaft 6 by crank-mechanism 20 and bevel gearing 21 so as to bring the disk apertures 16 in turn to rest directly over the label box 8; a spring-catch 22 fixed on a stud 23 being employed for retaining the said disk 15 in the moved position. At the opposite sides of the disk apertures 16 on the underside of the disk 15 are formed depending lugs 24, which, during the time the disk 15 is being moved to bring the disk apertures 16 in turn over the label box 8, are caused to take up an adhesive from a roller 25 situated in front of the label box 8 in a trough 26 containing liquid gum, which roller 25 is rotated in the trough 26 from the main shaft

6 by a crossed-belt 27 so that the said depending lugs 24 are effectually gummed before being brought to rest over the label box 8.

The shaft 14 which carries the disk 15 is made to slide in the bearings 13, and a spring 28 is situated on the said shaft 14 between the bearing 13 and a collar 29 supported by a strap 30 pivoted to the stud 23, so that the said disk 15 with its shaft 14 and spur pinion is capable of being depressed against the action of the spring 28 through the medium of a bell-crank tappet lever 31 rocking on a stud 32 of a bracket 33, and the said lever 31 is operated by a cam 34 on the main shaft 6 through a runner 35 at the moment each of the disk apertures 16 is over the label box 8, which movement has the effect of depressing the disk 15 and of causing the depending lugs 24 of each disk aperture 16 in turn to press upon the pile of labels 1 and take up the uppermost label; a spring 36 being employed for retaining the runner 35 in contact with the cam 34.

The depressing of the disk 15 by the tappet lever 31 to cause the depending lugs 24 to take up the uppermost label is such as to cause the plunger 9 and its pile of labels 1 to be depressed slightly in the label box 8 against the action of the counter-balance weight 12, which plunger 9 is momentarily held in the depressed position through the medium of a friction-grip 37 actuated by a spring-connection 38 and an arm 39 situated on the rock-shaft 19, while during the time the plunger 9 is in the depressed position the disk 15 with the uppermost label attached is raised to its normal or up position by the spring 28, the corner stops 11 having the effect of effectually preventing the second or subsequent labels of the pile being lifted out of the box 8; when the said disk 15 is moved a step forward so as to bring the subsequent aperture 16 over the label box 8, at which moment the friction-grip 37 is released when the counter-balance-weight 12 comes into operation and raises the plunger 9 in the box 8 and again brings the pile of labels 1 into contact with the corner stops 11 of the said box 8.

The disk 15 in moving a step forward brings the attached label over a rising and falling table 40 carried in a bracket forming a delivery plate 41 situated on the bed-plate 4, which table 40 is raised to below the attached label at the moment the disk 15 is depressed through the medium of a double-ended lifting-bar 42 pivoted on a stud 43 and operated by an arm 44 on the rock-shaft 19; and the said table 40 is held in the raised position by a friction-grip 45 so as to cause it to rest immediately beneath the said attached label.

Beyond the table 40 and on the bed-plate 4 is mounted a receiver-plate 46 on to which

the tablets are fed up to a stop 47 by means of an endless belt 48 which is caused to travel in the direction indicated by arrows (Fig. 6) by a crossed-belt 49 driven from the main shaft 6; and in conjunction with this receiver-plate 46 is a pusher-bar 50 which is reciprocated at predetermined intervals to time in with the movement of the label-carrying disk 15 by being carried on an arm 51 which is rocked forward on the stud 43 by means of a spring 52 until arrested by a stop 53 formed on the same stud and which is returned by means of a hook 54 operated by an arm 55 on the rock-shaft 19, by which a single tablet 2 is pushed forward at each reciprocation off the belt 48 and delivered on to the label 1 which has been carried by the depending lugs 24 of the disk 15 over the lifting table 40.

Over the disk 15 an intermittently moving plunger 56 is mounted on a bell-crank lever 57 which is rocked on a stud 58 of the bracket 33 by means of a link 59, double-ended lever 60 pivoted on a shaft 61, runner 62 and a cam 63 on the main shaft 6, so as to cause the said plunger 56 to pass through the disk aperture 16 carrying the label 1 and depress the tablet 2 and its label 1 along with the lifting table 40 between a raised part 41^x and a projecting part 41^y formed on or carried by the plate 41 and bring the said table into the down position, which has the effect of releasing the label 1 from the disk 15 and of simultaneously turning the opposite ends of the said label 1 into an upstanding position; a spring 64 being employed for keeping the runner 62 in contact with the cam 63.

After the tablet 2 and label 1 have been depressed by the plunger 56 to turn the ends of the said label into an upstanding position, an intermittently reciprocating slide 65 formed with an overhanging lip 66 is operated by means of a link 67, double-ended lever 68 pivoted on the shaft 61, runner 69 and a cam 70 on the main shaft 6, which lip 66 first engages against the inner upstanding end of the label 1 and causes it to be laid over upon the tablet 2 resting upon the table 40, while the continued movement of the slide 65 has the effect of pushing the partially labeled tablet 2 forward off the table 40 and on to the delivery plate 41 beneath a brush 71 by which the other or opposite upstanding end of the label 1 is laid over upon the first turned down portion of the said label; a spring 72 being employed for keeping the runner 69 in contact with the cam 70.

The tablet 2 is fed by the pusher-bar 50 up to a stop 73, and spring-studs 74 are employed in the delivery plate 41 for preventing the tablet 2 rising after being depressed by the plunger 56, while immediately in front of the brush 71 is fixed a spring-plate

75 beneath which the partially labeled tablet is caused to pass on its way to beneath the brush 71.

