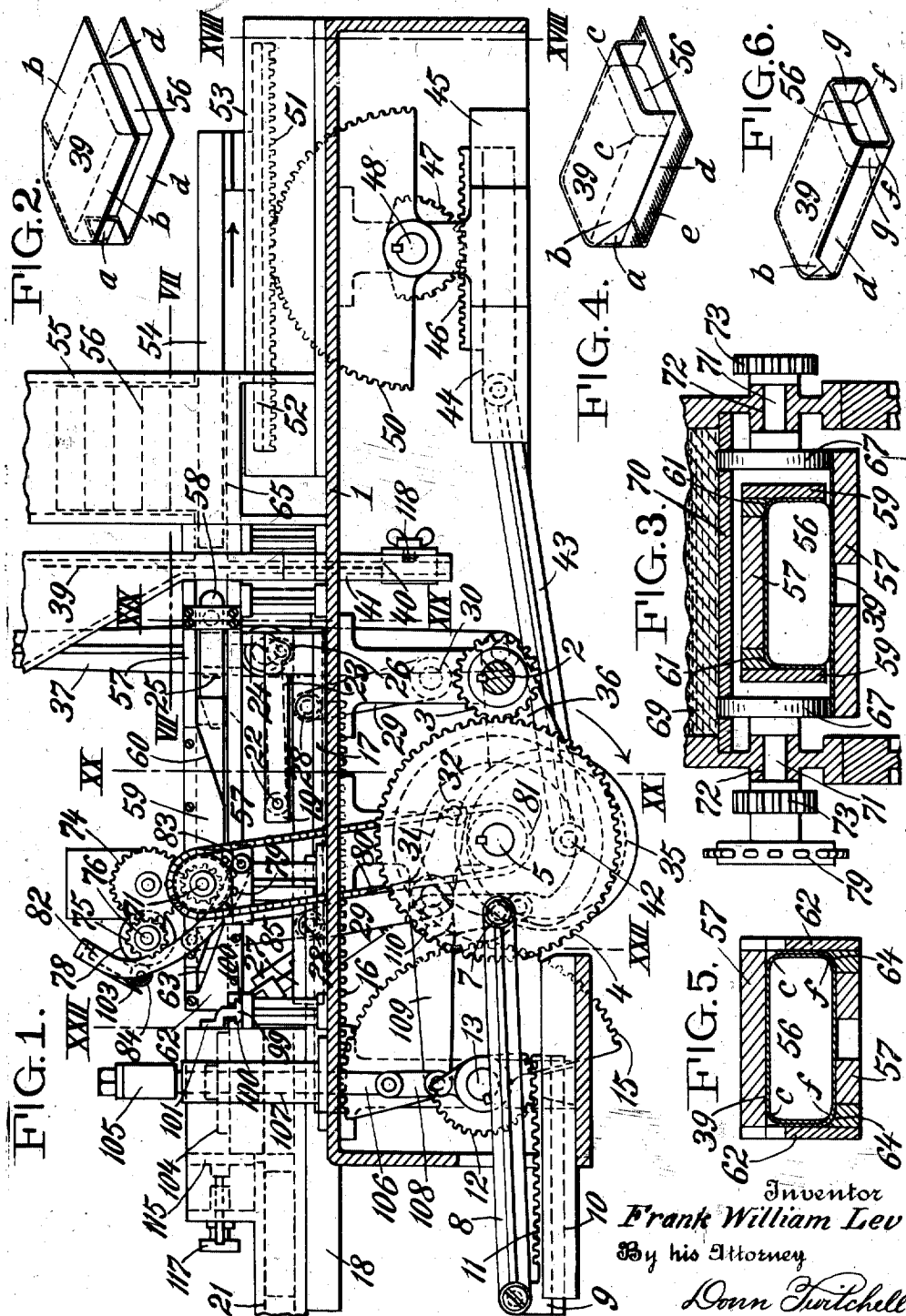


1,218,787.

