June 8, 1954 C. F. PRINCE 2,680,336

CRACKER WRAPPING MACHINE

Filed Dec. 28, 1950

7 Sheets-Sheet 1

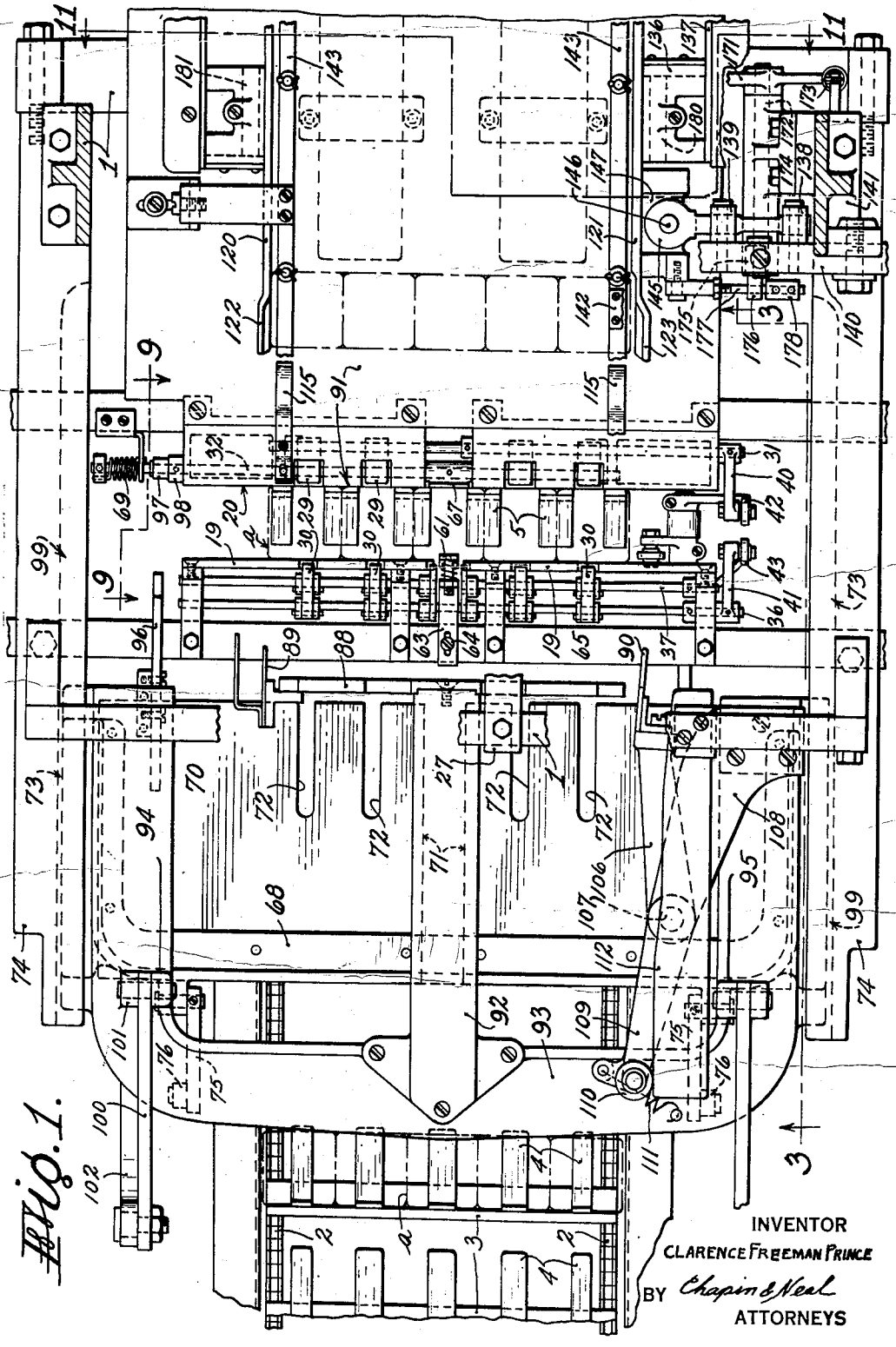


Fig. 1.

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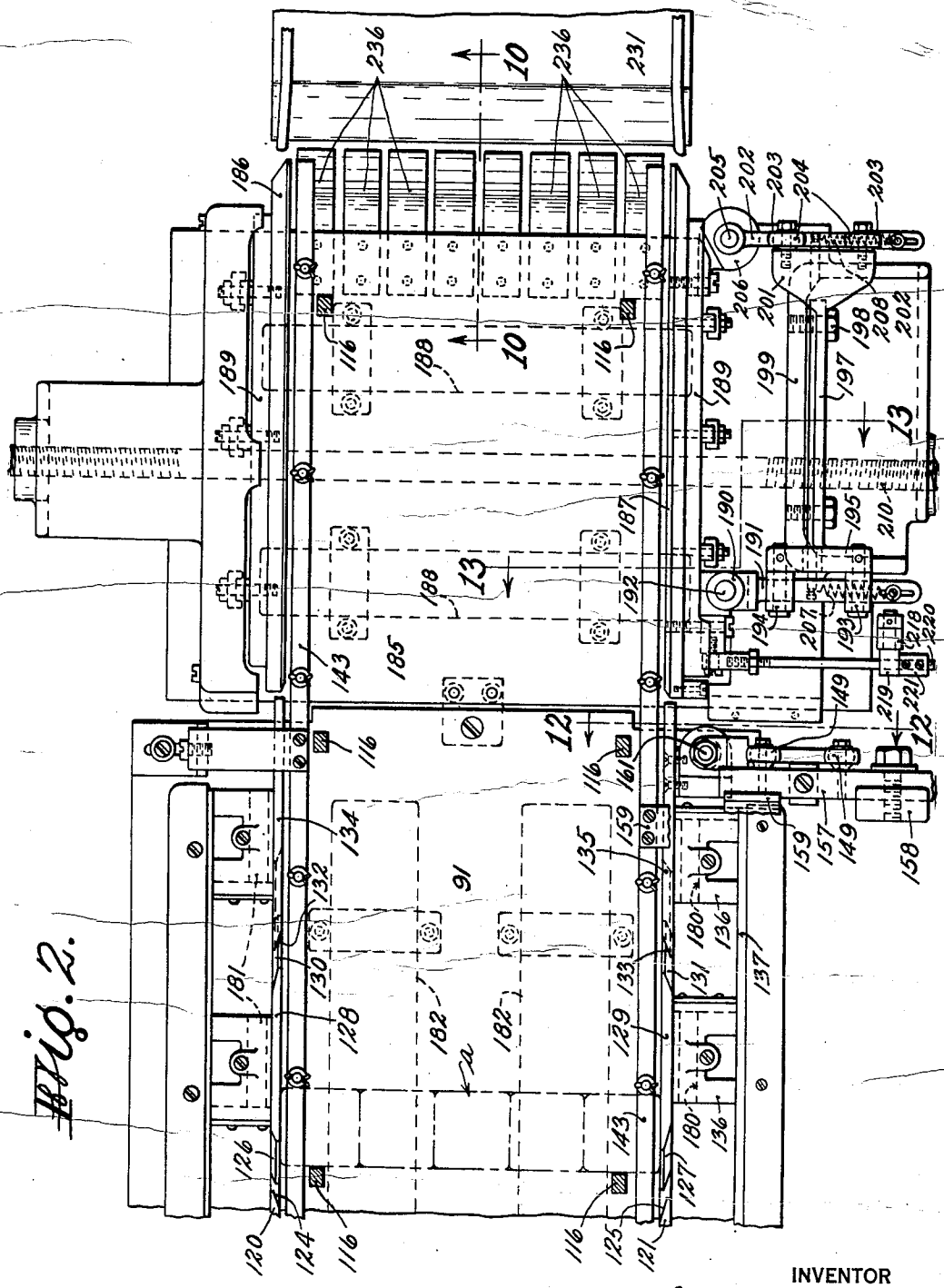


Fig. 2.

