E. HAAS & A. HECK.

WRAPPING MACHINE.

APPLICATION FILED JAN. 17, 1914.

1,159,934.

Patented Nov. 9, 1915.

6 SHEETS—SHEET 1.

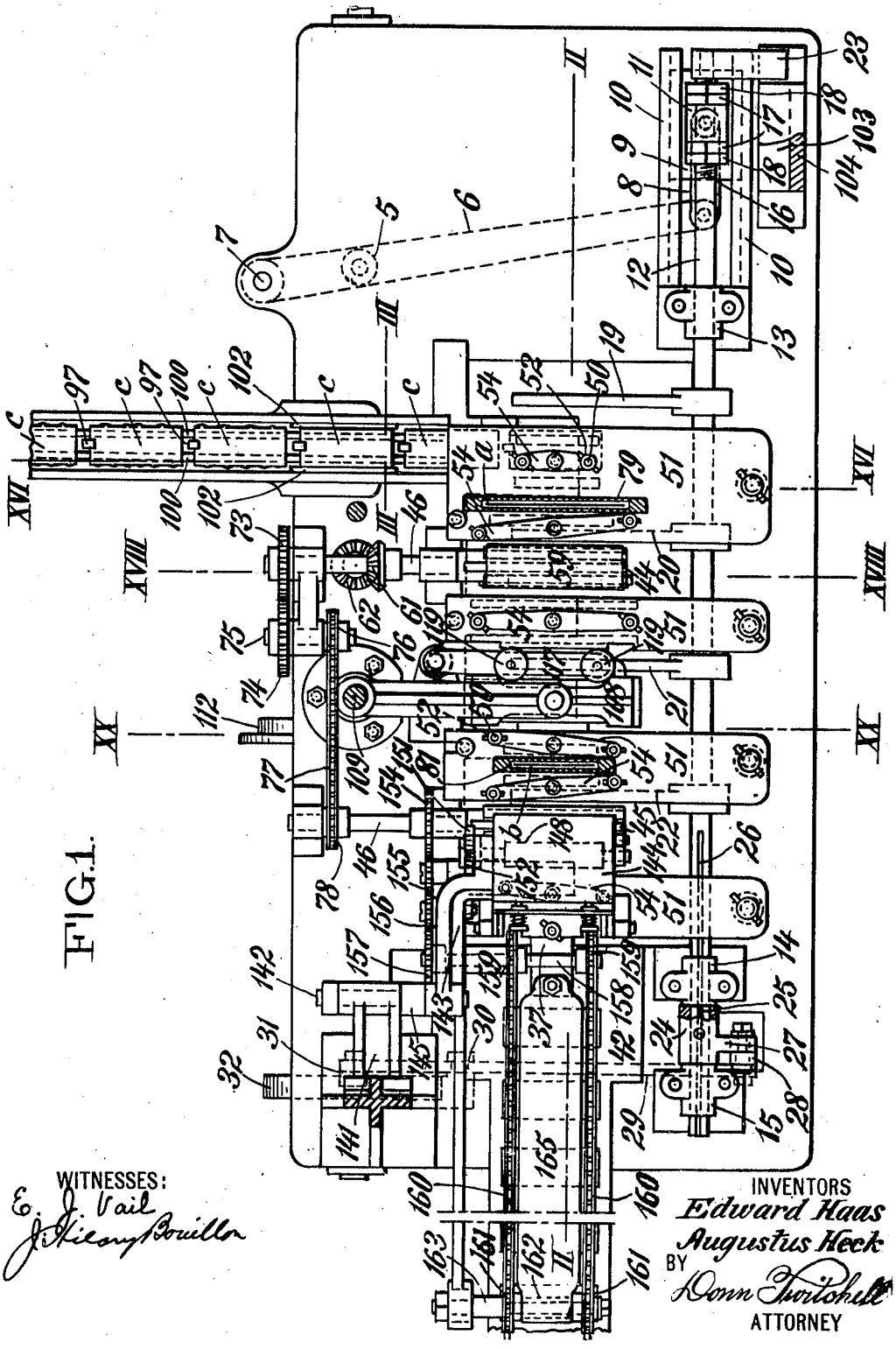


FIG. 1.

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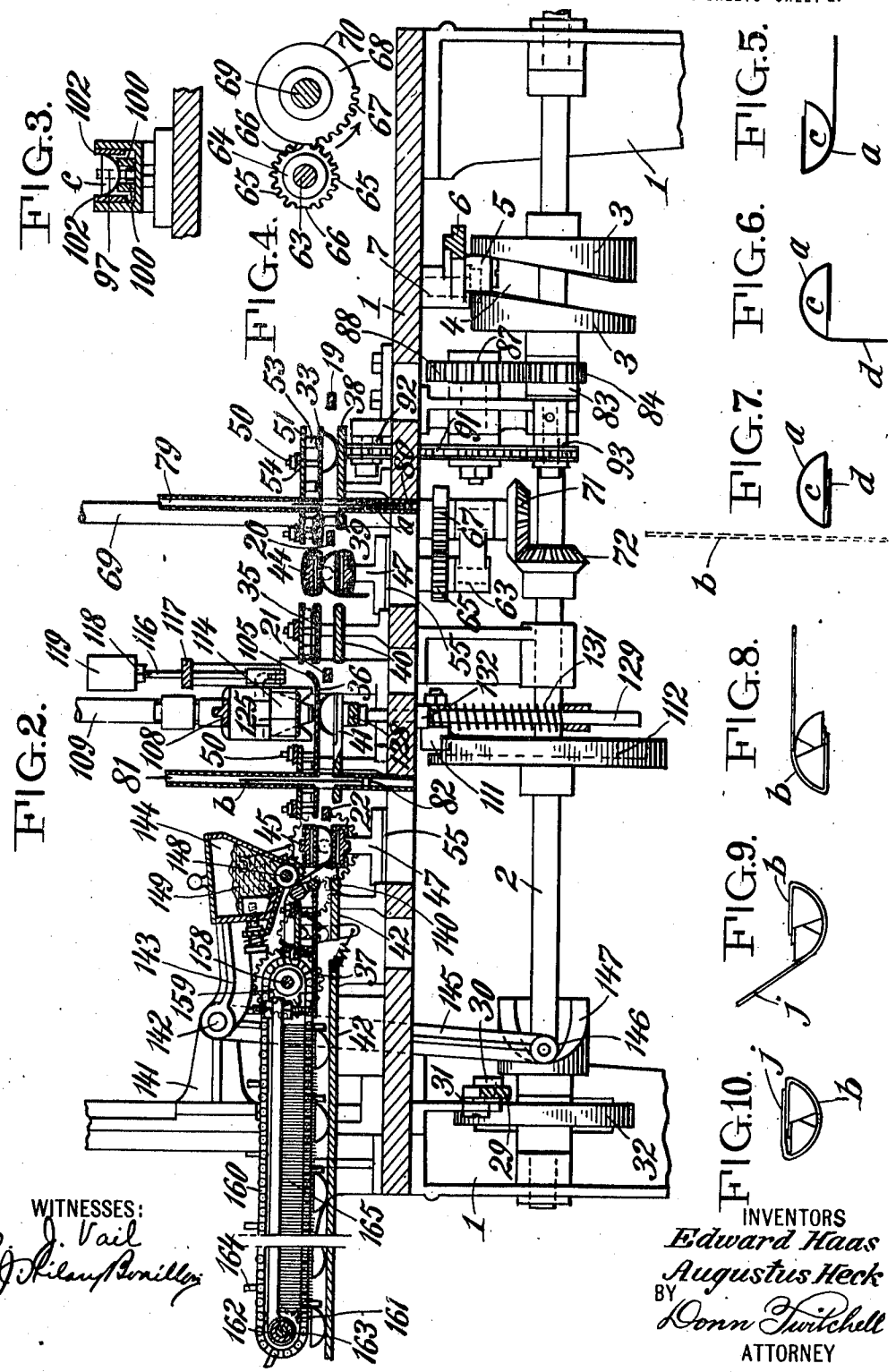


FIG.2.

FIG.3.

FIG.4.

