

Sept. 15, 1925.

1,553,799

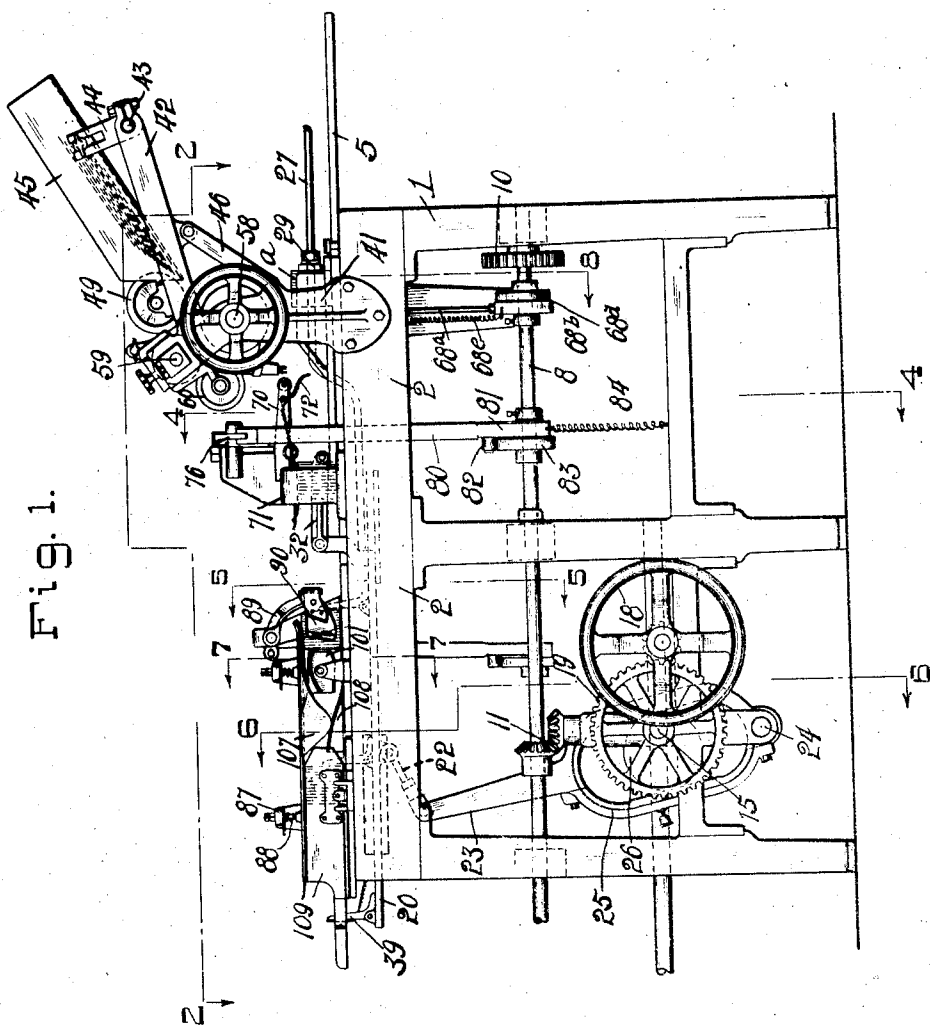
F. E. BEAM

WRAPPING MACHINE

Filed June 9, 1922

14 Sheets-Sheet 1

Fig. 1.



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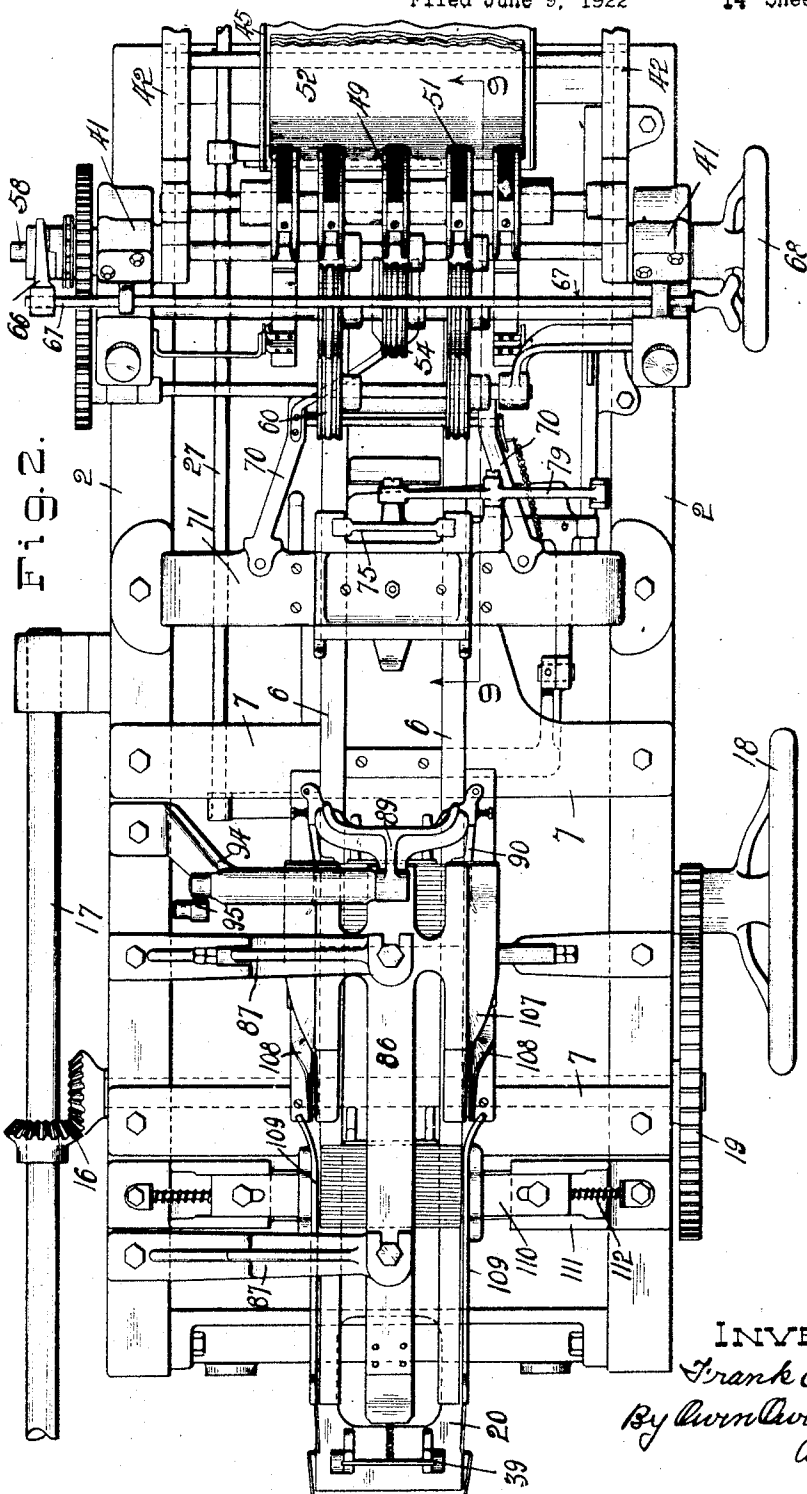
Sept. 15, 1925.

1,553,799

F. E. BEAM
WRAPPING MACHINE

Filed June 9, 1922

14 Sheets-Sheet 2



INVENTOR
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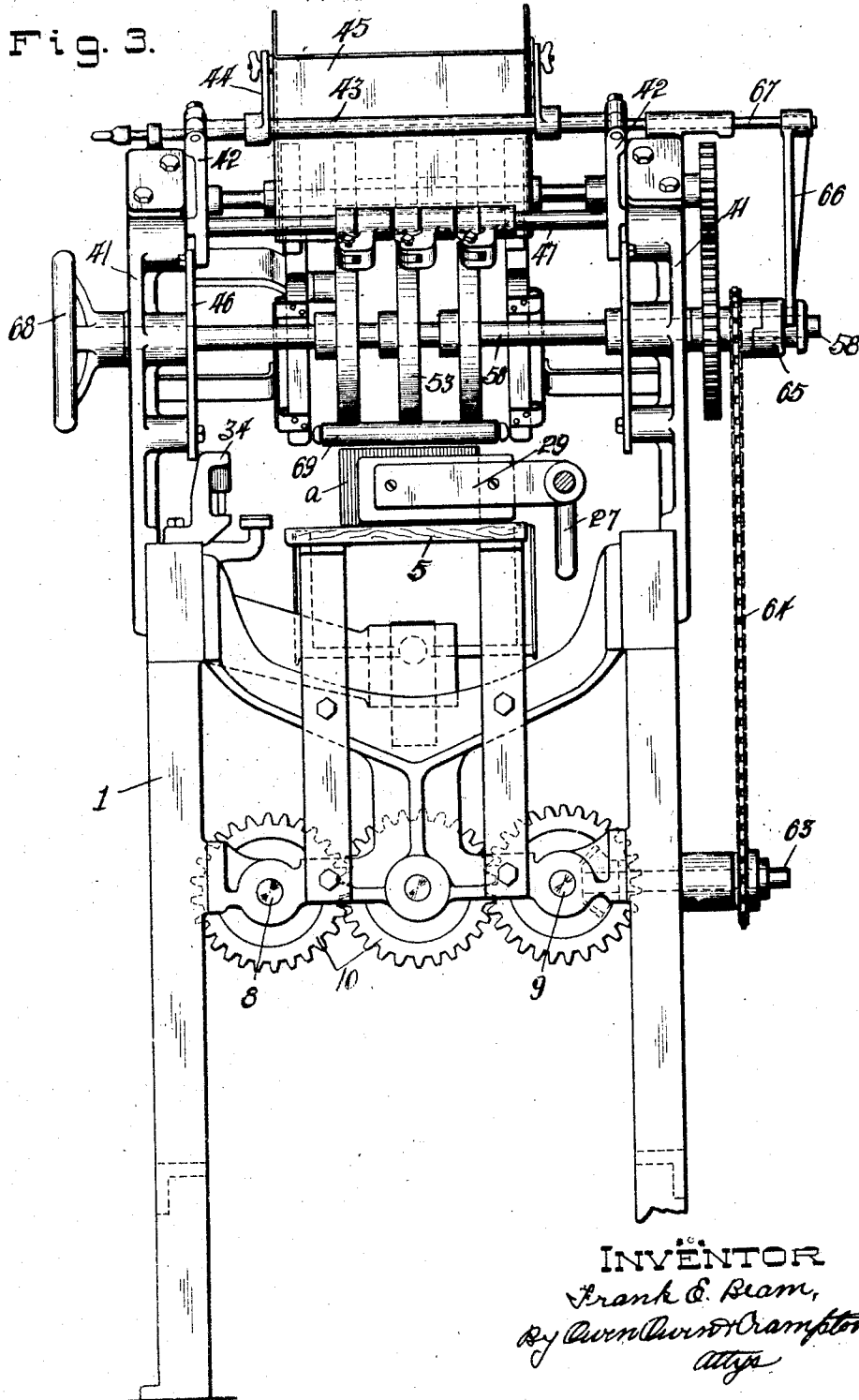
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14 Sheets-Sheet 3

Fig. 3.



