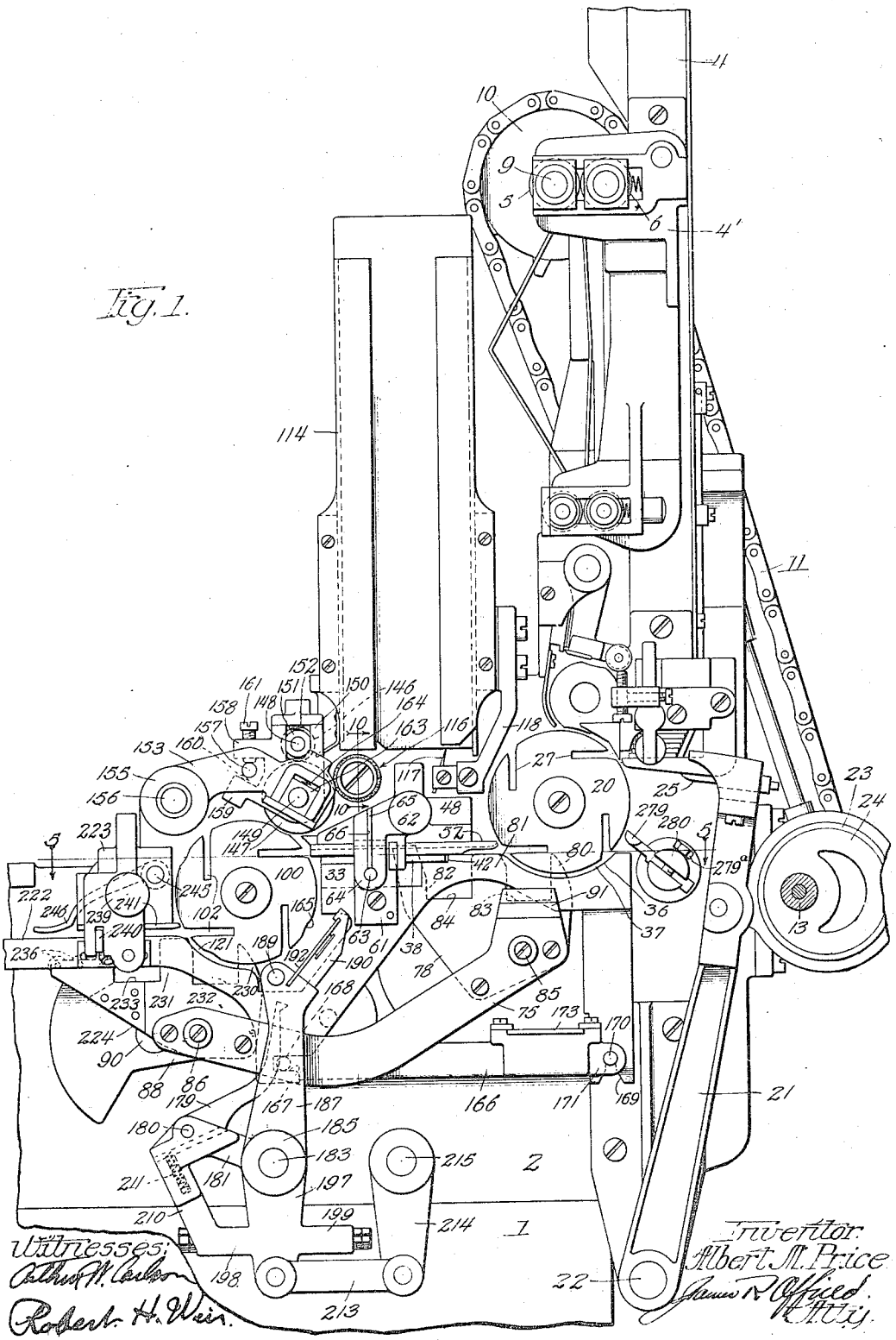
April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 1

Fig. 1.



April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 2

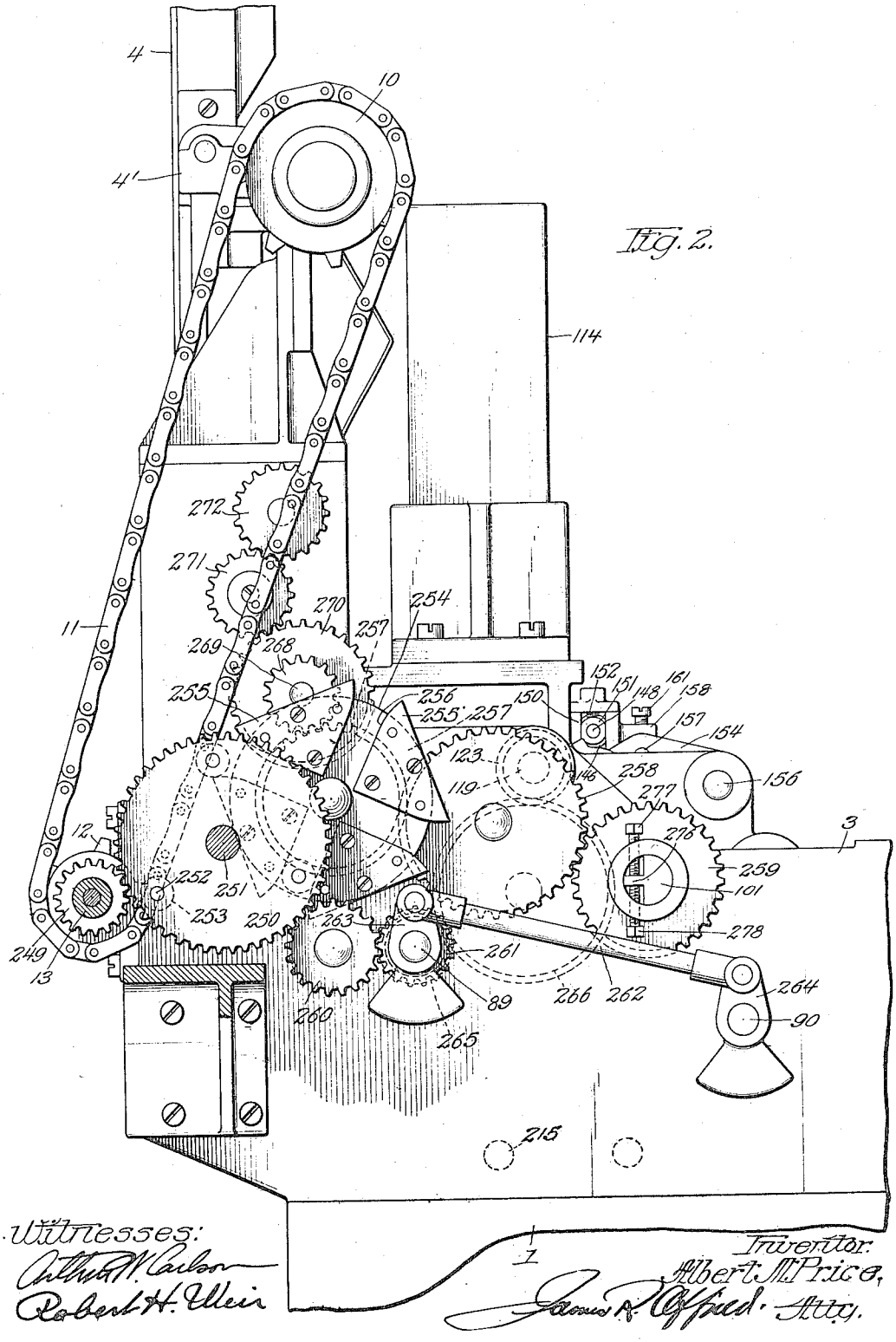


Fig. 2.

Witnesses:
Arthur W. Carlson
Robert H. Klein

Inventor:
Albert M. Price,
James A. Offield, Atty.

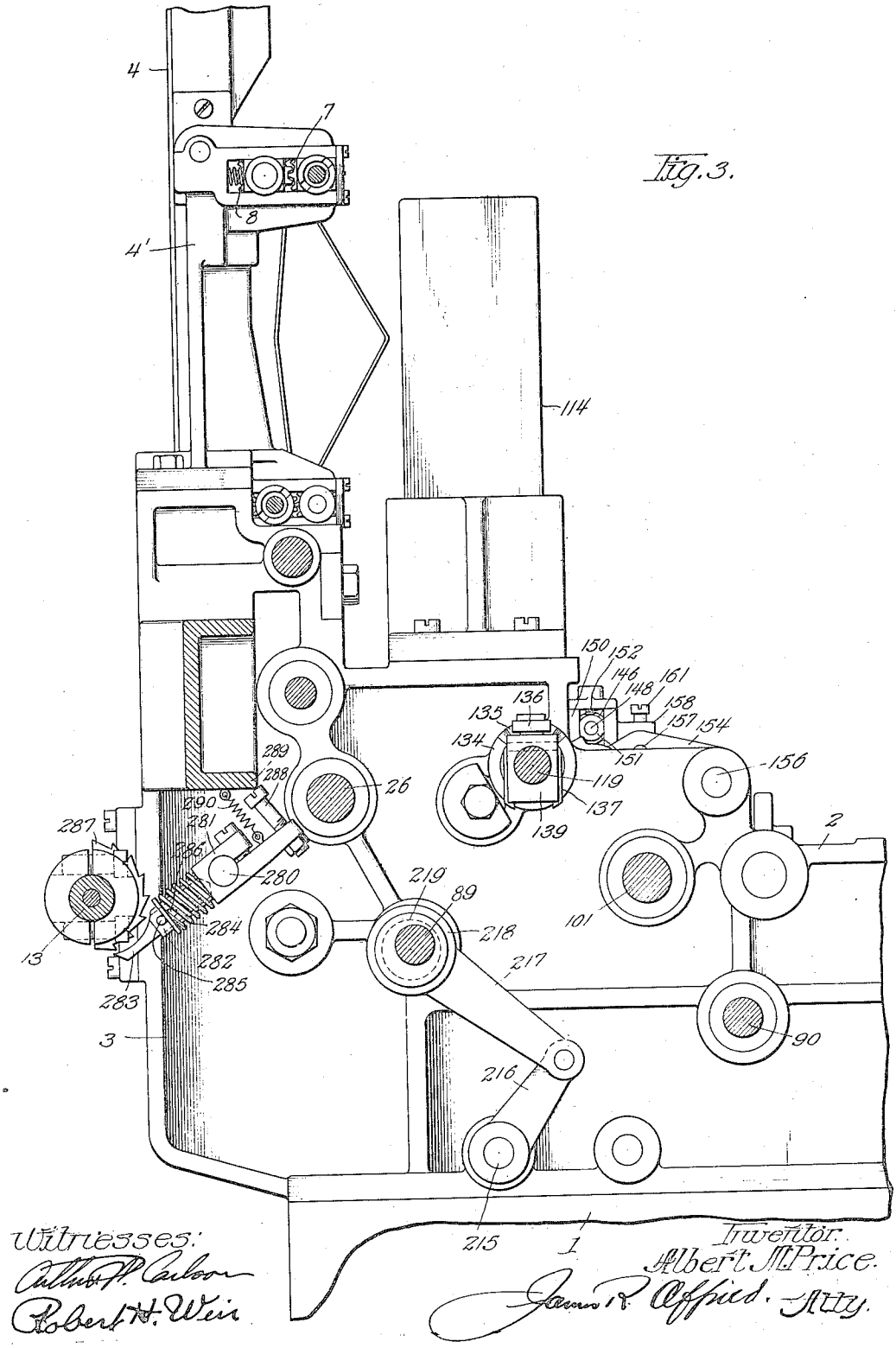
April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 3

Fig. 3.