FIG.5.

FIG.6.

FIG.7.

FIG.8.

FIG.9.

FIG.10.

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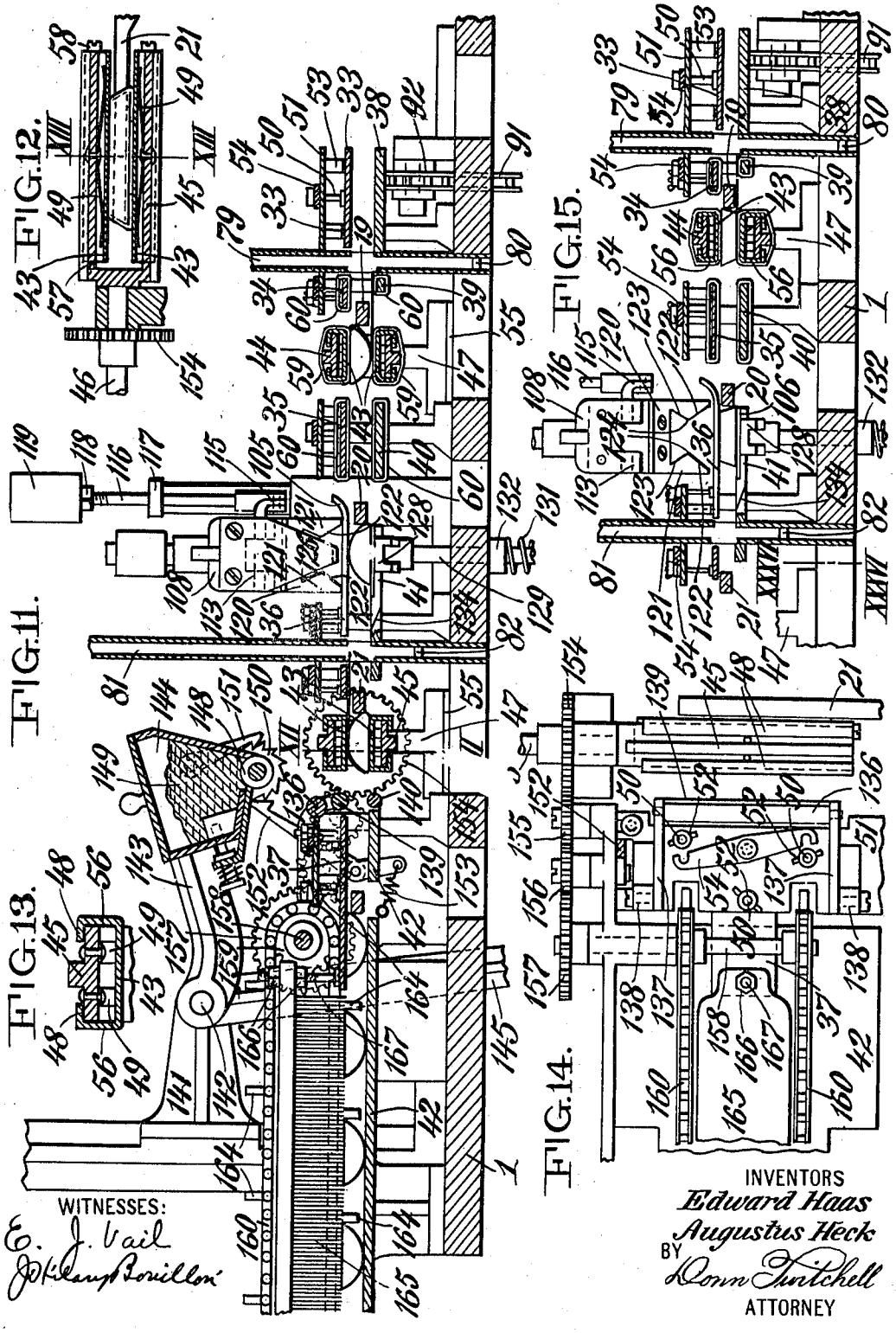


FIG. 11.

FIG. 12.

FIG. 13.

FIG. 14.

FIG. 15.

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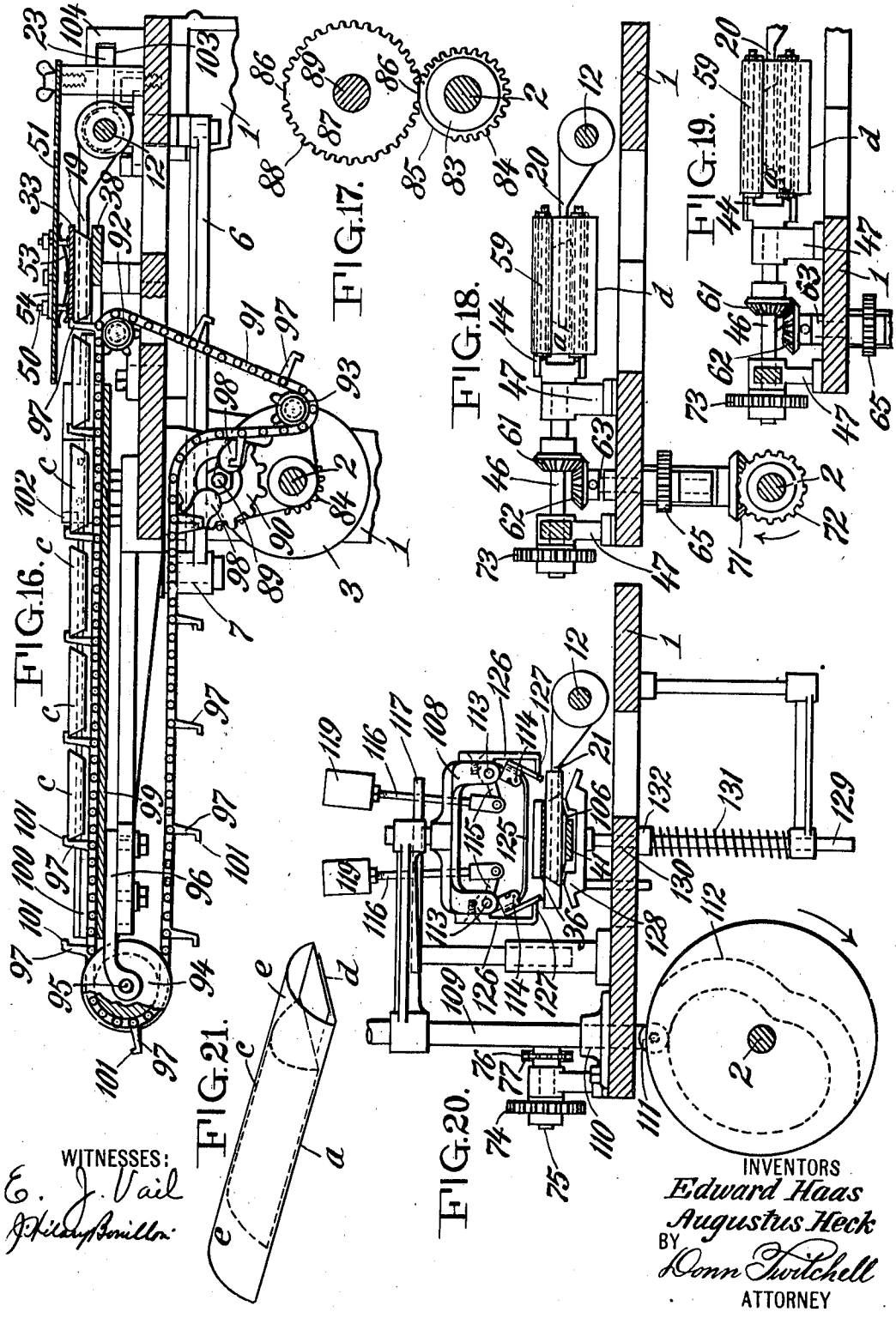
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6 SHEETS—SHEET 4.



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6 SHEETS—SHEET 5.