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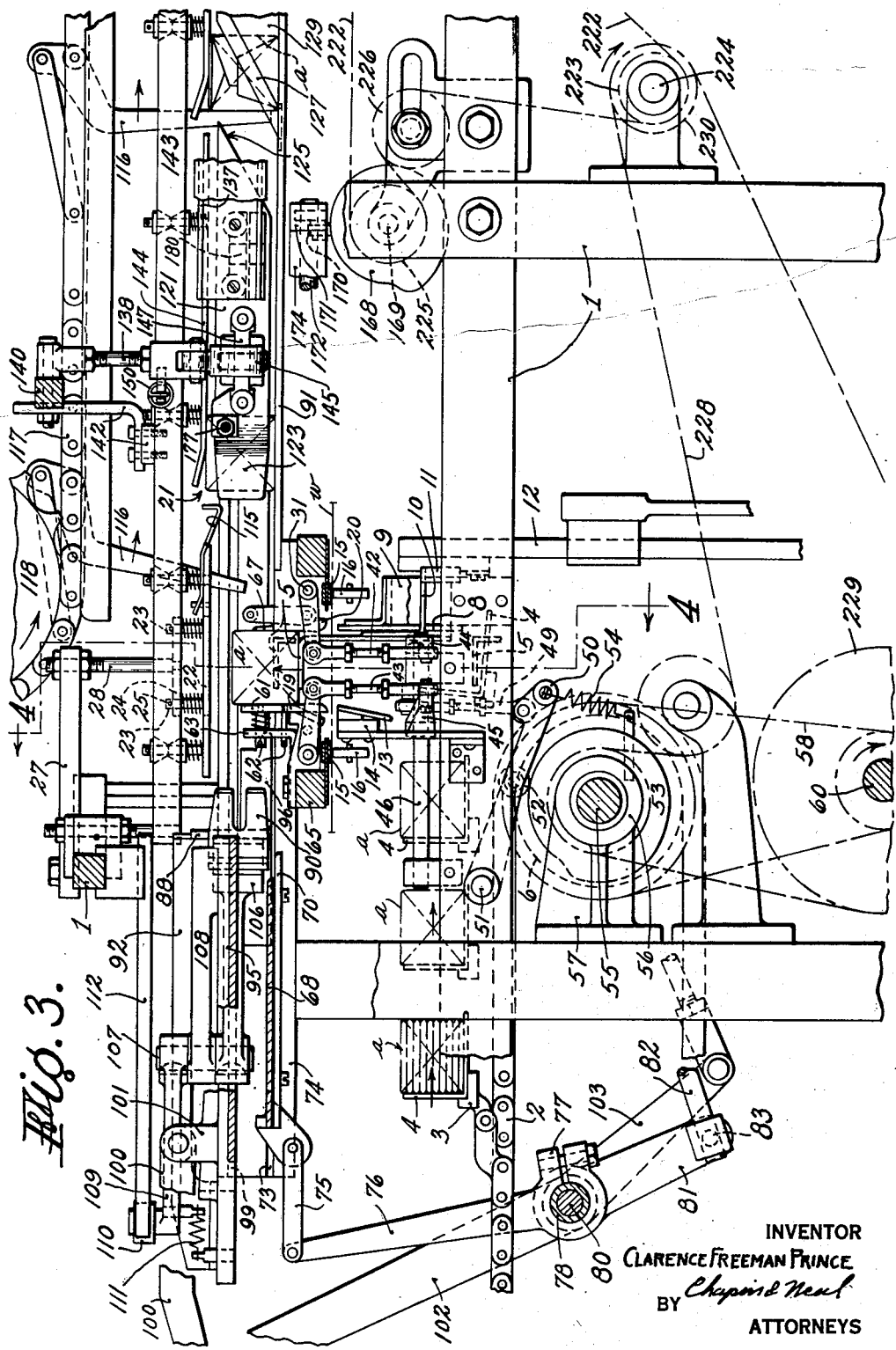


Fig. 3.

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CRACKER WRAPPING MACHINE

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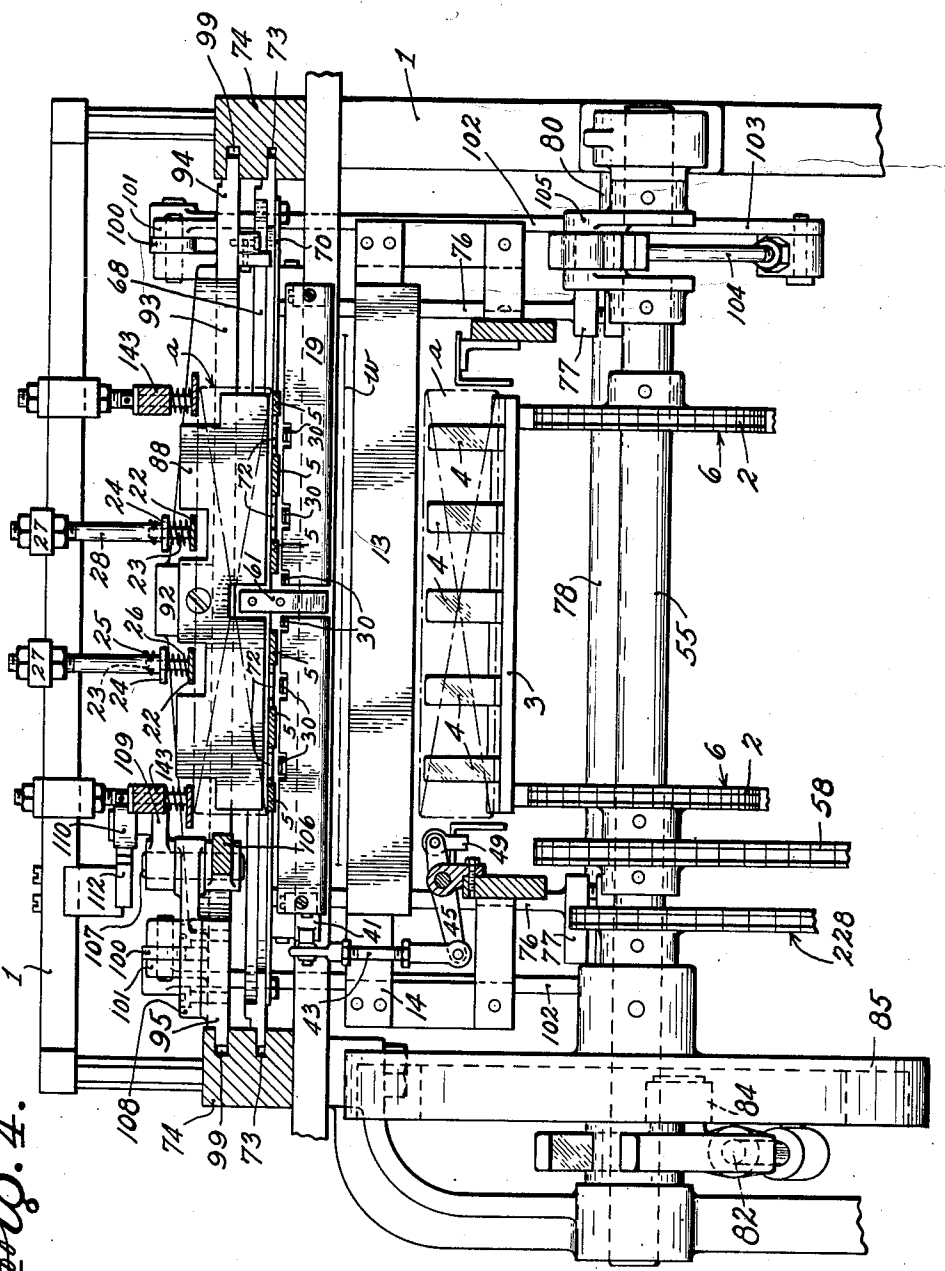


Fig. 4.