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1,553,799

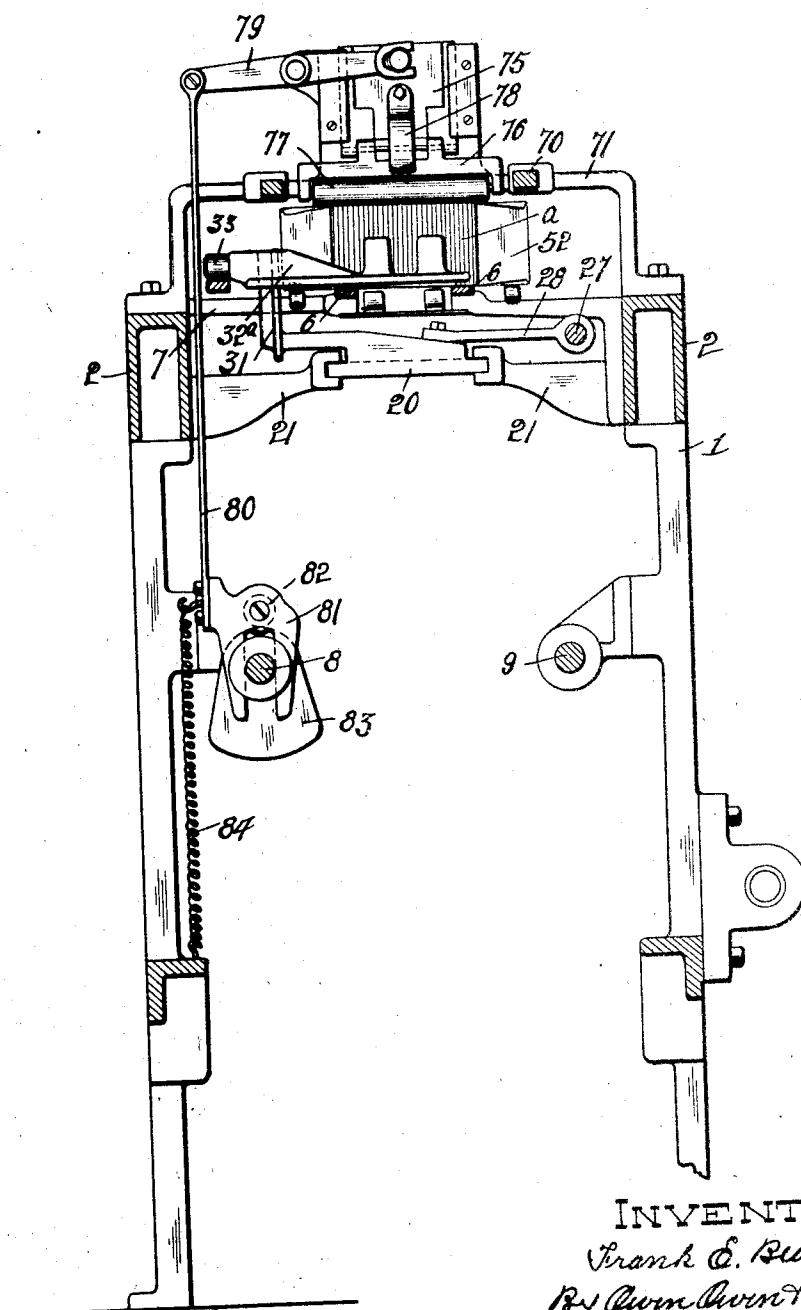
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14 Sheets-Sheet 4

Fig. 4.



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1,553,799

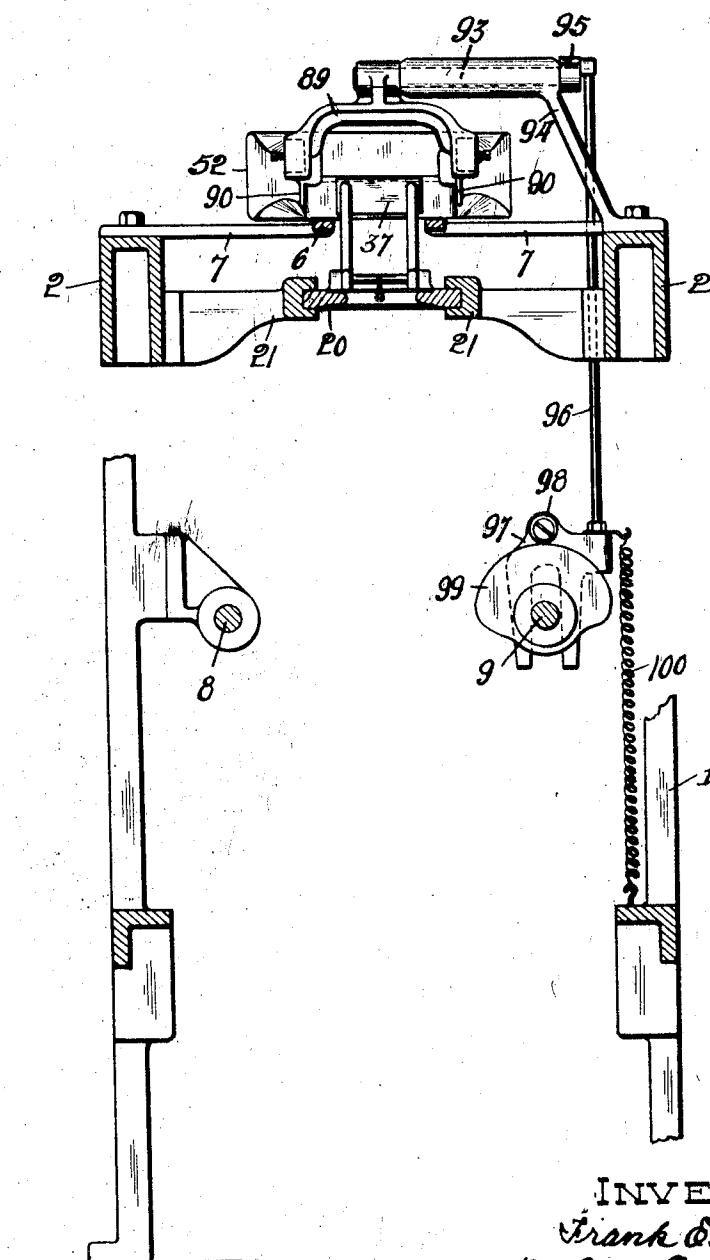
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14 Sheets-Sheet 5

Fig. 5.



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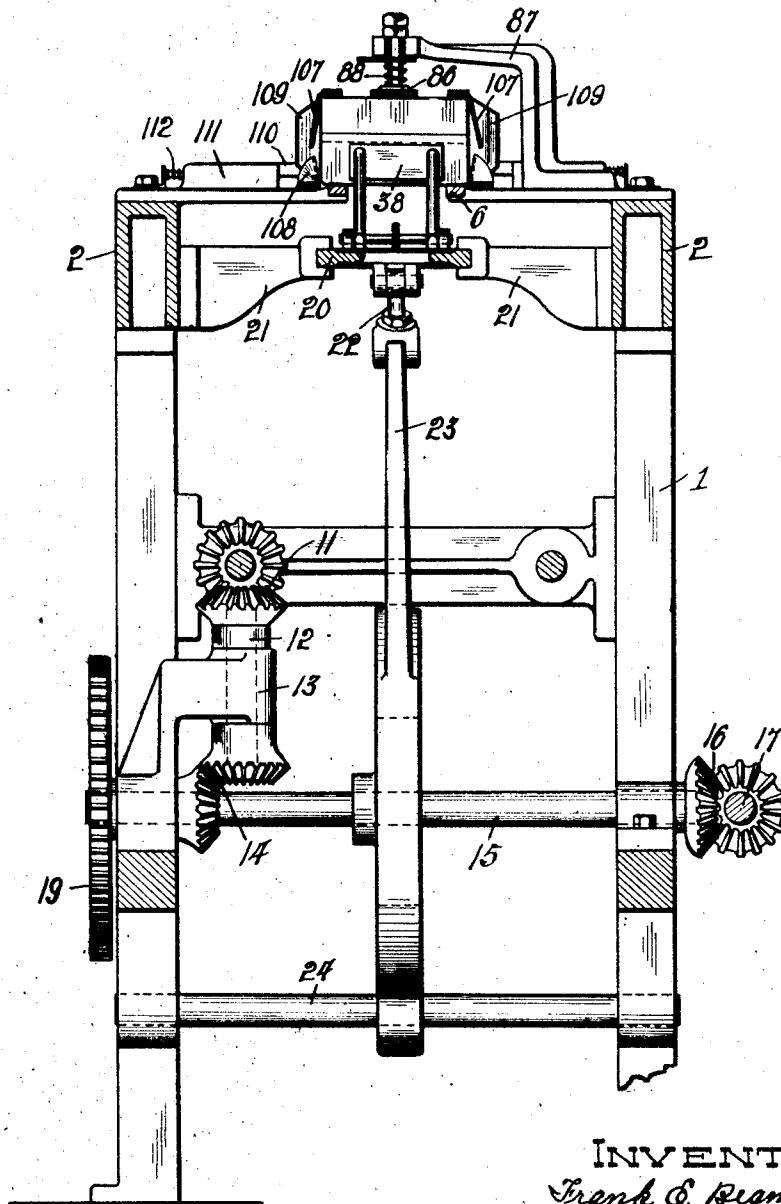
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14 Sheets-Sheet 6

Fig. 6.



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1,553,799

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14 Sheets-Sheet 7

Fig. 7.

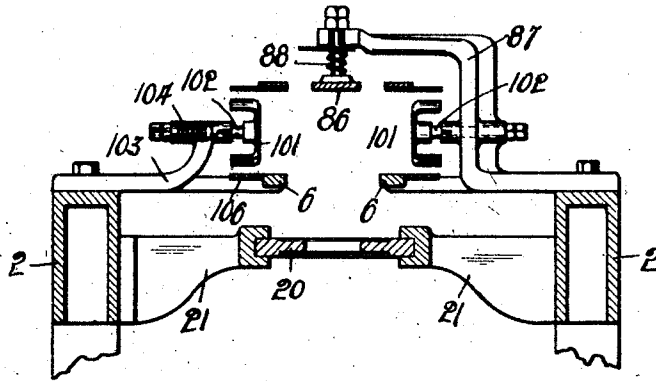
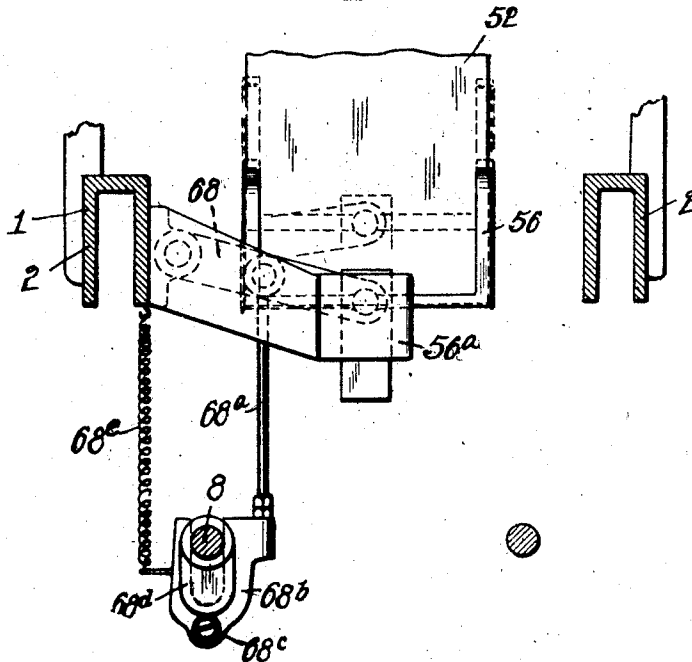


Fig. 8.



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1,553,799

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14 Sheets-Sheet 8

Fig. 10.

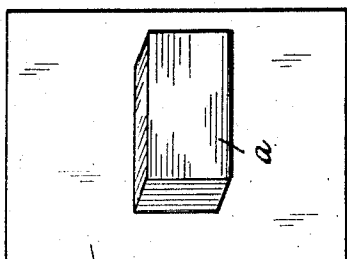


Fig. 11.

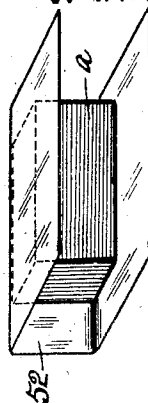


Fig. 9.