F. W. LEV.
WRAPPING MACHINE.
APPLICATION FILED APR. 19, 1915.

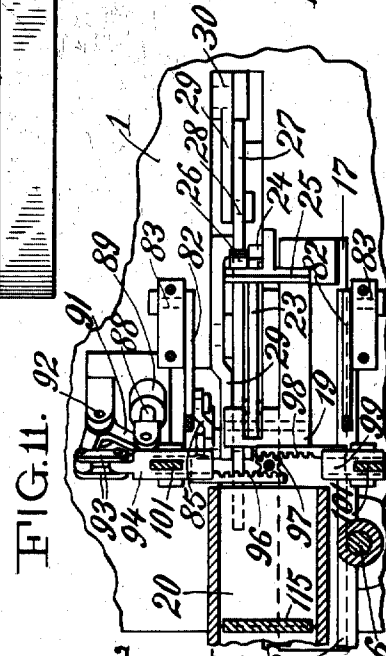
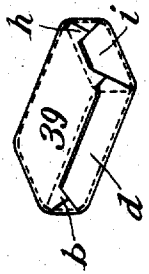
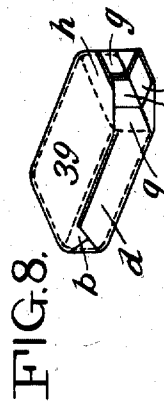
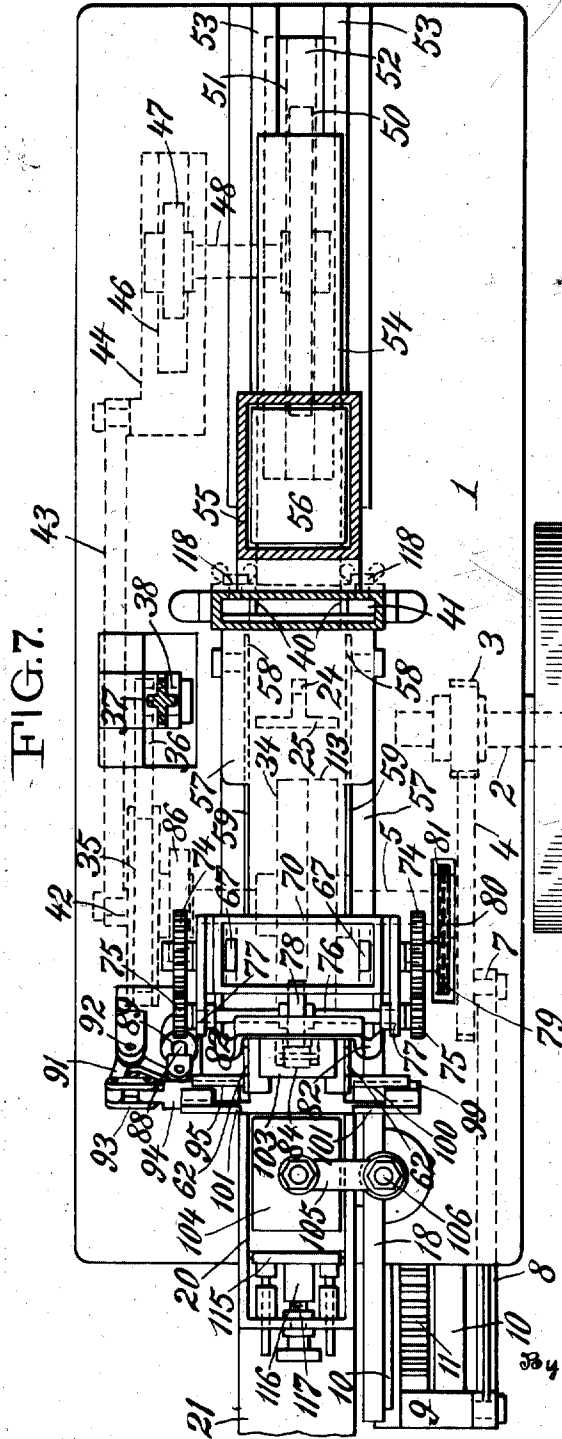
Patented Mar. 13, 1917.
4 SHEETS—SHEET 1.