Witnesses:
Arthur P. Carlson
Robert H. Weir

Inventor.
Albert M. Price.
James R. Offield. Atty.

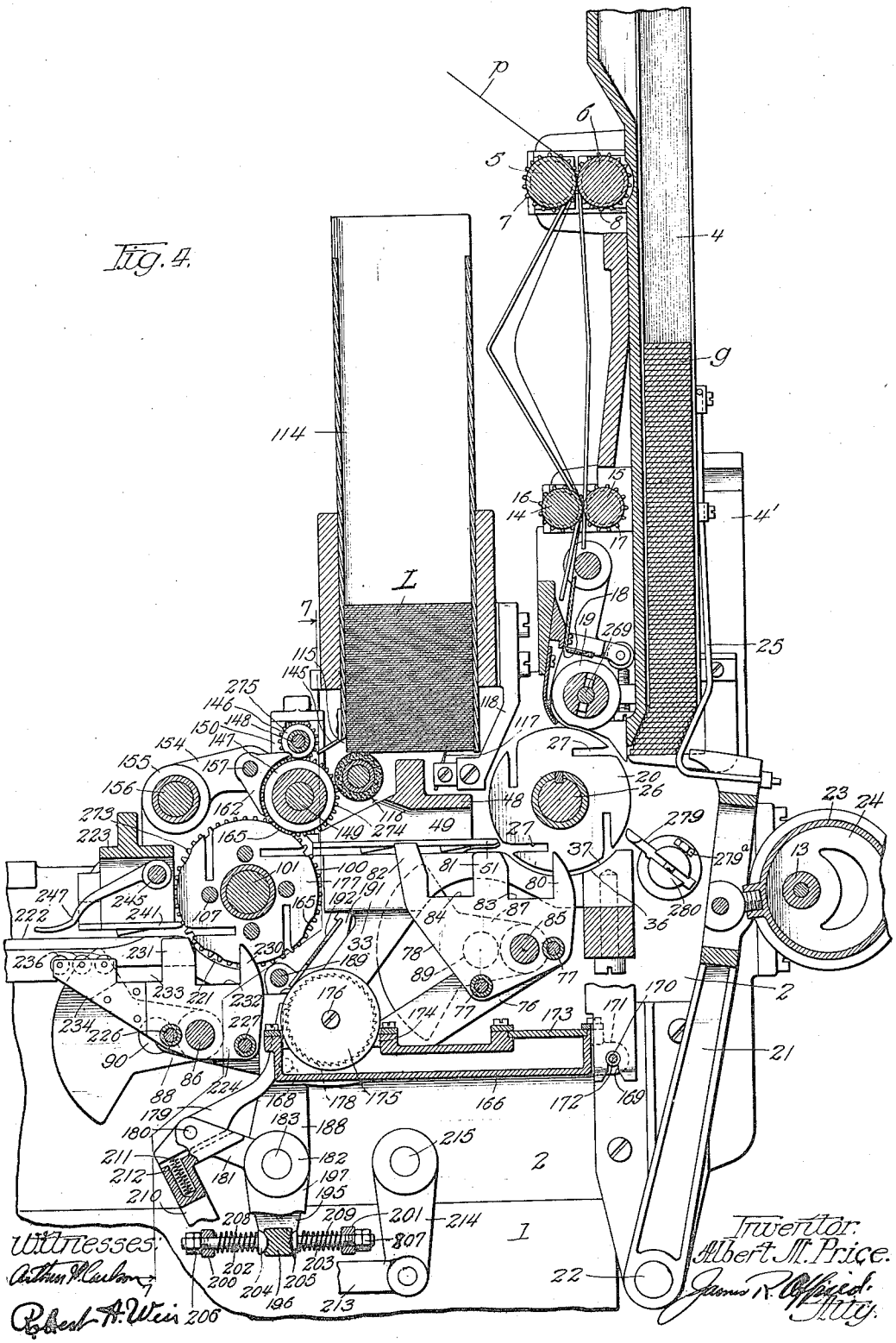
April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 4

Fig. 4.



April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 5

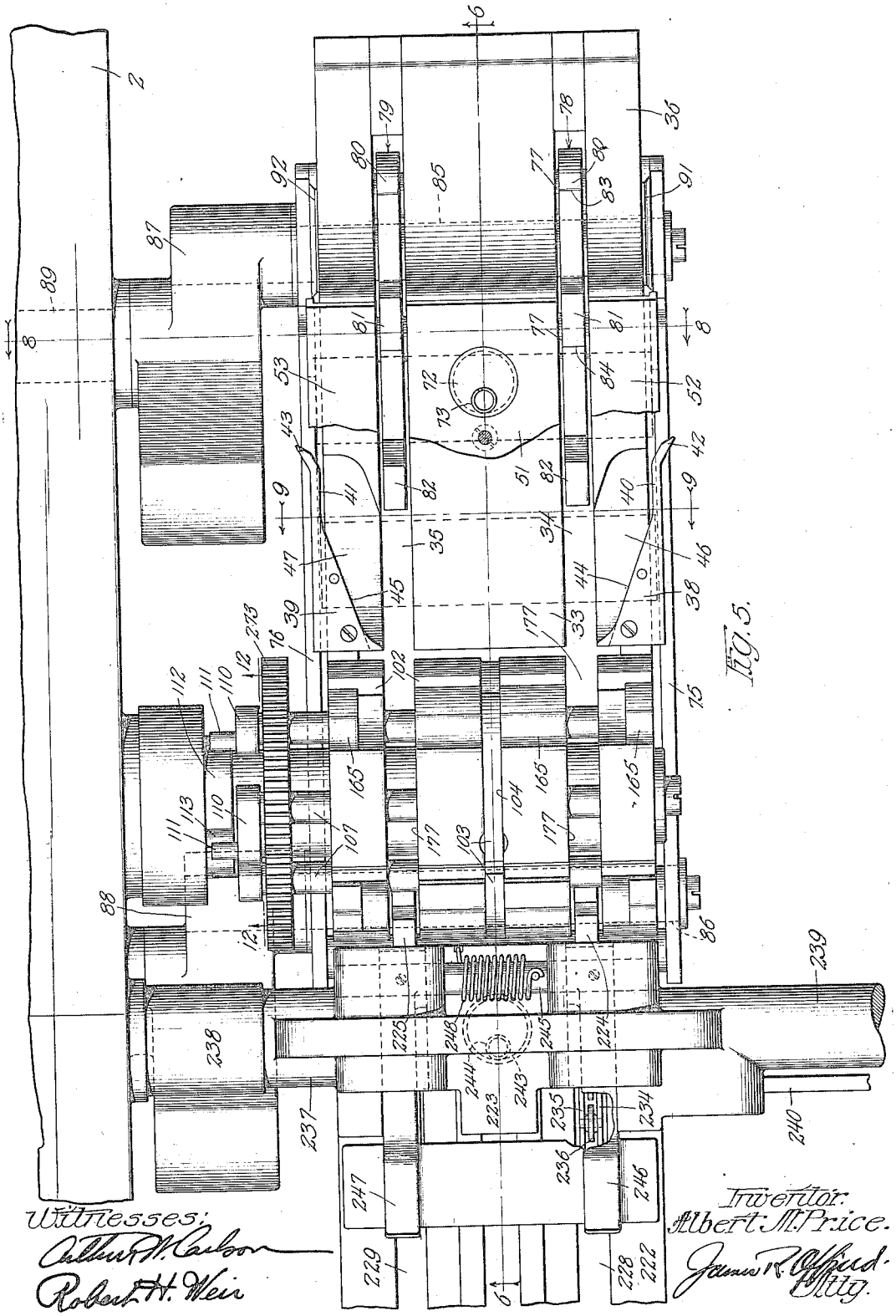


FIG. 5.

Witnesses:
Arthur H. Carlson
Robert H. Weir

Inventor:
Albert M. Price.
James R. Offield
Atty.

