

March 18, 1924.

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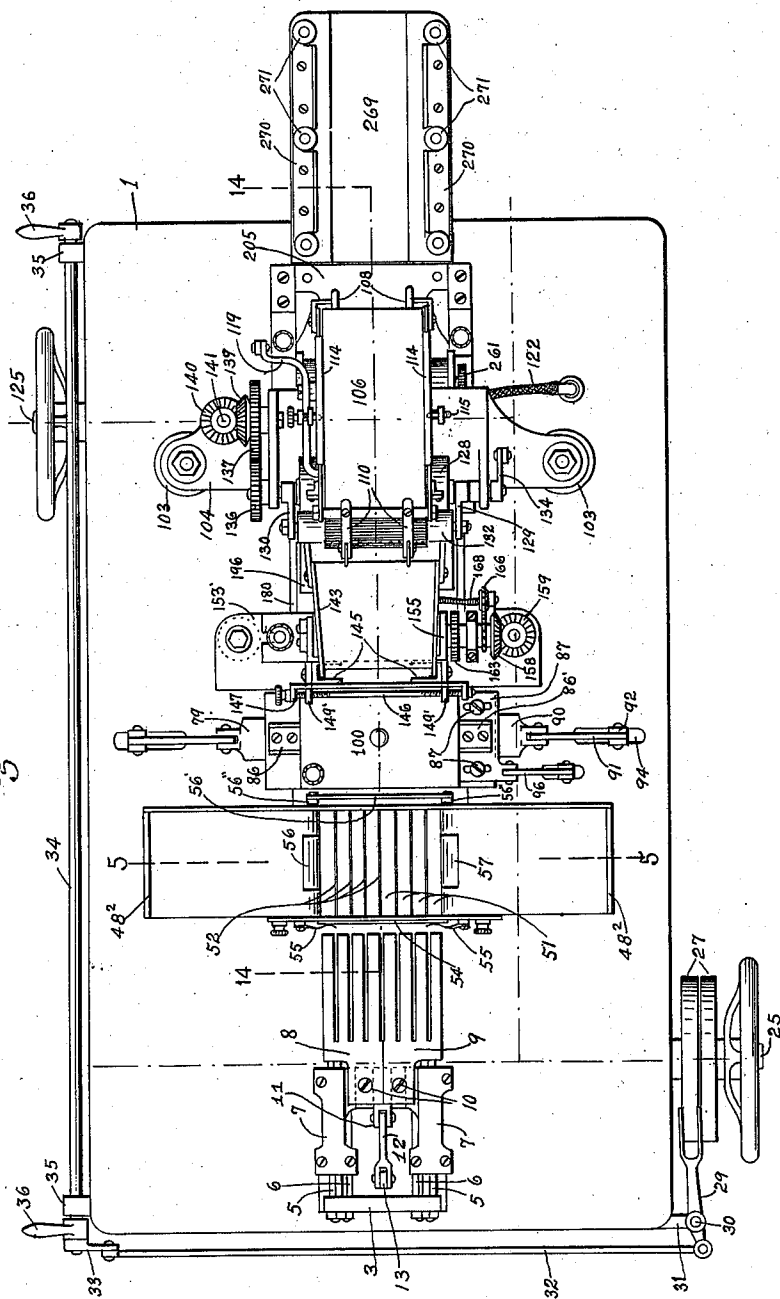
J. A. LOPEZ

WRAPPING MACHINE

Filed May 20, 1921

7 Sheets-Sheet 1

Fig. 1.



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March 18, 1924:

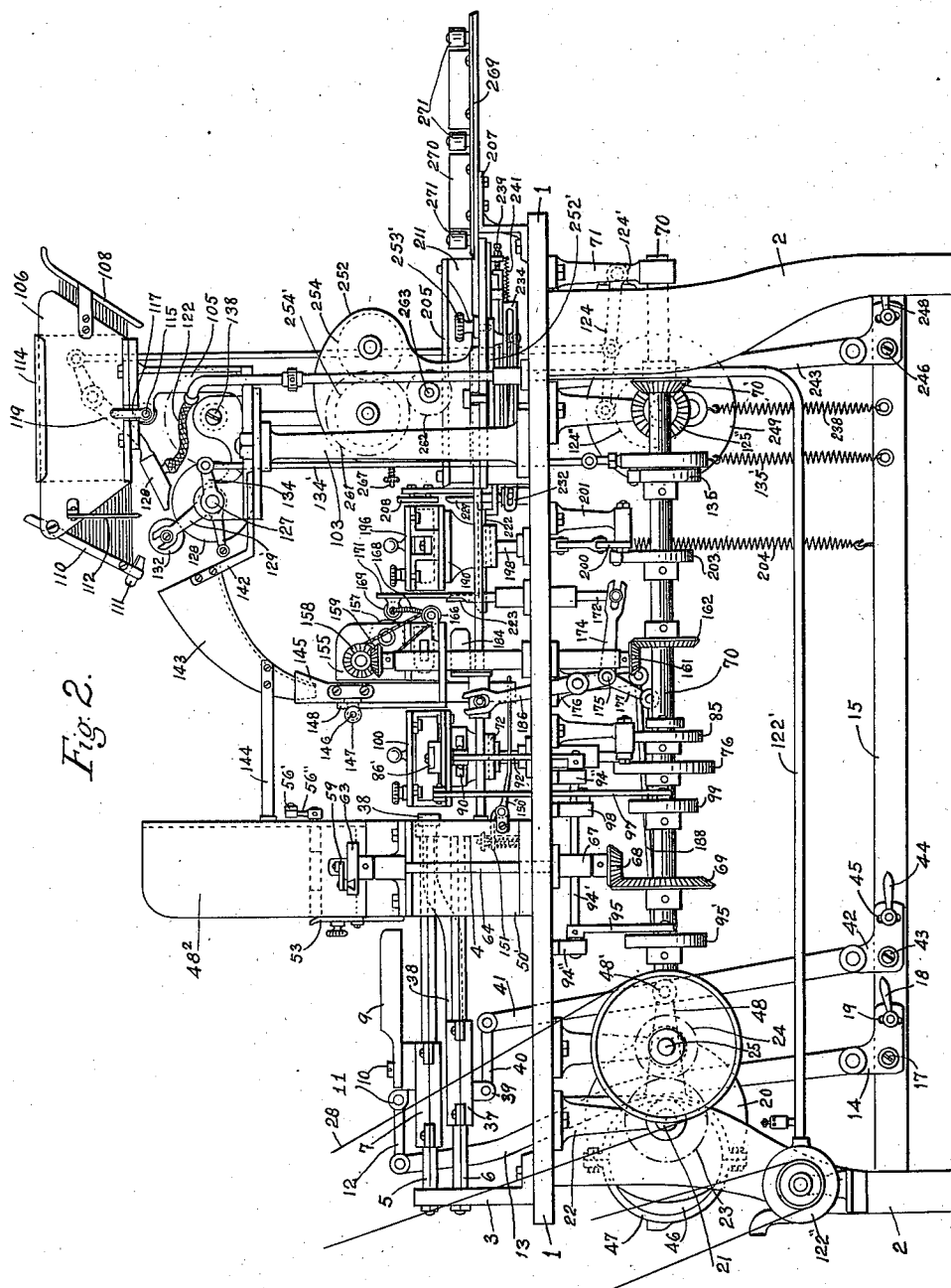
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J. A. LOPEZ