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4 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRANK WILLIAM LEV, OF NEW YORK, N. Y., ASSIGNOR TO C. & L. MACHINE COMPANY,
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WRAPPING-MACHINE.

1,218,787.

Specification of Letters Patent.

Patented Mar. 13, 1917.

Application filed April 19, 1915. Serial No. 22,370.

To all whom it may concern:

Be it known that I, FRANK WILLIAM LEV, a citizen of the United States, and a resident of the city of New York, in the county of Queens and State of New York, have invented a certain new and useful Wrapping-Machine, of which the following is a specification.

This invention relates to machines having means whereby an article and a wrapper can be forced through a stationary wrapper folding channel, whereby the wrapper is partially folded upon the article, the machine, also having movable folders adapted for folding portions of the wrapper not folded by the stationary wrapper folding channel.

The object of the invention is to provide means whereby extra long articles and wrappers can be rapidly passed through the machine, and to provide means for effectually folding and securing the wrapper.

The invention consists of a plunger adapted to move an article and a wrapper part way through the wrapper folding channel, and a second plunger adapted during part return movement of the first plunger to move the article and wrapper farther forward in the wrapper folding channel. The second plunger is pivoted to a reciprocating plunger adapted to force completed packages into a receiving channel, simultaneous with forward movement of the second plunger through the wrapper folding channel. The second plunger is supported by a track which during return movement of the plunger is lowered, causing the second plunger to be moved out of the wrapper folding channel during forward movement of a second article and wrapper into the wrapper folding channel by means of the first named plunger.

The invention also consists of a specially constructed wrapper folding channel having curved surfaces adapted to force the wrapper to conform to rounded corners of an article. The invention further consists of improved mechanism for actuating the movable folders, for applying paste to wrapper flaps, and for moving the completed packages into range with the plunger to which the second plunger is pivoted.

In the accompanying drawings:

Figure 1 is a sectional elevation of the machine.

Fig. 2 is a perspective view showing a wrapper partly folded upon an article.

Fig. 3 is a transverse section of part of the machine, showing certain wrapper folders, curved surfaces, and paste applying wheels.

Fig. 4 is a perspective view showing an article and wrapper that has been passed through the part of the machine shown in Fig. 3.

Fig. 5 is a transverse section of part of the machine, showing lower folders and curved surfaces.

Fig. 6 is a perspective view showing a wrapper folded upon an article, when passed through the part of the machine shown in Fig. 5.

Fig. 7 is a horizontal section on the line VII—VII of Fig. 1.

Figs. 8, 9 and 10 are perspective views showing successive operations performed during formation of a completed package.

Fig. 11 is a horizontal section on the line XI—XI of Fig. 12.

Fig. 12 is a central longitudinal section of the machine, showing the parts moved to a position different from that shown in Fig. 1.

Fig. 13 is a perspective view showing the curved surfaces shown in Fig. 3.

Fig. 14 is a perspective view showing the curved surfaces shown in Fig. 5.

Fig. 15 is a view similar to Fig. 12, showing parts moved to a different position.

Figs. 16 and 17 show certain cams forming part of the machine.

Fig. 18 is a transverse section on the line XVIII—XVIII of Fig. 1.

Fig. 19 is a transverse section on the line XIX—XIX of Fig. 1.

Fig. 20 is a transverse section on the line XX—XX of Fig. 1.

Fig. 21 is a transverse section on the line XXI—XXI of Fig. 12.

Fig. 22 is a transverse section on the line XXII—XXII of Fig. 1.

Journalled in the main frame 1 is a driving shaft 2 provided with a gear wheel 3 which is in mesh with a larger gear wheel 4 secured to a shaft 5 having rotary movement in bearings 6.

Gear wheel 4 is provided with a crank pin 7 on which is pivoted a rod 8 pivotally connected to a slide 9. Rotation of gear wheel 4 causes reciprocating movement of slide 9 in guides 10. Slide 9 is provided with a

rack 11 which is in mesh with a gear segment 12 secured to a shaft 13 having rocking movement in bearings 14.