April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 6

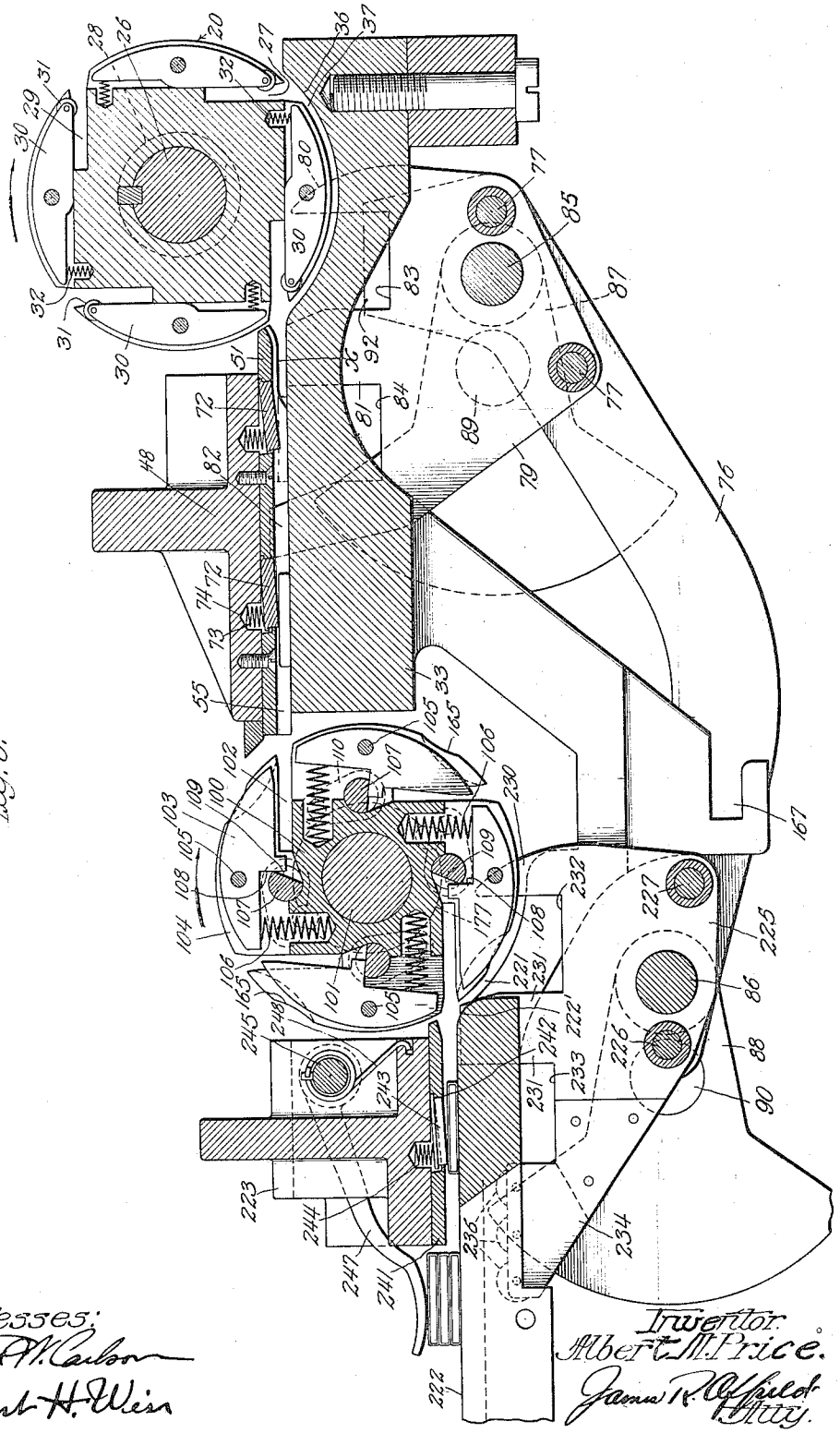


Fig. 6.

Witnesses:
Arthur H. Carlson
Robert H. Weiss

Inventor
Albert M. Price.
James R. Offield of
Atty.

April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 7

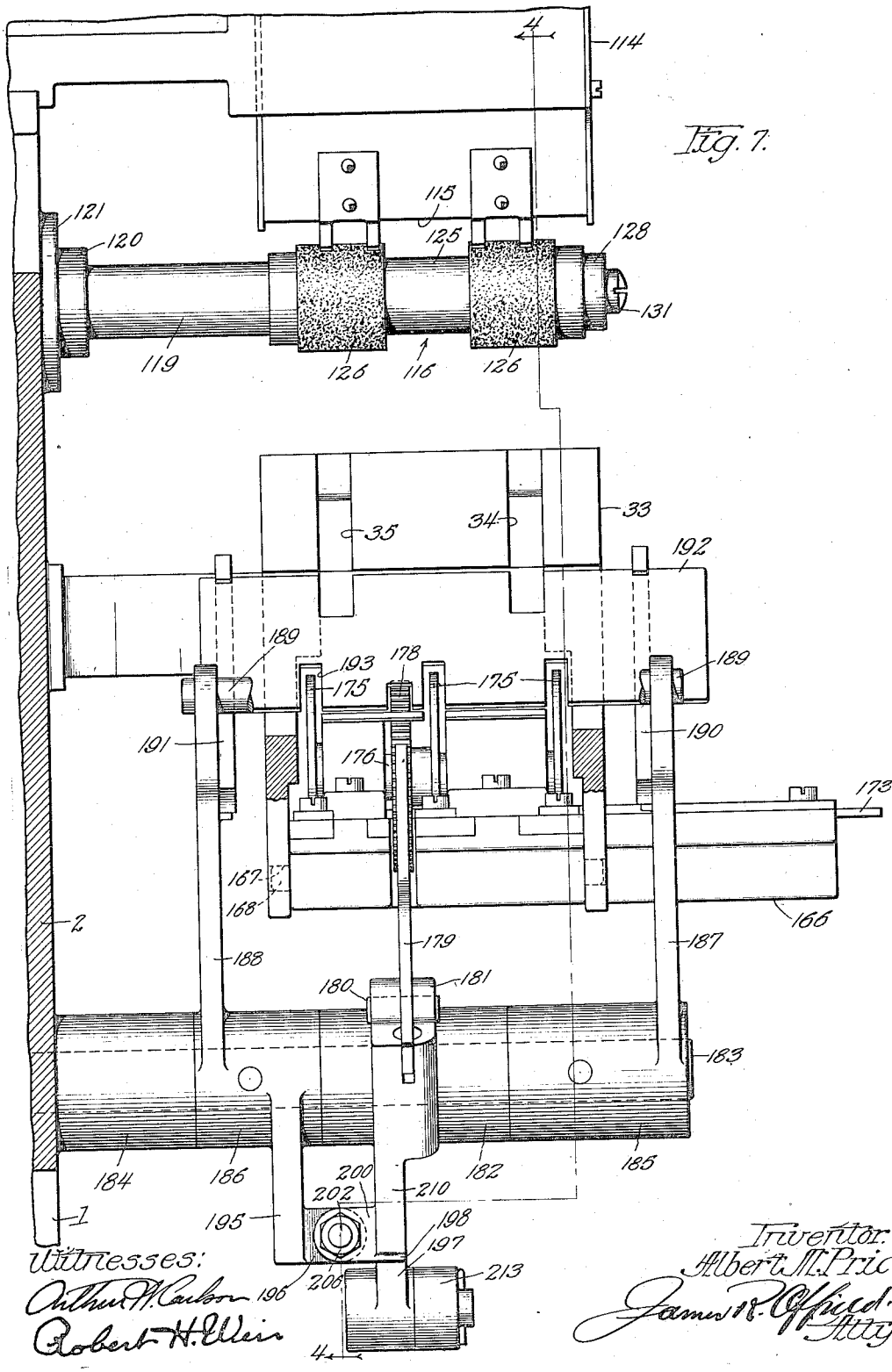


Fig. 7.

Witnesses:
Arthur A. Carlson
Robert H. Weir

Inventor:
Albert M. Price.
James R. Offield.
Atty.

April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 8

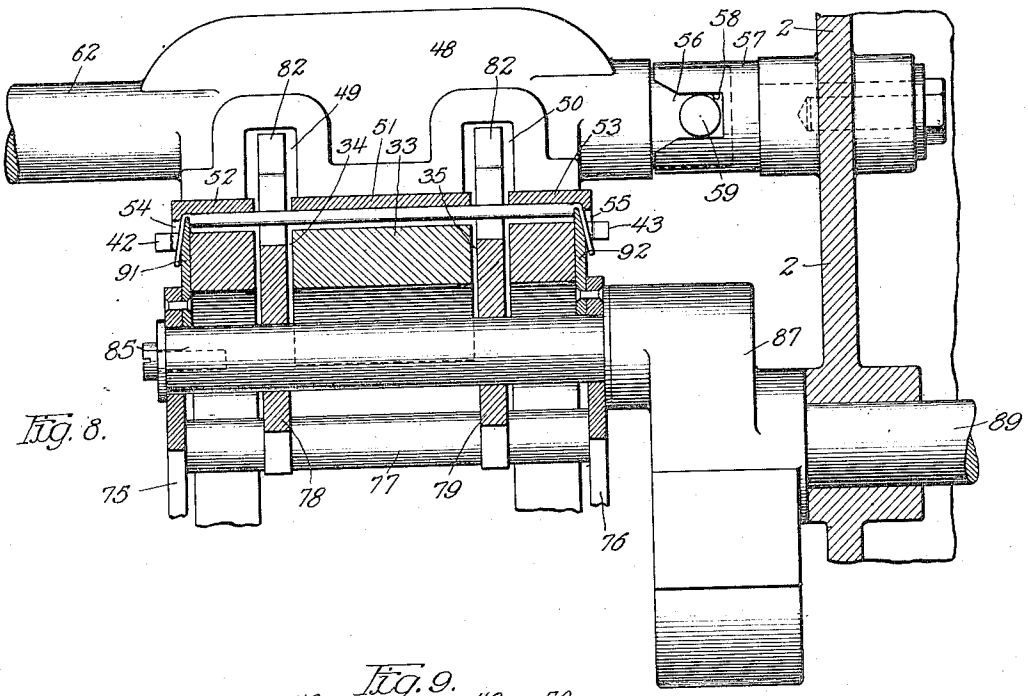
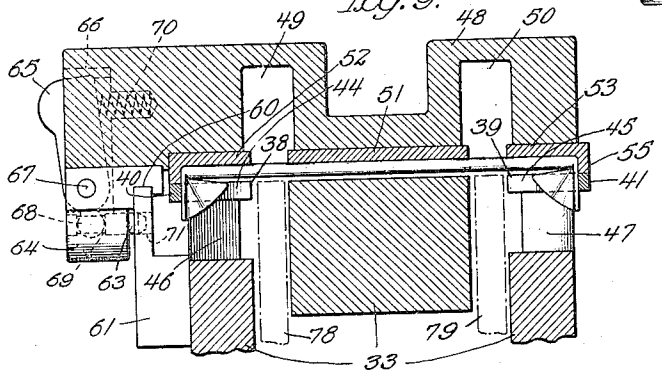


Fig. 8.

Fig. 9.



Witnesses:
Arthur W. Carlson
Robert H. Weir

Inventor:
Albert M. Price.
James R. Offield.
Atty.