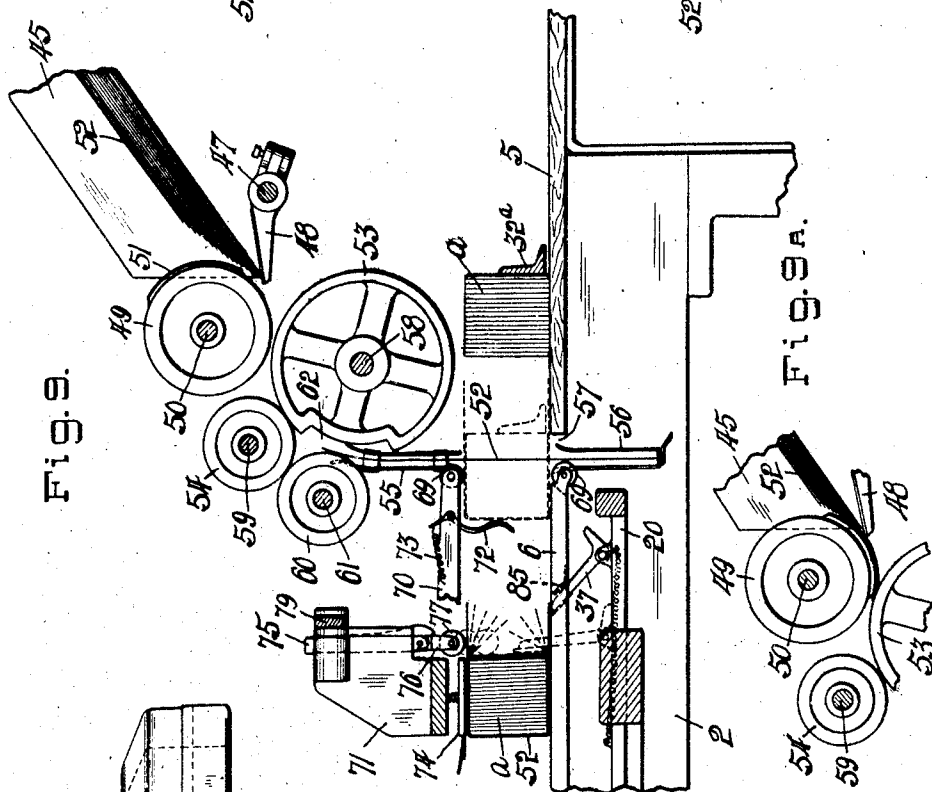
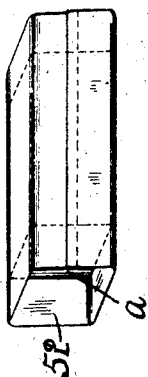


Fig. 9A.

Fig. 12.



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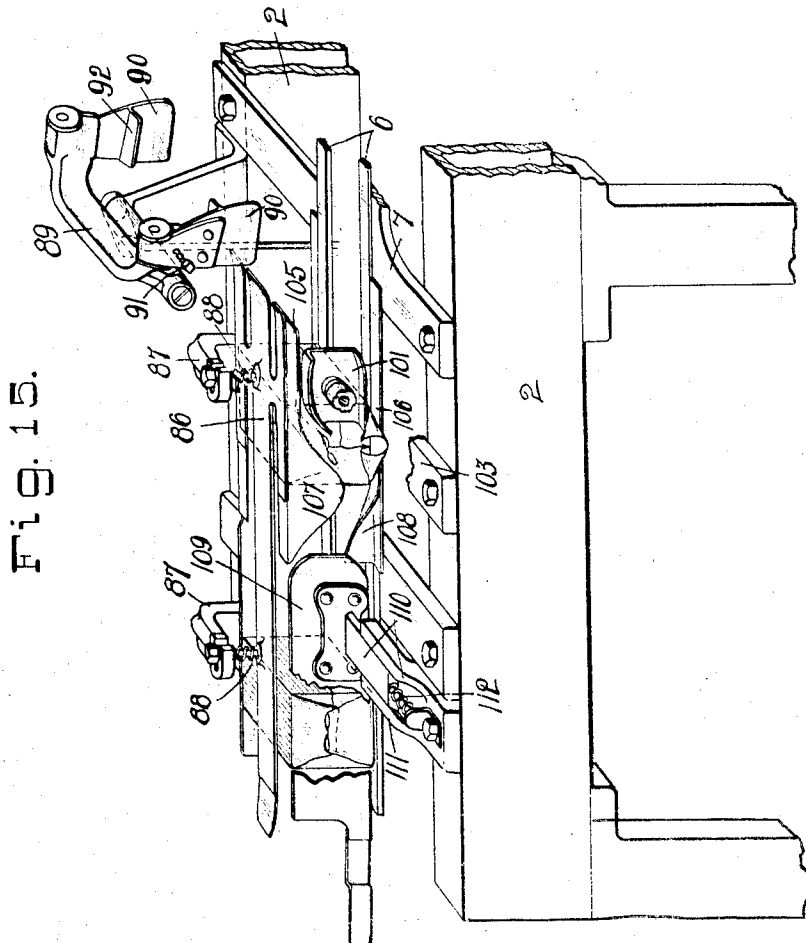
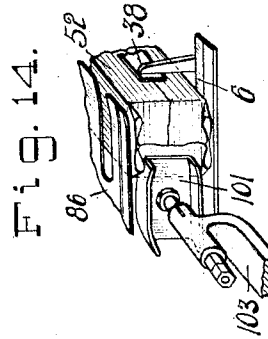
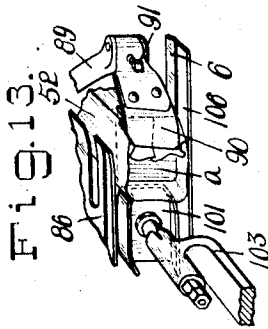
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WRAPPING MACHINE

Filed June 9, 1922

14 Sheets-Sheet 9



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1,553,799

F. E. BEAM
WRAPPING MACHINE

Filed June 9, 1922

14 Sheets-Sheet 10

Fig. 16.

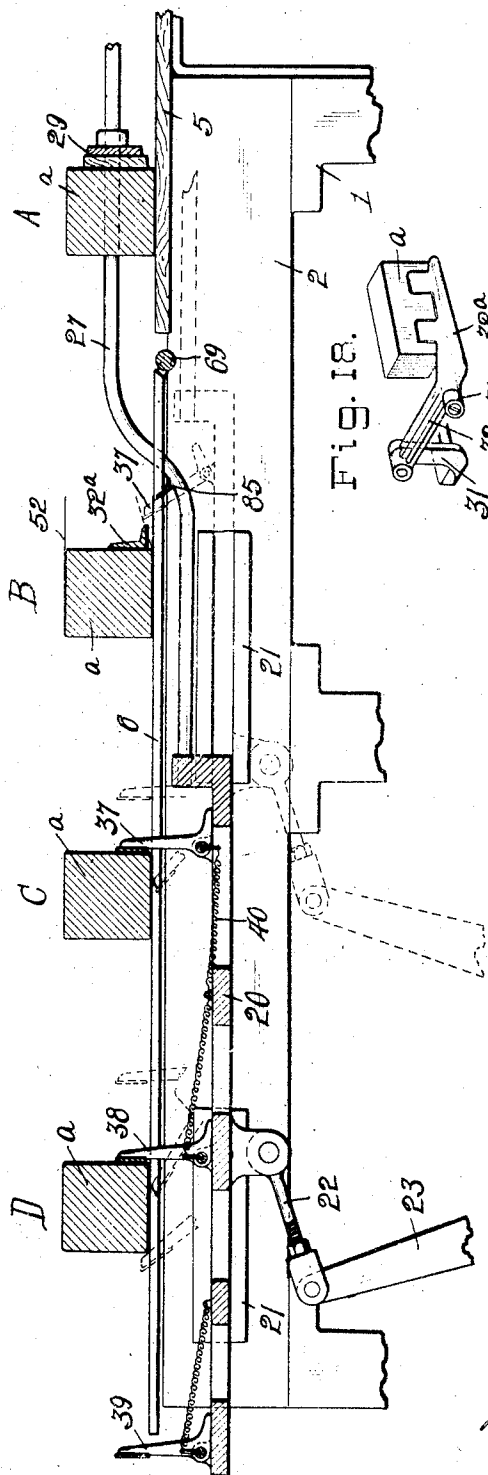


Fig. 18.

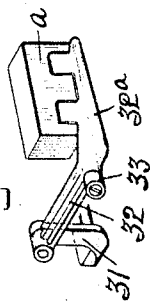
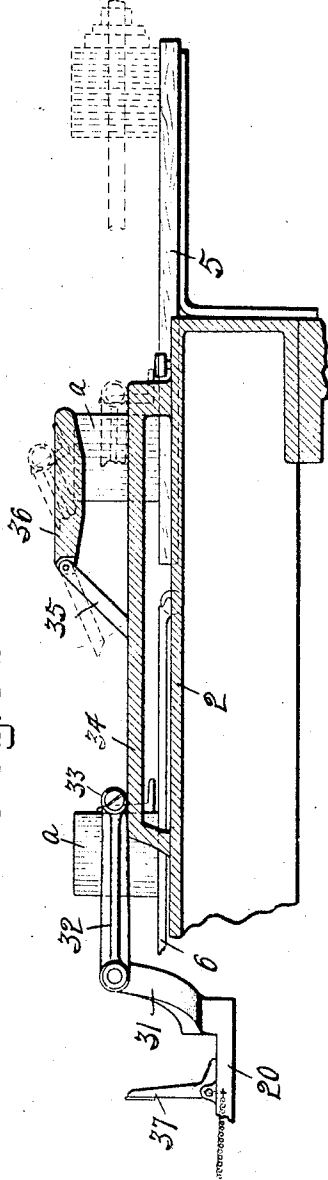


Fig. 17.



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WRAPPING MACHINE

Filed June 9, 1922

14 Sheets-Sheet 11

Fig. 19A.

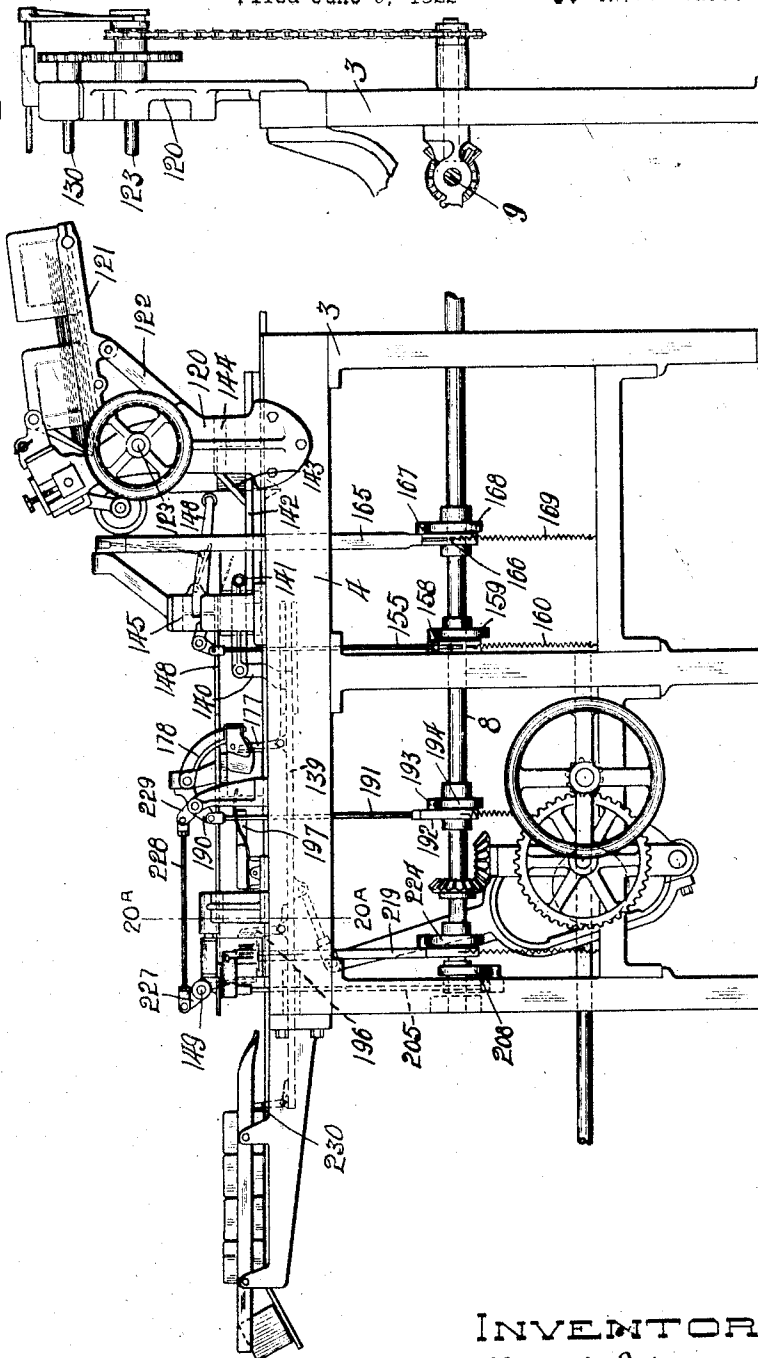


Fig. 19.