To rock-shaft 13 is secured a large gear segment 15 which is in mesh with a rack 16 forming part of a slide 17 having reciprocating movement in guides 18. Forming part of slide 17 is a plunger 19 which is free to move into and out of a chamber 20 arranged to receive the completed packages. Reciprocating movement of plunger 19 causes the completed packages to be moved from the receiving chamber 20 into the receiving channel 21.

Journalled near the forward end of plunger 19 is a shaft 22 to which is secured a rearwardly extending arm 23 having at its free end an upward extension 24 provided with a forwardly extending plunger 25. Journalled at the free end of rearwardly extending arm 23 is a roller 26 which is adapted to travel on a track 27. Track 27 is supported by pins 28 on the free ends of two arms 29 which are pivoted at 30 to the main frame. One of the arms 29 is provided with a lever 31 having a roller 32 arranged to travel in a groove 33 formed on a cam wheel 34 secured to the driven shaft 5.

The cam groove 33 acting on lever 31 and an arm 29 causes the track 27 and the pivoted arm 23 having the extensions 24 and 25 resting on said track, to be lowered as shown in Fig. 12, or raised as shown in Figs. 1, 15 and 19.

To the end of the driven shaft 5 opposite that having the gear wheel 4 is secured an eccentric 35 which is connected by a link 36 to the lower end of a lever 37 pivoted at 38 to the main frame. The upper end of lever 37 is connected to a paper feed mechanism (not shown) adapted to move a wrapper 39 to rest on supports 40 in a chute 41, as indicated in Fig. 1.

Eccentric 35 is provided with a crank pin 42 on which is pivoted a rod 43 pivotally connected to a slide 44. Rotation of shaft 5 carrying the eccentric 35 causes reciprocating movement of slide 44 in guides 45. Slide 44 is provided with a rack 46 which is in mesh with a gear segment 47 secured to a shaft 48 having rocking movement in a bearing 49. To rock-shaft 48 is secured a large gear segment 50 which is in mesh with a rack 51 forming part of a slide 52 having reciprocating movement in guides 53. Forming part of slide 52 is a plunger 54 which is arranged to reciprocate through a magazine 55 for articles 56, across the chute 41, and part way through a wrapper folding channel. The wrapper folding channel consists of upper and lower plates 57, and two inwardly extending side projections 58. The upper plate 57 is provided with two folders 59 which extend vertically downward in line with the inner ends of said side projections

58. The lower edges of the downwardly extending folders are inclined downward at an angle of about 20° from the upper plate as indicated at 60. The upper plate 57 is provided with surfaces 61 which curve downwardly toward the inner sides of the downwardly extending folders 59. The lower plate 57 is provided with two holders 62 which extend vertically upward in line with said downwardly extending folders and have their upper edges inclined upward at an angle of about 20° from said lower plate, as indicated at 63. The lower plate 57 is provided with surfaces 64 which curve upward toward the inner sides of the upwardly extending folders 62.

When the plunger 54 reaches the end of its travel in the direction indicated by the arrow in Fig. 1, the articles 56 resting on the plunger will fall to the support 65. Forward movement of the plunger will then force one of the articles 56 against the wrapper 39 and the article and wrapper being then forced between the upper and lower plates 57 and the inwardly extending side projections 58, cause the wrapper and the flaps *a* thereof to be folded upon the article in the manner shown in Fig. 2. At the end of forward movement of plunger 54, the article and wrapper will be moved to the position shown in Fig. 12, during which movement the upper flaps *b* of the wrapper will take against the inclined edges 60 of the downwardly extending folders 59, and against the rounded ends 66 of the curved surfaces 61, causing said upper flaps to be turned down and the wrapper to be forced against the rounded corners *c* of the article 56 as shown in Fig. 4. During partial return movement of plunger 54, the plunger 19 will also be moving rearwardly, and at the end of the latter's movement, the plunger 25 pivoted thereon will be raised from the position shown in Fig. 12 to the position shown in Fig. 1. Then, while plunger 54 continues its return movement, the pivoted plunger 25 will be moving forward in the reverse direction, causing the article and wrapper to be moved forward; thereby causing the lower flaps *d* of the wrapper to be moved beneath paste coated wheels 67 which are revolving in the same direction as the flaps are moving, whereby paste is applied to the lower flaps, as shown at *e* in Fig. 4.