April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 9

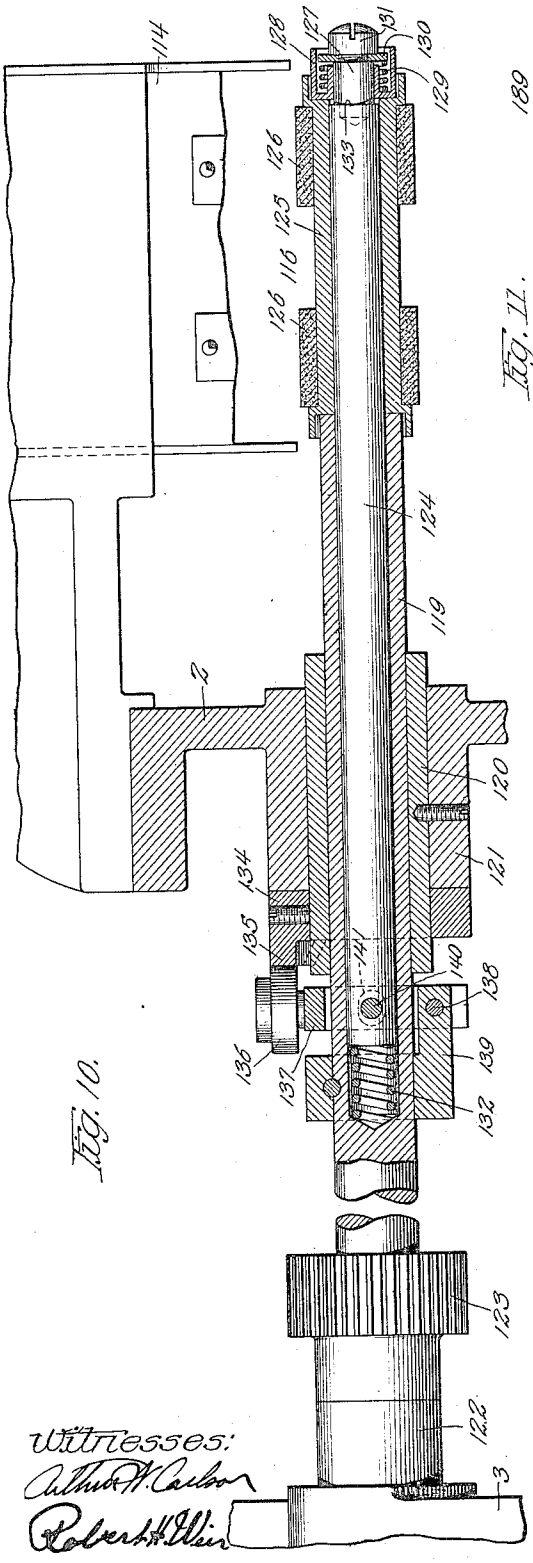


Fig. 10.

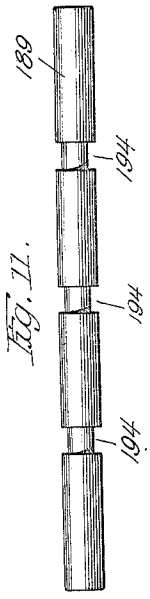


Fig. 11.

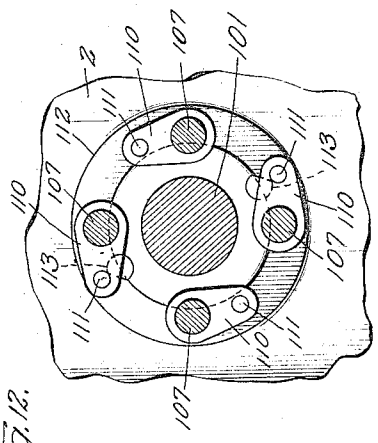


Fig. 12.

Witnesses:
Arthur H. Carlson
Robert H. Weir

Inventor.
Albert M. Price.
James R. Offield.
Atty.

April 29, 1924. 1,491,970

A. M. PRICE

WRAPPING MACHINE

Filed March 3, 1919 10 Sheets-Sheet 10

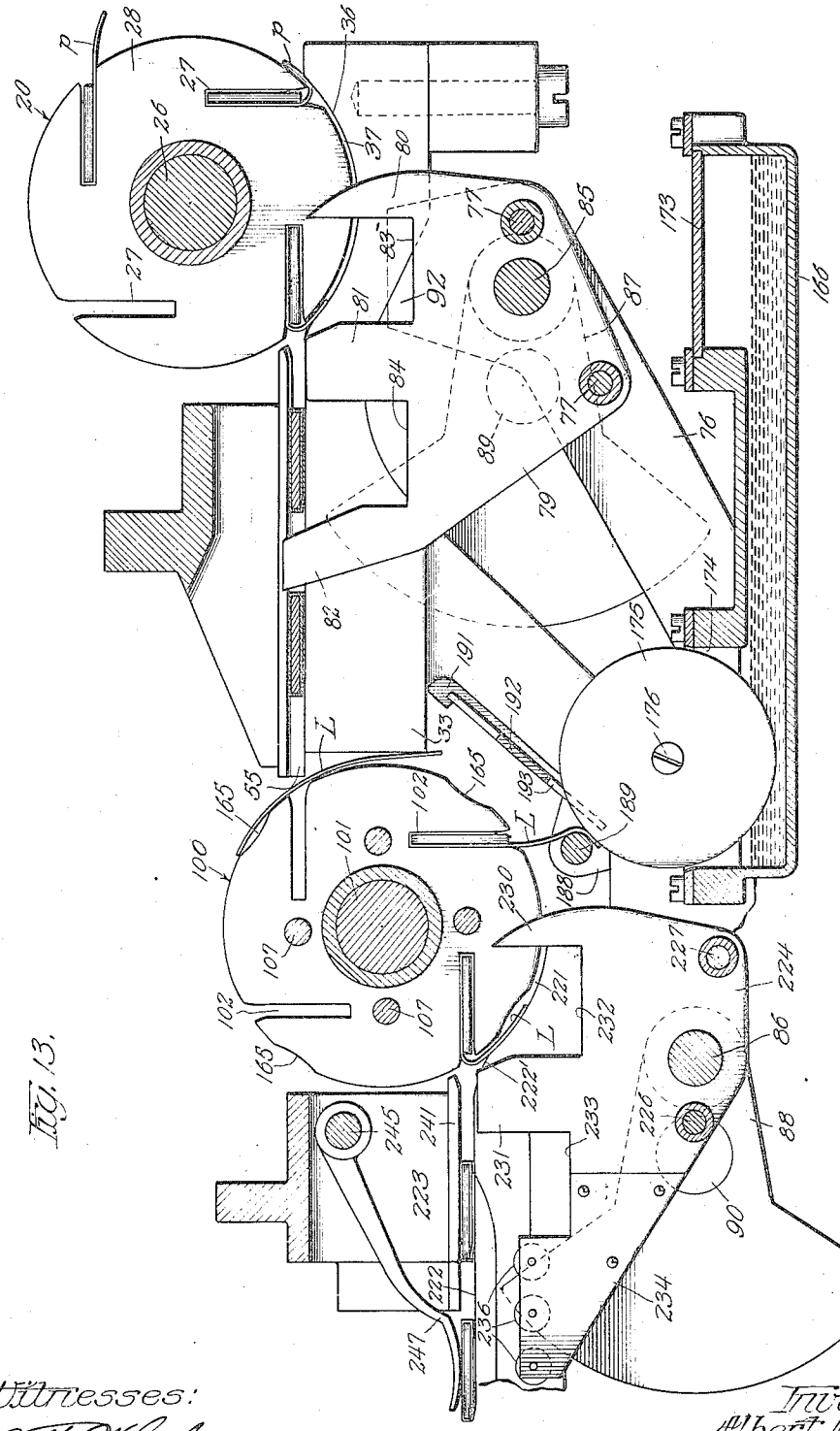


Fig. 13.

Witnesses:
Arthur W. Carlson
Robert H. Weir

Inventor:
Albert M. Price.
James R. Offield
Atty.

Patented Apr. 29, 1924. 1,491,970

UNITED STATES PATENT OFFICE.

ALBERT M. PRICE, OF ELGIN, ILLINOIS, ASSIGNOR TO WM. WRIGLEY, JR. COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF WEST VIRGINIA.

WRAPPING MACHINE.

Application filed March 3, 1919. Serial No. 280,283.

To all whom it may concern:

Be it known that I, ALBERT M. PRICE, a citizen of the United States, and a resident of Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Wrapping Machines, of which the following is a specification.

My invention relates to an improved machine for wrapping objects, and is particularly adaptable for applying wrappers and labels to sticks of chewing-gum.

My invention may be considered an improvement over the machine disclosed in my Patent No. 1,185,822 dated June 6, 1916. In the machine of this patent rectangular wrappers are wound transversely around the gum sticks, with their ends overlapping at the under side of the sticks, the wrappers being wider than the sticks are long, and the projecting wrapper sides being then creased at the gum stick ends and folded upwardly and inwardly against the top of the sticks. The wrapped sticks are then stacked and a label applied around each stack.

In my present machine rectangular wrappers are wound around the sticks with their overlapping ends below the stick, and the projecting sides of the wrapper are creased alongside the stick ends and folded downwardly and inwardly against the lower sides of the sticks. Then, before stacking of the sticks, a label is wound transversely around each wrapped stick with its overlapping ends glued together across the lower side of the stick, the labels being of sufficient width to extend around the folded wrapper sides to hold them securely in place.

The particular objects of the invention are to provide improved means for creasing and folding the wrapper sides during transfer of the sticks through the machine; to provide improved drum mechanism for receiving the wrapped sticks and for applying a label around them; to provide improved means for applying glue to one of the label ends; to provide improved means for stacking the wrapped and labeled sticks; to provide improved means for stopping the machine in case gum sticks have not been properly fed there through or become loosened after feeding therein; to provide improved means for feeding labels to the label applying drum; to provide improved construction in the label applying drum for holding the gum sticks and label in place during application of glue to the extending ends of the labels; and in general to provide improved construction and arrangement for rapidly and efficient transporting, wrapping, and labeling individual sticks and for enabling the various mechanisms to be readily accessible for inspection, adjustment or repairs.