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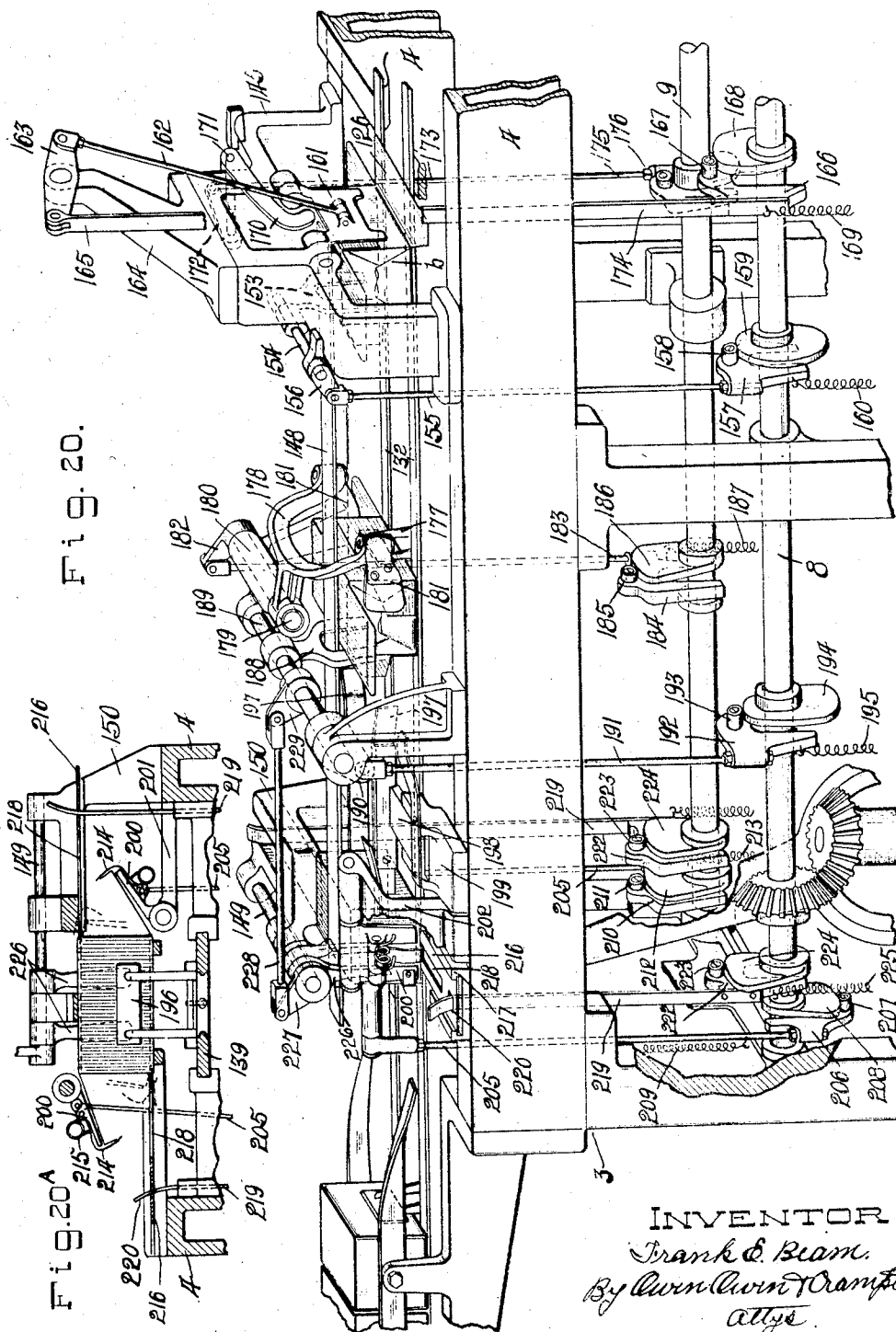
1,553,799

F. E. BEAM

WRAPPING MACHINE

Filed June 9, 1922

14 Sheets-Sheet 12



Sept. 15, 1925.

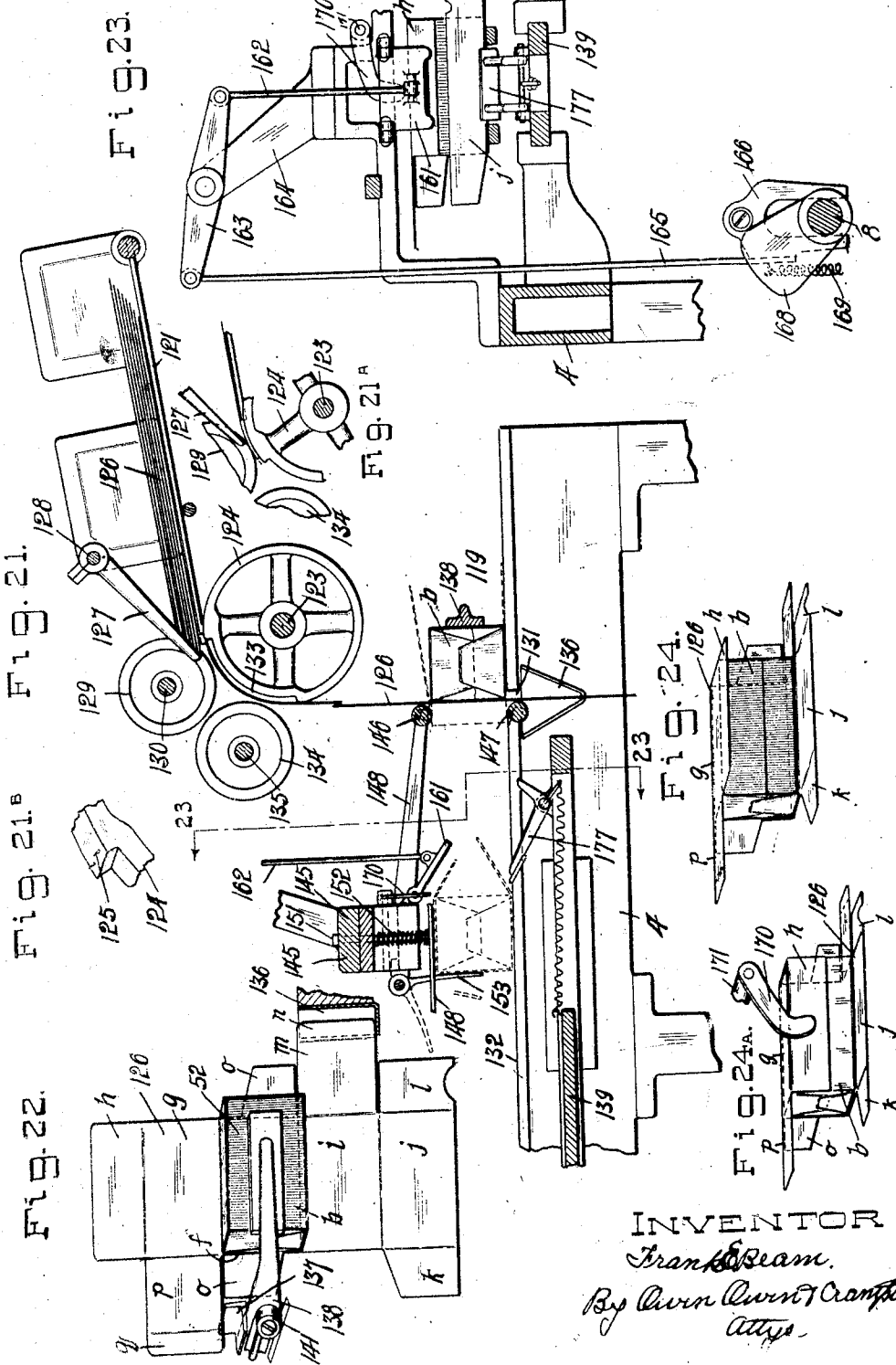
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F. E. BEAM

WRAPPING MACHINE

Filed June 9, 1922

14 Sheets-Sheet 13



Sept. 15, 1925.

1,553,799

F. E. BEAM
WRAPPING MACHINE

Filed June 9, 1922 14 Sheets-Sheet 14

Fig. 25.

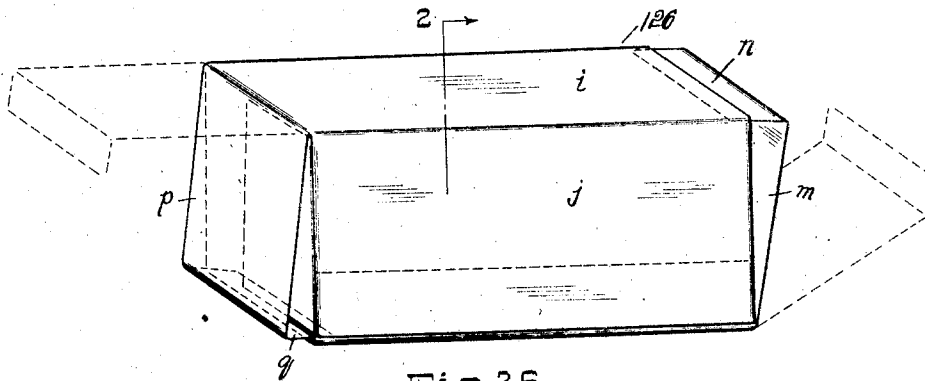


Fig. 26.

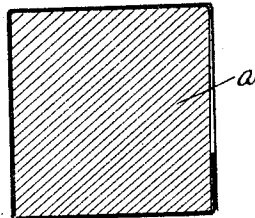
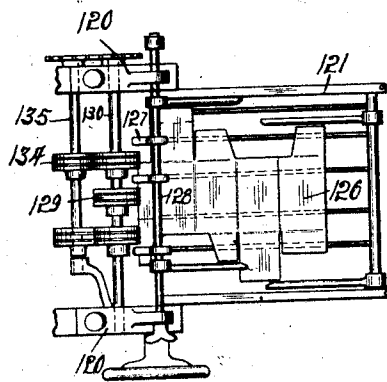


Fig. 27.



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UNITED STATES PATENT OFFICE.

FRANK E. BEAM, OF TOLEDO, OHIO, ASSIGNOR TO THE AUTOMAT MOLDING & FOLDING COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

WRAPPING MACHINE.

Application filed June 9, 1922. Serial No. 566,929.

To all whom it may concern:

Be it known that I, FRANK E. BEAM, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have made an Invention Appertaining to a Wrapping Machine; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a machine for folding wrapper sheets or cartons around articles as they are successively passed through the machine.

The primary object of the invention is the provision of a machine of this class which is automatically operable in a rapid and efficient manner to place or fold wrappers or cartons about articles, and particularly about cakes or bricks of material of a soft or semi-plastic nature, such for instance as butter and ice-cream, without destroying and changing the molded shape of the articles.

A further object of the invention is the provision of a machine of the character described which is successively and automatically operable to fold a tissue or thin wrapper sheet around bricks of butter or other material of a semi-plastic nature and then fold a carton member around the wrapped brick and tuck in its end flaps.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a side elevation of the thin sheet wrapping unit of the machine. Fig. 2 is an enlarged top plan view thereof with parts removed and parts broken away. Fig. 3 is a rear end elevation thereof with parts broken away and removed. Figs. 4, 5 and 6 are enlarged sections taken respectively on the lines 4—4, 5—5 and 6—6 in Fig. 1, with parts in Fig. 5 broken away. Fig. 7 is an enlarged fragmentary section on the line 7—7 in Fig. 1. Fig. 8 is an enlarged fragmentary section taken on the line 8 in Fig.