WRAPPING MACHINE

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7 Sheets-Sheet 2



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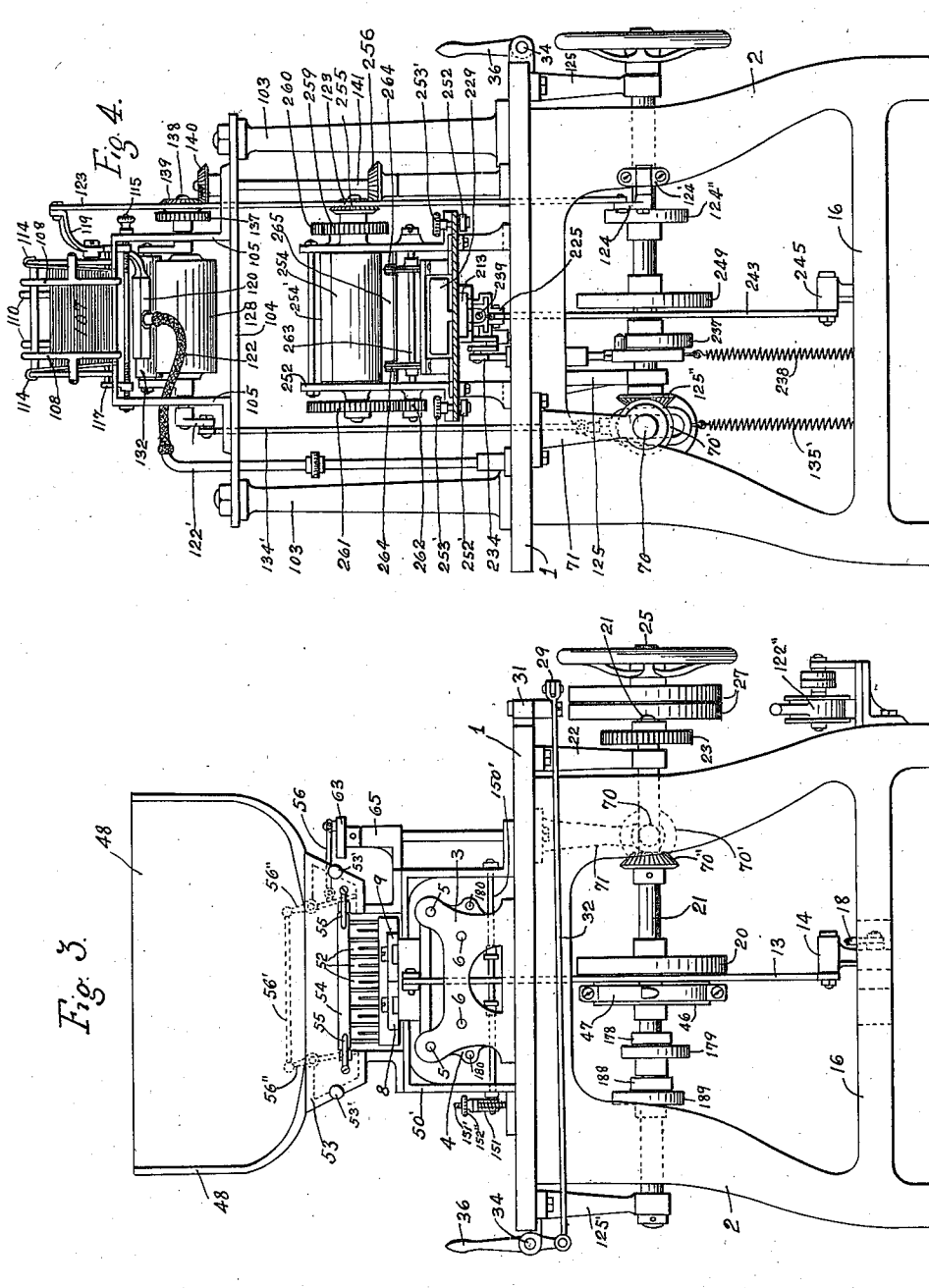
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WRAPPING MACHINE