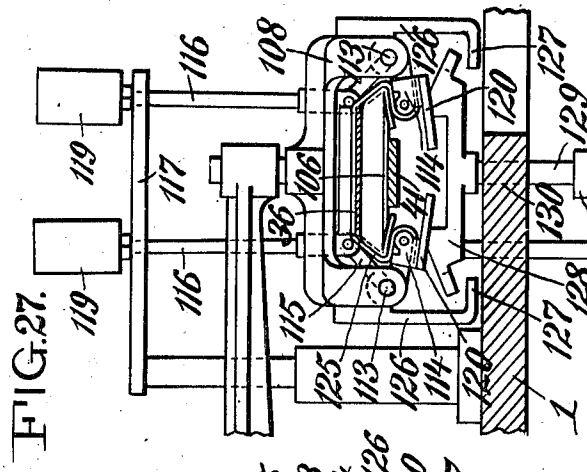


FIG. 27.

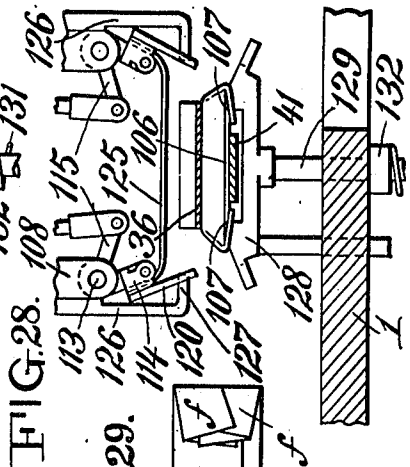


FIG. 28.

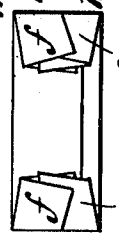


FIG. 29.

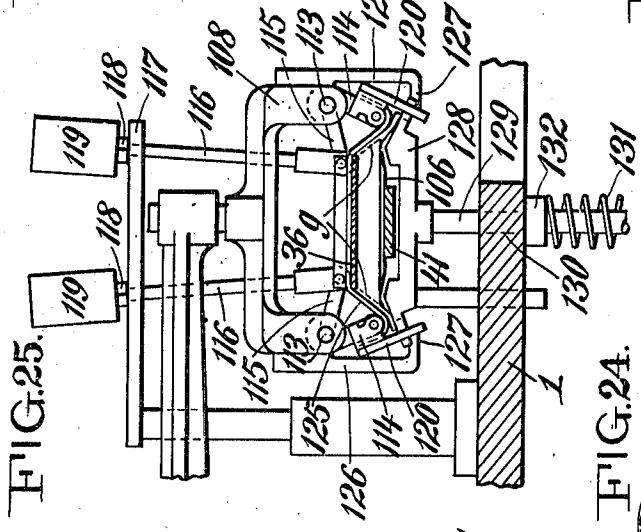


FIG. 25.

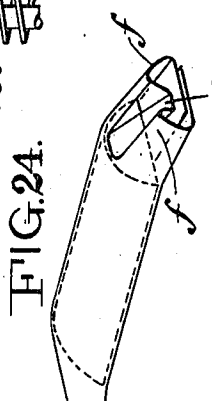


FIG. 24.

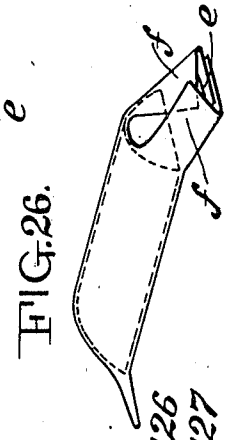


FIG. 26.

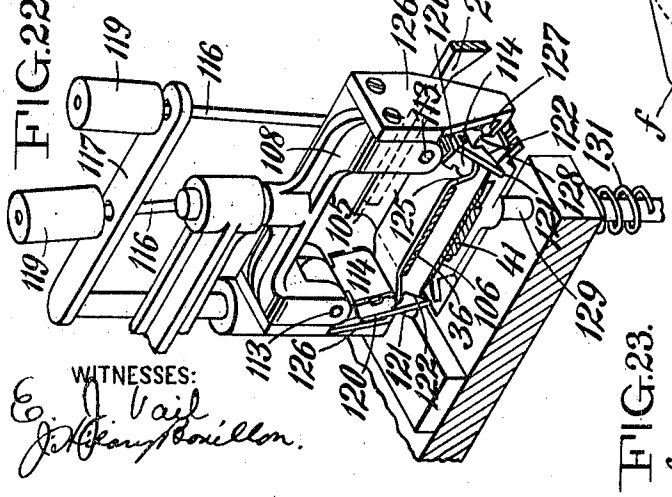


FIG. 22.

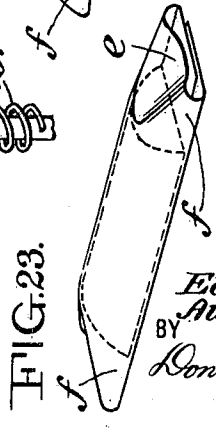


FIG. 23.

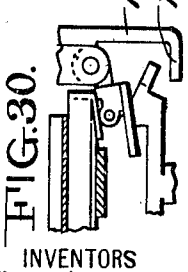


FIG. 30.

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6 SHEETS—SHEET 6.

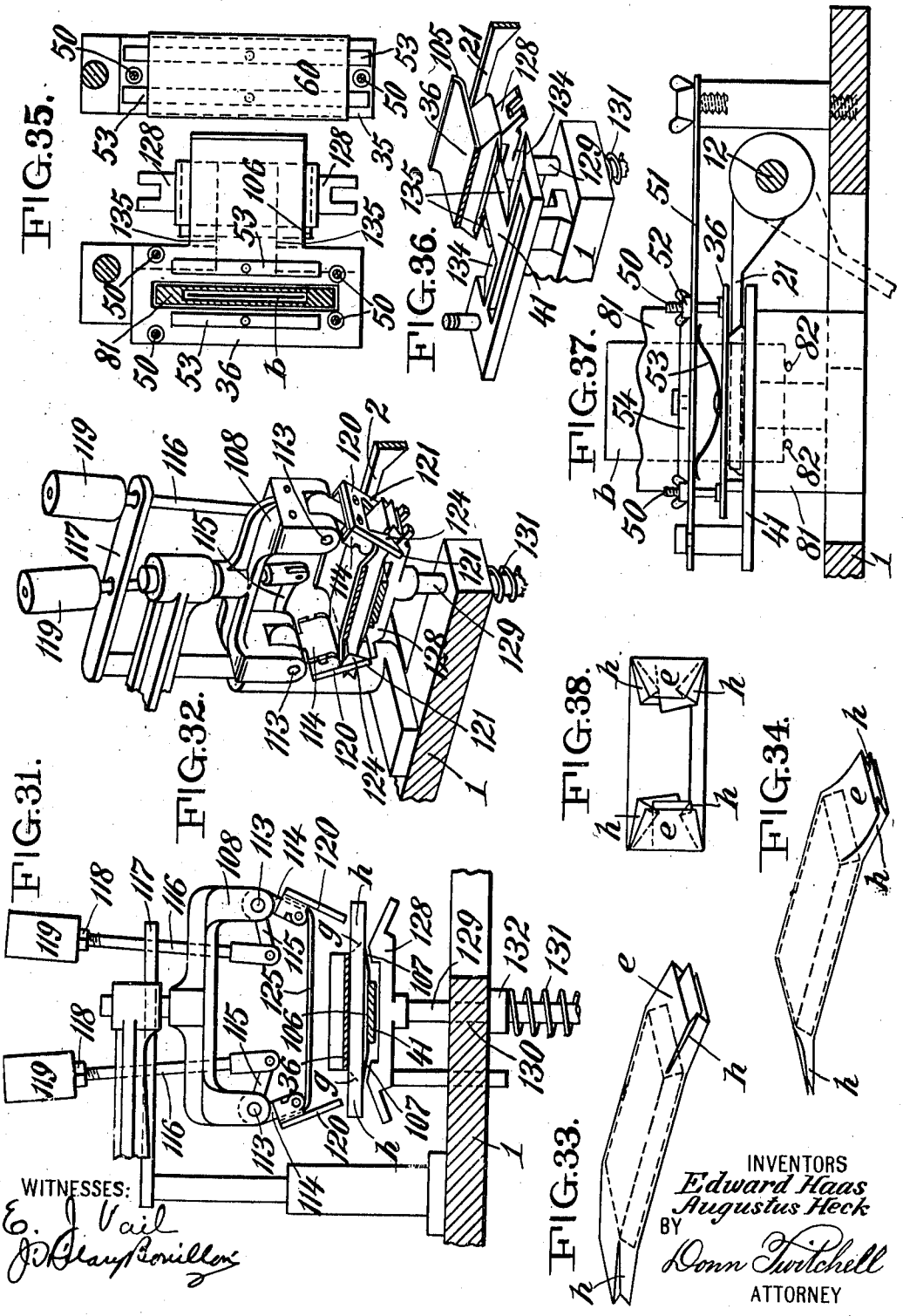


FIG. 35.