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Fig. 5.

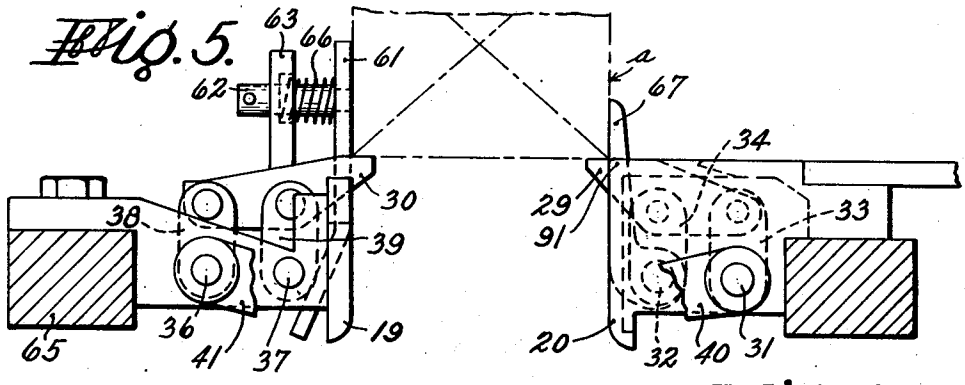


Fig. 7.

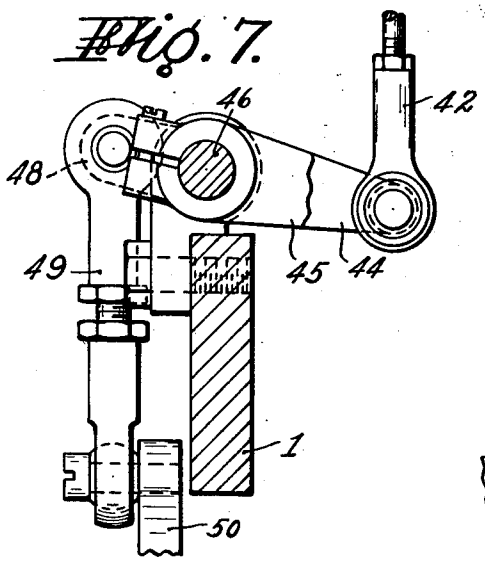


Fig. 6.

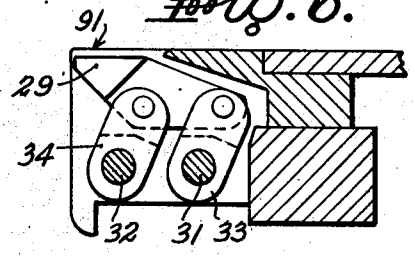


Fig. 8.

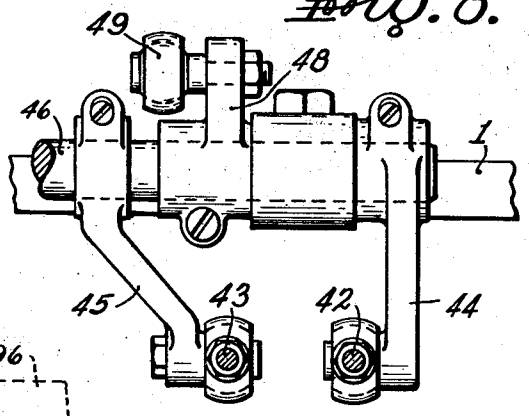


Fig. 9.

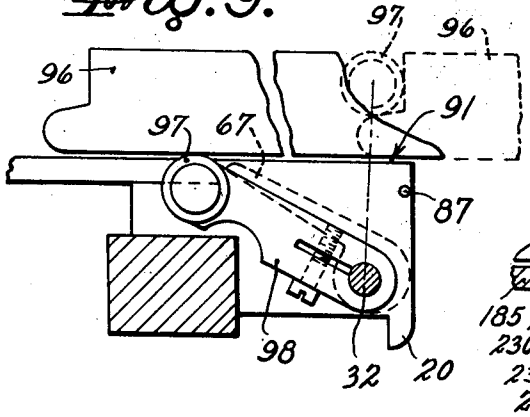
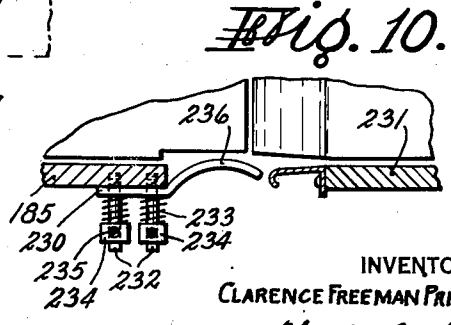


Fig. 10.



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CRACKER WRAPPING MACHINE

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Fig. 11.

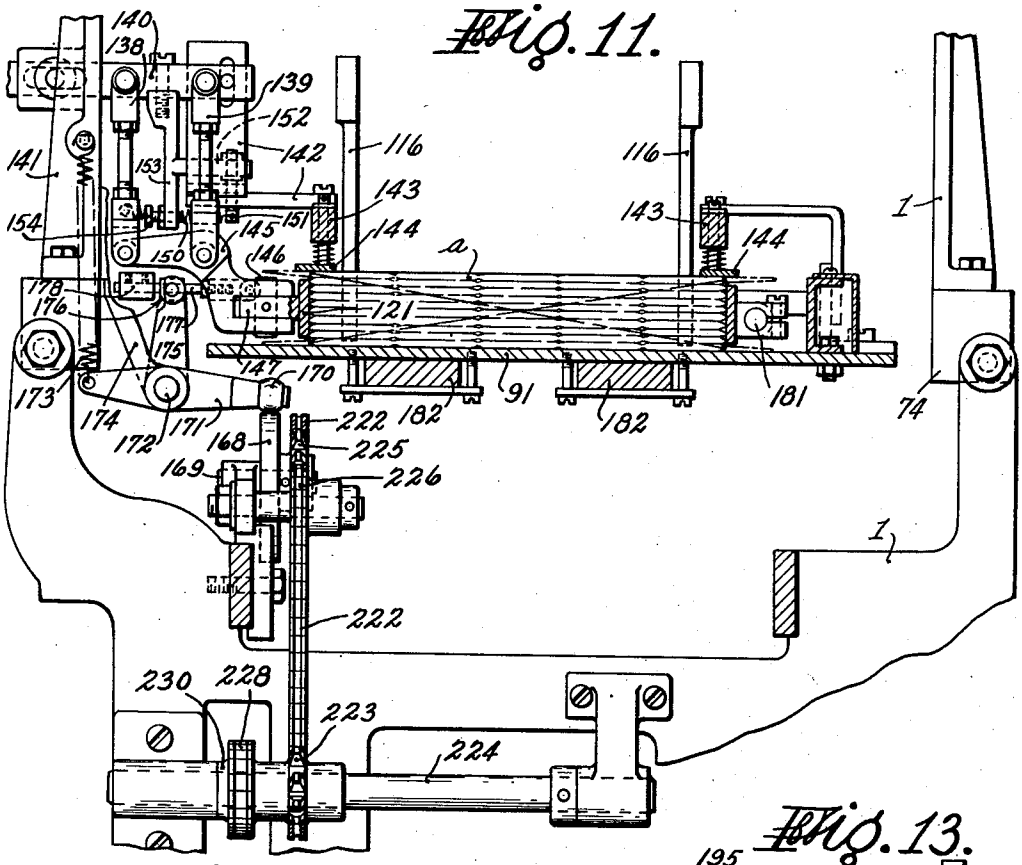


Fig. 12.