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7 Sheets-Sheet 3



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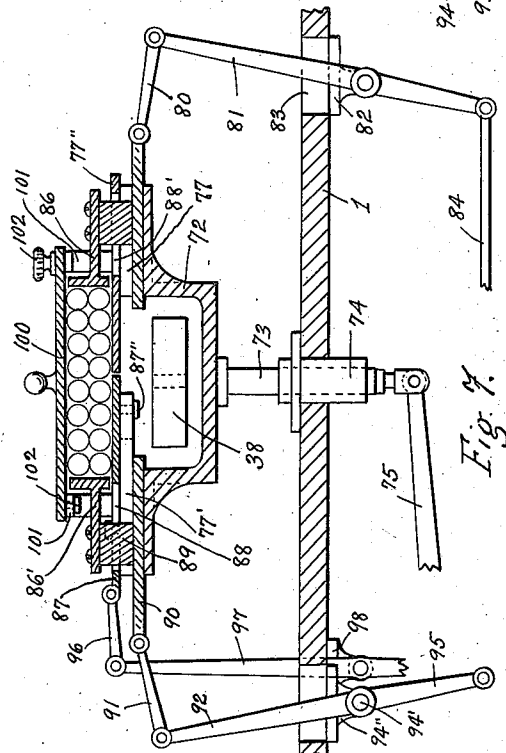
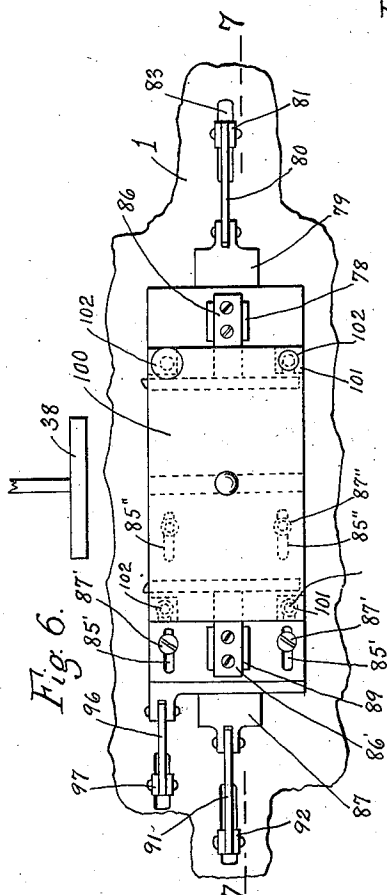
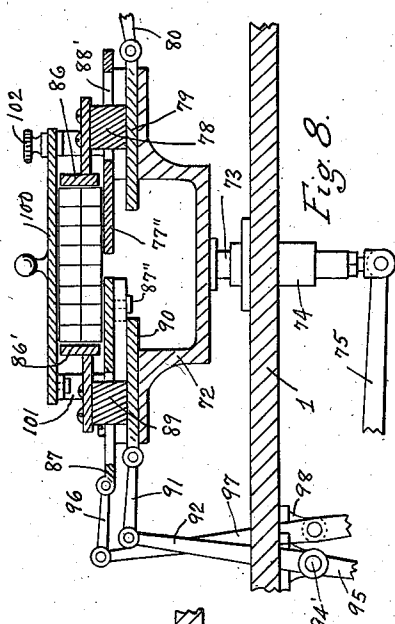
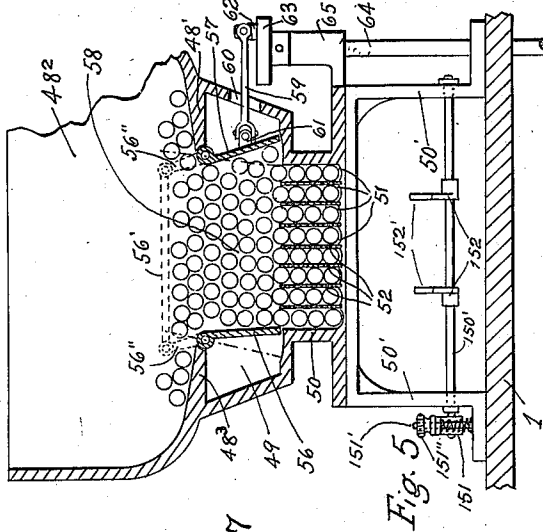
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WRAPPING MACHINE

Filed May 20, 1921

7 Sheets-Sheet 4



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J. A. LOPEZ

WRAPPING MACHINE

Filed May 20, 1921

7 Sheets-Sheet 6

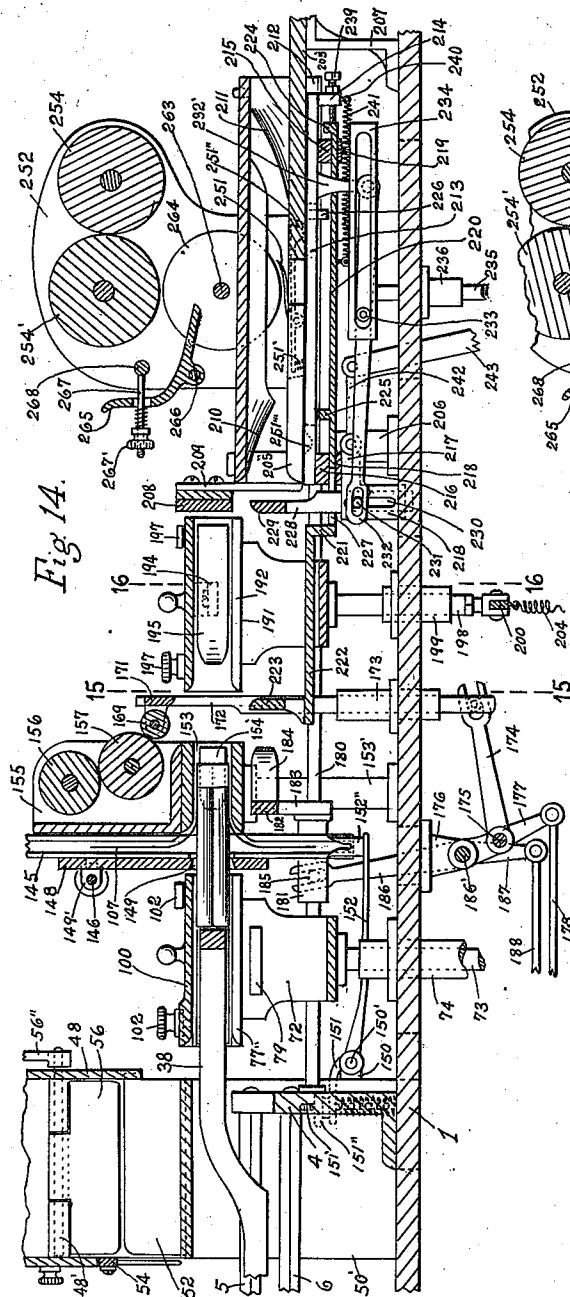


Fig. 14.

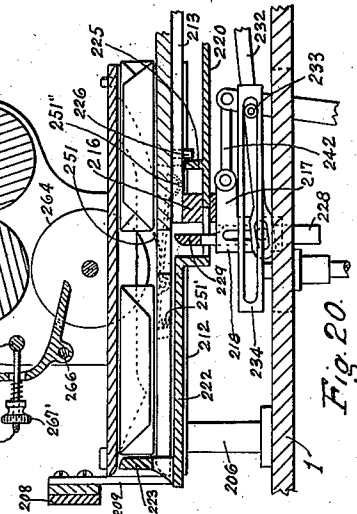
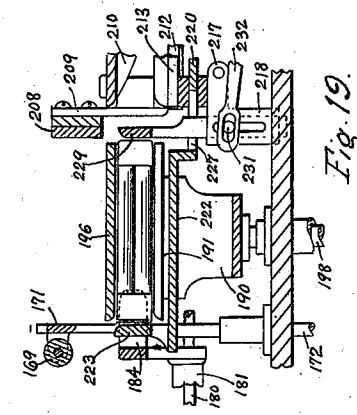


Fig. 20.