Plunger 54 will then have reached the end of its return movement, and while it is beginning another forward movement, the pivoted plunger 25 will be completing its forward travel, causing the article and wrapper to be moved forward to the position shown in Fig. 15. During this movement of the article and wrapper, the paste coated lower flaps *d* of the wrapper take against the inclined edges 63 of the upwardly extending folders 62, and against

the rounded ends 68 of the curved surfaces 64, causing said paste coated lower flaps to be turned up against the folded flaps *b* and causing the wrapper to be forced against the rounded corners *f* of the article, as shown in Fig. 6.

Each wheel 67 travels in contact with paste 69 in a receptacle 70 and is secured to a shaft 71 which revolves in bearings 72. Shafts 71 are provided with gear wheels 73 which mesh with gear wheels 74 meshing with gear wheels 75 on the ends of a shaft 76, revolving in bearings 77. Secured to the middle of shaft 76 is a wheel 78 which travels in contact with the paste 69 in receptacle 70. Secured to one of the shafts 71 is a chain wheel 79 over which rides a chain 80 riding over another chain wheel 81 secured to the driven shaft 5. It will be seen that rotation of the shaft 5 in direction indicated by the arrow will cause the paste coated wheels 67 and 78 to be continuously revolved in the same direction.

Journalled on arms 82 pivoted at 83 is a roller 84 which, during forward travel of the pivoted plunger 25, rests against and is rotated by the paste coated wheel 78. The roller 84 is held against the wheel 78 by means of a link 85 connecting one of the arms 82 to one of the track supporting arms 29.

Riding on a cam 86 secured to the driven shaft 5 is a roller 87 which is journalled at one end of a rod 88 having sliding movement in a guide 89. The roller 87 is held against the cam by means of a spring 90. The other end of sliding rod 88 is connected to an arm of a bell-crank lever 91, pivoted at 92. The other arm of bell-crank 91 is connected by links 93 to a slide 94 having reciprocating movement in dove-tail guides 95. Forming part of slide 94 is a rack 96 which meshes with a small gear wheel 97. Meshing with the side of gear wheel 97 opposite that in which rack 96 meshes, is a rack 98 forming part of a slide 99 having reciprocating movement in dove-tail guides 100. Forming part of each slide 94 and 99 is a folder 101, in range with side rear flaps *g* of the wrapper.

When the pivoted plunger 25 moves rearwardly from the position shown in Fig. 15, the roller 87 on sliding rod 88 enters the depression 102 formed on cam 86, causing the bell-crank 91 to move the slide 94 and rack thereon toward the gear wheel 97, which wheel in turn causes movement of rack 98 and slide 99 toward the gear wheel 97, resulting in movement of the folders 101 against the side rear flaps, thereby causing said flaps to be folded against the rear end of the article, as shown in Fig. 8. When roller 87, on sliding rod 88 travels out of the depression 102 on cam 86, the slides 94 and 99 will be moved away from the gear

wheel 97, causing the folders 101 to be moved away from the flaps of the wrapper.

As the pivoted plunger 25 continues its rearward travel the arms 29 controlling movement of track 27 which supports the pivoted plunger 25 cause the track and plunger to be lowered, and the link 85 connecting one of the arms 29 to one of the swinging arms 82 causes the arms 82 and paste coated roller 84 journalled thereon, and a folder 103 secured thereto, to be moved from the position shown in Fig. 15 to the position shown in Fig. 12. When this occurs, the folder 103 turns the upper rear flap *h* down, and the roller 84 applies paste to the lower rear flap *i*, as shown at *j* in Fig. 9. At the end of rearward travel of pivoted plunger 25, the arms 29 controlling movement of the track 27, and the link 85 connecting one of said arms to one of the swinging arms 82, cause the pivoted plunger 25 and the swinging arms 82 carrying the roller 84 and folder 103 to be raised to the position shown in Fig. 1.