In action the machine works as follows:—

5 A row of tablets is fed forward by the traveling belt 48 over the receiver-plate 46 until the foremost tablet 2 rests against the stop 47 and the disk 15 is moved intermittently through a third of a revolution so as to first
10 cause the depending lugs 24 of each of the apertures 16 in turn to take up the adhesive from the gum roller 25 before being brought to rest over the label box 8, where the gummed depending lugs 24 of the disk apertures 16 in turn, due to the depressing
15 and rising of the disk 15, are caused to take up a label 1 from the label box 8. The next forward movement of the disk 15 brings the attached label 1 over the lifting table 40, where, on the said disk being depressed to cause the subsequent aperture 16 to take up a label from the label box 8, the foremost tablet 2 is pushed off the belt 48 and on to the attached label 1 (see Fig. 1) by the
20 pusher-bar 50. The tablet 2 and label 1 are now depressed by the intermittently moving plunger 56 between the parts 41², 41¹, which action releases the label 1 from the gummed depending lugs 24 of the disk 15 and simultaneously turns the opposite ends of the said label 1 into an upstanding position (see Fig. 2). The inner upstanding end of the label 1 is now laid over upon the tablet 2 (see Fig. 3) by the overhanging lip 66 of the intermittently reciprocating slide 65, while the continued movement of the said slide 65 carries the tablet 2 forward on to the delivery plate 41 beneath the spring-plate 75 and brush 71 by which the
40 other or opposite upstanding end of the label 1 is laid over upon the first turned down portion of the label 1 (see Fig. 4); the adhesive on the label 1 taken from the gummed depending lugs 24 causing the label 1 to become firmly affixed to the inner wrapper and around the tablet 2 during its passage beneath the brush 71. In this way each disk aperture 16 in turn is caused to take up a
45 label 1 from the label box 8, which attached label in turn receives a tablet 2 around which it is affixed in an automatic manner as above described.

55 What I claim as my invention and desire to secure by Letters Patent is:—

1. In a machine for wrapping and affixing labels around rectangular tablets, the combination with a box containing the labels in pile formation, said box being fitted with
60 stops at its upper corners, of a vertically movable plunger adapted to normally retain the uppermost label of the pile in contact with the corner stops of the box, an intermittently moved revoluble disk having a series of apertures therethrough formed with
65 depending side lugs adapted in turn to take up the uppermost label, intermittently moving mechanism for transporting a tablet on to the disk-carried label, and means for folding and affixing said label around the tablet.

2. In a machine for wrapping and affixing labels around rectangular tablets, the combination with a label box fitted with an upwardly weighted plunger carrying the labels in pile formation, said plunger being fitted
70 with a friction grip, of an intermittently moved revoluble disk having a series of apertures therethrough formed with depending side lugs, means for applying an adhesive to the said lugs prior to their being brought
75 to rest over the label box, an intermittent mechanism for depressing the disk when at rest to cause the gummed lugs in turn to take up the uppermost label from the box, a lifting table over which the label is carried by
80 the subsequent movement of the disk, intermittently moving mechanism for transporting a tablet on to the disk-carried label, and means for folding and affixing said label around the tablet.

3. In a machine for wrapping and affixing labels around rectangular tablets, the combination with a box containing the labels in pile formation and an intermittently moved revoluble disk having a series of apertures therethrough formed with depending
85 side lugs, of a device for applying an adhesive to the disk lugs in succession, intermittent mechanism for depressing the disk when at rest over the label box to cause the
90 gummed lugs in turn to take up the uppermost label, an intermittently raised table fitted with a friction grip over which the label is carried by the subsequent movement of the disk, mechanism for transporting
95 a tablet on to the disk-carried label, and means for folding and affixing said label around the tablet.

4. In a machine for wrapping and affixing labels around rectangular tablets, the combination with a box containing the labels in pile formation, of an intermittently moved revoluble disk adapted at each interval of rest to take up a label from the box, a lifting table over which the label is carried
100 by the intermittently moved disk, intermittently moving mechanism for transporting a tablet on to the disk-carried label, means for depressing the tablet and its label along with the table between stationary projections to release the label from the disk and turn the opposite ends of the label into an upstanding position around the tablet, and means for completing the folding and affixing of the label around the tablet.

5. In a machine for wrapping and affixing labels around rectangular tablets, the combination with a box containing the labels in pile formation, of an intermittently moved revoluble disk adapted at each inter-
105

val of rest to take up a label from the box, a lifting table over which the label is carried by the intermittently moved disk, intermittently moving mechanism for transporting a tablet on to the disk-carried label, an intermittently moving plunger for depressing the tablet and its label along with the table between stationary projections adapted to turn the opposite ends of the label into an upstanding position around the tablet, an intermittently reciprocating slide adapted to turn one upstanding end of the label down upon the tablet, and means for completing the folding and affixing of the label around the tablet.

6. In a machine for wrapping and affixing labels around rectangular tablets, the combination with a box containing the labels in pile formation, of an intermittently moved revoluble disk adapted at each interval of rest to take up a label from the box, and a lifting table over which the label is carried by the intermittently moved disk, in-

termittently moving mechanism for transporting a tablet on to the disk-carried label, means for depressing the tablet and its label along with the table between stationary projections adapted to turn the opposite ends of the label into an upstanding position around the tablet, an intermittently reciprocating slide adapted to turn one upstanding end of the label down upon the tablet, a delivery plate onto which the partially labeled tablet is passed by the slide, and a brush situated over the delivery plate adapted to turn the other upstanding end of the label down upon the first turned down portion of the label and simultaneously affix it to the tablet.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

FREDERICK GROVER.

Witnesses:

JOHN JOWETT,
VANCE EWART GALLOWAY.