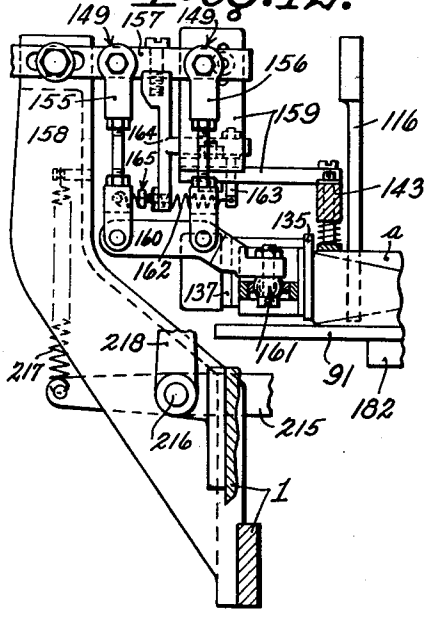
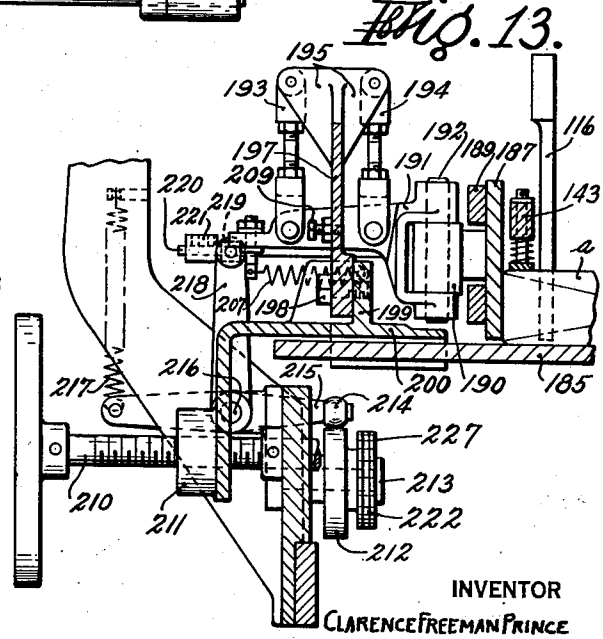


Fig. 13.



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Fig. 14.

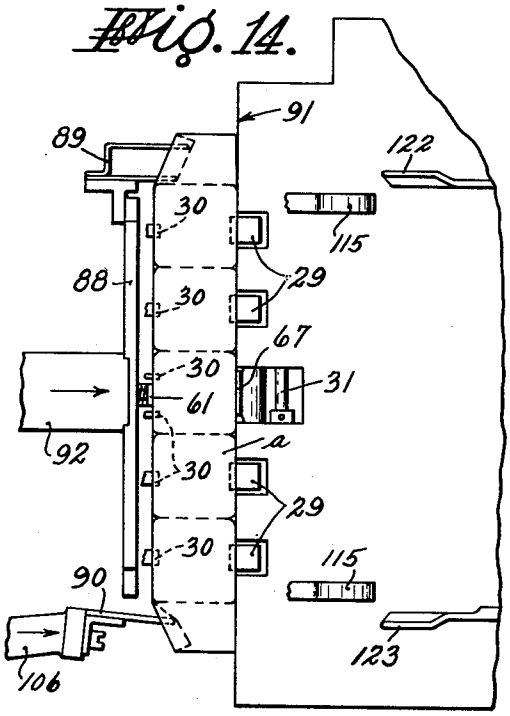


Fig. 15.

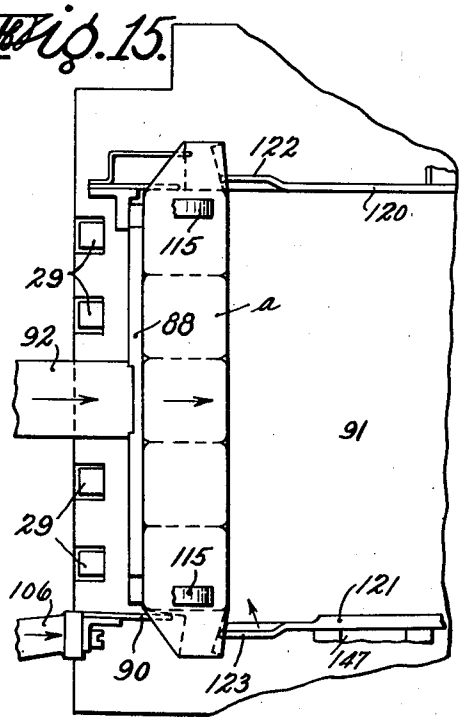
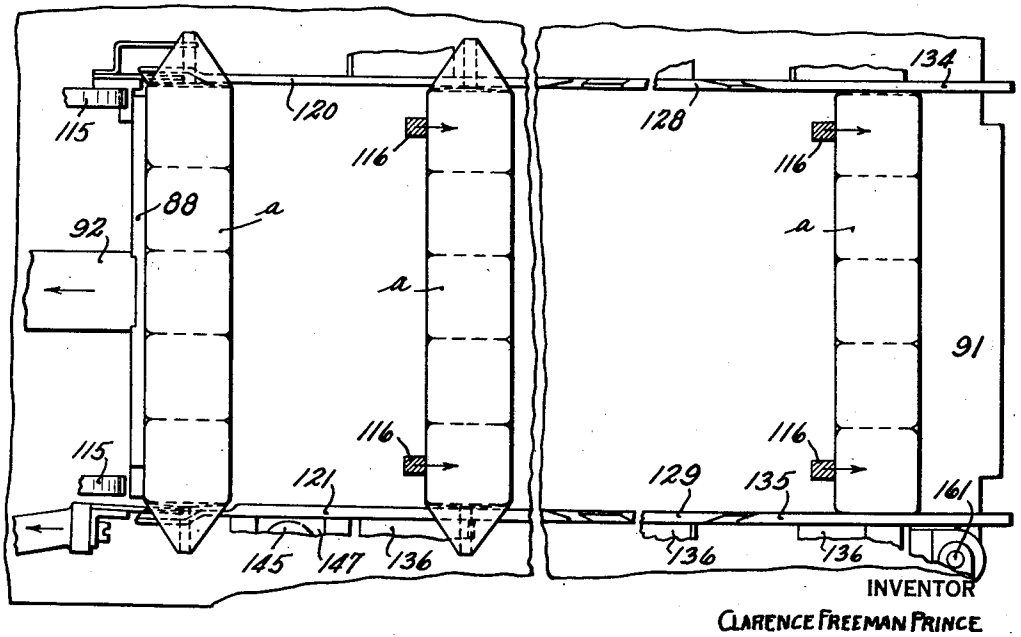


Fig. 16.