FIG. 36.

FIG. 37.

FIG. 32.

FIG. 38.

FIG. 34.

FIG. 31.

FIG. 33.

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UNITED STATES PATENT OFFICE.

EDWARD HAAS AND AUGUSTUS HECK, OF SPRINGFIELD, MASSACHUSETTS.

WRAPPING-MACHINE.

1,159,934. Specification of Letters Patent. Patented Nov. 9, 1915.

Application filed January 17, 1914. Serial No. 812,745.

To all whom it may concern:

Be it known that we, EDWARD HAAS and AUGUSTUS HECK, both citizens of the United States, and residents of the city of Springfield, in the county of Hampden and State of Massachusetts, have invented a certain new and useful Improvement in Wrapping-Machines, of which the following is a specification.

This invention relates to improvements in machines having means whereby an article and a wrapper are forced through folding devices which cause the wrapper to be folded upon the article.

The object of the invention is to provide means whereby articles of irregular shape can be effectually wrapped without injury to the article or the wrapper.

The improvements are shown applied to a wrapping machine for which a patent was granted to Felipe Girond October 17, 1911, No. 1,006,081.

The invention consists of an improved wrapper folding mechanism in combination with an elastic band which is adapted to fold the wrapper to fit irregularly shaped articles.

The invention further consists of a wrapper folding channel provided with yielding plates having a covering of elastic, whereby articles and wrappers can be passed through said channel without injury to the wrapper or the article.

The invention further consists of an intermittently moving chain having a series of arms, each arm being adapted to move an article between knives which trim the article to a uniform size, and to move the trimmed article into range with a plunger which forces said article, together with a wrapper, into said wrapper folding channel.

The invention also consists of adjusting means whereby said wrapper folding mechanism and channel can be adjusted in such a manner that articles of different height or shape can be wrapped.

In the accompanying drawings: Figure 1 is a sectional plan view of the machine. Fig. 2 is a longitudinal section on the line II—II of Fig. 1. Fig. 3 is section on the line III—III of Fig. 1. Fig. 4 is a detail view of gearing for causing intermittent rotation to certain parts of said wrapper folding channel. Figs. 5 to 10 inclusive show different positions which an article and the wrappers occupy during their travel through the machine. Fig. 11 is a longitudinal section showing parts of the machine in a different position from that shown in Fig. 2. Fig. 12 is a cross section on the line XII—XII of Fig. 11. Fig. 13 is an enlarged section on the line XIII—XIII of Fig. 12. Fig. 14 is a sectional plan view of portions of the machine. Fig. 15 is a view similar to Fig. 11, showing the position of parts when adjusted for wrapping articles having little height. Fig. 16 is a cross section on the line XVI—XVI of Fig. 1. Fig. 17 is a detail view of gearing for causing intermittent movement of the chain for feeding articles to the machine. Fig. 18 is a cross section on the line XVIII—XVIII of Fig. 1. Fig. 19 is a view similar to Fig. 18 showing the parts adjusted to a position for wrapping articles having little height. Fig. 20 is a cross section on the line XX—XX of Fig. 1. Fig. 21 is a perspective view of the article and wrapper that is shown in Fig. 20. Fig. 22 is a perspective view of the wrapper folding mechanism when moved to a position causing partial folding of portions of the wrapper which overhang the article. Figs. 23 and 24 show positions the wrapper assumes during said folding operation. Fig. 25 shows the position of the wrapper folding mechanism when forcing the wrapper against a presser plate. Fig. 26 shows said folds of the wrapper when pressed against said presser plate. Fig. 27 shows the wrapper folding mechanism when forcing said folds of the wrapper toward the under side of the ends of the article. Fig. 28 shows the wrapper folding mechanism when moved away from the article and wrapper, said folds of the wrapper being held toward the under side of the ends of the article by means of the presser plate. Fig. 29 shows the folds of the wrapper that are shown in Fig. 28. Fig. 30 shows a modification in which said elastic band is omitted. Figs. 31 and 32 show the wrapper folding mechanism when adjusted for folding wrappers upon articles of less height than shown in Fig. 20. Fig. 33 shows the position the wrapper assumes during the folding operation shown in Fig. 32. Fig. 34 shows the folds of the wrapper that are shown in Fig. 33 when pressed against the presser plate. Fig. 35 is a sectional plan view of parts of the machine showing said folds of the wrapper when further folded and held toward

the under side of the ends of the article by means of said presser plate. Fig. 36 is a perspective of some of the parts shown in Fig. 35. Fig. 37 is a sectional view on the line XXXVII—XXXVII of Fig. 15. Fig. 38 shows folds of the wrapper shown in Figs. 35 and 36.

Mounted in suitable bearings in the main frame 1 is a driving shaft 2. Secured to shaft 2 are cams 3 which form a groove 4 in which a roller 5 attached to a lever 6 travels, thereby causing oscillating movement of said lever. One end of lever 6 is pivoted at 7 to the main frame, the other end being connected by a link 8 to a slide 9 which has reciprocating movement in guides 10.

Forming part of slide 9 is an upward extension 11 having a bearing in which is fitted a shaft 12. Shaft 12 is journaled in bearings 13, 14 and 15. Shaft 12 is provided with a screw thread 16, nuts 17, and jam nuts 18, on each side of the extension 11, so that the nuts 17 can be adjusted to fit close to the extension, whereby reciprocating movements of slide 9 cause like movements of shaft 12. Secured to shaft 12 is a series of plunger arms 19, 20, 21 and 22, and an arm 23.

Located between bearings 14 and 15 is a sleeve 24, through which shaft 12 has reciprocating movement. Sleeve 24 is provided with a spline 25 which rides in a groove 26 formed in shaft 12. Forming part of sleeve 24 is an arm 27, which is connected by a link 28 to one end of a lever 29 pivoted at 30 to the main frame. Secured to the other end of lever 29 is a roller 31 which engages a cam 32 secured to the driving shaft 2. Action of cam 32 on lever 29 causes sleeve 24, shaft 12, together with the plunger arms 19, 20, 21 and 22, and arm 23, fixed thereto, to have an oscillating or rocking movement.

A horizontal channel divided into sections having an opening along one side, for permitting movement of plunger arms 19, 20, 21 and 22, is formed by upper plates 33, 34, 35, 36 and 37 and corresponding lower plates 38, 39, 40, 41 and 42, and by means of upper and lower plates 43 mounted in forks 44 and 45.

Forks 44 and 45 are secured to shafts 46 which are journaled in bearings formed on standards 47. The fork 44 is interposed between the channel section formed by plates 34 and 39 and the channel section formed by the plates 35 and 40. Each of the upper and lower plates 43 is provided with flanges 48, and the forks 44 and 45 are provided with springs 49 which force the plates toward each other until checked by engagement of flanges 48 with the forks.

Each of the upper plates 33, 34, 35, 36 and 37 are provided with bolts 50 which extend upward through holes formed in stationary plates 51, said bolts being screw threaded to receive thumb nuts 52. Between the stationary plates 51 and said upper plates are springs 53 which are riveted to the upper plates, said springs serving to force the upper plates downward until checked by engagement of the nuts 52 against the stationary plates, as shown in Figs. 15 and 37.