On the accompanying drawings I have shown a machine for carrying out the features of my invention. In these drawings—

Fig. 1 is a front elevational view of the machine,

Fig. 2 is a rear elevational view thereof,

Fig. 3 is a view from a vertical plane just behind the front supporting frame wall of the machine,

Fig. 4 is a vertical sectional view through the supply magazines and the gum feeding, propelling and wrapping mechanism, and also a reduced sectional view on plane 4—4, Fig. 7,

Fig. 5 is an enlarged sectional view on plane 5—5, Fig. 1,

Fig. 6 is a sectional view on plane 6—6, Fig. 5,

Fig. 7 is an enlarged sectional view on plane 7—7, Fig. 4,

Fig. 8 is a sectional view on plane 8—8, Fig. 5, showing in addition the side creasing operation,

Fig. 9 is a sectional view on plane 9—9, Fig. 5, with a partially wrapped gum stick in place,

Fig. 10 is an enlarged sectional view on plane 10—10, Fig. 1, showing particularly the label feeding mechanism,

Fig. 11 is an enlarged elevational view of the label guide rod.

Fig. 12 is a sectional view on plane 12—12, Fig. 5, and

Fig. 13 is an enlarged sectional view similar to Fig. 4 showing particularly the transporting mechanism, the wrapping and folding mechanism, the label and glue applying mechanism, and the stacking mechanism.

The main supporting structure for the various machine parts and operating mechanisms comprises the base 1 and the front and rear walls 2 and 3 mounted thereon. The mechanism for feeding the gum sticks and the inner wrapping material to the first drum is substantially the same as in

my patent referred to. Briefly describing this mechanism, the gum sticks *g* are contained within the vertical magazine 4 supported from the bracket 4'. Near the top of the magazine the feed rollers 5 and 6 are journalled and are interconnected by the gears 7 and 8, the shaft 9 of the roller 5, or an extension thereof, supporting a sprocket wheel 10 which is connected by chain 11 with the sprocket pinion 12 on the main shaft 13, the rollers 5 and 6 being continuously rotated. Below the rollers 5 and 6 are the feeding rollers 14 and 15 which are interconnected by gears 16 and 17, the rollers being connected for intermittent rotation in a manner which will be described later. Below the rollers 14 and 15 is the cutting mechanism 18 for cutting suitable wrapping lengths from the wrapping paper or other material *p*, the wrapping sections passing between the feed roller 19 and the drum 20 in the manner fully described in my Patent No. 1,185,822 referred to. 21 represents the feed arm which feeds the gum sticks into the drum 20 together with the wrappers therefor. This lever is pivoted to the machine frame at 22 and connected with the lever is the eccentric strap 23 encircling the eccentric disk 24 secured to the main shaft 13. The lever operates the actuating spring frame 25 for the gum sticks, as fully described in my patent referred to.

The drum 20 is of the same construction as in my patent referred to. Briefly, the drum is secured to the front end of the shaft 26 and is provided with four tangentially disposed pockets 27 extending from end to end of the drum, and two deep annular grooves 28. In the periphery of the drum between the grooves are two parallel series of recesses 29, one of each series being in open communication with one of the pockets 27. Each recess is fitted with a rocking clamp 30 carrying a clamping roller 31 which projects into the pocket under pressure of a spring 32. The drum is intermittently advanced ninety degrees, and during each advance a section of wrapping paper is carried between the drum and the feed roller 19 and held in front of the upper pocket 27 and during the period of rest of the drum the lever 21 is operated and shifts the lowermost gum stick from the magazine against the upper end of the wrapper and forces the stick with such wrapper end into the registering gum pocket. During the next advancement of the drum the outer end of the wrapper is deflected ready for folding around the stick when the stick is removed from the drum.

Shifting of the gum sticks from the drum is accomplished by improved transporter mechanism, and creasing and folding of the wrapper projecting sides is accomplished by improved mechanism particularly covered by this present invention. Extending transversely of the machine in front of the main supporting wall 2 is the shelf or table 33 which has the longitudinal slots 34 and 35 therethrough registering with the annular grooves or slots 28 of the drum 20, the table in its top surface at one end having the concave portion 36 into which the drum 20 extends, the gap or passageway 37 remaining between the drum periphery and the concave surface for the passage of the wrapper ends projecting from the drum after insertion of gum sticks into the drum. On top of the table outside of the slots 34 and 35 the folding plates 38 and 39 are secured, these plates being best shown in Figs. 5, 8 and 9. At their front ends the plates have the fingers 40 and 41 respectively with their ends 42 and 43 turned outwardly beyond the sides of the table. The inner sides 44 and 45 of the respective plates extend diagonally from the base of the fingers, and in the table below and in front of the plates are the clearance pockets 46 and 47 respectively.

A folding block co-operates with the folding plates, the construction of this block being plainly shown in Figs. 5, 6, 8 and 9. It comprises a casting 48 having the transversely extending grooves 49 and 50 in its under side and having its under side between the grooves faced by a middle plate 51, and outside the grooves by the plates 52 and 53. At the outer longitudinal edges of the plates 52 and 53 are the supporting flanges 54 and 55 which aline the gum transversely on the table and co-operate with plates 38 and 39 to fold the wrappers. The folding block is held a sufficient distance above the table to permit ready passage between the table and the plates 51, 52 and 53 of the wrapped gum sticks. The block is preferably supported to be readily detachable. As best shown in Fig. 8, the block frame 48 has the rearwardly extending stud 56 for fitting into a socket 57 extending forwardly from the front main wall 2, this socket having side slots 58 for receiving the pins 59 extending from the stud 56. At its front end the block frame has the notch 60 for engaging over the edge of the supporting bracket 61 extending from the table 33. This support and the rear support holds the block at the proper distance above the table and a handle 62 is preferably provided by means of which the block can readily be removed from or inserted into its operative position. To lock the block against accidental raising I provide a locking pin or bolt 63 which is slidable in the barrel 64 into which projects the lever 65 located in the pocket 66 and pivoted on the pin 67, the lower end 68 of the lever projecting into the slot 69 of the locking pin or bolt. A spring 70 tends to hold the upper end of the lever out and the lower end

in to shift the locking pin into the hole 71 in bracket 61. When it is desired to remove the block the handle 62 is grasped and the lever 65 swung inwardly to withdraw the locking pin, and then the block is raised slightly at its front end to release the notch 60 from the bracket 61, and then the block can be pulled forwardly and out of the machine.

As best shown in Fig. 6, a number of brake or clamping disks 72 are provided for holding wrapped gum sticks in shifted positions on the table 33. As shown, circular sections of the middle facing plate 51 of the folding block are hinged and pressed downwardly at one end by compression springs 73 confined within pockets 74 in the block frame 48.

The transporter structure which co-operates with the table and folding block to shift and fold the packages is clearly shown on Figs. 1, 4 and 6. The transporter structure comprises front and rear parallel connecting bars 75 and 76 connected together by cross members 77. At one end the cross members support intermediate plates 78 and 79 which are spaced parallel and in registration with the slots 34 and 35 of the table 33, the upper ends of these plates having the propulsion fingers 80, 81 and 82 and the stick receiving notches 83 and 84. At its ends the transporter structure is mounted on the crank pins 85 and 86 extending from crank arms 87 and 88 secured to shafts 89 and 90 which are journalled in the front and rear main walls 2 and 3. The shafts are rotated in counter-clockwise direction (Figs. 1, 4 and 6) so that the fingers of the plates 78 and 79 are repeatedly raised into and carried through the table slots to receive and propel wrapped gum sticks from the drum 20 into the space between the table and the folding block 48. Referring to Figs. 4 and 6, further movement of the transporter structure will cause raising of the fingers into the slots of drum 20 and receiving in the notches 83 the wrapped gum stick from the lowermost pocket of the drum, and then as the fingers travel away from the drum the outer fingers 80 will shift the received stick onto the table 33 and below the adjacent end of the folder block. When the stick is shifted from the drum by the transporter fingers the extending end of the wrapper encounters the table 33 and is swung below the stick to overlie the other end of the wrapper, and after such shifting from the drum the sides of the wrapper will project beyond the sides of the table and the ends of the contained gum stick, and these projecting wrapper sides must be folded against the stick. In the arrangement of my patent referred to these projecting wrapper sides were deflected upwardly and against the top of the stick. However, in accordance with my present invention, these wrapper sides are deflected downwardly and against the bottom of the stick and the overlapping ends of the wrapper so that all ends of the wrapper will be at the under side of the stick. For creasing the wrapper projecting sides to permit more accurate folding thereof I provide creasing blades 91 and 92, these blades being secured to the ends of the transporter structure front and rear connecting bars 75 and 76, the upper edges of the blades extending horizontally and substantially in registration with the inner edges of the flanges 54 and 55 on the folder block (Fig. 8). The blades extend upwardly a distance above the bases of the notches 83 in the transporter plates and the blade edges come into engagement with the wrapper midway of the path of shift of the stick from the drum 20, the edges engaging the projecting wrapper sides just beyond the ends of the stick and forcing them upwardly, the projecting wrapper sides encountering the folder plate flanges 54 and 55 and being thus deflected downwardly as show in Fig. 8. The wrapper projecting sides are thus creased just at the end of the gum stick so that they may be readily folded against the bottom of the stick. While the blade edges are in engagement with the wrapper to crease it the fingers 80 are shifting the wrapped stick along the table and the fingers 80 will leave the stick in position just in advance of the finger ends 42 and 43 of the folding plates 38 and 39, the stick being below the first brake or holding disk 72 (Figs. 5 and 6). During the next translatory movement of the transporter member the slots 84 will receive the gum stick and the fingers 81 will advance it along the folding plates 38 and 39, the ends 42 and 43 of these plates first engaging with the downwardly deflected wrapper sides and these ends will guide the sides to the fingers 40 and 41 and eventually to the diagonal edges 44 and 45, the fingers and the diagonal edges deflecting the wrapper ends upwardly and these ends then travel over the tops of the bodies of the folding plates 38 and 39 and are held thereby against the under side of the stick, the pockets 46 and 47 in the table 33 affording clearance for the wrapper sides during such folding thereof.

After the fingers 81 leave the stick after upward folding of the wrapper sides the stick will be in position below the next braking or holding plate 72 (Fig. 6) and the stick is ready to be shifted into the labeling mechanism, such shifting being accomplished by the fingers 82 of the transporter member, which fingers extend upwardly a greater distance than the preceding fingers 80 and 81 (Fig. 6).