As soon as the roller 84 and folder 103 are moved clear of the flaps *h* and *i*, a vertically moving plunger 104 forces the article and wrapper downward in the receiving chamber 20, thereby causing the paste coated lower flap *i* to take against the lower plate 57 of the wrapper folding channel, whereby said flap is turned up against the folded flap *h*, as shown in Fig. 10.

The vertically moving plunger 104 is attached to an arm 105 which is secured to a rod 106 having vertically reciprocating movement in a guide 107. The lower end of rod 106 is connected by links 108 to an arm of a bell-crank lever 109, which is pivoted at 110. The other arm of bell-crank 109 is provided with a roller 111 which rides in a groove 112 formed on a cam wheel 113 secured to the driven shaft 5. As shown in Fig. 1, the roller 111 has entered the part 114 of cam groove 112, thereby causing the plunger 104 to move the article and wrapper downward. At the same time, the track 27 has caused the pivoted plunger 25 to be moved up to the rear of a second article and wrapper which has been moved into the wrapper folding channel by means of plunger 54. While the pivoted plunger 25 is moving forward against the second article, the roller 111 will ride out of the part 114 of the cam groove, thereby causing the plunger 104 to be moved upward so that further forward movement of the pivoted plunger 25 will force the second article and wrapper forward beneath the plunger 104, as shown in Fig. 15. At the end of return movement of the pivoted plunger, the vertically moving plunger 104 will have moved the second article and wrapper downward, thereby forcing the first package down in the receiving chamber 20, to a position in front of the

reciprocating plunger 19, as shown in Fig. 1. Then as forward movement of the reciprocating plunger 19 causes the plunger 25 pivoted thereto to move a third article and wrapper forward beneath the vertically moving plunger 104, the reciprocating plunger 19 forces the first package forward into the receiving chamber 21.

Movement of an article and wrapper into the receiving chamber 20 is checked by means of a vertical wall 115 having an internally screw threaded extension 116 which is engaged by a screw 117. By rotation of the screw 117 the wall 115 can be moved toward the wrapper folding channel, thereby reducing the size of the receiving chamber 20; for the purpose of receiving shorter articles that may be passed through the wrapper folding channel.

Shorter articles 56 placed in the magazine 55 require shorter wrappers 39, which render it necessary for the supports 40 to be raised in order that the middle of a wrapper shall be in line with the wrapper folding channel. To effect adjustment of the supports 40, a clamping screw 118 passing through a slot 119 in each support and into a wall of the chute 41 is loosened, and the supports 40 moved up and again clamped by means of the screws 118.

Owing to the extra length of the wrapper folding channel constructed as described, the stroke of plunger 54 is made sufficient to move an article and wrapper only part way through the wrapper folding channel, the pivoted plunger 25 being provided for completing the movement of said article and wrapper through the wrapper folding channel. It will be seen that by timing the movements of plungers 25 and 54 with reference to each other, as described, time consumed in part return travel of plunger 54 is gained by forward movement of an article and wrapper by means of plunger 25, while time consumed in part return travel of plunger 25 is gained by forward movement of an article and wrapper by means of plunger 54. Therefore extra long articles 56 can be rapidly moved through the wrapper folding channel.