In Figs. 14, 15, 19, 31, 32 and 37, parts of the machine are shown adjusted to the position they occupy when articles of little height are to be wrapped. When articles of greater height are to be wrapped, the upper plates 33, 34, 35, 36 and 37 are raised and a plate or washer 54 is placed between the nuts 52 and the stationary plates 51. The forks 44 and 45 are also raised and held in place by means of plates 55 which are placed beneath the standards 47 which support the shafts 46 forming part of said forks. Then plates 43 having side walls 56 of less height than those shown in Fig. 15 are mounted on the forks. The plates 43 are slid onto the forks until the plates reach a stop 57, and are held in place by means of a screw 58 at the outer end of the forks. The plates 43 of fork 44 are inclosed by elastic sleeves 59, and the upper plates 34, 35 and lower plates 39, 40 of the channel sections are also inclosed by elastic sleeves 60. The purpose of said elastic is to effect frictional engagement with the inner wrapper sufficient to force the wrapper against the article, without injury to the wrapper or to the article.

Secured to the shaft 46 forming part of fork 44 is a bevel gear wheel 61 which is in mesh with a bevel gear wheel 62 secured to a vertical shaft 63. Secured to vertical shaft 63 is a wheel 64 having two series of gear teeth 65 formed on its circumference and concave surfaces, 66, between said series of gear teeth. The gear teeth 65 mesh with gear teeth 67 formed on a fourth part of the circumference of a wheel 68 which is secured to a vertical shaft 69. A concentric surface 70 extending through three fourths of the circumference of wheel 68 is adapted to fit against a concave surface 66 of wheel 64.

Secured to shaft 69 is a bevel gear wheel 71 which is in mesh with a bevel gear wheel 72 secured to the driving shaft 2. Said gearing causes rotation of shaft 69 and wheel 68 in the direction indicated by the arrow in Fig. 4. During three-fourths of the revolution of shaft 69 the concentric surface 70 fitting the concave surface 66 will cause the wheel 64, shaft 63, bevel gear wheels 62, 61, and shaft 46 attached to fork 44 to be held stationary. During the remaining fourth of a revolution of wheel 68 the teeth 67 will be in mesh with teeth 65 on wheel 64, and consequently cause a half revolution of fork 44.

Secured to the shaft 46 forming part of fork 44 is a gear wheel 73 which is in mesh with a gear wheel 74 secured to a shaft 75. Secured to the shaft 75 is a chain wheel 76 over which rides an endless chain 77, said chain also riding over a chain wheel 78 which is secured to the shaft 46 forming part of fork 45. It will be evident that said gearing and chain connection will cause rotation of fork 45 in a direction opposite to that of fork 44.

A chute 79 for reception of an inner wrapper *a* extends across the channel formed by upper plates 33, 34, and lower plates 38, 39, and is provided with supports 80 for sustaining the wrapper in such manner that the portion extending below the channel exceeds the portion above the channel.

A chute 81 for reception of an outer wrapper *b* extends across the channel formed by upper plate 36 and lower plate 41, and is provided with supports 82 for sustaining the wrapper in such manner that the portion of wrapper extending above the channel exceeds the portion below the channel.

Secured to driving shaft 2 is a wheel 83, having gear teeth 84 and a concentric surface 85 so proportioned to each other that the concentric surface occupies one-fourth and the gear teeth three-fourths of the circumference of the wheel. The concentric surface 85 rides in concave surfaces 86 formed in the periphery of a wheel 87, said wheel having gear teeth 88 which are adapted to mesh with the gear teeth 84 of wheel 83. Wheels 83 and 87 are so proportioned to each other that when the gear teeth are in mesh, three-quarters of a revolution of wheel 83 will cause one half of a revolution of wheel 87. Wheel 87 is secured to a short shaft 89 to which is secured a chain wheel 90.

An endless chain 91 driven intermittently by chain wheel 90 rides over chain wheels 92 and 93 and also over a pulley 94 which is journaled at 95 upon an adjustable slide 96. The chain 91 is provided with a series of arms 97 and the chain wheel 89 is provided with recesses 98 into which the arms pass during travel of the chain over the wheel. The portion of said chain extending from pulley 94 to chain wheel 92 is provided with a straight support 99 which causes the upward extending arms 97 to travel in a straight line. A series of articles *c* are placed upon supports 100 in such manner that each article is in advance of one of the arms 97. Each of the arms 97 is provided with a right angular extension 101 which engages the upper side of the article as shown in Fig. 16. During each movement of the chain 91 the attached arms 97 cause a corresponding movement of the series of articles. A pair of knives 102 are fixed in such manner that during successive movements of the articles the sides of the articles are trimmed by means of the knives. Successive movements of the chain 91 cause one of the trimmed articles to be moved to rest between the vertically yielding upper plate 33 and the lower plate 38, and in front of the plunger arm 19. Forward longitudinal movement of the rock-shaft 12 then causes the plunger arm 19 to move the article and wrapper *a* between the canvas covered plates 34 and 39, thereby causing the wrapper to be folded upon the article in the manner shown in Fig. 5. Said forward longitudinal movement of the rock-shaft also causes plunger arm 19 to move said article and wrapper between the canvas covered plates 43 of fork 44. During said forward longitudinal movement of the rock-shaft 12, the arm 23 secured thereto travels in a guide 103 formed in a stationary part 104 of the machine, thereby causing the series of attached plunger arms 19, 20, 21 and 22 to travel in a straight path along the wrapper folding channel. Rocking movement of shaft 12 then causes downward swinging movement of said series of plunger arms to the position shown by the dotted lines in Fig. 37. A half revolution is then imparted to fork 44 causing the article and wrapper to assume the position shown in Fig. 6. During a return longitudinal movement of said rock-shaft, the arm 23 travels above the stationary part 104. Rocking movement of shaft 12 causes upward swinging movement of said series of plunger arms, causing them to occupy the position shown in Fig. 2. It will be seen that in this position, plunger arm 20 stands to the rear of the article and wrapper in fork 44, so that as forward longitudinal movement of the rock-shaft causes plunger arm 19 to repeat the operations previously described, the plunger arm 20 will move the article and wrapper out of the fork 44, and through the channel section formed by canvas covered plates 35 and 40, whereby the lower plate 40 causes the downwardly extending portion *d* of the wrapper to be folded upon the portion of the wrapper previously folded upon the article, as shown in Fig. 7. Said forward movement of plunger arm 20 causes the article and wrapper to be moved between the vertically yielding upper plate 36 and the lower plate 41, said upper plate having an incline 105 for guiding said partially wrapped article, whereby buckling or tearing of the wrapper is avoided.

During the downward, rearward and upward movement of the series of plunger arms caused by rock-shaft 12, the wrapper folding mechanism shown in Figs. 11, 15, 20, 22, 25, 27, 28, 30, 31, and 32, become operative. The article with the wrapper folded

as shown in Figs. 20 and 21 rest upon a thin plate 106 which is secured to the lower plate 41. The wrapper overhangs the two ends of the article and the two beveled edges 107 of the thin plate 106. Located above the partially wrapped article is a frame 108 forming part of an arm which is secured to a vertical rod 109 fitting in a guide 110. The lower end of rod 109 is provided with a roller 111 which engages a cam 112 secured to the driving shaft, whereby said rod and frame 108 are caused to reciprocate vertically. Journaled at each end of frame 108 is a shaft 113 to which is secured a downward extending swinging arm 114. Forming part of each shaft 113 is a crank 115 to which is pivoted a rod 116 which extends upwardly through holes formed in a stationary plate 117. The rods 116 are screw threaded to receive nuts 118 which are adjusted to a certain distance above the plate 117. Upon the upper ends of rods 116 are fitted weights 119 which are supported by said nuts. Secured to each swinging arm 114 is a plate 120 having a downward extension 121 at each end thereof. The lower ends of said extensions have edges which are inclined at 122 in an upward direction toward each other, and extending about half the length of the extensions, the upper ends of said extensions have edges which are inclined at 123 in an upward direction away from each other, whereby projections 124 are formed on said extensions as is shown in Figs. 11 and 15. The swinging arms 114 are connected by an elastic canvas band 125. Secured to each end of frame 108 is a downward extending plate 126, the lower end of which is provided with a narrow portion 127, which extends inward above one of said overhanging ends of the wrapper. The weights 119 cause the arms 114 to swing away from each other until checked by the elastic band 125 or by engagement of the plates 120 with the downward extending plate 126, as shown in Fig. 20.