1. Fig. 9 is a fragmentary section on the line 9—9 in Fig. 2. Fig. 9^A is a fragmentary detail of a portion of the thin wrapper sheet feeding means. Fig. 10 is a perspective view illustrating the relation of a brick of material to a wrapper sheet when moved into engagement therewith. Fig. 11 is a perspective view of a brick and wrapper sheet illustrating the first folding operation. Fig. 12 is a similar view illustrating the second and third folding operations, which lap the projecting side edges of the sheet. Fig. 13 is a perspective fragmentary view illustrating the first end folding operation. Fig. 14 is a similar view illustrating the second end folding operation. Fig. 15 is a perspective fragmentary view of the end folding means for the wrapper sheets, with parts broken away. Fig. 16 is an enlarged central vertical longitudinal section illustrating the brick feeding means and with parts broken away and removed. Fig. 17 is an enlarged fragmentary vertical longitudinal section of a portion of the brick feeding means which moves the bricks from the first folding to the second folding position. Fig. 18 is a perspective detail of a portion of the brick feeding means. Fig. 19 is a side elevation of the carton wrapping unit of the machine. Fig. 19^A is a fragmentary rear elevation thereof illustrating the feed roll driving means. Fig. 20 is an enlarged fragmentary perspective view of a portion thereof with parts broken away. Fig. 20^A is a fragmentary cross-section on the line 20^A—20^A in Fig. 19. Fig. 21 is a fragmentary longitudinal vertical section of the carton sheet feeding means and a portion of the carton folding mechanism. Fig. 21^A is a fragmentary view of the carton sheet feeding means. Fig. 21^B is a fragmentary perspective view of a portion of the carton feeding wheel. Fig. 22 is a perspective view of an article and carton in initial engaging relation together with associated parts of the machine. Fig. 23 is a section on the line 23—23 in Fig. 21. Fig. 24 is a perspective view of an article and carton after the first folding operation. Fig. 24^A is a similar view thereof after the second folding operation showing the side flap folding finger. Fig. 25 is an enlarged perspective view of a carton in complete folded position with the edge tongues of the end closing flaps in the act of

being inserted into the carton. Fig. 26 is a cross-section on the line 26 in Fig. 25, and Fig. 27 is a fragmentary top plan view of the carton feeding means.

Referring to the drawings, 1 designates the frame of the thin sheet wrapping unit, having the longitudinally extending top side bars 2, and 3 the frame of the carton wrapping unit which has the longitudinally extending top side bars 4 on a level with and substantially longitudinally aligned with the top bars 2 of the first unit. A table or platform 5 is provided at the upper rear end portion of the frame 1 between the sides 2, and the bricks or articles *a* to be wrapped are placed on this table either by hand or may be automatically fed thereto from a brick molding unit which in practice is used in connection with the machine and successively forms butter, or other material of a semi-plastic nature, in brick form and feeds the bricks forward onto the table 5 in position to be advanced through the wrapping machine by the feeding means hereinafter described. The table 5 terminates at its forward end adjacent to the rear end of the frame unit 1 and the bricks continue their movement through the wrapping machine on transversely spaced track bars 6. These track bars are mounted on and supported by suitable bracket arms 7 projecting inward from the side bars 2.

Two shafts 8 and 9 are journaled in transversely spaced relation in the two frames 1 and 3 and extend the entire length thereof. These shafts are connected at one end by a train of gears 10 to cause them to rotate in unison and, in the present instance, at the same speed. The shaft 8, in the present instance, is in bevel-gear connection 11 with a vertical shaft 12 (Figs. 1 and 6) which shaft is carried by a bracket 13 at a side of the frame 1 and is in bevel-gear connection 14 at its lower end with a cross-shaft 15 journaled crosswise in the frame 1. The shaft 15 is in turn in bevel-gear connection 16 with a drive shaft 17 disposed at one side of the frame lengthwise thereof. A hand operating wheel 18 (Fig. 1) is mounted on a stub shaft projecting from the frame 1 and has a small pinion in mesh with a large pinion 19 on the shaft 15.

Thin sheet folding unit.

A feed-slide 20 is mounted in the upper portion of the frame 1 for longitudinal reciprocatory movements in a horizontal plane below the track-bars 6 and has its movements guided by bearing brackets 21 projecting inward from the frame side bars 2 (Figs. 4, 5 and 6). The slide 20 is connected by a link 22 to the upper end of a lever 23, which is pivoted below the counter-shaft 15 at 24 and is provided above such pivot with a yoke 25, which embraces a cam-

wheel 26 on the shaft, whereby a rotation of the cam-wheel imparts predetermined rocking movements to the lever. It is thus evident that at each revolution of the cam 26 the feed-slide 20 has a forward and rearward stroke of predetermined length imparted thereto.

A rod 27 projects rearward from one side of the feed-slide 20 near its rear end and the rear end portion of such rod is elevated above the plane of the table 5 at one side thereof and has a brick or article feeding arm 29 projecting transversely therefrom and adapted, during each forward stroke thereof, to engage a brick *a* previously placed on the table 5, and move it to the position A (Fig. 16) in the machine.

An arm 31 (Fig. 17) projects upward and outward from the rear end of the feed-slide 20 and has an elbow-lever 32 pivoted to and projecting rearwardly therefrom above the plane of the track-bars 6, with its forearm portion 32^a projecting over the track-bars 6 crosswise thereof in position to engage back of an article *a* and move it a distance forward over the track-bars when the feed-slide 20 is reciprocated. The lever 32 is provided at its elbow with a roller 33, which rests on a bar 34 for horizontal movements thereover, and when the lever 32 has been moved rearward a predetermined extent, the roller 33 passes up a pivoted inclined finger 35 to an elevated horizontally disposed bar 36. The movement of the roller up the incline 35 and onto the bar 36 effects a raising of the forearm portion 32^a of the lever sufficiently to pass rearwardly over the top of the brick *a*, which has been positioned at a side of the bar 36 by the preceding forward movement of the arm 29. As the roller 33 passes from the rear end of the bar 36 at the rear end of its stroke, the lever drops down until its roller strikes the bar 34 thereby placing the fore-arm 32^a of the lever in the rear of the adjacent brick *a* in position to engage and push the same forward at the return or forward stroke of the feed-slide. The inclined finger 35 is pivoted to the bar 36 to permit the roll 33 on its forward movement to raise and pass under the same. The lever 32 moves an engaged brick *a* forward to the second position of the brick in the machine, which position is designated B (Fig. 16).

The feed-slide 20 has, in the present instance, three pusher-fingers 37, 38 and 39, of bellcrank-lever form pivoted thereto and adapted to have successive pushing engagement with a brick *a* in its movement over the track-bars 6 as the slide 20 is reciprocated. Each pusher-finger is normally held in upright operative position by a respective spring 40, which connects the same to the slide 20 and is permitted to swing forward against the tension of its spring when

it passes under a brick *a* during a retracting movement of the slide, as is evident by reference to Fig. 16.

A bearing standard 41 (Figs. 1, 2 and 3) rises from each frame bar 2 near its rear end and each standard has an arm 42 projecting rearward from its upper end portion and connected at its rear end to the rear end portion of the other arm 42 by a cross-bar 43, which is fixedly clamped at each end to the respective carrying arm. A pair of arms 44 projects up from the bar 43 in transversely spaced relation and has an adjustably inclined wrapper sheet supporting table 45 therebetween. The arms 42 are braced at their under side by bars 46, which extend therefrom down to and connect with the standards 41. A bar 47 connects the two arms 42 below the forward end portion of the table 45 and has a plurality of fingers 48 adjustably projecting forward therefrom slightly in advance of the forward end of the table and in supporting relation thereto as shown in Fig. 9. A plurality of sheet feeding rolls 49 are mounted on a shaft 50 with their rear portions in overhanging relation to the forward end of the feed-table 45 and each provided on a portion of its periphery with a friction feed strip or surface 51 of rubber or other suitable material. The wrapper sheets 52, which are placed in a pile on the top of an inclined table 45, are positioned with the forward edge of each sheet disposed slightly to the rear of the next subjacent sheet and at each revolution of the feed wheels 49 the friction strips 51 are intended to engage the exposed forward end portion of the lowermost sheet in the pile and draw it forward from under the pile, such feeding movement of the sheet being continued until the sheet has been advanced a distance over a lower set of feed rolls 53 and between them and an upper set of coacting gripping rolls 54, which rolls then take up the feeding of the sheet and feed it downward between vertically disposed edge guides 55 and 56 disposed respectively above and below the forward end portion of the frame table 5, the sheet passing through a space 57 provided between the adjacent ends of the table 5 and track bars 6, as best shown in Fig. 9. The downward movement of a sheet 52 is stopped by the lower guides 56 with the middle portion of the sheet substantially in position to be engaged by the brick *a* disposed at the rear thereof when such brick is moved forward. The friction strips 51 also coact with the wheels 53 to assist in the sheet feeding movement.

The sets of wheels 53 and 54 are respectively mounted on cross shafts 58 and 59 and a set of guide wheels 60 is mounted on a cross shaft 61 in advance of the wheels 53 and assists in guiding the sheets into the

edge guides 55. The shafts 50, 58, 59 and 61 are journaled at their ends in the standards 41. The wheels 53 are provided with peripheral recesses 62, which when in register with the feed strips 51 and coacting feed rolls 54 release the feeding action of the rolls on the sheet.

A shaft 63 is journaled in one side of the frame, being in beveled gear connection with the shaft 9, and has a chain and sprocket wheel connection 64 with the shaft 58, the sprocket member of which connection, mounted on the shaft 58, is loose thereon and connected thereto by a shiftable clutch collar 65 that is feathered on the shaft. A shipper arm 66 engages the clutch collar and is carried by a control bar 67, which is mounted for reciprocatory movements transversely of the machine. The shaft 58 is in suitable geared connection with the shafts 50, 59 and 61 to impart the requisite driving movements thereto.

The lower guide frame 56 for the sheet 52 preferably has its side or upright portions connected by a channeled cross-bar portion so that the frame is of U-form. It is preferable to mount the frame 56 for limited vertical movements so that it may be moved up to meet the sheet 52 in its downward feeding movement substantially at the time the upper edge of the sheet is released by the coacting feeding rolls, and the frame 56 then lowers the desired extent to place the sheet with its vertical center substantially in alignment with the vertical center of a brick *a* to be wrapped thereby. For this purpose the frame 56 is guided for limited vertical movements by an arm 56^a projecting from an adjacent part of the frame 1 and a lever 68 is pivoted at one end to the inner end portion of said bracket for vertical rocking movements relative thereto and has its free end pivotally connected to the lower end portion of the frame 56, as shown in Fig. 8. A rod 68^a projects down from the lever 68 intermediate its ends and carries a fork 68^b at its lower end for straddling the shaft 8. This fork carries a roller 68^c below the shaft which is engaged by a cam 68^d on the shaft whereby a positive downward stroke is imparted to the frame 56 at each revolution of the cam. A coiled contractile spring 68^e connects the fork 68^b to a superposed portion of the frame 1 to yieldingly retain the roller 68^c in coaction with the cam.

When a brick *a* is moved by the feed lever 32 from its position A at the rear of the table opening 57 to its position B in advance of said opening, the front side of the brick engages a sheet 52, disposed in the guides 55 and 56, substantially intermediate its ends and causes a folding of the sheet in reclined U-shape about the brick,

due to the sheet being carried with the brick to its position B and having its projected ends respectively folded under and over the brick by the coaction therewith of a pair of rollers 69. One of these rollers is carried by the track bars 6 at their rear ends and the other is carried by a pair of arms 70 projecting rearward from a frame yoke 71, which projects over the track bars and is mounted on its ends on the respective frame bars 2.

A finger 72 is pivotally suspended from between the arms 70 at the rear of the upper roll 69 and is acted on by a spring 73 to cause it to press against the central portion of the sheet 52 and hold it to the brick α during a predetermined advancing movement of the brick.

A brick α and its wrapper sheet, when moved to position B, are disposed below the yoke 71, and a yielding pressure plate 74, which is carried at the under side of the yoke for yielding vertical movements, coacts lightly with the upper side of the brick to hold the upper rearwardly bent portion of the wrapper sheet against the brick. A slide 75 (Figs. 2, 4 and 9) is mounted for vertical sliding movements in guides provided at the rear side of the yoke 71 and this slide has a fork 76 pivoted to its lower end for swinging movements longitudinally of the machine and carrying a roller 77. Upon a lowering of the slide 75 the roller 77 passes a short distance down at the rear side of the brick α and causes a folding of the upper projecting edge portion of the wrapper sheet down against the rear side of the brick, as best shown in Fig. 9. A spring 78 is carried by the slide 75 and bears against the fork 76 to yieldingly hold the roller against the brick. The fork thus functions as a yieldable tip on the lower end of the slide. A lever 79 is fulcrumed to one side of the slide guiding portion of the yoke 71 and has one end connected to the slide 75 to impart reciprocatory movements to the slide when the lever is rocked. The other end of the lever has a rod 80 extending down therefrom and provided at its lower end with a fork 81, which straddles the shaft 8. This fork carries a roller 82 on the shaft 8 whereby at each revolution of the cam a predetermined lowering and raising movement is imparted to the slide 75. A coiled contractile spring 84 connects the rod 8 to a subjacent part of the frame 1 and yieldingly holds the roller 82 to the cam.