March 18, 1924.

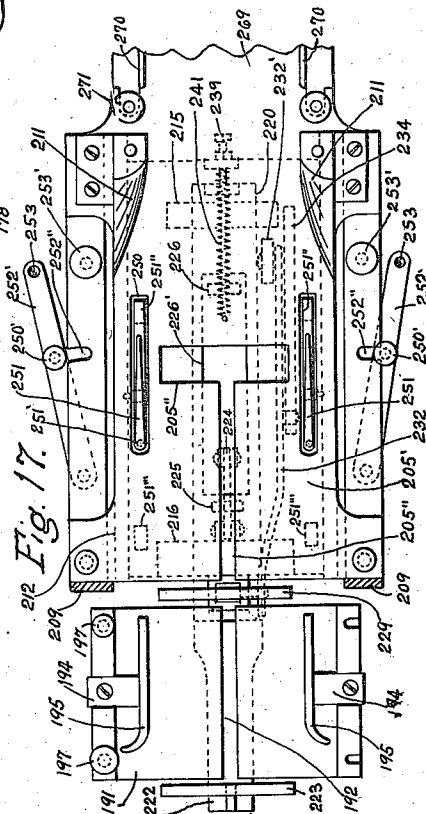
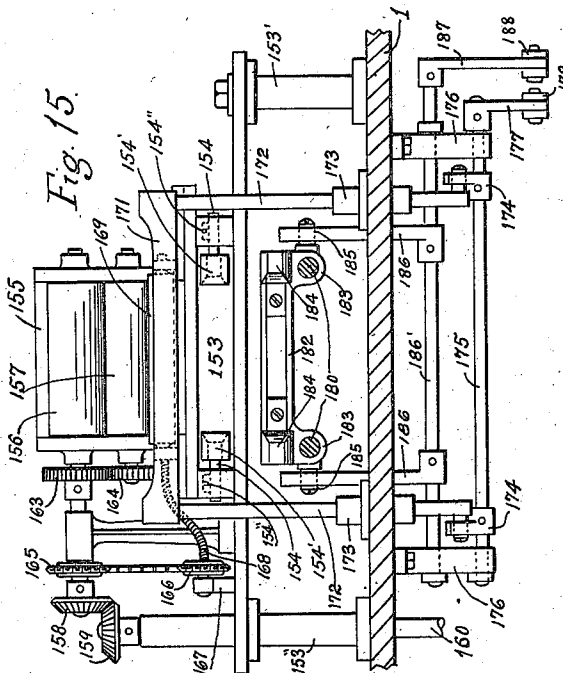
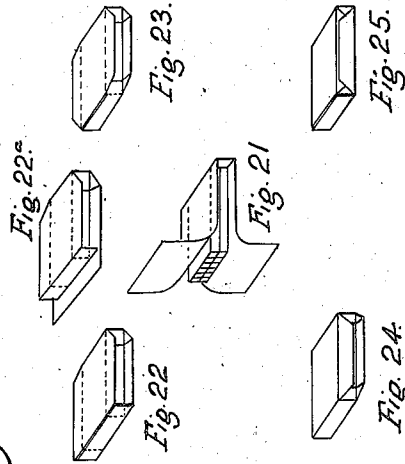
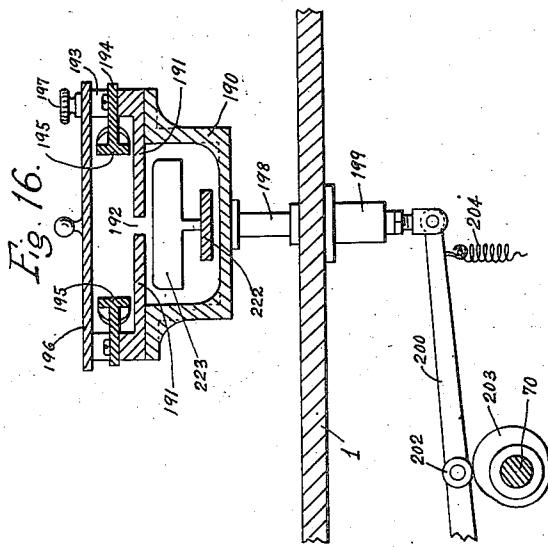
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J. A. LOPEZ

WRAPPING MACHINE

Filed May 20, 1921

7 Sheets-Sheet 7



Inventor -
Joaquin Alvarado Lopez,
By - B. Singer, Atty.

UNITED STATES PATENT OFFICE.

JOAQUIN ALEMANY LOPEZ, OF HABANA, CUBA.

WRAPPING MACHINE.

Application filed May 20, 1921. Serial No. 471,137.

To all whom it may concern:

Be it known that I, JOAQUIN ALEMANY LOPEZ, a citizen of the Republic of Cuba, and resident of Habana, Cuba (whose post-office address is No. 195^A Salud Street, Habana, Cuba), have invented certain new and useful Improvements in Wrapping Machines, of which the following is a specification.

This invention relates to an invention in wrapping machines, particularly to those especially adapted for wrapping cigarettes; and it has for its main object the production of a machine of this type embodying the various improvements in wrapping machines hereinafter appearing. With this and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then specifically set forth in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same or like parts, Fig. 1 is an upper plan view of the machine forming the subject matter of this invention; Fig. 2 is a side elevation thereof; Fig. 3 is a front elevation of said machine; Fig. 4 is a rear end elevation view of the same; Fig. 5 is a cross vertical section on line 5—5 of Fig. 1; Fig. 6 is an upper plan view in detail of the compressing and transporting device of the cigarette package; Figs. 7 and 8 are vertical section views on line 7—7 of Fig. 6 showing two different operative positions of the compressing and transporting device of the cigarette package; Fig. 9 is an upper plan view of the wrapper feeding magazine; Fig. 10 is a side elevation of the same; Fig. 11 is a cross vertical section on line 11—11 of Fig. 9; Figs. 12 and 13 are detailed section views of two operative positions of the drawing means of the wrapper from the magazine; Fig. 14 is a longitudinal vertical section detail on line 14—14 of Fig. 1; Fig. 15 is a cross vertical section detail on line 15—15 of Fig. 14; Fig. 16 is a cross vertical section detail on line 16—16 of Fig. 14; Fig. 17 is an upper plan view of the folding members of the sides of the cigarette package with the cover thereof being taken off; Figs. 18, 19 and 20 are detailed views in cross vertical section showing different operative positions of the receiving, trans-

porting and folding means; Figs. 21, 22, 22^a, 23, 24 and 25 are perspective detail views showing the various steps in the formation of a cigarette package.