Downward movement of frame 108 causes the inward extension 127 of plates 126 to fold the upper portions *e* of the overhanging ends of the wrapper to the position shown in Fig. 23. Further downward movement of frame 108 causes the inclined edges 122 of plates 120 on swinging arms 114 to fold side portions *f* of said overhanging portions of the wrapper to the position shown in Fig. 24. Further downward movement of frame 108 causes said elastic band 125 to fold said parts *e* and *f* of the wrapper against the beveled ends *g* of the article. Further downward movement of frame 108 causes the arms 114 and elastic canvas 125 to fold said overhanging ends of the wrapper against a presser plate 128, as shown in Fig. 25, thereby causing said portions of the wrapper to be folded to the position shown in Fig. 26. Presser plate 128 is secured to a rod 129 having vertical movement in a guide 130 and forced upward by means of a spring 131 which presses against a collar 132 secured to the rod. As shown in Fig. 25, the nuts 118 on rods 116 are resting on the stationary plate 117, so that as the frame 108 moves farther downward, pull of rods 116 on cranks 115 will cause the arms 114 to swing from the position shown in Fig. 25 to the position shown in Fig. 27. During said swinging movement of arms 114 the attached plates 120 take against the yielding presser plate 128, causing downward movement thereof, thereby permitting said arms to force the elastic canvas band 125 and said folded portions of the wrapper toward the under sides of the ends of the article. During upward movement of frame 108 the weights 119 on rods 116 will cause the arms 114 and attached plates 120 to swing back to the first position, thereby permitting the presser plate to be moved upward by means of spring 131 until checked by engagement of collar 132 against a stationary part of the machine. As shown in Fig. 28, said presser plate at the end of its upward movement serves to hold said folded portions of the wrapper toward the under side of the ends of the article.

In case the article to be wrapped has square ends, as shown in Fig. 30, instead of the bevel ends *g*, the elastic band 125 could be omitted, the swinging arms 114 then causing said portions of the wrapper to be folded toward the under side of the ends of the article.

In case the article to be wrapped has little height, the plates 126 will be removed and folding of the overhanging ends of the wrapper will be accomplished in the manner shown by Figs. 15, 31 and 32. Downward movement of frame 108 then causes the projections 124 on extensions 121 of plates 120 to fold side portions *h* of said overhanging portions of the wrapper to the position shown in Figs. 32 and 33. Further downward movement of frame 108 causes said elastic canvas band 125 to fold the parts *e* and *h* against the beveled ends *g* of the article and also causes said parts of the wrapper to be folded against the presser plate 128. The remaining operation being the same as that shown in Figs. 27 and 28, further description is not considered necessary.

When another forward longitudinal movement of the rock-shaft occurs, a third article and wrapper will be moved by plunger arm 19 into fork 44, simultaneously with movement of the second article and wrapper into range with said wrapper folding mechanism by means of plunger arm 20, and simultaneously with movement by plunger arm 21 of the first article and wrapper against the outer wrapper *b* which wrapper

is folded upon the wrapped article and forced therewith into the fork 45, as shown in Fig. 11.

By reference to Figs. 35 and 36 it will be seen that during movement of the first article and wrapper *a* from said folding mechanism to the wrapper *b* the folded portions of the wrapper *a* while traveling away from their support on presser plate 128, are forced upward by means of inclines 134 which are formed on plate 41, said plate being cut away at 135 to permit said folded portions of the wrapper to seat themselves against the fold of the wrapper on the underside of the article.

A half revolution of fork 45 causes the wrapped article and outer wrapper *b* to be moved from the position shown in Fig. 8 to the position shown in Fig. 9, causing an upward extension of the outer wrapper to rest against a roller 136. Roller 136 is journaled in the free ends of arms 137 which are pivoted at 138. Journaled in the outer ends of arms 137 is a roller 139 which is located near the forward end of the vertically yielding upper plate 37. Journaled in lower plate 42 is a roller 140 which is located below roller 139. Journaled in a standard 141 is a shaft 142 to which is secured an arm 143 extending horizontally, and carrying a paste receptacle 144 at its outer end. Also secured to shaft 142 is a downwardly extending arm 145 having a roller 146 at its lower end, which roller bears against a cam 147 secured to the driving shaft. Journaled in the bottom of paste receptacle 144 is a roller 148 having part of its surface in contact with paste 149 within the receptacle, and part of the surface of said roller being outside of the receptacle.

Secured to one end of roller 148 is a ratchet wheel 150 which is engaged by a retaining pawl 151 pivoted to the receptacle and also engaged by a pawl 152 which is pivoted to a stationary part of the machine. A spring 153 causes the pawl 152 to be held against the ratchet wheel 150. The cam 147 acting on arm 145 causes upward movement of the paste receptacle 144, roller 148, and ratchet wheel 150, thereby causing rotation of roller 148 by engagement of pawl 152 with the ratchet wheel. Said rotation of roller 148 carries paste out from the receptacle. Action of cam 147 on arm 145 permits the receptacle to move downward, thereby causing paste on the surface of roller 148 to be deposited upon said upturned portion *j* of the outer wrapper resting against the roller 136.

Forward longitudinal movement of the rock-shaft will cause movement of articles and wrappers by the plunger arms in the manner previously described, and will also cause the plunger arm 22 to move the wrapped article and partially folded and paste coated outer wrapper into the channel section formed by yielding upper plate 37 and the lower plate 42. When this occurs the roller 139 will cause the paste coated extension *j* of the outer wrapper to be folded upon a previous fold of said outer wrapper as shown in Fig. 10, said paste serving to hold said folds of the wrapper together. The roller 140 and roller 139 journaled on the swinging arms 137 by avoiding friction render the passage of said article and wrapper easy, in a manner that will be readily understood.

Secured to the shaft 46 to which fork 45 is secured, is a gear wheel 154 which is in mesh with a gear wheel 155. Gear wheel 155 is in mesh with a gear wheel 156 which is in mesh with a gear wheel 157 secured to a shaft 158. It will be readily seen that each intermittent half revolution of fork 45 will by means of said gearing cause intermittent half rovolutions of shaft 158 in a reverse direction.

Secured to shaft 158 are two chain wheels 159. Riding over each chain wheel 159 is an endless chain 160 which rides over a chain wheel 161 secured to a tube 162. Tube 162 is journaled upon a fixed shaft 163. Forming part of each chain 160 is a series of arms 164 so arranged that while the chain is at rest, said wrapped article is moved by plunger arm 22 to rest between two of said arms, as shown in Fig. 11. Then after the rock-shaft has caused downward and rearward movement of plunger arm 22, a half revolution of fork 45 will cause a movement of chain 160, by means of said intermediate connections, thereby causing an arm 164 on the portion of chain then passing over chain wheel 159 to engage and move said wrapped article from the position shown in Fig. 11 to the position shown in Fig. 2.

A brush 165 pivoted at one end, is adjusted by means of nuts 166 on a screw threaded rod 167 which is secured to plate 37, in such a manner that the brush is caused to bear upon said pasted portion of the outer wrapper, during successive movements of the wrapped article on the supporting plate 42. It will be evident that adjustment of plate 37 to any height will cause a like adjustment of the swinging end of brush 165.

Having described our invention, what we claim is:

1. A wrapping machine comprising a wrapper folding channel having a lower plate and a vertically yielding upper plate, a reciprocating plunger, means for supporting a wrapper between the folding channel and said plunger, an intermittently moving chain having a series of arms, means for supporting a series of articles in such manner that any one of the articles rests in advance of one of said arms, means for actu-

ating said chain whereby one of said articles is moved to rest between said wrapper and said plunger, a vertically yielding plate above said article, and means for actuating said plunger whereby the plunger forces said article and wrapper into said wrapper folding channel, said vertically yielding plates serving to guide the article and to ease the travel of said article and wrapper, substantially as described.