In the labeling mechanism are the receiv-

ing drum, label feeding mechanism, and glue applying mechanism. The receiving drum 100 is of cylindric form and secured to the front end of a shaft 101 which is driven intermittently and in time with the shaft 26 for the feeding drum. The drum has tangential pockets 102 adapted to be brought into alinement to receive wrapped sticks from the table 33. With each pocket 102 a row of clamping levers 103 is provided arranged within compartments 104, the levers being pivoted on pins 105, a spring 106 tending to force the front ends of the levers downwardly into the pockets 102 to clamp wrapped sticks therein. Provision is made to hold the clamping levers out of the pockets during the reception of wrapped sticks from the table 33 and to release the levers thereafter to permit removal of the sticks. For controlling the operation of the levers cam mechanism is provided. As best shown in Figs. 5, 6 and 12, a plurality of shafts 107 extend longitudinally through the drum, there being a shaft adjacent to each lever 103. Each lever has a cam abutment 108 for co-operating with abutments 109 on the shafts formed by slotting the shafts transversely. When the shafts are turned to bring the abutment surface 109 into parallelism with the lever abutments 108 the levers will be free to swing into the stick receiving pockets, but when the shafts are turned clockwise the levers will be raised out of the pockets. Each shaft has at its inner end a crank arm 110 secured thereto from which extends a pin 111, these pins riding over a stationary cam disk 112 supported from the main supporting wall 2 of the machine. The cam disk is cylindrical except for cam projections 113 placed at suitable intervals for engaging with the pins 111 to effect rotation of the corresponding shafts 107. When the pins engage with the cylindrical surface of the cam disk the respective shafts will be in position to release the corresponding levers 103, and when the pins engage with the projections 113 the corresponding levers will be raised out of the stick receiving slots or pockets.

Describing now the label feeding mechanism, a magazine 114 is mounted above the table 33 just in front of the receiving drum 100. The labels L are stacked in the magazine and just below the magazine outlet slot 115 is the label dispensing roll 116 on which one end of the label stack rests. The other end of the label stack is supported on a pin 117 extending upwardly from a bracket 118. This pin acts as an escapement to prevent more than one label from being dispensed at any time. The construction of the dispensing roll and its controlling mechanism is best shown in Fig. 10. A hollow shaft 119 is journalled at its front end in a bushing 120 secured in the hub 121 forming part of the front machine supporting wall 2, and the rear end of the shaft is journalled in a bearing hub 122 extending from the rear supporting wall 3 of the machine, the driving gear 123 being secured to the shaft adjacent its hub. Within the hollow shaft 119 is journalled the shaft 124 on which the feed roll structure 116 is supported. This structure comprises the tube or sleeve 125 on which are secured the friction rolls 126 of rubber or other suitable material. The front end 127 of the shaft 124 is of reduced diameter, on which end a washer structure 128 is slidable, a compression spring 129 encircling the washer and being held therein by the washer 130 secured to the shaft end by the screw 131. Between the inner end of shaft 124 and the base of the bore of shaft 119 a compression spring 132 is inserted which tends to force the shaft 124 outwardly to carry its shoulder 133 against the washer structure 128 and to force this structure away from the outer end of the roll supporting sleeve 125 and thus to relieve the pressure of the sleeve 125 against the front end of the shaft 119 so that the sleeve with its friction rolls thereon will be entirely free and will remain at rest. To overcome the spring 132 and draw in the shaft 124 cam mechanism is provided. A cam disk 134 surrounds and is secured to the bushing 120 and has the cam ridge 135 for co-operating with the cam roller 136 journalled to the bifurcated frame 137 which straddles shaft 119 and has the lower ends of its limbs pivoted by pin 138 to the lower end of the bracket 139 secured to the shaft 119 to rotate therewith. Extending between the limbs of the frame 137 is the pin 140 which extends through slots 141 in the walls of shaft 119 and diametrally through the inner shaft 124. Whenever the cam roller 136 travels over the cam projection 135 the frame 137 will be swung rearwardly to draw in the shaft 124 and to cause the washer 130 to compress the spring 129 to force the washer frame 128 against the sleeve 125 as soon as the shoulder 133 passes within the outer end of the sleeve, and then the pressure of the spring 129 will lock the sleeve 125 against the shaft 119 with sufficient frictional engagement to force the sleeve to rotate with its shaft so that the friction rolls 126 will dispense a label from the label magazine. As soon as the cam roller 136 leaves the cam projection 135 the spring 132 will be free to force the shaft 124 outwardly until its shoulder 133 projects beyond the outer end of the sleeve 125 and holds the spring pressed washer structure 128 away from the outer end of the sleeve 125 and then the weight of the label stack on the rolls 126 will prevent rotation thereof. When a la-

bel is dispensed from the magazine it is guided by fingers 145 between upper and lower feed rolls 146 and 147 respectively. These feed rolls are supported on shafts 148 and 149, the shaft 149 being journalled at the lower end of a frame 150, and the shaft 148 being journalled in bearing blocks 151 slidable vertically in the frame and depressed by springs 152 to force the roll 146 against the roll 147 (Figs. 1, 3 and 4). The frame 150 extends between the arms 153 and 154 extending from the hub 155 supported on shaft 156, and the shaft 149 of feed roll 147 is journalled at its ends in these arms. An abutment pin 157 extends between the arms 153 and 154 and extends between the lugs 158 and 159 extending from the frame 150. A compression spring 160 is interposed between the lug 159 and the pin, and a set screw 161 extends through the lug 158 to engage with the pin, the frame 150 being swung toward or away from the magazine 114 by adjustment of the screw 161 in order to adjust the contact line of the feed rolls with reference to the magazine outlet. The location of the shaft 149 is such with reference to the shaft 101 of the receiving drum 100 that the feed roll 147 will engage with the cylindrical surface of the drum. When a label is dispensed from the magazine by the rolls 126 it is received between the upper and lower feed rolls 146 and 147 and guided downwardly by the guide blocks 162 supported on the pin 157, the label being then received between the roller 147 and the cylindrical surface of the drum 100. To permit yielding engagement of this feed roll 147 and drum the shaft 149 is journalled in bearing blocks 163 which are slidable in the arms 153 and 154 against the pressure of springs 164 (Fig. 1). The label is fed downwardly between the drum 100 and the end of table 33 preparatory to receiving a wrapped stick from the table. When the label has been fed in this receiving position, the drum 100 will be in position to bring one of its pockets 102 into horizontal registration with passageway above the table 33 and then the fingers 82 of the transporter mechanism will shift the wrapped gum stick against the label end to fold such end around the stick and to carry the stick into the drum pocket. The drum has peripheral concaved sections 165 which come opposite the feed roll 147 to release the label end so that it will be free to be folded into the drum pocket with the gum stick. After the stick has been thus charged into the drum, the drum is rotated to carry the free end of the label through the gluing field.

The gluing apparatus is best shown in Figs. 1, 4 and 13. A rectangular glue receptacle 166 is detachably supported on the machine frame, the frame having at one side the horizontal slots 167 for receiving pins 168 extending from the glue receptacle, while at the other side the frame has a vertical slot 169 for receiving a pin 170 extending between lugs 171 projecting from the glue container. The upper end of the slot is of a diameter to fit the pin, but the throat of the slot is narrow to receive only the reduced diameter sections 172 of the pin. The pin is slidable in its supporting lugs and after the pins 168 are inserted in the horizontal slot 167, the pin 170 is shifted to bring the reduced section 172 into registration with the slot 169 and then when the receptacle is shifted upwardly to bring the pin into the end of the slot, the pin is shifted to displace the reduced section from the slot throat and the glue container will then be rigidly held in operative position. At one side the container has the slide 173 for permitting the charging of glue into the container, while at the other side are openings 174 through which project the glue applying disks 175 supported and spaced on the shaft 176 journalled in bearings mounted on the glue receptacle. Secured to the glue disk shaft 176 is a ratchet disk 178 with which a pawl 179 co-operates. This pawl is pivoted by a pin 180 at the outer end of the arm 181 extending from the hub 182 on shaft 183 which extends transversely of the machine and is journalled in bearing hubs 184. Secured to the shaft in front and in rear of the hub 182 are the hubs 185 and 186 from which arms 187 and 188 extend upwardly to support the cylindrical bar 189 which is parallel with the shaft 176 and adjacent the glue applying disks 175. On brackets 190 and 191 extending upwardly and diagonally from the arms 187 and 188 a stripper plate 192 is supported in such manner as to be slidable forwardly and rearwardly to be removed from the machine or inserted in operative position on the brackets. The lower end of the stripper plate is between the rod 189 and the peripheries of the glue applying disks 175 and has notches 193 registering with the disks, while the rod 189 has peripheral notches 194 in registration with these stripper plate notches and disks.

The arms 187 and 188 with the rod and plate supported thereon are adapted to be swung toward or away from the gluing disks. Depending from the hub 186 is the arm 195 which at its lower end has the forwardly extending abutment lug 196. Depending from the hub 182 is the arm 197 which near its lower end has the laterally extending arms 198 and 199 terminating in inwardly extending flanges 200 and 201. Through these flanges and slidable therein extend abutment rods 202 and 203 having at their inner ends the abutment heads 204 and 205 and having at their outer ends adjusting nuts 206 and 207. Between their abutment

heads and the respective flanges the rods support compression springs 208 and 209, which springs exert practically no pressure when the lug 196 is midway between the flanges. A frame part 210 connects the left end of arm 198 with the end of arm 181, to which arm 181 the pawl 179 is pivoted. For yieldingly holding the upper end of the pawl against the ratchet 178 the compression spring 211 is provided in the pocket 212 of the frame part 210 and presses against the lower end of the pawl.

At its lower end the arm 197 is pivoted to one end of a connecting link 213, which link pivots at its other end to the arm 214 on shaft 215, this shaft at the rear of the machine having the upwardly extending arm 216 connected with the arm 217 extending from the eccentric strap 218 which encircles the eccentric disk 219 on the shaft 89. As this shaft rotates the arm 97 with its abutment frame thereon will be oscillated laterally to positively swing the arm 181 and to operate the pawl for advancing the glue applying disks. Through the flexible abutment rods acting on the lug 196, the arm 195 and hub 186 may be oscillated, and this hub being secured to the shaft 183 such swing of the arm 195 will be communicated to the hub 185 which is also fixed about the shaft 183 and the arms 187 and 188 will swing to operate the rod 189 and plate 192 with reference to the glue applying disks.