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Patented June 8, 1954

2,680,336

UNITED STATES PATENT OFFICE

2,680,336

CRACKER WRAPPING MACHINE

Clarence Freeman Prince, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass., a corporation of Massachusetts

Application December 28, 1950, Serial No. 203,123

8 Claims. (Cl. 53—131)

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This invention relates to wrapping machines of the type in which a stack of articles is picked up off a horizontal conveyor by an elevator, carried with a sheet of wrapping material between folders which drape the wrapper around the stack of articles in U-form, is deposited at the entrance to a horizontal wrapping channel, and transported through the channel to complete the wrapping operation.

A principal object of the invention is to provide wrapping elements in such a machine which coact upon the stack of articles in such a fashion that delicate articles such as soda crackers and the like will not be in danger of being broken or crushed. A further object is the provision of wrapping elements which are not invariably fixed in their spaced relation to one another, so that small variations or irregularities in the size of articles being wrapped will not interfere with the proper operation of the machine.

A further object is to improve the means for supporting the article stack at the top of the elevator stroke before said stack is delivered into the wrapping channel.

These aspects of the invention, as well as certain other objects and advantages of the present machine will appear from the following description and claims.

In the drawings, which accompany and form a part of the specification:

Figs. 1 and 2 together constitute a top plan view of a wrapping machine embodying the invention, parts being broken away;

Fig. 3 is a sectional view substantially on line 3—3 of Fig. 1;

Fig. 4 is a sectional view substantially on line 4—4 of Fig. 3;

Fig. 5 is a detail view on a larger scale of one set of latches, in article supporting position;

Figs. 6, 7 and 8 are similar detail views of the actuating mechanism for the latches;

Fig. 9 is a sectional detail view of the means for actuating the wrapper retaining finger, taken substantially on line 9—9 of Fig. 1;

Fig. 10 is a sectional detail view of means for applying pressure to the sealed overlap of the wrapper, taken substantially on line 10—10 of Fig. 2;

Fig. 11 is a sectional view substantially on line 11—11 of Fig. 1; parts being omitted;

Fig. 12 is a detail sectional view substantially on line 12—12 of Fig. 2;

Fig. 13 is a detail sectional view substantially on line 13—13 of Fig. 2; and

Figs. 14, 15 and 16 are generally diagrammatic

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views showing successive folding steps in the folding channel.

Referring to Figs. 1 and 3 of the drawings, the machine parts are shown as supported by a frame, generally indicated at 1. Articles to be wrapped, such as a stack of crackers, as indicated at *a*, are fed into the machine by a suitable conveyor which may comprise a pair of constantly traveling conveyor chains 2 carrying spaced brackets 3 to which are secured spaced angular fingers 4 on which the stacks of crackers are supported. The conveyor delivers the stacks to a vertically reciprocating elevator which includes a plurality of spaced angular fingers 5 with which the fingers 4 of the conveyor interdigitate when the elevator is in its lowermost position, shown in dotted lines in Fig. 3. As the conveyor chains round their forward supporting sprockets 6 the fingers 4 passing between the fingers 5 deposit the stacks on the latter fingers, and against stationary vertical guide bars 8 secured to cross member 9. The fingers 5 (Fig. 3) are individually fixed to respective angle irons 10 carried in spaced relation by a transverse bar 11 secured to an elevator slide 12. The elevator slide 12 is reciprocated in timed relation to conveyor 2 by any suitable means, not shown.

As the stacks of crackers are carried upwardly by the elevator the crackers in the stack are trued against the guides 8 by a guide bar 13 (Figs. 3 and 4) supported by a cross frame member 14. Further upward movement of the elevator carries the stack against a wrapper sheet *w* fed across the path of the elevator by any suitable wrapper feeding means, such as the belts 15 and rolls 16. Continued upward movement carries the stacks and wrapper between spaced folding members 19 and 20 which drape the sheet over the top of the stacks with the side portions of the sheet extending downwardly over the front and rear sides thereof.

As the elevator comes to rest with the articles in the plane, and at the entrance, of a folding channel, generally indicated at 21, the top of the stack is engaged by spaced spring cushioned paper retaining bars 22, Figs. 3 and 4. The bars 22 are provided with pins 23 which extend through openings in supporting bars 24. The upper ends of the pins 23 carry cotter pins 25 and springs 26 surrounding pins 23 and compressed between bars 22 and 24 provide a spring backing for the bars 22. The supporting bars 24 are suspended from cantilever supports 27 by adjustable rods 28.

After the elevator fingers 5 reach the top of

their stroke, they are immediately moved downwardly. To support the stack in its topmost position, after the retreat of the elevator fingers, opposed rows of spaced latches 29 and 30 (Figs. 1 and 5) are swung inwardly under the front and rear edges respectively of the stack.

The latches 29 are mounted in spaced relation on a pair of parallel shafts 31 and 32 by means of parallel links 33 and 34, the links 33 being fixed to shaft 31 while links 34 are pivotally mounted on the shaft 32. Latches 30 are similarly mounted on a pair of parallel shafts 36 and 37 by means of parallel links 38 and 39, the links 39 being fixed to shaft 37. Shafts 31 and 36 are rocked in opposite directions through arms 40 and 41 fixed respectively to the shafts 31 and 36. The free ends of arms 40 and 41 are respectively connected by adjustable links 42 and 43 to respective arms 44 and 45 fixed to a rocker shaft 46. Shaft 46 carries an arm 48 connected by an adjustable link 49 to a lever 50 (Fig. 3) pivoted to the frame at 51. Lever 50 carries a cam roll 52 held in operative relation with a cam 53 by a spring 54. The cam 53 is fixed on a shaft 55 journaled in bearings 56 in a bracket 57, said shaft being driven by a sprocket chain 58 from the main drive shaft 60.

As previously mentioned the several articles making up the stack may vary somewhat in dimension and the members 19 and 20 are spaced apart a distance sufficient to freely pass a stack of maximum width as well as to allow for a slight disarrangement of the articles in the stack. Because of this slight excess spacing of members 19 and 20 the wrapper may not be laid as snugly against the stack in the movement of the latter between said members as is desirable to hold the wrapper in place. Therefore, as the stack *a* is moved into its uppermost position, the wrapper *w* is drawn more snugly or tightly against the stack by spring pressed members which engage the front and rear faces of the center portion of the stack. The rearmost of said members is a narrow wrapper tightening and holding finger 61 yieldingly mounted centrally of member 19 (Figs. 1, 3 and 5) on a pair of pins 62. The pins 62 are slidable in an angle iron 63 adjustably fastened at 64 to a cross-beam 65 fixed on the frame of the machine. A light spring 66 on the upper pin urges the finger 61 into engagement with the rearmost face of stack *a*. An oppositely related wrapper tightening finger 67 (Fig. 1) is fixed on the shaft 32 and is normally held upright and in engagement with the front face of a stack *a* by a torsion spring 69.

After the elevator retreats and leaves the stack *a* supported by the rows of latches 29 and 30, a rear folding blade 70 is advanced under the stack, folding the rear downward extension of the wrapper *w* beneath the stack. The stack *a* is held against any tendency to be advanced by the forward stroke of the folding blade 70 by the finger 67. The folding blade 70 is divided at 71 to provide clearance for finger 61 and is provided with slots 72 which receive the latches 30 as the blade 70 advances under the article *a*.