2. A wrapping machine comprising a wrapper folding channel having a lower plate and a vertically yielding upper plate, each of said plates being provided with an elastic covering, means whereby an article and a wrapper are forced into said channel, whereby the wrapper is folded upon the article, said elastic covering of said plates and said yielding upper plate permitting easy travel of said article and wrapper, substantially as described.

3. A wrapping machine comprising an intermittently rotating fork having spring pressed plates provided with flexible covering; a channel section on either side in range therewith, each of said channel sections having upper and lower plates provided with flexible covering, one of said plates being spring pressed toward the other plate; means whereby an article and a wrapper are moved through one of said channel sections and into said fork thereby causing the wrapper to be partially folded upon the article, said plates and said flexible covering thereof serving to prevent injury to said wrapper; means for causing a half revolution of said fork; and means whereby said article and wrapper are forced out of said fork and into the other channel, thereby causing the wrapper to be further folded upon the article, said spring pressed plates and flexible covering thereof serving to prevent injury to said wrapper, substantially as described.

4. A wrapping machine comprising a channel and means for moving partially wrapped articles to rest therein; vertically reciprocating folders above said channel, said folders being connected by a flexible band and provided with inclined lateral projections; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders; means for actuating said folders, whereby downward movement thereof causes said inclined lateral projections to force the sides of said overhanging portions of the wrapper inward, said flexible band serving to fold portions of said overhanging portions of the wrapper against the ends of the article; and means whereby further downward movement of said folders causes them to swing toward each other, thereby causing said flexible band to fold said portions of the wrapper toward the under side of the ends of the article.

5. A wrapping machine comprising a channel and means for moving a partially wrapped article to rest therein, vertically reciprocating folders above said channel, said folders being connected by a flexible band; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders; means for actuating said folders whereby downward movement thereof causes said flexible band to fold portions of said overhanging portions of the wrapper against the ends of the article; and means whereby further downward movement of said folders causes them to swing toward each other, thereby causing said flexible band to fold said portions of the wrapper toward the under side of the ends of the article.

6. A wrapping machine comprising a channel and means for moving a partially wrapped article to rest therein; vertically reciprocating folders above said channel, said folders being provided with inclined lateral projections; a vertically yielding presser plate beneath said channel; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders, and in range with portions of said vertically yielding presser plate; means for actuating said folders whereby downward movement thereof causes said inclined lateral projections to fold the sides of said overhanging portions of the wrapper inward, and also causes said portions of the wrapper to be folded against said presser plate; means whereby further downward movement of said folders causes them to swing toward each other, whereby said portions of the wrapper are folded toward the under side of the ends of the article, said downward and swinging movement of said folders causing downward movement of said yielding presser plate; and means whereby upward movement of said folders permits upward movement of said presser plate, whereby the presser plate serves to hold said portions of the wrapper folded toward the under side of the ends of the article.

7. A wrapping machine comprising a channel, and a plunger adapted to move an article and a wrapper into said channel, whereby the wrapper is folded upon the article in such a manner that portions of the wrapper overhang the ends of the article; vertically reciprocating folders above said channel, said folders being attached to a flexible band; a vertically yielding presser plate beneath said channel; said overhanging portions of the wrapper being in range with said vertically reciprocating folders

and in range with portions of said yielding presser plate; means for actuating said folders whereby downward movement thereof causes said overhanging portions of the wrapper to be folded against said presser plate, said flexible band serving to fold portions of said overhanging portions of the wrapper against the ends of the article; and means whereby further downward movement of said folders causes them to swing toward each other, said downward and swinging movement of said folders causing downward movement of said yielding presser plate and causing said folders to be moved to rest between said article and said yielding presser plate, said flexible band serving to fold said portions of the wrapper to rest between said article and said folders.

8. A wrapping machine comprising a channel and means for moving a partially wrapped article to rest therein; vertically reciprocating folders above said channel, said folders being connected by a flexible band; a vertically yielding presser plate beneath said channel; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders, and in range with portions of said vertically yielding presser plate; means for actuating said folders whereby downward movement thereof causes said overhanging portions of the wrapper to be folded against said presser plate, said flexible band serving to fold portions of said overhanging portions of the wrapper against the ends of the article; means whereby further downward movement of said folders causes them to swing toward each other, thereby causing said flexible band to fold said portions of the wrapper toward the under side of the ends of the article, said downward and swinging movement of said folders also causing downward movement of said yielding presser plate; and means whereby upward movement of said folders permits upward movement of said presser plate, whereby the presser plate holds said portions of the wrapper folded toward the under side of the ends of the article.

9. A wrapping machine comprising a channel and means for moving a partially wrapped article to rest therein; vertically reciprocating folders above said channel; a vertically yielding presser plate beneath said channel; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders, and in range with portions of said vertically yielding presser plate; means for actuating said folders whereby downward movement thereof causes said overhanging portions of the wrapper to be folded against said presser plate, means whereby further downward movement of said folders causes them to swing toward each other, whereby said portions of the wrapper are folded toward the under side of the ends of the article, said downward and swinging movement of said folders also causing downward movement of said yielding presser plate, means whereby upward movement of said folders permits upward movement of said presser plate, whereby the presser plate holds said portions of the wrapper folded toward the under side of the ends of the article; and means for moving said article and wrapper along said channel, said channel having an incline which forces said portions of the wrapper against the under side of the ends of the article, substantially as described.

10. A wrapping machine comprising a channel and means for moving a partially wrapped article to rest therein; vertically reciprocating folders above said channel, said folders being attached to a flexible band; a vertically yielding presser plate beneath said channel; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders, and in range with portions of said vertically yielding presser plate; means for actuating said folders whereby downward movement thereof causes said overhanging portions of the wrapper to be folded against said presser plate, said flexible band serving to fold portions of said overhanging portions of the wrapper against the ends of the article; means whereby further downward movement of said folders causes them to swing toward each other, thereby causing said flexible band to fold said portions of the wrapper toward the under side of the ends of the article, said downward and swinging movement of said folders also causing downward movement of said yielding presser plate, means whereby upward movement of said folders permits up vard movement of said presser plate, whereby the presser plate serves to hold said portions of the wrapper folded toward the under side of the ends of the article; and means for moving said article and wrapper along said channel, said channel having an incline which forces said portions of the wrapper against the under side of the ends of the article.

11. A wrapping machine comprising a channel having a lower plate, and a vertically yielding upper plate having an incline at its forward end; means whereby a partially wrapped article is forced into said channel, said inclined yielding plate permitting easy travel of said partially wrapped article; vertically reciprocating folders above said channel; a vertically yielding presser plate beneath said channel; portions

of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders, and in range with portions of said vertically yielding presser plate; means for actuating said folders whereby downward movement thereof causes said overhanging portions of the wrapper to be folded against said presser plate, means whereby further downward movement of said folders causes them to swing toward each other, whereby said portions of the wrapper are folded toward the under side of the ends of the article, said downward and swinging movement of said folders also causing downward movement of said yielding presser plate, means whereby upward movement of said folders permits upward movement of said presser plate, whereby the presser plate serves to hold said portions of the wrapper folded toward the under side of the ends of the article, and means for moving said article and wrapper along said channel, the lower plate of said channel having an incline which forces said portions of the wrapper against the under side of the ends of the article.

12. A wrapping machine comprising a channel having a lower plate, and a vertically yielding upper plate having an incline at its forward end; means whereby a partially wrapped article is forced into said channel, said inclined yielding plate permitting easy travel of said partially wrapped article; vertically reciprocating folders above said channel, said folders being attached to a flexible band; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders; means for actuating said folders whereby downward movement thereof causes said flexible band to fold portions of said overhanging portions of the wrapper against the ends of the article; and means whereby further downward movement of said folders causes them to swing toward each other, thereby causing said flexible band to fold said portions of the wrapper toward the under side of the ends of the article.