Having described my invention, what I claim is:

1. A wrapping machine, comprising a wrapper folding channel or rectangular cross section, the corners of the interior of said channel having concave surfaces, means whereby a wrapper and an article having rounded corners can be moved through said wrapper folding channel, whereby the wrapper is partially folded upon the article, said concave surfaces serving to force the wrapper against the rounded corners of said article during travel of said article and wrapper through the wrapper folding channel; wrapper folders on two opposing sides of and

having reciprocating movement into and out of said wrapper folding channel, whereby corresponding rear flaps of the wrapper are folded against the rear end of the article; a folder having oscillating movement at right angles to the movements of the first named folders, and adapted to move into and out of said wrapper folding channel, thereby causing a certain rear flap of the wrapper to be folded against the rear end of the article; and a plunger having reciprocating movement at right angles to the movements of the first named folders, and adapted to move said article and wrapper away from said wrapper folding channel, thereby causing a certain other rear flap of the wrapper to be forced against a wall of said wrapper folding channel, whereby the last named flap is folded against said folded rear flaps.

2. A wrapping machine, comprising a wrapper folding channel and means whereby an article and a wrapper can be moved through said wrapper folding channel, whereby the wrapper is partially folded upon the article; wrapper folders on two sides of and having reciprocating movement into and out of said wrapper folding channel, whereby side rear flaps of the wrapper are folded against the rear end of the article; a movable folder located above and adapted to swing into and out of the wrapper folding channel, thereby causing an upper rear flap of the wrapper to be folded against the rear end of the article; and means whereby said article and wrapper are moved downward, thereby causing a lower rear flap of the wrapper to be forced against the lower plate of said wrapper folding channel, whereby said flap is forced against the rear end of the article.

3. A wrapping machine comprising a wrapper folding channel and means whereby an article and a wrapper can be moved through said wrapper folding channel, whereby the wrapper is partially folded upon the article; wrapper folders on two sides of and having reciprocating movement into and out of said wrapper folding channel, whereby side rear flaps of the wrapper are folded against the rear end of the article; a movable folder, having an attached paste applying roller, located above and adapted to swing into and out of the wrapper folding channel, thereby causing an upper rear flap to be folded against the rear end of the article, said roller on said folder serving to apply paste to a lower rear flap of the wrapper; and means whereby said article and wrapper are moved downward, thereby causing said paste coated lower rear flap to be forced against the lower plate of said wrapper folding channel, whereby said paste coated flap is forced against said folded upper rear flap.

4. A wrapping machine, comprising a

wrapper folding channel consisting of upper and lower plates and inwardly extending side folders on two opposing sides; said upper plate having two downwardly extending side folders and also having surfaces which curve downward toward the inner sides of said downwardly extending folders; said lower plate having two upwardly extending side folders and also having surfaces which curve upward toward the inner sides of said upwardly extending folders; means whereby a wrapper and an article having rounded corners can be moved through said wrapper folding channel, thereby causing the wrapper to be partially folded upon the article, said curved surfaces of said upper and lower plates causing said wrapper to be forced against the rounded corners of said article while the wrapper is being folded; wrapper folders having reciprocating movement into and out of said wrapper folding channel, whereby side rear flaps of the wrapper are folded against the rear end of the article; a movable folder located above and adapted to swing into and out of said wrapper folding channel, thereby causing an upper rear flap of the wrapper to be folded against the rear end of the article; and means whereby said article and wrapper are moved downward, thereby causing a lower rear flap of the wrapper to be forced against the lower plate of said wrapper folding channel, whereby said flap is forced against the rear end of the article.

5. A wrapping machine comprising a wrapper folding channel and a reciprocating plunger; means whereby forward movement of said plunger can force an article and a wrapper into said wrapper folding channel, whereby the wrapper is partially folded upon the article; a second reciprocating plunger and means for actuating it, whereby said second plunger is moved into and forward along said wrapper folding channel during return movement of the first named plunger, whereby said article and wrapper are moved farther forward; further forward movement of the second plunger then causing said article and wrapper to be moved through said wrapper folding channel, whereby the wrapper is further folded upon the article; and means whereby said second plunger during return movement thereof is moved out of said wrapper folding channel.