The blade 70 is mounted on a carriage 68 which rides in horizontal grooves 73 in side frame members 74 and is reciprocated therein by means of linkage comprising links 75 pivoted at opposite ends to the carriage 68 and to cranks 76. The cranks 76 are fixed as at 77 to a sleeve 78 which is rotatably mounted on a rock shaft 80. A drive crank 81 is fixed to the sleeve 78 and is oscillated by a link 82 pivoted to the crank at 83. The link 82 carries a cam roll 84 (Fig. 4) engaging a groove cam 85 on shaft 55.

Following slightly behind the advancing folding blade 70 is a transfer pusher 88 (Fig. 1) with which is associated a pair of tuckers 89 and 90. The pusher 88 moves the stack *a* forwardly off the folding blade and onto the floor plate 91 of the folding channel. As this movement is effected, the front downward extension of the wrapper *w* is folded beneath the article by engagement of the same with the edge of the floor plate 91.

As will be seen by reference to Fig. 1, the pusher 88 is fixed on the forward end of an arm 92 which is mounted at its rearmost end to the center of a U-shaped frame 93 having two side legs 94 and 95. Substantially simultaneously with the initial movement of the stack *a* by the pusher 88, the finger 67 and shaft 68 is rocked forwardly against spring 69 to permit entrance of the stack into the channel. Referring to Figs. 1 and 9, the shaft 68 is rocked by the action of a cam finger 96, which is fixed on frame leg 94, and engages a roller 97 on a crank 98 fixed to shaft 32, to swing finger 67 below the plane of the channel floor. A stop pin 87 engageable with the crank 98 limits the movement of finger 67 under the influence of spring 69.

The frame 93 is reciprocated in horizontal grooves 99 in frame members 74 by links 100 pivoted to ears 101 on the frame 93 and to crank arms 102 which are fixed on rock shaft 80 (Figs. 3 and 4). One of the arms 102 is extended at 103 and is connected by a link 104 to a crank 105 carried by shaft 55, by which means rock shaft 80 is actuated.

The tucker 89 is fixed to the pusher 88. The tucker 90 is carried (Figs. 1, 3 and 4) at the forward end of one arm 106 of a bell crank pivoted at 107 to a bracket 108 which is secured to side leg 95 of the pusher frame so as to travel therewith. The other arm 109 of the bell crank carries a cam roll 110 which is held by a spring 111 against an edge cam 112 fixed to the machine frame. When pusher 88 is in its rearward position the tucker 90 is held spaced from the end of pusher 88 by cam 112. As the pusher advances, tucker 90 is permitted by cam 112 to swing inwardly under the influence of spring 111 to engage and tuck the sidewise extending rear portion of the wrapper to tuck it against the adjacent end of the cracker stack. The force of spring 111 is made sufficiently light so that as the wrapper is laid against the end of the cracker stack the pressure or endwise thrust of the tucker 90 is insufficient to crush or damage the crackers. The action of the tuckers 89 and 90 as the pusher advances the article stack into the folding channel is diagrammatically shown in Figs. 14, 15 and 16.

If the space between the tuckers was not resiliently variable, an over-size cracker or row of crackers might be crushed between the tuckers, or would not be contained between the tuckers when the latter are moved forwardly. The tuckers in that case would engage and disarrange the articles in the stack or the stack *a* might be pushed prematurely into the folding channel. Further, the in-swinging motion of the tucker 90 has the effect of lightly tamping the several layers of crackers which make up the stack into substantial alignment against the opposite, fixed tucker 89.

When the stack *a* is positioned on the floor 91 of the entrance end of the folding channel, the folding blades 70, the pusher 88 and the tuckers

89 and 90 withdraw to the rear. The presser bars 22 are provided at their forward ends with depending spring members 115 which may engage the rear of the stack a to prevent any tendency of the retreating folding blade pusher and tuckers to pull the stack rearwardly.

The articles are advanced along the folding channel by a series of spaced pusher fingers 116 carried by endless sprocket chains 117 supported by suitable sprockets, one of which is indicated at 118 in Fig. 3 and which are constantly driven by any suitable means not shown.

The sides of the channel are provided (Figs. 1, 2 and 3) with conventional type folders which complete the folding of the wrapper as the article stack is carried through the channel. These folders comprise opposed members 120 and 121 which carry at one end tuckers 122 and 123 which fold the front lateral extensions of the wrapper against the ends of the article stack. The other ends of members 120 and 121 are formed with forwardly and upwardly inclined edges 124 and 125 respectively which, with similar edges 126 and 127 formed on the adjacent ends of members 128 and 129, engage and fold upwardly the bottom lateral extensions of the wrapper. The forward ends of members 128 and 129 are formed with downwardly and forwardly extending edges 130 and 131 respectively which with similar edges 132 and 133 formed on the adjacent ends of members 134 and 135 fold the top wrapper extensions downwardly to complete the wrap.

The members 120, 128 and 134, at one side of the channel, and the folders associated therewith are mounted in fixed position. The opposite members 121, 129 and 135 with their folders are connected by means of blocks 136 to a beam 137 and are thus connected together for common lateral movement as a unit. This folder and beam assembly is supported at the end adjacent the entrance of the channel (Figs. 1, 3 and 11) by a pair of parallel links 138 and 139 pivoted at their upper ends to the bar 140 which carries angles 142 which support rails 143 with conventional presser bars 144. The outer end of bar 140 is adjustably connected to a vertical standard 141. The lower ends of links 138 and 139 are pivotally connected to one end of a member 145, the other end of which is forked and connected by a vertical pivot pin 146 to a lug 147 extending outwardly from member 121.

The end of the folder assembly at the channel entrance is urged toward the adjacent end of the packages passing through the channel by a spring 150 (Fig. 11) having one end connected to the link 138 and the other end to a pin 151 carried by an arm 152 extending from a bracket 153 secured to the cross bar 140. The inward movement of the folders under the influence of spring 150 is limited by a stop 154 adjustably carried by the lower end of bracket 153, and engageable with link 138.

The end of the movable folder assembly adjacent the exit of the channel is supported by means similar to that just described, including links 155 and 156 (Figs. 2 and 12) connected by ball and socket connections 149 at their upper ends to a short bar 157 adjustably secured to a bracket 158 secured to the frame. An adjustable angle bracket 159 secured to the innermost end of bar 157 supports longitudinal rail 143. The lower ends of the links 155 and 156 are connected to one end of a member 160, the other end of which is connected by a ball and socket joint 161 to member 135 of the folder assembly. A spring 162 connected between link 155 and pin 163 carried by a bracket 164 urges the folder assembly toward the article to the limit of an adjustable stop 165 engageable with link 155.

By the end supporting arrangements above described, the ends of the folder assembly are permitted substantially independent outward and inward movement relative to the adjacent ends of the articles.

To assure a free entrance of the article stack into the channel the entrance end of the folder assembly which carries the tucker 123 is outwardly as the article stack is introduced into the folding channel (Fig. 15). This outward movement is sufficient to assure that the article stack enters the channel without having to force the folder assembly outwardly against the spring 150, that is the outward movement is sufficient so that the end of the article stack clears the folder and enters the channel without impact at the forward end edges. This outward movement is not, however, sufficient to prevent the tucker 123 from engaging the adjacent forward lateral extension of the wrapper to start the forward end tuck as the article stack enters the channel.