13. A wrapping machine comprising a channel and means for moving a partially wrapped article to rest therein; vertically reciprocating folders above said channel; swinging folders pivoted to said vertically reciprocating folders, said swinging folders being attached to a flexible band and provided with inclined lateral projections; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders; means for actuating said vertically reciprocating folders whereby downward movement thereof causes downward fold of upper portions of said overhanging portions of the wrapper, and causes said inclined lateral projections of said swinging folders to fold the sides of said overhanging portions of the wrapper inward, said flexible band serving to fold said portions of the wrapper against the ends of the article, and means whereby further downward movement of said vertically reciprocating folders causes said swinging folders to be moved toward each other, thereby causing said flexible band to fold said portions of the wrapper toward the under side of the ends of the article.

14. A wrapping machine comprising a channel and means for moving a partially wrapped article to rest therein; vertically reciprocating folders above said channel; swinging folders pivoted to said vertically reciprocating folders, said swinging folders being provided with inclined lateral projections; a vertically yielding presser plate beneath said channel; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders and in range with portions of said vertically yielding presser plate; means for actuating said vertically reciprocating folders whereby downward movement thereof causes downward fold of upper portions of said overhanging portions of the wrapper, and causes said inclined lateral projections of said swinging folders to fold the sides of said overhanging portions of the wrapper inward, and also causes said portions of the wrapper to be folded against said presser plate, means whereby further downward movement of said vertically reciprocating folders causes said swinging folders to be moved toward each other, whereby said portions of the wrapper are folded toward the under side of the ends of the article, said downward and swinging movement of said folders causing downward movement of said yielding presser plate; and means whereby upward movement of said folders permits upward movement of said presser plate, whereby the presser plate serves to hold said portions of the wrapper folded toward the under side of the ends of the article.

15. A wrapping machine comprising a channel and means for moving a partially wrapped article to rest therein; vertically reciprocating folders above said channel, swinging folders pivoted to said vertically reciprocating folders, said swinging folders being attached to a flexible band and provided with inclined lateral projections; a vertically yielding presser plate beneath said channel; portions of the wrapper of said partially wrapped article overhanging the ends of the article and being in range with said vertically reciprocating folders, and in range with portions of said vertically yield-

ing presser plate; means for actuating said vertically reciprocating folders whereby downward movement thereof causes downward fold of upper portions of said overhanging portions of the wrapper, and causes said inclined lateral projections of said swinging folders to fold the sides of said overhanging portions of the wrapper inward, said flexible band serving to fold said portions of the wrapper against the ends of the article and also causing said portions of the wrapper to be folded against said presser plate, means whereby further downward movement of said vertically reciprocating folders causes said swinging folders to be moved toward each other, whereby said portions of the wrapper are folded toward the under side of the ends of the article, said downward and swinging movement of said folders causing downward movement of said yielding presser plate; and means whereby upward movement of said folders permits upward movement of said presser plate, whereby the presser plate serves to hold said portions of the wrapper folded toward the under side of the ends of the article.

16. A wrapping machine comprising an intermittently rotating fork having vertically yielding plates, a channel on either side in range therewith, each of said channels having a lower plate and a vertically yielding upper plate, means whereby an article and a wrapper are moved through one of said channels and into said fork thereby causing the wrapper to be partially folded upon the article, means for causing a half revolution of said fork, whereby the wrapper is further folded upon the article and caused to extend upwardly, means for applying paste to said upwardly extending wrapper, means whereby said partially wrapped article is moved out of said fork and into the other channel; and a yielding frame carrying a roller which is adapted to press the paste coated part of said wrapper against one of said folds of the wrapper during travel of said article and wrapper into the last named channel.

17. A wrapping machine comprising an intermittently rotating fork, a wrapper folding channel on either side in range therewith, means whereby an article and a wrapper are moved through one of said channels and into said fork, thereby causing the wrapper to be partially folded upon the article, means for causing a half revolution of said fork whereby the wrapper is further folded upon the article and caused to extend upwardly, means for applying paste to said upwardly extending wrapper, means whereby said partially wrapped article is moved out of said fork and into the other channel, thereby causing said paste coated part of said wrapper to be folded against the folded wrapper; and an intermittently moving chain carrying a series of arms, one of said arms adapted during movement of the chain to take against said wrapped article and move it forward.

18. A wrapping machine comprising an intermittently rotating fork having vertically movable plates and springs normally forcing said plates toward each other; devices for checking the movement of said plates whereby space is provided sufficient to allow passage of articles of a certain height between them; a channel on either side of said fork and in range therewith, each of said channels having stationary lower plates, vertically movable upper plates and springs normally forcing said upper plates toward said lower plates; devices for checking movement of said upper plates toward said lower plates, whereby space is provided sufficient to allow passage of said articles between the upper and lower plates; means for moving articles and wrappers through said fork and said channels, whereby the wrappers are folded upon the articles; and means for adjusting said devices for checking movement of the movable plates of said fork and said channels, whereby space is provided for passage of articles of different heights through said fork and said wrapper folding channels.

19. A wrapping machine comprising a wrapper folding channel having stationary lower plates, vertically movable upper plates and springs normally forcing said upper plates toward said lower plates; devices for checking movement of the upper plates toward the lower plates whereby space is provided sufficient to allow passage of articles of a certain height between said upper and lower plates; means for moving articles and wrappers through said wrapper folding channel, whereby the wrappers are folded upon the articles; and means for adjusting said devices for checking the movement of said upper plates, whereby space is provided for passage of articles of different heights through said wrapper folding channel.

20. A wrapping machine comprising an intermittently rotating fork, a wrapper folding channel on either side in range therewith, means whereby an article and a wrapper are moved through one of said channels and into said fork, thereby causing the wrapper to be partially folded upon the article, means for causing a half revolution of said fork whereby the wrapper is further folded upon the article and caused to extend upwardly, means for applying paste to said upwardly extending wrapper, means whereby said partially wrapped article is moved out of said fork and into the other channel; a yielding frame carrying a roller at the entrance to the last named channel

and adapted to press the paste coated part of said wrapper against one of said folds of the wrapper during travel of said article and wrapper into the last named channel; and a moving chain carrying a series of arms, one of said arms adapted during movement of the chain to take against said wrapped article and move it forward.

21. A wrapping machine comprising an intermittently rotating fork, a wrapper folding channel on either side in range therewith, means whereby an article and a wrapper are moved through one of said channels and into said fork, thereby causing the wrapper to be partially folded upon the article, means for causing a half revolution of said fork whereby the wrapper is further folded upon the article and caused to extend upwardly, means for applying paste to said upwardly extending wrapper, means whereby said partially wrapped article is moved out of said fork and into the other channel, thereby causing said paste coated part of said wrapper to be folded against the folded wrapper; a moving chain carrying a series of arms, one of said arms adapted during movement of the chain to take against said wrapped article and move it forward; and a brush adapted to press said pasted flap to the wrapper during said forward travel of the wrapped article.

22. A wrapping machine comprising a wrapper folding channel having vertically yielding plates, a brush pivoted at one end, the other end of said brush being connected to one of said vertically yielding plates, means for moving articles and wrappers through said wrapper folding channel having said brush, whereby the wrappers are folded upon the articles; and means for adjusting said vertically yielding plates, said plate having said brush connected thereto causing a like adjustment of said brush, whereby articles having different height can be moved through said wrapper folding channel having said brush.

23. A wrapper machine comprising a plurality of wrapper folding means, a shaft having a series of attached plunger arms, means for causing longitudinal reciprocating movements of said shaft, means for causing a rocking movement of said shaft at the end of each of said reciprocating movements; a longitudinal guide on the machine, said shaft having an arm adapted to be moved into range with said guide after one of said rocking movements of the shaft, means whereby a forward longitudinal movement of said shaft causes said series of plunger arms to force a corresponding series of articles and wrappers along said wrapper folding means, movement of said arm in said guide serving to maintain straight travel of said plunger arms during said forward movement.

Signed at the city of Springfield, in the county of Hampden and State of Massachusetts, this 10th day of January, A. D. 1914.

EDWARD HAAS.
AUGUSTUS HECK.

Witnesses:
WILLIAM HANIFAN,
WALTER N. CUSHING.