When the feed slide 20 is at the limit of its rearward movement, as shown by its dotted line position in Fig. 16, the rear pusher-finger 37 is disposed in forwardly inclined position under the rearwardly projecting lower edge portion of the wrapper sheet 52 of the brick when in its position B,

being held in such inclined position by a stop 85 between the track-bars 6, with which it engages. As the feed-slide 20 moves forward the finger 37 straightens up and raises the lower rear flap portion of the wrapper sheet 52 therewith, and then, during the continued forward movement of the finger, forces said portion of the sheet up against the rear side of the brick in lapping relation to the upper rear edge portion of the wrapper, the folding of which against the brick precedes that of the lower edge portion. The brick and wrapper are fed to the position B in the relation shown in Fig. 11, and the rear edge portions of the wrapper are folded inward in lapping relation, as shown in Fig. 12, when the brick is in its position B. It will be understood that when the finger 37 is in position to engage the brick α disposed below the yoke 71 the member 32^a will be in position to engage the next brick α at the rear which is disposed in its first position at the return of a fed wrapper sheet 52, as shown in Fig. 9.

As the feed slide 20 continues its forward movement after the finger 37 has folded the lower rear wrapper edge against the brick, the brick and its wrapper are moved forward under a vertically yielding pressure strip 86, and stop in their third position, or position C, under the rear edge of such strip, as indicated in Figs. 1 and 13. The pressure strip 86 extends for a considerable distance over the track bars 6 lengthwise thereof and is suspended for vertical movements from bracket arms 87 attached to one of the frame bars 2. Coiled compression springs 88 are disposed between the pressure strip and bracket arms to yieldingly resist a raising of the pressure strip. When a brick has been moved to this C position, a pivotally mounted forked member 89 is swung downward and forward from its raised position shown in Fig. 15. This member has fingers 90 pivoted to and projecting forward from its fork arms in position to pass forward at the ends of the brick in lapping relation thereto when the member 89 is swung down, and to engage and cause the rear projecting end portions of the wrapper sheet to be folded forward against the ends of the brick between the upper and lower projecting end portions of the wrapper, as shown in Fig. 13. The fingers 90 are mounted for yielding outward swinging movements from the normal position shown in Fig. 15, being normally held in such position by coiled springs encircling headed pins 91, which project loosely through the inner end portions of the fingers from respective portions of the member 89. The fingers 90 have flanges 92 projecting inward therefrom for stop engagement with the rear edge of a brick, as shown.

The member 89 is carried by a shaft 93

(Fig. 5), which is journaled in a bearing arm 94 projecting from one of the frame bars 2, and this shaft has a rocker-arm 95 at one end. A rod 96 projects down from this rocker-arm and is provided at its lower end with a fork 97 which straddles the shaft 9 and carries a roller 98, which rides on a cam 99 on said shaft. It is thus evident that at each revolution of the cam 99 a predetermined rocking movement is imparted to the rocker member 89. A coiled contractile spring 100 connects the rod 96 to a subjacent portion of the frame 1 and yieldingly holds the roller 98 on its cam.

During the folding operation of the member 89 the feed-slide 20 is retracted to place the pusher finger 38 at the rear of the brick, and during the next forward stroke of the feed slide the brick is moved forward under the pressure strip 86 to its fourth or D position, in which position it is still disposed under the pressure strip. During the initial portion of this movement of the brick the ends of the brick pass by end folding members 101, which engage the forward projecting end portions of the wrapper sheet and cause an inward folding of such portions between the upper and lower end flap portions of the sheet and over the previously folded rear end portions of the sheet, as shown in Figs. 14 and 15. The members 101 are carried by stems 102, one of which is mounted for yielding outward movements in the rear bracket arm 87, while the other is mounted for yielding outward movement in a bracket arm 103 fixed to the adjacent frame bar 2. A coiled contractile spring 104 (Fig. 7) is mounted in each stem bearing in encircling relation thereto and coacts with the stem and bearing in a manner to resist an outward movement of the folding member. The upper and lower edges of the folding member are preferably turned outward as shown. Upper and lower flange strips 105 and 106 project respectively from the side edges of the pressure strip 86 at the rear end portion thereof and from the outer edges of the track bars 6 above and below the end folding members 101 in vertically spaced relation thereto. The upper flanges 105, immediately in advance of the members 101, are formed with downwardly and inwardly extending wrapper folding portions 107, which coact with the upper projecting end portions of the wrapper sheet and turn them down and inward against the previously folded front and rear end portions of the sheet as the brick is moved forward. The lower flanges 106 are provided near their forward ends slightly in advance of the upper folding portions 107 with upwardly and inwardly extending folding portions 108, which engage the lower projecting end portions of the wrapper sheet and fold them upward and inward in lapping relation over

the respective upper folded portions of the wrapper sheet. This completes the folding operation of the wrapper sheet.

Yielding side pressure plates 109 are disposed at the sides of the brick runways immediately in advance of the side folding flanges 107 and 108 in position to engage the folded end portions of a wrapper sheet and hold them closely to the ends of the brick in such position. The members 109 also extend a distance forward from position D to hold the end portions of the wrapper sheet in closely folded relation during a predetermined portion of the forward feeding movement of the brick after leaving the position D.

Each plate 109 preferably has its rear end turned slightly outward and is carried by a stem member 110, which is mounted for reciprocatory movements transversely of the frame in a guide 111 carried by the adjacent frame side bar 2. A coiled compression spring 112 coacts with the stem 110 to yieldingly resist an outward movement thereof. The next forward movement of the feed-slide 20 causes the forward pusher finger 39 thereof to engage a wrapped brick disposed in the position D and to move it to the first position in the carton wrapping unit, the frames 1 and 3 of the two units being in close end abutment for such purpose, and the forward ends of the track-bars 6 meeting the rear end of a table 119 on the rear end portion of the frame 3.

Carton folding unit.

Two standards 120 (Fig. 19) rise from the rear end portion of the frame 3, one from each side bar 4 thereof, and an inclined carton holding table 121 is supported in elevated position at the rear of these standards by supports 122 rising therefrom. A shaft 123 is journaled in the standards 120 below the front edge of the table 121 and carries a plurality of feed wheels 124 below the forward edge of the table. Each of these wheels is provided at a point on its periphery with one or more radially projecting pins 125 (Fig. 21^B), which, as they pass under the forward edge of the table in each revolution of the wheel, engage the lowermost carton 126 of the pile disposed on the table and draw it forward from the pile. The forward movement of the remaining cartons of the pile is prevented by a plurality of fingers 127, which extend downward and forward from a shaft 128 carried by the upper portion of the table as shown in Fig. 21. An upper set of wheels 129, which are mounted on the shaft 130, coact with the wheels 124 to feed the carton forward and downward in advance of a wrapped brick disposed on the table 119 and through an opening 131 provided between the forward end of the table 119

and the pair of track bars 132, which extend lengthwise of the frame the same as the track bars 6 of the sheet wrapping unit. A portion of the periphery of the wheel 124 in advance of the pins 125 is cut away, as shown at 133, to release the feeding coaction of the wheels 129 with the wheels 124 during a portion of each revolution of the latter. A second set of feed wheels 134 are disposed on a shaft 135 in advance of the wheels 124 and coact therewith in feeding and guiding the movements of the carton. The shafts 123, 130 and 135 are driven from the shaft 9 by a clutch controlled driving connection, as shown in Fig. 19^A, which connection is similar to that between the shaft 9 and the thin wrapper sheet feeding means in Fig. 3.

The cartons are of the usual form, being provided with a central panel *f*, a top panel *g* with an edge flap *h* at its outer side edge, and a bottom panel *i* with a front panel *j* attached to its outer edge. The front panel *j* has the opposite end flaps *k* and *l*, the panel *i* has an outer end closing flap *m* at its right end with a tongue *n* attached to its outer edge. The panel *f* has flaps *o* at its opposite ends, and the panel *g* has an outer end closing flap *p* at its left end with a tongue *q* at its outer end.

When a carton 126 has been fed to brick engaging position, as shown in Figs. 21 and 22, its center panel *f* is disposed in register with the wrapped brick designated *b*, which is disposed on the table 119, and the carton is supported in this position by the end closing flap *m* resting at its outer end in the bottom of a U-shaped guide member 136 disposed below the table opening 131 at one end thereof. The other end flap *p* of the carton rests at its lower edge on a support 137 (Fig. 22) provided on the top of the elbow lever 138, which performs the same function with respect to the wrapped brick as does the elbow lever 32 of the sheet wrapping unit with respect to the unwrapped brick.

A feed slide 139 corresponding to the feed slide 20 of the wrapper unit is mounted in the upper portion of the frame 3 below the track bars 132, for reciprocatory movements longitudinally thereof, and has an outwardly and upwardly projecting arm 140 at its rear end to which the lever 138 is pivoted. This lever projects rearward from the arm 140 and is of angled or L-form and has a roller 141 at its elbow which travels on a track bar 142. At a predetermined point in a rearward movement of the lever 138 it passes up an inclined finger 143, which is pivoted to the forward end of an elevated track bar portion 144. The rearward movement of the lever 138 is sufficient for it to pass beyond the rear end

of the elevated track portion 144 so that it is permitted to drop at the rear of a wrapped brick *b*, which is disposed immediately at the rear of a fed carton sheet 126 by the bracing movement of the pusher finger 39. Upon the forward stroke of the lever 138 its laterally projecting arm portion engages the wrapped brick *b* and moves it forward to a position beneath the frame yoke 145 carrying with it a carton 126, the same as described in connection with the movement of the brick and wrapper sheet from position A to position B in the first unit, the inclined finger 143 raising as the roller 141 passes thereunder. As the brick *b* engages the panel *f* of the carton and forces the carton forward, the carton passes between the upper and lower folding rolls 146 and 147 (Fig. 21) and these rolls cause a folding of the panels of the carton which are above and below the center panel *f* respectively over and under the brick. The roll 146 is carried by arms 148 projecting rearward from the frame yoke 145 and the roll 147 is disposed at the forward side of the table opening 131, being journaled in the rear ends of the track bars 132.

The brick and carton sheet as they pass under the yoke 145 have engagement at their top sides with a pressure strip 148 which extends from a point under the yoke to the rear end portion of the frame so that the brick and carton in their continued movement through the machine for the subsequent carton folding operations is held to the track bars 132 by such strip. The strip is pivotally suspended at its forward end from a shaft 149, which is mounted in a bearing bracket 150 rising from one side bar 4 of the machine frame at the forward end portion thereof. The strip 148 at its rear end is yieldingly suspended from the yoke 145 by a bolt member 151. A coiled compression spring 152 is disposed on the bolt between the strip 148 and upper portion of the yoke to resist an upward movement of the strip.

When the brick is in position under the yoke 145, the panel *f* of the carton is held closely thereto by a finger 153, which is carried by a shaft 154 mounted cross-wise of the machine in bearings provided at the upper rear portion of the yoke 145. A rod 155 projects down from a rocker arm 156 on said shaft and is provided at its lower end with a fork 157, which straddles the shaft 8 and carries a roller 158 that rides on the top of a cam 159 on the shaft 8. A spring 160 acts on the fork 157 to hold its roller to the cam.

The upper edge flap *h* of the carton is next folded down against the rear side of the brick by the action of a gate 161, which is hinged to the rear side of the yoke 145 above the brick for vertical swinging move-

ments and is connected by a rod 162 to one arm of a rocker lever 163 that is fulcrumed to a bearing arm 164 projecting upward and rearward from the top of the yoke. A
 5 connecting bar 165 extends down from the other arm of the rocker lever and carries a fork 166 at its lower end in straddling relation to the shaft 8. This fork carries a roller 167 which rides on an operating
 10 cam 168 on said shaft. A spring 169 acts on the fork 166 to hold its roller in engagement with the cam. The raising and lowering of the bar 165 by the cam 168 is timed to effect a downward flap folding
 15 movement to the gate 161 immediately after the brick and associated carton have been placed under the yoke 145.