In the drawings, 1 designates a working platform supported at its ends by legs 2 constituting a bench. Mounted on this bench are two standards 3 and 4 one front of the other one and between them are fixed horizontal guides 5 parallel to each other and guides 6 which are also parallel and arranged on a lower horizontal plane than that of the guides 5 and with less distance of separation than the same. On guides 5 is mounted a sliding block of U shape 7, there being fixed on the transverse branch of said block, by means of screws 10, a cigarette ejecting member comprising two sections 8 and 9 terminated in a plurality of horizontal fingers. The cross branch of block 7 terminates rearwardly in lugs 11 between which is pivoted one end of a link 12 which is articulated at its other end with a lever 13 passing through an opening in platform 1, the lower end of this lever being pivoted to a bracket 14 supported by a bar 15 connecting together the bridges 16 of the legs of the bench, this bracket being adjustable around its fixed point, formed by screw 17, by means of a bolt with handle 18 working through a slot 19 in the bracket 14. The lever 13 derives its motion from a cam 20 mounted on a horizontal shaft 21 transversely arranged beneath the platform between pendant supports 22, this shaft receiving motion through the agency of a gear wheel 23 fixed on the end of shaft 21 and meshing with another gear wheel 24 fixed to a short horizontal shaft 25 parallel to shaft 21 and supported by a pendant support 26 fixed beneath platform 1. At one end of shaft 25 exteriorly to platform 1 is fixed a driving pulley and a loose pulley 27 to which motion is transmitted through a belt 28 from a proper power source which is not shown. The belt 28 is controlled by means of a fork 29 pivoted at 30 to a bracket 31 fixed to the platform 1, and at its free end to a long horizontal rod 32 which is articulated at its opposite end at the opposite side of the platform to an arm 33 fixed to a horizontal rock shaft 34 extending along one side of the machine and actuated by handles 36 fixed thereto.

On guides 6 is slidably mounted block 37 on which is fixed a cigarette pushing plun-

ger 38 whose stem is curved up at its front part as more clearly illustrated in Figs. 2 and 14. The sliding block 37 is provided with lugs 39 to which is articulated one end of a link 40 pivoted at its opposite end to a lever 41 passing through an opening in platform 1, and the lower end of this lever is pivoted on a bracket 42 mounted on the bar 15 by a screw 43 and adjustable on the same by means of a screw with handle 44, the screw working through a vertical slot 45 in the bracket 42. Said lever 41 derives its motion from an eccentric disc 46 mounted on the shaft 21, engaged by an eccentric strap 47 terminating in an eccentric rod 48 pivoted at 48' to the lever 41.

Above the platform 1 is a cigarette magazine having walls 48² merging into inclined walls 49 which in turn are merged into delivery throat walls 50. Said case is supported on a base of U-shape transverse section 50'. Projecting horizontally from the walls 48² of the magazine into the same above the throat 50 are ledges 48³ and the delivery throat is divided into cells 51 separated from each other by vertical partitions 52. Said cells are adapted to permit the fingers of the pushing elements to pass therethrough during their advance. The front part of the magazine is partially open and partially closed by a plate 53 secured by screws 53', and on the outer face of this plate is transversely hinged a narrow plate 54 of comb shape secured by straps 55 and serving to prevent the cigarettes in the cells 51 from being displaced when the block 7 returns.

At the ends of the ledges 48³ are articulated pendant agitating plates 56 and 57 between which is placed the mass of cigarettes 58 filling the magazine, which cigarettes, on coming down, occupy the cells 51. Plates 56 and 57 are connected together so as to receive the same motion through a horizontal rod 56' behind the rear wall of the magazine case and articulated at its ends to arms 56'' secured to the projecting ends of the pintles of plates 56 and 57. A horizontal rod 59 passes through an opening 60 in one of the walls 49 of the magazine and one of its ends is articulated to a universal joint 61 secured to said plate 57, the other end of said rod being universally connected to a crank 62 fixed on the upper face of a horizontal disc 63 mounted on the upper end of a vertical shaft 64 journaled in a bracket 65 carried by the support 50' of the magazine, and also journaled in another bracket 67 carried by the platform 1, there being mounted on its lower end a bevel pinion 68 which meshes with a bevel gear 69 fixed on a horizontal shaft 70 longitudinally arranged beneath platform 1 and journaled in pendant supports 71 secured beneath said platform. The shaft 70 has at its front end

a pinion 70' meshing with another pinion 70'' arranged on shaft 21.

Behind the cigarette magazine is a device for receiving the cigarette package and compressing and transporting the same. Said device includes a channeled base 72 having horizontally extending wings. The said base has a reciprocating vertical motion produced by the reciprocation of a stem 73 fixed on the lower face of said base and working in a bearing 74 mounted in the platform 1. The said stem is actuated by a lever 75 deriving its motion from a cam 76 mounted on the shaft 70. On the upper face of the horizontal wings of the base 72 are formed slideways 77 and 77', there being fixed above recess 77 a plate 77'' having a slot through which works a block 78 carried by a plate 79 slidable in the slideway 77 and actuated by a link 80 articulated to the rear edge of said plate and to which link is articulated a lever 81 fulcrumed on a pendant support 82 secured to the platform 1 beneath a slot 83 therein. The said lever 81 is actuated by a rod 84 deriving its motion from a cam on shaft 70. The block 78 carries a compressing member 86 of T-shape. Above the slideway 77' a plate 87 is mounted and is adjustable with respect to the slideway 77' by means of four screws 87' and 87'' of which the screws 87' pass through slots 85' in the plate 87 and are fixed to the slideway 77' and the screws 87'' reversely pass through slots 85'' in the slideway 77' and are fixed to the plate 77''. The plate 87 is provided with a slot 88 through which works a sliding block 89 carrying a compressing member 86' similar to the opposite compressing member 86, said block being mounted on a plate 90 slidable in the slideway 77'. This plate is actuated by means of a link 91 connecting it with an arm 92 passing through a slot 94 on the platform 1 and fixed on one end of a horizontal shaft 94' journaled in pendant brackets 94'' fixed beneath platform 1. The other end of the shaft 94' carries an arm 95 to which motion is transmitted by a cam 95' mounted on shaft 70. The plate piece 87 is actuated by a link 96 connected to a lever 97 articulated on a pendant bracket 98 fixed beneath a slot in the platform 1, which lever derives its motion from a cam 99 on shaft 70. The compressing device carries a lid 100 resting on four blocks 101 projecting from the upper face of the slideways 77 and 77', and is secured thereto by means of screws 102.