The free ends of the labels projecting from the drum 100 after reception of the gum sticks will extend downwardly between the drum and the stripper plate 192, and after a ninety degree rotation of the drum, after receiving a stick, the label end will pass between the stripper plate and the rod 189 in position to have glue applied thereto by the glue disks. As the glue disks are rotated by the pawl and ratchet mechanism fresh glue will be available on their peripheries for each label, and after the label has been positioned between the plate 192 and rod 189, the arms 187 and 188 are swung and the stripper plate 192 and rod 189 are moved thereby toward the disks which then project through the slots 193 of the plate and against the label for applying short streaks of glue thereto. After this glue application the arms 187 and 188 are swung in the opposite direction to shift the stripper plate 192 to raise the label away from the glue disks after which the drum is again advanced ninety degrees and the glued label end is drawn over the top of the rod 189 and through the passageway 221 between the drum and the end of a receiving table 222, the drum again coming to rest when its pocket, which contains the stick with the glued label, is in horizontal registration with the passageway between the top of the table 222 and the guide frame 223.

On the transporter structure transporter plates are provided for shifting the sticks from the drum 100 and along the table 222, such plates being similar in operation to those already described for shifting the sticks from the drum 20 to and through the wrapper folding feed. These plates 224 and 225 are mounted on the cross rods 226 and 227 which extend between the side bars 75 and 76 of the transporter frame mounted on the crank pins 85 and 86, and the plates, as the transporter frame revolves, pass into and out of the slots 177 of the drum 100 and the registering slots 228 and 229 of the table 222. The plates have each the fingers 230 and 231, and the grooves 232 and 233. Secured to the ends of each plate are separated extension plates 234 and 235 between which are journalled a train of rollers 236. Above the table 222 at the left of the drum 100 the guide frame 223 is mounted, this frame being similar to the folding block structure 48 over the table 33, it having the lug 237 at its rear end for engaging in the socket 238, its front end having the handle 239 and the latch controlling lever 240. The under side of the frame has the facing plate 241 having the opening 242 through which a braking or holding disk 243 is projected in the path of wrapped gum sticks by a spring 244. The front end 222′ of the table 222 is rounded so that the glued trailing end of the labels can pass from the passageway 221 into the space between the table and the frame 223. When a wrapped gum stick with a label partly applied thereto is brought into registration with the table by the drum 100, the transporter fingers 230 will engage with the stick and shift it onto the table into position below the brake disk 243 of the frame, and the extending end of the label which has glue streaks thereon will be pressed against the other end of the label and the label thus secured. During the next revolution of the transporter structure the fingers 231 will engage with and shift the wrapped gum stick into position beyond the frame 223. Journalled in the frame 223 is the transverse shaft 245 to whose ends presser arms 246 and 247 are secured and extend laterally to bring their ends above the place where the wrapped and labeled gum sticks are delivered from the frame 223. A torsion spring 248 encircles the shaft 245 and is secured thereto and to the frame and tends to hold the presser arms down. The trains of rollers 236 at the ends of the transporter structure serve to raise the presser arm during the time that a wrapped gum stick is being shifted from underneath the frame 223 by the fingers 231 and then at the next revolution of the transporter structure the rollers will engage this stick and will raise it against the pressure of the presser arms to make way for the

next stick thereunder, and in this manner a stack of wrapped and labeled sticks is built up. The disposition of the stacks is not concerned in this invention but is clearly disclosed in my Patent No. 1,185,822 already referred to, shifting prongs operating at predetermined intervals to shift the stacks from underneath the presser arms into a packaging field.

Describing now the various driving mechanisms and trains for the different operating parts, a pinion 249 (see Fig. 2) secured on the main drive shaft 13 meshes with a gear wheel 250 on the shaft 251, this gear wheel having three equidistantly spaced studs 252 each supporting a roller 253. On the inner end of the shaft 26 which supports the feeding drum 20 is secured the disk 254 on whose rear face the triangular plates 255 are secured to leave the four radial cam passageways 256 with which the rollers 253 cooperate. The construction of this cam wheel and its drive by the wheel 250 is exactly the same as in my patent referred to, the drum shaft being rotated intermittently and through ninety degrees for each complete revolution of the main drive shaft 13.

The shaft 26 carries the gear 257 which through the idler gear 258 transmits rotation to the gear 259 secured to the shaft 101 of the drum 100, both drums rotating in unison. Through an idler 260 the gear 250 transmits rotation to the gear 261 secured to the shaft 89. This shaft and the shaft 90 carry the cranks whose pins support the transporter mechanism, and at the rear of the machine a link 262 connects the crank arms 263 and 264 extending from the shafts respectively. The transporter structure is thus continually carried bodily through its orbit to carry its propulsion fingers through the various drums and folding and receiving fields. The pinion 265 secured on shaft 89 meshes with the idler 266 which in turn meshes with the pinion 123 for rotating the shaft 119 associated with the label dispensing roll mechanism (Fig. 10).

The lower feed rolls 14 and 15 for feeding wrappers for the gum sticks are driven intermittently, the gear 257 secured to the drum shaft 26 meshing with the pinion 268 on shaft 269, this shaft supporting the gear 270 which through the idler 271 drives the gear 272 on the shaft of the feed roll 15. The shaft 269 driven by the pinion 268 supports the feed roll 19 which co-operates with the drum 20 to feed the wrappers.

The gear 273 on the drum shaft 101 meshes with the gear 274 on the shaft of the feed rollers 147 and this gear meshes with the gear pinion 275 on the shaft of the companion roll 146 (Fig. 4).

The operation of the machine has been more or less disclosed in the description of the various parts. Briefly summarizing, the wrapper material is fed in front of the successive pockets of the drum 20 and during the periods of rest of this drum the arm 21 shifts the gum stick into the receiving pocket and at the same time folds an end of a wrapper around a stick. The extending end of the wrapper is carried through the passageway 37 and the gum stick is brought into registration with the table 33, and while the drum is at rest the fingers 80 of the rotating transporter structure, shifts the stick onto the table 33 below the entrance end of the folding block 48, the flanges 54 and 55 of the block being cut away at this end as indicated at x (Fig. 6) in order to leave clearance for the extending sides of the wrapper whose folding is completed when the stick is in position on the table. While in such position the creasing blades 91 and 92 on the transporter structure co-operate with the folding block flanges to crease and deflect downwardly the overhanging sides of the wrapper (Fig. 8). At the end of its engagement with the fingers 80 the wrapped gum stick will be in position on the table 33 underneath the braking disk 72. During co-operation of the transporter fingers 81 with the wrapped stick it will be shifted along the table in association with the folder plates 38 and 39 and the projecting wrapper sides will be folded against the under side of the stick, the stick coming to rest below the next braking disk 72 of the folding block 48. During the next revolution of the transporter structure its fingers 82 shift the wrapped stick into one of the receiving pockets 102 of the drum 100 in which the clamping lever 103 is raised in order that the stick may readily enter and fold partly around itself one of the labels which has been brought into position in front of the drum pocket by the label feeding mechanism. During the next ninety degree advance of the drum 100 the locking lever 103 is released and securely clamps the stick in the pocket, the advancing free end of the label passing downwardly between the rod 189 and the plate 192 adjacent the gluing disks, and while in such position the arms 187 and 188 supporting the rod and plate are swung to carry the label against the glue disks so that streaks of glue are applied thereto. After application of the glue the rod and plate are swung away from the gluing disks carrying the end of the label with them and the drum 100 is advanced ninety degrees, the extending end of the glued label passing through the passageway 221, the drum coming to rest with the stick holding slot in registration with the top of the table 222. The fingers 230 of the transporter structure then shift the stick out of the drum slot onto the table into position below the braking disk 243 of the frame 223, the glued

label end being then pressed and secured against the other end of the label. The fingers 231 of the transporter structure then shift the wrapped and labeled stick along the table into position below the presser arms 246 and 247, the rollers 236 raising the presser arms for the insertion of the stick thereunder. In order to bring the printed matter on the labels into proper position with reference to the stick sides and edges, adjustment is made by means of the screw 161 to bring the engaging lines of the label feed rolls 146 and 147 at the proper distance from the label magazine. In Fig. 2 an arrangement is also shown for accurately adjusting the position of the drum 100 with reference to the drum 20. The shaft 101 is cut transversely to leave an abutment web 276 against whose opposite sides set screws 277 and 278 abut. these set screws threading through the hub of the gear 259. By adjusting these screws the position of the gear on the shaft is adjusted and the proper position relation of the drums is accurately established.

I also provide safety machanism for stopping the machine in case a gum stick is not accurately and fully fed into the drum 20 from the magazine 4, or in case the gum stick should shift partly out of the drum pocket during rotation of the drum. Referring to Figs. 3 and 4, an arm 279 is adjustably secured in a split shaft 280 by means of a clamp screw 279ª, and extends to within a short distance of the drum periphery to be engaged by the projecting end of the gum stick should it not be fully in the drum pocket. This shaft is journalled in the supporting wall 2 and at its rear end has clamped thereto a frame 281 having the tubular extension 282 in which a pawl pin 283 is slidable but urged outwardly by a spring 284 engaging between the frame and the pin 285 extending from the pawl through the slots 286. On the main drive shaft 13 a ratchet sector 287 is secured with which the pawl pin 283 co-operates, the pawl pin being normally spaced from the ratchet teeth by means of an abutment screw 288 extending from the frame 281 and abutting against a part of the machine frame at 289. A spring 290 tends to rotate the frame and shaft to hold the screw 288 against the frame part 289, and to hold the pawl away from the ratchet and to hold the arm 279 away from the drum 20. Should a gum stick project a sufficient distance beyond the drum pockets to prevent its proper passage through the machine it will strike the arm 279 to cause rotation of the shaft 280 and swinging of the frame 281 to carry the end of the pawl 283 into the path of the ratchet teeth 287, thus stopping the main shaft and the operation of the machine. This will prevent projecting gum sticks from entering the machine and becoming broken and stuck in the various passageways.

It is evident that changes and modifications can be readily made in the construction, arrangement and operation without departing from the scope of the invention and I do not therefore desire to be limited to the exact construction, arrangement and operation shown and described.