After the folding operation the gate 161 is immediately swung upward and a flap
 20 holding finger 170 then automatically moved down into position to hold the flap *k* against the brick preparatory to the lower edge flap or panel *j* of the carton being folded up against the rear side of the brick in out-
 25 ward lapping relation to the flap *k*. The finger 170 is carried for vertical rocking movements by a shaft 171 journaled in the upper portion of the yoke 145 lengthwise of the frame and having a rocker arm 172
 30 from which an operating rod 173 depends. This rod has a fork 174 at its lower end which straddles the shaft 9 and carries a roller 175 for riding on a cam 176, which is timed to move the finger 170 in proper
 35 relation to the movements of the gate 161.

The upward folding of the lower flap *j* of the carton is effected by the engagement of the feed finger 177 with the carton and brick preparatory to forcing them forward
 40 to the next operating position, in the same manner as the folding of the lower edge portion of the wrapper 52 upward against the brick *a* is effected by the feed finger 37 of the sheet wrapping unit. The finger
 45 177 is carried by the feed slide 139 and, upon a rearward stroke of said slide, passes rearward under the yoke 145 and brick and carton disposed thereunder, and on the rear stroke of the feed bar engages under the
 50 flap *j* of the carton and forces it up against the rear side of the carton in lapping relation to the upper flap *k*. The continued forward movement of the finger forces the brick and carton forward to the next operat-
 55 ing position and holds the edge flaps in lapping relation during such movement.

The next operation consists in folding the end flaps *k* and *l* forward at the ends of the brick and this is accomplished by the
 60 downward and forward swinging movements of a forked rocker arm 178, which is the same in construction and operation as the forked rocker arm 89 of the sheet wrapping unit. The arm 178 is carried by a shaft
 65 179, which is journaled in a bearing arm 180

crosswise of the frame over the brick, and the fork arms of this rocker arm carry spring pressed folding fingers 181, which extend forward and engage and force the flaps
 70 *k* and *l* inward against the ends of the brick when the arm is swung down. The shaft 179 carries a rocker arm 182 from which an operating rod 183 projects downward and carries a fork 184 at its lower end in strad-
 75 dling engagement with the shaft 9. A roll 185 is carried by this fork and rides on a cam 186 on the shaft 9. A spring 187 acts on the fork to hold its roller in engagement with the cam.

When the brick and carton are in this
 80 folding position of their movement, the carton is engaged at the forward side thereof and held closely to the brick by a finger 188, which extends down from a rocker shaft 189 and has its free end portion forked to strad-
 85 dle the top pressure strip 148. The shaft 189 has a rocker arm 190 and a rod 191 depends from this arm and carries a forked member 192 at its lower end in straddling engagement with the shaft 8. A roller 193
 90 on this fork rides on an operating cam 194 on the shaft 8. A spring 195 acts on the fork to retain its roller in engagement with the cam.

Upon the next rearward movement of the
 95 feed slide 139, the feed finger 196 near the forward end thereof engages back of the brick and carton and on the forward stroke of the feed slide moves them forward to the last folding position in the machine. As the
 100 brick and carton are moved forward to this last position they pass between opposed side strips 197, which engage and force the end flaps *o* attached to the ends of the center panel *f* rearward and hold them and
 105 also the flaps *k* and *l* in folded position until the carton and brick have reached the last operating position. The side strips 197 are carried by arms 198, which are mounted for inward and outward adjustment in
 110 bracket arms 199 mounted on the respective side bars 4 of the frame.

When the brick and carton are in the last operating position the opposite end closing
 115 flaps *m* and *p* are folded inward and their edge tongues *n* and *q* inserted into the carton between the wrapped brick and the respective edge portions of the carton. To
 120 accomplish this, a folding wing or gate 200 is mounted for vertical swinging movements transverse to the machine at each end of the brick, the one at the right end being
 125 pivoted below the plane of the brick to adapt its folding movements to be upward and inward in engagement with the flap *m*, and the other gate is pivoted above the plane of the brick to adapt its folding movements to be downward and inward against the end flap *p*, as best shown in
 130 Fig. 20^A. One gate 200 is pivoted to a

bracket arm 201 projecting inward from the adjacent frame bar 4 and the other gate is pivoted to a bracket-arm 202 projecting inward and upward from the other frame bar 4. Each gate has a rod 205 pivotally projecting downward therefrom, the one at the right carrying a forked member 206 at its lower end which extends up around the shaft 8 in straddling relation thereto and has a roller 207 below the shaft and held in engagement with the under side of a cam 208 on the shaft by a spring 209. The other rod 205 carries a fork 210 at its lower end, which straddles the shaft 9 and carries a roller 211 which rides on the top of a cam 212 on said shaft, being held thereto by a spring 213. It is thus evident that in each revolution of the two shafts 8 and 9 positive end flap folding movements are imparted to the gates 200.

Each gate 200 has a narrow tongue 214 pivotally attached to its outer side and projecting outward around the free end of the gate and then inward over the end of the gate in transverse relation thereto, being held in such position by a spring 215. During the flap folding movements of the gates 200, each tongue 214 is intended to engage the edge tongue *n* or *q* of the respective end flap and to bend such tongue inward at substantially a right angle to the flap, as best shown in Fig. 20^A, thereby placing the flap tongue in position to enter the carton between a side wall thereof and the brick. To facilitate such entry of the tongue into the carton a guide plate 216 is provided for each tongue. These plates are mounted at opposite ends of the brick, one in substantially the plane of the upper edge and the other in substantially the plane of the lower edge of the brick for reciprocatory movements longitudinally thereof. When these plates are in tongue guiding positions, their inner ends are inserted into the spaces in the carton into which the respective tongues are to be inserted. One of these plates is guided for reciprocatory movements by a guide bracket 217 secured to and projecting inward from the left hand frame-bar 4 at the lower edge of the adjacent brick, and the other is carried by the bracket 150 in the other side of the machine adjacent to the upper edge of the brick. Each plate 216 has a narrow longitudinally extending opening 218 therethrough through which the free end portion of the tongue 214 projects when the associated gate 200 is swung inward to flap tucking-in position, the tongues *n* or *q* of the respective end flaps being then guided by the plates into the receiving edge portions of the carton during the continued inward movement of the gates.

The sliding movements are imparted to the guide plates 216 by reciprocatory movements of the cam-bars 219, one of which is

provided for each plate. These bars have their upper ends of angled or cam form and inserted through a registering opening 220 in the respective guide plate, whereby the engagement of the angled end of the bar with the walls of the opening, when the bar is reciprocated, will impart reciprocatory movements to the plate, as is apparent. The bars 219 are guided for true vertical movements by guides 221 secured to the respective frame-bars 4, and each has a fork 222 carried by its lower end in straddling engagement with the adjacent shaft 8 or 9 and carrying a roller 223 which rides on a cam 224 on the respective shaft. A spring 225 acts on each fork member 222 to retain its roller in engagement with the cam. With the present arrangement a raising of the bars 219 imparts inward movements to the respective slide plates and a lowering of the bars imparts outward movements to the plates.

A pair of rocker fingers 226 are fixedly suspended from the shaft 149 and are adapted to engage the front side of the brick and carton when in final folding position to act as stop members for the brick and carton when in such position. The shaft 149 has a rocker arm 227 projecting therefrom and connected by a rod 228 to a rocker arm 229 on the shaft 189 whereby said shafts are caused to have rocking movements in unison. It is thus evident that both shafts are rocked together to raise the respective fingers 188 and 226 upward out of brick obstructing position and then to lower the same to such position.

Upon the next rearward stroke of the feed slide 139 the forward finger 230 thereof moves back of the brick and carton in the last folding position thereof, and upon a forward stroke of the feed slide the brick and carton are moved forward a predetermined distance on the track bars 132. The packages are then moved forward the width of the same by each succeeding package as it is advanced from final carton folding position by the feed finger 230. The feed-slide 139 has properly timed reciprocatory movements imparted thereto from a continuous rotation of the shaft 17 by means similar to that employed for operating the feed-slide 20, and such means need not, therefore, be specifically described.

In the use of the apparatus, the wrapper sheets 52 are successively fed by the mechanism shown, or in any other suitable manner, to vertical position in advance of bricks *a* positioned on the table 5, which bricks are successively moved forward to a point adjacent to the rear side of the fed wrapper sheets by the feed finger 29 at each forward stroke of the feed slide 20. At the next rearward movement of the feed slide the feed lever 32 moves rearward therewith and

to a point at the rear of the positioned brick by reason of the lever roll 33 passing up the incline 35 and over the elevated track bar 36 and then leaving the rear end of the latter to permit the lever finger 32^a to drop at the rear of the bricks. It will be understood that the fork arm 32^a of the feed lever 32 passes to the rear of the table opening 57 through which the lower portion of a wrapper sheet 52 feeds immediately before the feeding of the next sheet into brick engaging position. The next forward movement of the lever 32 with the feed slide 20 draws the brick *a* forward therewith into engagement with the aligned wrapper sheet and causes a doubling of the opposite end portions of the sheet over and under the brick and a movement of the brick and wrapper sheet to the second folding position in the sheet wrapping unit, as illustrated in Fig. 9. The roll 77 carried by the slide 75 is next lowered by reason of the action of the cam 83 and causes a folding of the upper free edge portion of the wrapper down at the rear side of the brick immediately after which the feed slide 20 is moved forward, causing the feed finger 37 to engage the rearwardly projected lower edge portion of the wrapper and fold it up against the brick in lapping relation to the upper edge portion of the wrapper and to then move the brick and wrapper forward to the third operating position, the brick when placed in such position being wrapped as shown in Fig. 12. The forked arm 89 then swings downward and forward under the action of the cam 99 and causes the fingers 90 thereof to engage the rear projecting end portions of the wrapper and fold them forward and inward against the ends of the brick as indicated in Figs. 5 and 13. On the next forward movement of the feed slide 20 the feed finger 38 thereof engages the brick and wrapper which have thus been acted on and move them forward to the fourth or final folding position. During the initial portion of such movement the ends of the brick pass by folding members 101 which force the front projecting end portions of the wrapper inward in lapping relation to the previously folded rear end portions of the wrapper. After passing the folding members 101 the upper and lower projecting end portions of the wrapper are engaged respectively by the folding strips 107 and 108 (Fig. 15) and folded inward in lapping relation to one another, thus completing the wrapper folding operations. The wrapped brick then passes between the end pressing strips 109 which press the folded end portions closely against the end of the brick where it rests until picked up and advanced by the feed finger 39 upon the next forward stroke of the feed slide 20. The finger 39 moves the wrapped brick into position

on the table 119 of the carton wrapping unit to be engaged and fed forward by the feed lever 138 upon the next forward stroke thereof. The feed slide 139 is then moved rearward to place its angled reed arm 138 in engagement with the wrapped brick, and immediately thereafter a carton 126 is fed down in advance of the brick to the position shown in Figs. 21 and 22, with its center panel *f* in register with the front side of the brick. The feed slide 139 then moves forward carrying the brick and carton with it and causes the upper and lower projecting ends of the carton to be folded over and under the brick by the passage of the same between the upper and lower folding rolls 146 and 147, the brick and carton being carried by this movement to a point under the frame yoke 145. The gate 161 is then swung downward by reason of the action of the cam 168 and causes a folding of the upper edge flap *h* of the carton down against the rear side of the wrapped brick. Immediately after this the finger 170, which is controlled by the cam 176 is swung downward into holding relation to the folded flap *h* and the gate 161 then swung upward. Upon the next forward movement of the feed slide 139 the finger 177 thereof engages the lower rear panel *j* of the wrapper and folds it upward against the rear side of the wrapped brick in lapping relation to the flap *h* and then moves the brick and carton forward to initial end folding position. The forked arm 178, which is controlled by the cam 186 is then swung downward to cause its fingers 181 to engage the end flaps *k* and *l* at the rear side of the brick and fold them forward at the respective brick ends. The brick and carton are then moved forward to the final end flap folding position by the feed finger 196, at the next forward movement thereof, and the side strips 197 act on the opposite end flaps *o* at the forward side of the brick and move them rearward against the brick end. The slide plates 216 are now moved inward to place their inner ends between the respective edges of the wrapped brick and the carton, and the end folding gates 200 are then swung inward in engagement with the respective end flaps *p* and *m* to effect a folding of said flaps against the ends of the package. During this movement of the gates 200 the spring fingers 214 thereof engage the tongue ends *n* and *q* of the end flaps and dispose them in position to engage the respective slide plates 216 and be guided thereby into the carton as is apparent, the tongues 214 during the latter portion of such movement passing through the openings 218 of the slide plates. The slide plates 216 are operated by vertical movements of the cam-bars 219 the movements of which are controlled by cams 224, and the move-

ments of the folding gates 200 are controlled by cams 208 and 212. The next forward movement of the feed slide 139 causes the forward finger 228 thereof to engage and
 5 move the wrapped brick from the final carton folding position to advanced position on the track bars 132 where they may be disposed of as desired.