On the rear part of platform 1 there are two supports or columns 103 supporting a platform 104 and at the front part of said platform are upstanding supports 105 of channeled section for the slotted horizontal bottom of a magazine 106 designed to contain the package of wrappers 107. The

leaves of said package are arranged within the magazine 106 in echelon formation, they being compelled to be thus maintained by the inclined members 108 secured by supporting arms 109 adjustable by screws 109' to the sides of the magazine 106, and by inclined members 110 fixed to the upper part of the sides of the same and provided at their lower ends with knives 111 projecting inwardly and on which an end of the package wrapper rests. Said package is secured laterally by vertical members 112 which are fixed to the sides of the magazine 106 and which are provided at their lower ends with knives underlying the package of wrappers. From the upper edge of the sides of the case hooked plates 114 are suspended. For the purpose of controlling movement of these plates, there is provided a rod 115 having an integral head 116 by means of which it can be rotated without advancing through the wall of the supports 105 owing to the collars 115'. The outer portions of said rod have reversible threads working in upstanding blocks 117 carrying horizontal stems 118 passing through the sides of the magazine 106 and bearing against the outer faces of the plates 114. On one of the outer sides of the magazine 106 is fulcrumed a lever 119 which at its front end terminates in a hollow suction head 120 the upper face of which is provided with suction perforations 121. The interior of this suction head is connected by means of a flexible tube 122 with a tube 122' in turn connected with a centrifugal vacuum pump 122''. The opposite end of lever 119 is articulated with a vertical rod 123 which is connected at its lower end to an arm 124 which is articulated at one end to a bracket 124' fixed on the rear end of the bench and at its other end carries a roller in contact with the periphery of a cam 124'' mounted on a horizontal shaft 125 journaled in pendant brackets 125' and having at one end a bevel pinion 125'' with which meshes another bevel pinion 70' fast on the shaft 70.

On the rear part of platform 104 are mounted upstanding brackets 126 and 126' in and between which is mounted a horizontal shaft 127 carrying a roller 128. On the end of shaft 127 adjacent the bracket 126, there is loosely mounted an angular lever 130, and on the other end of shaft 127 there is loosely mounted a sleeve 129 which securely carries an angular lever 129'. Two corresponding arms of these levers have forked ends and on them is fixed a shaft 131 carrying a loose roller 132. Between the ends of the two other arms of said levers is fixed a horizontal reinforcing bar 133. On sleeve 129 is fixed also an arm 134 to which is pivoted the upper end of a vertical rod 134' which receives reciprocal motion from a cam 135 mounted on shaft 70 and which is

maintained in operative position by means of a spring 135'. On the end of the shaft 127 projecting beyond the support 126 is fixed a gear wheel 136 meshing with another gear wheel 137 fixed to a short shaft 138 journaled in the support 126, and at its projecting end the shaft carries a bevel pinion 139 meshing with a similar pinion 140 carried on the upper end of a vertical shaft 141 passing through the platform 1 and driven by gearing connecting it with the shaft 125. On the rear end of platform 104 are fixed the angular arms 142 rigidly supporting at its ends the sides of an inclined chute 143 serving to direct the fall of the wrapper; this chute being supported by stays 144 secured to its lower end and to the rear wall of the cigarette magazine. Said chute discharges wrappers between vertical guides 145 of channeled horizontal section which can be variously spaced by actuating a horizontal screw 146 of reversible thread which passes through lugs 147 projecting forwardly from a vertical plate 148 arranged behind the transporting and compressing mechanism and provided with a horizontal slot 149 in alinement with the tube or conduit formed by the lid 100, plates 77'' and 87' and compressors 86 and 88' of said transporting and compressing mechanism when the same descends as will be explained hereinafter.

Mounted on the sides of the support 50 of the magazine, are two brackets 150 carrying a rock shaft 150' on one end of which is fixed an arm 151 having an opening at its free end through which passes a vertical stem 151' fixed at its lower end to platform 1. The arm 151 can be depressed or raised to gradually rock the shaft 150' by means of a nut 151'' which is threaded on the upper end of stem 151' provided with reversible thread and which nut works against the tension of a helical spring coiled on said stem beneath the arm 151. The shaft 150' has rigidly secured thereto two members 152 which extend forwardly and terminate below the guides 145 in forked ends 152' which project up and receive the wrapper falling through the guides 145.

Behind the guides 145 there is a short conduit or tube of rectangular section 153, which is in horizontal alinement with the slot 149 of plate 148 this conduit being supported by a platform resting on a standard 153'—153'' rising from the platform 1. In this conduit, the first folding of the wrapper should be effected and for this purpose horizontal stems 154 pass through its sides and carry at its ends within the conduit the folding blocks 154' adjustable by means of screws 154''. On the lid of tube 153, a paste box 155 is mounted. Inside this paste-box are two contacting rollers 156 and 157 one beneath and offset from the other. The

roller 156 derives its motion through a bevel pinion 158 driven by a bevel pinion 159 fast on the upper end of a vertical shaft 160 journaled in a bearing 153'', and driven by the bevel gears 161 and 162 from the shaft 70. The roller 156 transmits its motion to the lower roller 157 by means of the gears 163 and 164. The shaft of roller 156 carries a sprocket wheel 165 which through a chain transmission drives a wheel 166 rotatably mounted on a bracket 167 rising from the platform holding the tube 153. The wheel 166 drives a flexible shaft 168 which in turn drives a roller 169 journaled in bearings 170 projecting from the front face of a narrow and long plate 171 arranged transversely to the platform 1 and carried by two vertical rods 172 passing through bearings 173 in the platform 1 and connected at their lower ends with the forked ends of arms 174 fixed to a horizontal shaft 175 rocking between pendant supports 176 below the platform 1. The shaft 175 carries an arm 177 articulated with a rod 178 deriving its motion from an eccentric 179 mounted on shaft 21. Along the platform 1 are arranged horizontal guides 180 which are secured at their front ends to the standard 4 before referred to. Slidably mounted on these guides are sleeves 181 to which is fixed a narrow transverse plate 182. On the rear face of the plate 182, and at both of its ends are fixed folding fingers 184. The sleeves 181 have laterally projecting studs 185 engaging the forked upper ends of levers 186 rigidly secured to a horizontal shaft 186' rocking between the supports 176. This shaft carries an arm 187 to which is pivoted a rod 188 deriving its motion from an eccentric 189 mounted on the shaft 21.