The outward movement of the folder assembly above referred to is effected by a cam 168 (Figs. 1, 3 and 11), secured to a stub shaft 169. Cam 168 is engaged by a cam roll 170 carried by one end of a lever 171 which is fixed intermediate its ends to a rock shaft 172. The roll 170 is held against the cam by a spring 173. Rock shaft 172 which is supported in a bracket 174 carries an arm 175 provided on its free end with a pivoted block 176 slidable on a rod 177 extending from lug 147. Block 176 makes a lost motion engagement with an abutment 178 adjustably secured on rod 177. Cam 168 is so timed that as the pusher 88 advances the article stack into the folding channel, rock shaft 172 is rocked counter-clockwise, as viewed in Fig. 11, to bring block 176 into engagement with abutment 178 and draw the entrance end of the folder assembly away from the adjacent end of the entering article stack as described. As soon as the article is safely within the channel the cam reverses the direction of swing arm 175 and block 176 letting the folder 121 settle gently against the end of the article stack under the pressure exerted by spring 150, the throw of arm 175 being sufficient to cause block 176 to leave the abutment 178 as shown in Fig. 11. As the entrance end of the folder assembly is moved outwardly, the exit end of the assembly is held in yielding engagement with the end of an article stack at, or adjacent, the exit of the channel, by the flexible mounting described which includes the ball and socket connections 149 and 161. These ball and socket connections compensate for the slight rise and fall of the other end of the folder assembly in its outward movement and avoids the necessity of adjusting the linkage elements to exact parallelism in obtaining the free floating movement of the ends of the folder assembly for accommodation of variation in the length of the article stacks.

Preferably, when wax coated wrapping material is used means are provided for heating the several folder elements to prevent the accumulation of wax on the folders. With respect to the movable folders this is accomplished by inserting heater units in the several blocks 136 as indicated at 180 in Figs. 1 and 2. Similar heating members are secured to the stationary folders at the opposite side of the channel as indicated at 181. Heater units 182 are also secured to the

floor of the channel to heat the latter for sealing the longitudinal bottom fold.

As the wrapped articles leave the wrapping channel they are carried through a pressing and heat sealing channel, see Fig. 2. This channel comprises a floor 185, a fixed side member 186 and a movable side member 187. The floor is provided with heating units indicated at 188 and the side members carry heating units indicated at 189.

Side member 187 is mounted for floating movement by means similar to that employed for the movable folder assembly above described. As shown in Figs. 2 and 13, the end of member 187 adjacent the exit of the wrapper channel is provided with a lug 190 to which a member 191 is hinged by a vertical pin 192. Member 191 is suspended by parallel links 193 and 194 pivotally connected at their lower ends to member 191 and at their upper ends to ears 195 extending from the end of a plate 197 which is bolted at 198 to a vertical web 199 formed on a supporting plate 200. The opposite end of plate 197 carries ears 201 from which a member 202 is suspended by parallel links 203 connected to the ears by ball and socket connections 204. Member 202 is hinged by a vertical pin 205 to a lug 206 extending from the discharge end of plate 187. Plate 187 is urged inwardly into engagement with the ends of the wrapped article stacks by springs 207 and 208 respectively connecting the outer ends of members 191 and 202 to flange 199. Suitable stops, one of which is shown at 209 in Fig. 13, engage the adjacent suspension link to limit the inward movement of plate 187. Supporting plate 200, with the parts carried thereby, is adapted to be adjusted transversely of the sealing channel by means of a threaded rod 210 journaled against longitudinal movement in the frame of the machine and threaded through a boss 211 formed on the edge of the plate.

The end of side member 187 adjacent the exit of the wrapping channel is adapted to be periodically moved outwardly to freely admit a wrapped package to the heat sealing channel. This outward movement is effected by a cam 212 secured to a stub shaft 213. A cam roll 214 is carried at one end of an arm 215, fixed intermediate its ends to a rock shaft 216, roll 214 being held in operative engagement with the cam by a spring 217. An arm 218 is fixed to shaft 216 and carries at its free end a pivoted block 219 slidable on a rod 220 fixed to lug 190. As arm 218 is rocked counterclockwise as viewed in Fig. 13, block 219 engages an abutment 221, adjustably secured to rod 220, to draw the end of side member 187 outwardly against spring 207. After the wrapped package has entered the channel reverse movement of arm 218 permits the side member to move inwardly against the end of the package. There is sufficient lost motion between block 219 and abutment 221 to accommodate variations in the lengths of successive packages.

Cam 212 and cam 168 (Figs. 3, 11 and 13) are driven by a common sprocket chain 222 trained around a sprocket 223, secured on a countershaft 224, a sprocket 225 on cam shaft 169, an adjustable idler sprocket 226 and a sprocket 227 on cam shaft 213. Countershaft 224 is driven from main shaft 60 by a chain 228 passing around sprockets 229 and 230 secured on the main shaft 60 and countershaft 224 respectively.

From the heat sealing channel the wrapped articles are carried over a row of spring fingers 230 and discharged by the transport members 116 onto a table or receiving channel 231 in which the softened sealing material sets to complete the seal. As best shown in Figs. 2 and 10, the fingers 230 are each yieldingly mounted on a pair of pins 232, extending from the lower face of the floor 185 of the sealing channel. The fingers 230 are held on the pins by spring 233 compressed between the fingers 230 and collars 234 adjustably secured on the pins by set screws 235. The free end portions of the fingers are curved upwardly as at 236, the crest of the curved portions normally lying slightly above the surface of the channel floor. They act to press the longitudinal overlap of the wrapper at the under face of the package, against the irregularities of the cracker surfaces and insure an adequate sealing of the overlapped wrapper surfaces together.

The mechanisms above described effectively wrap articles such as stacks of crackers without damage and at a speed comparable with that at which solid articles can be wrapped. An important feature in securing this result is the manner in which the wrapper is associated with articles and the conditions established as the succesive folds are made.

Initially the wrapper is draped freely over the article. The folding walls of the elevator well are spaced sufficiently from the ascending article so that the wrapper is held in place and tensioned locally at the center portion only by the spring pressed rear and forward fingers, 61 and 67, the pressure exerted by the fingers being only sufficient to hold the wrapper in position, the end portions of the wrapper being free to adjust themselves to the inequalities of the article surfaces. The inward movement of the supporting fingers maintains the established position of the wrapper. As the bottom folder plate 70 advances the depending rear wrapper extension is folded beneath the article and simultaneously the wrapper is thereby drawn more tightly around the rear face and edges of the article. This tightening, however, is resisted only at the forward center portion which is engaged by the forward finger 67, the forward end portions of the wrapper being free so that the increasing tension is graduated toward the ends. As the pusher 88 advances, member 96 rocks finger 67 out of the path of the article. As the localized pressure of finger 67 is relieved the edge 91 of the channel floor engages the forward downward wrapper extension to fold it beneath the article, simultaneously tightening it around the article in the relationship established by its previous freedom of movement. The article stack is thus encircled by the wrapper with increments of shifting pressure and tension, rapidly and effectively but without damage to the article.

The further folding of the wrapper is carried out under similar conditions. While one end of the stack is engaged by the rear tucker 89 rigidly carried by the pusher the opposite end is engaged by the movable rear tucker 99 only after the tucker 89 is in position to prevent lateral movement of the article and the maximum lateral thrust imposed is that of the light spring 111. As best shown in Figs. 14, 15 and 16, the folding action of the rear end tuckers starts prior to the engagement of the pusher 88 with the article and while the wrapper is still locally held by the members 61 and 67. The travel of the pusher 88 is sufficient, after the rear end tuckers have completed their folding operation to carry the forward side extensions of the wrapper into engagement with the forward tuckers 122 and

123 (Fig. 15). The latter tuckers are bent outwardly so that the rear tuckers pass inside the forward tuckers and the forward tucks are made while the rear tucks are still held by the rear tuckers (Fig. 16).