I claim is follows:

1. In a wrapping machine, the combination of means for advancing an article through the machine and for winding a wrapper around the article with the ends of the wrapper overlapping against the under side of the article, said wrapper being wider than the length of the article, creasing members movable upwardly relatively to said article and past the lower corner edges at the opposite ends of said article for creasing the under face of the projecting sides of said wrapper along lines parallel to and closely adjacent the end edges of the article, and means for folding said projecting sides of the wrapper along the creased lines and against the under side of the article.

2. In a wrapping machine, the combination of means for winding a wrapper transversely around an article with its ends overlapping at the bottom of the article, said wrapper being wider than the length of the article, a table for receiving the wrapped article, a folding block supported over said table, a transporter member for shifting the wrapped article along said table, flanges on said folding block, creasing edges on said transporter for co-operating with said flanges to crease the projecting sides of the wrapper alongside the article ends and for deflecting said sides downwardly, and folding plates raised in the path of said article to fold said sides against the under side of the article.

3. In a wrapping machine, the combination of means for winding a wrapper transversely around an article with its ends overlapping at one side of the article, said wrapper being wider than the length of the article, a table for receiving the article, a folding block supported over said table, transporter means for shifting said wrapped article along the table, flanges on the folder block overhanging the sides of the table, blades on said transporter means for engaging with the projecting sides of the wrapper alongside of the article and for forcing said article against the folding block between said flanges whereby said projecting sides are engaged by the flanges and deflected downwardly, and means interposed in the path of said article for receiving the downwardly deflected wrapper sides and for folding them inwardly and upwardly against the under side of the article.

4. In a wrapping machine, the combination of means for winding a wrapper transversely around an article with its ends overlapping at one side of the article, said wrapper being wider than the length of the article, a table, transporter mechanism for shifting the wrapped article from the wrapping means to and along the table, a folder block supported over the table, flanges on said block overhanging the sides of said table, blades on said transporter mechanism for engaging with the projecting sides of the wrapper alongside of the article ends to crease such sides at these points, said plates co-operating with said flanges to deflect the wrapper sides downwardly, and folding plates mounted on said table and having folding surfaces for receiving the downwardly deflected wrapper sides and for folding them upwardly against the lower side of the article.

5. In a wrapping machine, the combination of means for applying a wrapper to an article, a table, transporter mechanism for shifting the wrapped article from the wrapping means to and along the table, a block mounted over said table, and yielding pressure members supported in said block in an inclined position so as to present a passage which converges in the direction of travel of the article for engaging with the articles to hold them to the table.

6. In a wrapping machine, the combination of means for winding a wrapper transversely around an article, the wrapper being wider than the length of the article, a table, transporter mechanism for shifting the wrapped article from the wrapping means to and along the table, a folder block supported over the table, said transporter mechanism and folder block co-operating to fold the projecting sides of the wrapper against one side of the article during travel of the article across the table, and yielding pressure members supported on said block in the path of said articles in an inclined position so as to present a passage which converges in the direction of travel of the article to hold them yieldingly on the table.

7. In a wrapping machine, the combination of means for winding a wrapper transversely around an article, the wrapper being wider than the length of the article, transporter mechanism for intermittently engaging with the article to shift it first from the wrapping means to the table and then intermittently along the table, a folder block supported above the table, said transporter mechanism and folder block co-operating to fold the projecting sides of the wrapper against one side of the article, disks supported on said folder block, and springs above said disks for pressing them downwardly into the path of the articles to yieldingly hold such articles in position on the table after shift thereof by the transporter mechanism.

8. In a wrapping machine, the combination of a drum having a plurality of pockets, means for inserting articles in said pockets and partially folding a wrapper around such articles, a movable transporter having upwardly extending fingers for engaging with and discharging the partially wrapped articles from said drum, a table and folding mechanism for receiving said articles and for completing the wrapping of the wrapper thereon, other fingers on said transporter for shifting the wrapped articles along said table away from said folding mechanism, presser arms under which the wrapped articles are shifted, and rollers on said transporter for raising said presser arms and wrapped articles below them to permit the insertion of a succeeding article under said presser arms.

9. In a wrapping machine, the combination of a drum having pockets for receiving articles, a drive shaft connected with said drum to cause rotation thereof, a ratchet disk secured to said drive shaft, a pawl frame normally held away from said ratchet disk, and a finger extending from said pawl frame toward said drum to be engaged by articles which are not fully seated in said pockets whereby said pawl frame is brought into engagement with said ratchet disk and said driving shaft stopped.

10. In a wrapping machine, in combination, an assembling platform, a transporter having a combine reciprocating and elevating movement for engaging a series of articles to successively feed the same to said platform, a lifting portion on said transporter to raise each article as it is successively fed to said platform, and non-friction rollers on said lifting portion to roll beneath said raised article as the succeeding article is fed beneath the same.

11. In a wrapping machine, in combination, a folding channel having means to complete the wrapping of an article with the overlapping edges of said wrapper on the under side of said article, an assembling platform at the delivery end of said channel, a transporter having a combined reciprocating and elevating movement for engaging a series of articles and feeding them successively through said channel to said assembling platform, a lifting portion on said transporter to raise each wrapped article as it is successively fed to said assembling platform, and non-friction rollers on said lifting portion to roll beneath each raised article as the succeeding article is fed beneath the same.

12. In a wrapping machine, in combination, a rotatable drum having a plurality of pockets for receiving articles to be wrapped, means for rotating said drum from a re-

ceiving to a discharging position, clamping members movable in said pockets for clamping and releasing articles therein, springs tending to move said clamping members against articles in said pockets during the rotation of said drum between said receiving and discharging positions, an endless cam track stationary relatively to said movable drum, means coacting with said endless cam track continuously during the rotation of said drum to withdraw said clamping members from said articles at the receiving and discharging positions of said drum, and to furnish a limiting stop for the movement of said clamping members at other positions of said drum.

13. In a wrapping machine, in combination, a rotatable drum having a receiving pocket for an article with fixed side walls spaced apart slightly greater than the thickness of said article, means for rotating said drum from a receiving to a discharging position, a clamping member movable through a slot in one of said side walls for clamping and releasing an article in said pocket, means comprising cam-operated mechanism movable relatively to said clamping member for withdrawing the latter from said article when the drum is in receiving or discharging position and means for moving said clamping member against said article during the rotation of said drum between said receiving and discharging positions.

14. In a wrapping machine, in combination, a rotatable drum having a receiving pocket for an article, one of the side walls of said pocket being slotted, means for rotating said drum from a receiving to a discharging position, a pivoted clamping member mounted in the slotted wall of said pocket and having a spring tending to move it against an article in said pocket, and cam-operated mechanism movable relatively to said clamping member for withdrawing the latter from said article when the drum is in its receiving or discharging positions.

15. In a wrapping machine, in combination, wrapper-applying mechanism including a rotatable member having pockets for being positioned in one plane to receive an article and wrapper and in another plane for the discharge of said article and wrapper, a second rotatable member having pockets for being positioned in one plane to receive said article and a second wrapper and in another plane for the discharge of the same, a folding chute in line with the discharging position of the pockets in said first-named rotatable member, a second folding chute in line with the discharging position of the pockets of said second rotatable member, and transporter mechanism moving in an orbital path comprising two sets of projecting fingers connected together for simultaneously discharging articles from each rotatable member into its respective folding chute.

16. In a wrapping machine in combination, wrapper-applying mechanism including a rotatable member having pockets for being positioned in one plane to receive an article and wrapper and in another plane for the discharge of said article and wrapper, a second rotatable member having pockets for being positioned in one plane to receive said article and a second wrapper and in another plane for the discharge of the same, a folding chute in line with the discharging position of the pockets in said first-named rotatable member and in line with the receiving position of the pockets in said second-named rotatable member, a second folding chute in line with the discharging position of the pockets of said second rotatable member, and transporter mechanism moving in an orbital path comprising two sets of projecting fingers connected together for simultaneously discharging articles from each rotatable member into its respective folding chute and from said first-named chute into said second rotatable member.

17. In a wrapping machine in combination, wrapper-applying mechanism including a rotatable member having pockets for being positioned in one plane to receive an article and wrapper and in another plane for the discharge of said article and wrapper, a second rotatable member having pockets for being positioned in one plane to receive said article and a second wrapper and in another plane for the discharge of the same, a folding chute in line with the discharging position of the pockets in said first-named rotatable member, a second folding chute in line with the discharging position of the pockets of said second rotatable member, transporter mechanism moving in an orbital path comprising two sets of projecting fingers connected together, one set of fingers adapted to extend into a discharging pocket of the first-named rotatable member and its respective folding chute and the other set of fingers adapted to extend into a discharging pocket of the second-named rotatable member and its respective folding chute, and means for operating said transporter mechanism to discharge articles simultaneously from each rotatable member into its respective chute.

18. In a wrapping machine in combination, wrapper-applying mechanism including a rotatable member having pockets for being positioned in one plane to receive an article and wrapper and in another plane for the discharge of said article and wrapper, a second rotatable member having pockets for being positioned in one plane to receive said article and a second wrapper and in another

plane for the discharge of the same, a folding chute in line with the discharging position of the pockets in said first-named rotatable member, a second folding chute in line with the discharging position of the pockets of said second rotatable member, transporter mechanism comprising two sets of projecting fingers connected together for simultaneously discharging articles from each of said rotatable members into its respective chute, and rotating crank shafts at different elevations for giving said fingers an orbital movement.

19. In a wrapping machine, the combination of means for advancing an article through the machine and for winding a wrapper around the article with the ends of the wrapper overlapping against the under side of the article, said wrapper being wider than the length of the article, creasing members movable with the article as it is advanced for creasing the under face of the projecting sides of said wrapper along lines adjacent the article ends, and means for folding said projecting sides of the wrapper along the creased lines and against the under side of the article.

20. In a wrapping machine, the combination of means for advancing an article through the machine and for winding a wrapper around the article with the ends of the wrapper overlapping against the under side of the article, said wrapper being wider than the length of the article, creasing members movable upwardly relatively to the advancing article, while simultaneously moving in the direction of feed of said advancing article for creasing the under face of the projecting sides of said wrapper along lines adjacent the article ends, and means for folding said projecting sides of the wrapper along the creased lines and against the under side of the article.

In witness whereof I hereunto subscribe my name this 10th day of February, A. D., 1919.

ALBERT M. PRICE.