Behind the plate 183, there is located a vertically moving transporting mechanism for the partially wrapped cigarette packages, which is formed by a support of channeled transverse section 190 carrying two overhanging angular plates 191 between which is a narrow space marked 192. The sides of said plates are recessed at 193, and in these recesses are fixed horizontal stems 194 carrying at their free ends flexible holding members 195 consisting of metal strips the front ends of which are outwardly bent, as clearly shown in Fig. 17. On the side walls of the plates 191 is mounted a lip 196, fixed thereto by means of screws 197. The support 190 is caused to be vertically moved by means of a stem 198 passing through a bearing 199 on the platform 1 and terminating at its lower end in a fork pivoted to a lever 200 fulcrumed to a bracket 201 beneath the platform 1. The lever 200 carries a bowl 202 which is held in contact with a cam 203 mounted on shaft 70, by means of a spring 204. The transporting mechanism, at the end of its descending

movement, comes into horizontal alinement with a conduit 205, the bottom 205' of which rests at its front on supports 206 and 207. The conduit bottom 205' has a T-shaped slot 205'' commencing at the fore edge of the conduit and terminating at the center thereof. Above the entrance to this conduit, there is a stationary plate 208 supported by short vertical stays 209. From the sides of the top of the conduit 205, folding members 210 are suspended and on the rear part of the conduit are placed the folding members 211. Beneath the bottom 205' of conduit 205 are located slideways 212 along which a plate 213 slides. This plate carries a depending lug 214, in front of same a transverse bridge 215, and at its front end another bridge 216 carrying a lug 217, integral with a sleeve 218. Cut through the bridges 215 and 216 are horizontal slots through which slides a cigarette package extracting mechanism 220 the main body of which is formed by a narrow and long plate offset at 221 and having a horizontal extension 222 terminating in an upstanding T-head 223. The rear end of the member 220 terminates in an upstanding lug 224, and on the upper face of the said main body is mounted a block 225 designed to engage a stop 226 projecting down from the conduit bottom 205'. The front part of said main body has a slot 227 through which a vertical extracting member 228 works. This member has a T-shaped head 229. A vertical slot 230 is cut in the side of the sleeve 218 and sliding therein is a pin 231 projecting horizontally from the vertical body of the extractor 228. This pin engages the eyed end of a lever 232 provided with a roller 233 slidable in a crosshead 234 carried on the top of a vertical stem 235 passing through a bearing 236 on the platform 1 and deriving its motion from a cam 237 mounted on the shaft 125. A spring 238 maintains the said stem and cam in operative relation. Through the rear lug 224 of the extracting member 220 is threaded a horizontal screw 239 serving to limit or increase the stroke of the extracting member 220 as will be seen hereinafter, and from the lower face of said member there is a projection in which and in another projection 240 of lug 214 is hooked a helical spring 241 which serves to exert the required tension in the extractor 220 during the operation of the machine. The sliding plate 213 receives motion through the agency of a link 242 pivoted to the lug 217 projecting back of the sleeve 218 and to a lever 243 fulcrumed on a pin in a bracket 245 which is articulated by a screw 246 to the bar 15, said bracket having a slot engaged by a bolt 248 in the bar 15. The lever 243 is moved by the cam 249 fast on the shaft 125.

At the bottom of the conduit 205, there

are longitudinal side slots 250 in which are secured fingers 251 designed to maintain in raised up position the sides of the wrapper while they are pasted.

On the bottom 205' of the conduit 205, there is mounted a paster, the side walls 252 of which have flanges to bear on the bottom 205', and can be removed or adjusted by means of members 252' pivoted beneath the bottom 205' at one end and provided at its middle portion with screws or securing pins 250' which can be hooked in the slots 252' existing in the flanges of walls 205, and at their free ends said members have recesses 253 in which are lodged the lower ends of screws 253' passing through the bearing flanges of walls 252 when the walls 252 are fixed in position. Inside of the paster are two rollers 254 and 254' in about the same horizontal plane and in contact with one another. The roller 254 receives motion by means of a pinion 255 secured to the end of its shaft which projects out of the walls of the paster and a pinion 256 fast on the vertical shaft 141. On the shafts of rollers 254 and 254' projecting out of the walls of the paster are mounted gear wheels 259 and 260 meshing together and transmitting motion from one roller to the other, and at the opposite end of the roller 254' is mounted a gear wheel 261 which meshes with a pinion 262 secured to the projecting end of a shaft 263 on which are mounted two spaced apart pasting wheels 264. In contact with the periphery of the pasting wheels 264, there is a doctor 265 having vertical slots through which the said wheels 264 work. The doctor 265 is fulcrumed on a shaft 266 in the front part of the paster and is adjusted by means of a stem 267 and nut 267', the latter bearing against a helical spring coiled around the stem between the doctor and nut. The end of the stem is fixed to a horizontal shaft 268 which can rock between the walls of the paster.

In continuation of the conduit 205, there is a delivery table 269 the bottom of which is a continuation of the bottom 205' of the conduit 205, and its walls are formed by angular plates 270 vertically fixed, in front of which are mounted vertical rollers 271 which loosely rotate and aid the discharge of the wrapped cigarettes.

The operation of this machine is as follows: Once the cigarette magazine is full with cigarettes, a package of wrappers placed in the wrapper magazine, paste fed to the pasters, and motion imparted to the driving pulley 27 and transmitted thereby to shafts 21, 70 and 125, the transmission members mounted thereon will impart motion to the various mechanisms actuated thereby in proper timed relation. Therefore the compressing and transporting mechanism will ascend and come into alinement with