Due to the floating suspension of the forward end tucker and the bottom and top end folders at one side of the channel, the folding pressure is never greater than that exerted by the springs 150 and 162 at the ends of the unitary folder assembly at one side of the channel. The side folders yield as a unit at any point along the channel assuring free folding of the wrapper without excessive tension or pressure as the packages are carried through the channel.

The final heating channel receives the completely wrapped packages with the wrapper folds in final position and acts to relieve any strains at the seams and to assure complete fusion of the sealing material before the packages are discharged for cooling and setting of sealed wrapper surfaces.

What is claimed is:

1. In a wrapping machine of the type having an elevator reciprocable in a vertical well to transport an article and wrapper from a position below to a position in alignment with the entrance of a folding channel extending horizontally from the upper end of the well; forward and rear wall members spaced from the elevator and engaging the wrapper to drape the latter freely about three sides of the article as the latter is moved by the elevator to said second position, forward and rear spring pressed wrapper tightening fingers mounted above the upper end of the elevator well and positioned to centrally engage the adjacent sides of the article as the article emerges from the well to locally tighten the wrapper against the central portion of the upper, rear and forward faces of the article, a plurality of supporting fingers arranged along the rear end forward upper edges of the well, means to project said fingers beneath the rear and forward edge portions only of an article when the latter is in said second position to support the article upon retreat of the elevator, a forwardly reciprocating folder blade having slots to receive the tightening finger and the supporting fingers at the rear edge of the well, means to advance said blade to fold the rear downward extension of the wrapper beneath the article and simultaneously tighten the wrapper along the end portions thereof, and a pusher for advancing the article from the supporting fingers, said pusher carrying means for moving the forward wrapper tightening finger out of the path of the article, the folding channel having an edge engaging the forward downward extension of the wrapper to simultaneously tighten the wrapper along the entire length of the article and fold the last-named extension against the under face of the article and in overlapping relation with the previously folded rear extension.

2. In a wrapping machine of the type having an elevator reciprocable in a vertical well to transport an article and wrapper from a position below to a position in alignment with the entrance of a folding channel extending horizontally from the upper end of the well; forward and rear wall members spaced from the elevator and engaging the wrapper to drape the latter freely about three sides of the article as the latter is moved by the elevator to said second position, forward and rear spring pressed wrapper tightening fingers mounted above the upper end of the elevator well and positioned to centrally engage the adjacent sides of the article as the article emerges from the well to locally tighten the wrapper against the central portion of the upper, rear and forward faces of the article, a plurality of supporting fingers arranged along the rear and forward upper edges of the well, means to project said fingers beneath the rear and forward edge portions only of an article when the latter is in said second position to support the article upon retreat of the elevator, a forwardly reciprocating folder blade having slots to receive the tightening finger and the supporting fingers at the rear edge of the well, means to advance said blade to fold the rear downward extension of the wrapper beneath the article and simultaneously tighten the wrapper along the end portions thereof, a pusher for advancing the article from the supporting fingers, said pusher carrying means for moving the forward wrapper tightening finger out of the path of the article, the folding channel having an edge engaging the forward downward extension of the wrapper to simultaneously tighten the wrapper along the entire length of the article and fold the last-named extension against the under face of the article and in overlapping relation with the previously folded rear extension, means to advance the articles in spaced relation through the channel, forward end tuckers and bottom and top end folders positioned at the sides of the channel to complete the enclosure of the ends of the article, the end tucker and end folders at one side of the channel being mounted for movement as a unit toward and from the adjacent end of the packages and means to positively swing the end of said unit adjacent the elevator outwardly as the packages enter the channel and independently acting spring means at each end of the unit controlling the inward movement of the unit.

3. In a wrapping machine of the class described which includes a horizontal wrapping channel and an elevator movable from a position below the channel to a position in alignment therewith to transport an article and wrapper from said first position to said second position; means in the path of movement of the elevator to engage the wrapper and drape it freely about three sides of the article as the latter is raised by the elevator to said second position, spring pressed fingers positioned to engage the rear and forward faces, respectively, of the article in said second position to locally tighten and hold the wrapper about the central portion of the article, said forward holding finger being carried by a rock shaft, a forwardly reciprocating folder blade, means to advance the blade to fold the rear downward extension of the wrapper beneath the article, a pusher carrying rear end tuckers, means to advance said pusher to cause the tuckers to engage and fold the rear endwise wrapper extensions while the wrapper is held about the article throughout the length of the rear face of the article by the said folder blade and centrally of the front face by said forward holding finger, and means carried by the pusher to rock said shaft to swing the forward holding finger into the plane of the channel floor as the article is engaged and advanced into the channel and over said finger by the pusher.

4. In a wrapping machine of the class described which includes a horizontal folding channel; an end tucker and end folders arranged successively along each side of the channel in the direction of movement of the article through the channel,

the end tucker and end folders at one side of the channel being secured to a common support and held thereby against movement longitudinally of the channel, said support and the end tucker and folders secured thereto forming a unit, a pivotal mounting for said support permitting movement of said unit toward and from the channel, and means to swing the end of said unit adjacent the channel entrance outwardly to permit free entrance of an article into the channel and independently acting spring means at each end of the unit controlling the inward movement of the unit.

5. In a wrapping machine of the character described which includes a horizontal folding channel having end tucker and bottom and top end folders arranged successively along each side of the channel; characterized in that the end tucker and end folders at one side of the channel are connected to a common support, said support being suspended at each end by parallel links from a fixed frame, the parallel links at the discharge end of the channel being attached to the support by universal connections, means to swing the end of the support adjacent the channel entrance outwardly to permit free entrance of an article into the channel and independently acting springs at each end of the support urging the support and the parts carried thereby toward the adjacent end of articles in the channel.

6. In a wrapping machine of the character described which includes a horizontal folding channel having end tucker and bottom and top end folders arranged successively along each side of the channel; characterized in that the end tucker and end folders at one side of the channel are connected to a common support, said support being suspended at each end by parallel links from a fixed frame, the parallel links at the discharge end of the channel being attached to the support by universal connections, a bell crank, one arm of which is attached to the end of the support adjacent the channel entrance by a lost motion connection, a constantly rotating cam engaging the other end of the bell crank to periodically swing said end of the support outwardly to permit free entrance of an article into the channel and spring connected to the ends of the support and urging the support and the parts carried thereby toward the adjacent end of articles in the channel.

7. In a wrapping machine of the class described which includes a horizontal folding channel having end tucker and end folders arranged successively along each side of the channel; a beam forming a common support for the end tucker and end folders at one side of the channel, respective block members connecting the last-mentioned end tucker and end folders to said beam, heater units mounted in said block members to heat the tucker and end folders carried thereby, and means to swing the end of said support adjacent the channel entrance outwardly to permit free entrance of an article into the channel.

8. In a wrapping machine having a folding and sealing channel which comprises opposed side wall members, said channel being characterized in that one side wall member is movable toward and from the channel, fixed brackets positioned above said wall adjacent each end thereof, and a pair of parallel links at each end of the wall member, the links of each pair lying in a plane at right angles to the plane of the wall and having their lower ends connected to the wall for pivotal movement in the plane of the links, the upper ends of the links being connected to the adjacent bracket for pivotal movement in the plane of the links, the last-mentioned connections at one end of the wall member comprising ball and socket joints.

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