It is evident that I have provided a comparatively simple and efficient apparatus which is operable both to wrap a brick with a thin wrapper sheet and then to fold a carton therearound in a rapid and economical manner, and that the action of the two units
 10 of the apparatus is very similar.

I wish it understood that the particular machine and the different parts thereof illustrated and described are merely a typical embodiment of one form of my invention, and that the specific construction described herein is merely by way of illustration and not by limitation or narrowing of my claims, as obviously, a great many changes in construction and design can be made without
 20 departing from my invention, and obviously, also, various of the features described can be omitted leaving the machine still operative to usefully do certain of the work described and such changes are contemplated by me and would not involve any departure from my invention. It will also be understood that reference in the claims to "wrapping sheets" applies to either the thin inside wrapping sheets or to the carton, and that reference in the claims to "thin wrapping sheets" and to "cartons" applies respectively to the sheets 52 and cartons 126, or their equivalents.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is,—

1. In a machine of the class described, an article feed-way, means for successively feeding wrapper sheets across said way in the
 45 path of movement of articles therealong, and means for supporting the fed wrapping sheets in article engaging position and operable to periodically raise to engage a feeding sheet before the sheet has reached the
 50 limit of its feeding movement, and then to support and lower the sheet into proper article engaging position.

2. In a machine of the class described, an article feed-way having an opening therein, a
 55 wrapper sheet supporting frame mounted for vertical reciprocatory movements below the feed-way opening, means above the feed-way for successively feeding wrapper sheets to said opening in article engaging position, and means operable to periodically raise
 60 the frame to sheet receiving position before the sheet has reached the limit of its feeding movement and then to lower and support the sheet in predetermined article engaging position.

3. In a machine of the class described, a table having an opening in its top, means for successively feeding wrapping sheets into vertical position with the lower portion thereof projected down through the opening,
 70 means having a part movable up from below the table to meet and engage the sheet at a predetermined point in its downward movement and then to move downward a predetermined distance with the sheet and support the same in predetermined position,
 75 means for feeding an article forward over the table into engagement with the sheet intermediate its ends and then to carry the sheet forward therewith, and means for effecting a doubling of the upper and lower end portions of the sheet over and under the article as it is moved forward.

4. In a machine of the class described, means for successively feeding wrapper
 85 sheets to vertical article engaging position, means for moving an article forward into engagement with the sheet intermediate its upper and lower ends and to cause the article to carry the sheet forward therewith,
 90 means for lapping the ends of the sheet over and under the article as it is moved forward, means operable to lap the upper end portion of the sheet down at the rear of the article, and means operable to lap the lower end
 95 portion of the sheet up against the rear side of the article and to move the sheet and article forward a predetermined extent.

5. In a machine of the class described, a table over which articles are successively
 100 moved, a reciprocally movable member, a pusher finger pivotally carried by the member, means guiding the movement of the finger and causing it to rise and pass over a registering article and then to drop into operative position at the rear of the article
 105 during a rearward stroke of the member, the finger being operable to feed the article forward upon a forward stroke of the member, and means for positioning a wrapper sheet in vertically disposed position in advance of the article, whereby the sheet is doubled about the article and carried forward there-
 110 with when the article is moved forward.

6. In a machine of the class described, means for placing an article with a wrapper sheet doubled about the same in one position with the ends of the wrapper sheet projecting in the same direction from the article, cam operated means for engaging one
 120 of the projecting ends of the sheet and folding it against the article, and means operable to engage the other end of the sheet and fold it against the article in lapping relation to the first folded end and then to impart a predetermined forward feeding movement to the article and sheet.

7. In a wrapping machine, an article guideway, means operable to intermittently feed an article therethrough, said means in-
 130

cluding a reciprocatory member, a lever pivotally connected to the member for vertically swinging and having a lateral extension for engaging behind an article and moving it forwardly in the guideway, and means arranged alongside of the latter for deflecting the extension from the guideway and including an elevated stationary part for holding the lever extension elevated over a defined path on the inactive stroke of said reciprocatory member.

8. In a wrapping machine, an article guideway, means operable to intermittently feed an article therethrough, said means including a reciprocatory member, a lever pivotally connected to the member for vertically swinging and having a lateral extension for engaging behind an article and moving it forwardly in the guideway, a support for guiding the lever in its reciprocation, a fixed elevated support onto which the free end of the lever may ride on its inactive stroke whereby the extension may pass over and behind a succeeding article, and means for elevating the lever to said elevated support upon the inactive stroke of said lever and adapted to be displaced by the latter upon the active stroke.

9. In a wrapping machine, an article guideway, means operable to intermittently feed an article therethrough, said means including a reciprocatory member, a lever pivotally connected to the member for vertically swinging and having a lateral extension for engaging behind an article and moving it forwardly in the guideway, means for swinging the lever extension from the path of an article on the inactive stroke thereof whereby the extension may pass over and behind a succeeding article, and means for feeding a wrapper sheet in the path of an article immediately following the movement of the lever extension behind the article.

10. In a wrapping machine, an article guideway, means for intermittently feeding an article with a wrapper sheet embracing its front, top and bottom faces, and the ends of the sheet extending rearwardly from the article, said means comprising a slide and a normally upright feed finger pivoted thereto for folding forwardly downward on its inactive stroke to pass beneath the article and then aright itself after passing the latter to engage the article and advance it on the active stroke of the slide and means for holding the finger against moving to its full normal position after passing beneath the article on its inactive stroke to direct said finger toward the projecting lower end of the sheet to engage and fold the same up against the rear face of the article as the slide begins its active stroke.

11. In a wrapping machine an article guideway, means operable to intermittent-

ly feed an article therethrough, said means including a reciprocatory member, a lever pivotally connected to the member for vertically swinging and having a lateral extension for engaging behind an article and moving it forwardly in the guideway, a roller extending from the opposite side of the lever, a support alongside of the guideway on which the roller rides, an elevated support over which the roller is adapted to ride to carry the lever extension over a succeeding article in the guideway, and an inclined finger pivoted to the elevated support with its lower end resting on the first support for guiding the roller up to the elevated support from whence the extension may lower behind an article for advancing it on the active stroke of said member, the finger yielding to permit the roller to pass the active stroke.

12. In a wrapping machine, means for guiding the movement of an article and embracing wrapper sheet which projects at its ends from the article, and means for folding one end over the article comprising a member movable toward and from the article and a rearwardly yieldable tip on the member for engaging the specified end of the wrapper sheet to fold the same against the article.

13. In a wrapping machine, means for guiding the movement of an article and embracing wrapper sheet which projects from the ends of the article, and means for effecting a folding of portions of the projecting sheet over the ends of the article comprising a forked member having laterally yieldable fingers and mounted for being moved into lengthwise straddling relation to the article to thereby engage over the end faces of the latter and effect a folding of the projecting portions of the sheet against said end faces of the article.

14. In a wrapping machine, means for guiding the movement of an article and embracing wrapper sheet which projects from the ends of the article, and means for effecting a folding of portions of the projecting sheet over the ends of the article comprising a forked member having laterally yieldable fingers and mounted for being moved into lengthwise straddling relation to the article to thereby engage over the end faces of the latter and effect a folding of the projecting portions of the sheet against said end faces of the article, and stops arranged on the fingers of the forked member to gage the depth of the straddling relation between the forked member and the article.

15. In a machine of the class described, mechanism operable to wrap a carton around an article and to fold a portion of its end flaps inward at the ends of the article, means operable to fold the remaining end closing

flaps of the article to end closing position, and means to guide each tongue thereof into the carton at a side of the article.

16. In a machine of the class described, 5 mechanism operable to wrap a carton around an article and to fold a portion of its end flaps inward at the ends of the article, an end gate operable to swing end closing flaps of the carton into closing position, each end 10 gate having a spring finger projecting inward from its free end for engaging and bending an edge tongue of the flap at right angles thereto, means operable to cause parts thereof to enter the carton ends in advance 15 of the tongues of the respective flaps to guide the insertion of the respective flaps therein and adapted to engage and hold the spring fingers in retracted position.

17. In a machine of the class described, an 20 article guideway, means operable to impart step by step movements to articles lengthwise of the way, means for successively feeding thin wrapper sheets across said way to be engaged and doubled about an article as 25 it is moved forward, means for lapping the edges of the sheet at the rear side of the article, means operable to fold the ends of the sheet at the ends of the article, means operable to feed a carton in vertical position in 30 advance of the wrapper article, means for doubling the carton over and under the wrapped article as it is fed forward, means for lapping the free edges of the carton at the rear of the wrapped article, and means 35 successively operable on the end flaps of the carton to fold them against the ends of the wrapped article and to insert the tongues of the outer flaps into the carton.

18. In a wrapping machine, means for 40 guiding an article with an embracing wrapper which projects from an end of the article, means for moving the partly wrapped article intermittently through a plurality of wrapping stations, means at two stations 45 for engaging the front faces of arrested articles at the respective stations for holding the respective articles while the wrapper is further folded about the articles, and means for simultaneously moving the holding 50 means at the two stations to and from operative position.

19. In a wrapping machine, means for guiding an article and a carton partly wrapped thereabout with a projecting end 55 flap designed for being tucked into the carton for closing the same flap guiding means movable partly into the carton, and means mounted and movable independently of the flap guiding means for closing the flap as 60 guided by the flap guiding means.

20. In a wrapping machine, means for guiding an article and a carton partly

wrapped thereabout with a projecting end flap designed for being tucked into the carton for closing the same, a guide plate slid- 65 able into the open end of the carton for directing a flap thereinto, and a swingingly mounted gate for folding the end flap to closed position.

21. In a wrapping machine, means for 70 guiding a carton with a projecting end flap having an edge tongue, a swingingly mounted gate for folding the flap to closed position, means yieldably carried by the gate for bending and directing the edge tongue 75 of the flap toward the carton during folding movement of the flap, and means for guiding the tongue of the folding flaps into the carton.

22. In a wrapping machine, means for 80 guiding an article and a carton partly wrapped thereabout with a projecting end flap designed for being tucked into the carton for closing the same, means movable 85 into the open end of the carton for directing the tongue of the flap thereinto, means operable independently of the flap directing means for moving the flap into the carton including a tongue bender, and means for 90 guiding the tongue bender by and from the flap directing means.

23. In a wrapping machine, means for guiding an article and a carton partly wrapped thereabout with a projecting end flap designed for being tucked into the carton 95 for closing the same, a guide plate slidable into the open end of the carton for directing a flap thereinto, and a swingingly mounted gate mounted and movable independently of said guide plate for folding 100 the end flap to closed position.

24. In a wrapping machine, means for guiding an article and a carton partly wrapped thereabout with a projecting end flap designed for being tucked into the carton 105 for closing the same, means for folding the flap against the carton, and means movable into the path in advance of the free end of the folding flap for directing it into the 110 carton.

25. In a wrapping machine, means for guiding an article and a carton partly wrapped thereabout with a projecting end flap designed for being tucked into the carton for closing the same, means for folding 115 the flap against the carton, and means movable in advance of the folding means, into the carton and into the path of the free end of the folding flap for directing the flap end 120 into the carton.

In testimony whereof I have hereunto subscribed my name to this specification.

FRANK E. BEAM.