the compartments 51 of the cigarette magazine, the compressing members 86 and 86' at this time being held back as illustrated in Fig. 7. Then, in the advance movement of blocks 8 and 9 carrying the pushing fingers, 70 the latter introduce the cigarettes in a double layer between the bottom formed by the plates 87—77" and lid 100 where they are alined at their ends by the vertical plate 148, which at that moment closes the outlet end of the conduit formed by said plates and lid. Then the mechanism descends, and simultaneously the compressors advance towards each other, the cigarette package being compressed between them, as shown in Fig. 8, until the conduit constituted by lid 100 and plates 87—77" comes into alinement with the plunger 38 which pushes the cigarette package through the opening 149 in the fixed vertical plate 148. When the cigarette package passes through the slot 149, it finds in its way a wrapper which has been fed between the guides 145 as follows: The lever 123 imparts an oscillating motion to the suction head 120 and causes its upper face to come into contact with the lowermost wrapper in the magazine and withdraws the same, when the said head descends. During this interval, the lever 134' has caused the roller 132 to move around the constantly rotating roller 127, and the wrapper, as shown in Fig. 13, rests first on the roller 128 and then, on advancing the roller 132, is caught between both, the suction being at that moment cut off either automatically or merely by the drawing of the wrapper therefrom. The wrapper, being freed, rapidly passes between said rollers while the roller 132 retrocedes always in contact with the roller 126, and the wrapper falls through the channel 143 to the guides 145, being centered with respect to the slot 149 by varying more or less the inclination of members 150' carrying the forked end 152". The advancing movement of the double layer of cigarettes causes the wrapper to be folded on its middle part as shown in Fig. 14, and causes it to enter into the conduit 153 where the folders 154' effect the first folding of the wrapper, folding inwards the side edges of the closed ends of the cigarette package, as illustrated in Fig. 21. The plunger 38 pushes the cigarettes and wrapper through the conduit 153 into the conduit formed by lid 196 and plates 191. During this movement, the sides of the front fold of the wrapper are bent in against the sides of the cigarettes by the plates 195. Then the paste roller 169 descends together with plate 171 which bends down the upper projecting horizontal edge of the wrapper, as shown in Fig. 18. The plate 171 then ascends and the transporting mechanism descends. This results in causing the head 223 of the extracting

member to bend the pasted lower edge of the wrapper on to the upper downwardly bent edge of the same, as shown in Figs. 19 and 22. The folding fingers 184 are then advanced and these fold in the sides of the wrapper ends and close the end of the package, as shown in Figs. 19 and 23. Then the cigarette package is pushed into the conduit 205 by the extractors 223 and 229, the cigarette package being carried between the extractors 223 and 229 until the shoulder 225 of the extractor 220 may abut the stop 226, as shown in Fig. 20, the folders 210 folding meanwhile the upper edges of the wrapper as shown in Figs. 20 and 24. The extractor 229 continues its advance against the tension of the spring 241, thus pushing somewhat forward the prior cigarette package which will be in the state of formation shown in Fig. 24, and the folders 211 fold up the lower edges of this wrapper after being pasted by wheels 264, the doctor 265 permitting only the required amount of paste to be applied to the lower edges, the small fingers 251 aiding this operation by keeping the said lower edges of the wrapper raised while the same are pasted. Being pushed by the preceding cigarette box, the wrapping of a cigarette package is completed by the folders 211 which effect that last fold, as shown in Fig. 25, the finished cigarette package coming out through channel 269.

Having thus described my invention and the manner in which the same is carried out, what I desire to cover with Letters Patent is all that which may fall within the scope of the appended claims.

What is claimed is:—

1. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction along a primary level, thence to and along a secondary level, and thence to and along a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary level, secondary folding means for partially wrapping said group while in transit from said secondary level to said tertiary level, and tertiary folding means for completing the wrapping of said group while in transit along said tertiary level.

2. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction along a primary level, thence to and along a secondary level, and thence to and along a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary level, secondary folding means for partially wrapping said group while in transit from said secondary level to said tertiary level, tertiary folding means for completing the wrapping

of said group while in transit along said tertiary level, and means for supplying a group of articles to said primary level.

3. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction along a primary level, thence to and along a secondary level, and thence to and along a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary level, secondary folding means for partially wrapping said group while in transit from said secondary level to said tertiary level, tertiary folding means for completing the wrapping of said group while in transit along said tertiary level, and means for compressing said group while in transit from said primary level to said secondary level.

4. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction along a primary level, thence to and along a secondary level, and thence to and along a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary level, secondary folding means for partially wrapping said group while in transit from said secondary level to said tertiary level, tertiary folding means for completing the wrapping of said group while in transit along said tertiary level, means for supplying a group of articles to said primary level, and means for compressing said group while in transit from said primary level, to said secondary level.

5. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction along a primary level, thence to and along a secondary level, and thence to and along a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary level, secondary folding means for partially wrapping said group while in transit from said secondary level to said tertiary level, and tertiary folding means for completing the wrapping of said group while in transit along said tertiary level, said primary folding means including stationary folding devices alongside the path of said group.

6. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction along a primary level, thence to and along a secondary level, and thence to and along a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary level, secondary folding means for partially wrapping said group while in transit from said secondary level to said tertiary level, and tertiary folding means for completing

the wrapping of said group while in transit along said tertiary level, said secondary folding means including movable folding devices alongside the path of said group.

5 7. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction along a primary level, thence to and along a secondary level, and thence to and along
10 a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary level, secondary folding means for partially
15 wrapping said group while in transit from said secondary level to said tertiary level, and tertiary folding means for completing the wrapping of said group while in transit along said tertiary level, said tertiary fold-
20 ing means including stationary folding devices alongside the path of said group.

8. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction along a primary level, thence to and along
25 a secondary level, and thence to and along a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary level, secondary folding means for partially
30 wrapping said group while in transit from said secondary level to said tertiary level, and tertiary folding means for completing the wrapping of said group while in transit along said tertiary level, said primary fold-
35 ing means including stationary folding devices alongside the path of said group, said secondary folding means including movable folding devices alongside the path of said group, and said tertiary folding means in-
40 cluding stationary folding devices alongside the path of said group.

9. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction
45 along a primary level, thence to and along a secondary level, and thence to and along

a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary level, secondary folding means for partially
50 wrapping said group while in transit from said secondary level to said tertiary level, tertiary folding means for completing the wrapping of said group while in transit along said tertiary level, and means for
55 supplying a succession of wrappers to said primary folding means.

10. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction
60 along a primary level, thence to and along a secondary level, and thence to and along a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary
65 level, secondary folding means for partially wrapping said group while in transit from said secondary level to said tertiary level, tertiary folding means for completing the wrapping of said group while in transit
70 along said tertiary level, and means for pasting the outer folds of said wrapper.

11. In a package wrapping machine, the combination with means for advancing a group of articles in one general direction
75 along a primary level, thence to and along a secondary level, and thence to and along a tertiary level, of primary folding means for initially applying a wrapper to said group while in transit along said secondary
80 level, secondary folding means for partially wrapping said group while in transit from said secondary level to said tertiary level, and tertiary folding means for completing the wrapping of said group while in transit
85 along said tertiary level, said secondary level being lower than said primary level and said tertiary level being lower than said secondary level.

In witness whereof I affix my signature.

JOAQUIN ALEMANY LOPEZ.