6. A wrapping machine comprising a wrapper folding channel and a reciprocating plunger; means whereby forward movement of said plunger can force an article and a wrapper into said wrapper folding channel, whereby the wrapper is partially folded upon the article; a second reciprocating plunger and means for actuating it, whereby said second plunger is moved into and forward along said wrapper folding

channel during return movement of the first named plunger, whereby said article and wrapper are moved farther forward; further forward movement of the second plunger then causing said article and wrapper to be moved through said wrapper folding channel, whereby the wrapper is further folded upon the article; and means whereby during movement of a second article and wrapper into said wrapper folding channel by forward movement of the first named plunger, said second plunger during return movement thereof is moved out of said wrapper folding channel.

7. A wrapping machine comprising a wrapper folding channel and a reciprocating plunger; means whereby forward movement of said plunger can force an article and a wrapper into said wrapper folding channel, whereby the wrapper is partially folded upon the article; a second reciprocating plunger and means for actuating it, whereby said second plunger is moved into and forward along said wrapper folding channel during return movement of the first named plunger, whereby said article and wrapper are moved farther forward; further forward movement of the second plunger then causing said article and wrapper to be moved through said wrapper folding channel, whereby the wrapper is further folded upon the article; means whereby said second plunger during return movement thereof is moved out of said wrapper folding channel; wrapper folders having reciprocating movement into and out of said wrapper folding channel, whereby side rear flaps of the wrapper are folded against the rear end of the article; a movable folder located above and adapted to swing into and out of said wrapper folding channel, thereby causing an upper rear flap of the wrapper to be folded against the rear end of the article; and means whereby said article and wrapper are moved downward, thereby causing a lower rear flap of the wrapper to be forced against a wall of the wrapper folding channel, whereby said flap is forced against the rear end of the article.

8. A wrapping machine comprising a wrapper folding channel and a receiving chamber; a reciprocating plunger adapted during forward movement thereof to move an article and a wrapper into said wrapper folding channel, whereby the wrapper is partially folded upon the article; a second reciprocating plunger adapted to move a wrapped article out of said receiving chamber; a plunger pivoted to the second plunger and a track for supporting the pivoted plunger; means for raising and lowering said track whereby said pivoted plunger is moved into and by means of the second plunger is moved forward along said wrapper folding channel during return movement

of the first named plunger, whereby said article and wrapper are moved farther forward; further forward movement of the second plunger then causing a wrapped article to be moved out of said receiving chamber and causing said pivoted plunger to move said article and wrapper through said wrapper folding channel, whereby the wrapper is further folded upon the article; said track being lowered during return movement of the second plunger, whereby said pivoted plunger is moved out of said wrapper folding channel, wrapper folders having reciprocating movement into and out of said wrapper folding channel, whereby side rear flaps of the wrapper are folded against the rear end of the article; a movable folder located above and adapted to swing into and out of said wrapper folding channel, thereby causing an upper rear flap of the wrapper to be folded against the rear end of the article; and means whereby said article and wrapper are moved down into said receiving chamber, thereby causing a lower rear flap of the wrapper to be forced against a wall of the wrapper folding channel, whereby said flap is forced against the rear end of the article.

9. A wrapping machine, comprising a wrapper folding channel, a receiving chamber, and supports for a wrapper; means whereby an article can be forced against

said wrapper and whereby said article and wrapper can be forced through said wrapper folding channel and into said receiving chamber, whereby the wrapper is partially folded upon the article; wrapper folders on two sides of and having reciprocating movement into and out of said wrapper folding channel, whereby side rear flaps of the wrapper are folded against the rear end of the article; a movable folder located above and adapted to swing into and out of the wrapper folding channel, thereby causing an upper rear flap of the wrapper to be folded against the rear end of the article; means whereby said article and wrapper are moved downward, thereby causing a lower rear flap of the wrapper to be forced against the lower plate of said wrapper folding channel, whereby said flap is forced against the rear end of the article; and adjusting devices whereby the length of said receiving chamber can be varied, and whereby the height of said wrapper supports can be varied, whereby articles and wrappers of varying length can be passed through the machine and the wrapper be thereby folded upon the article.

Signed at New York city in the county of Queens and State of New York this 17th day of April, A. D. 1915.

FRANK WILLIAM LEV.