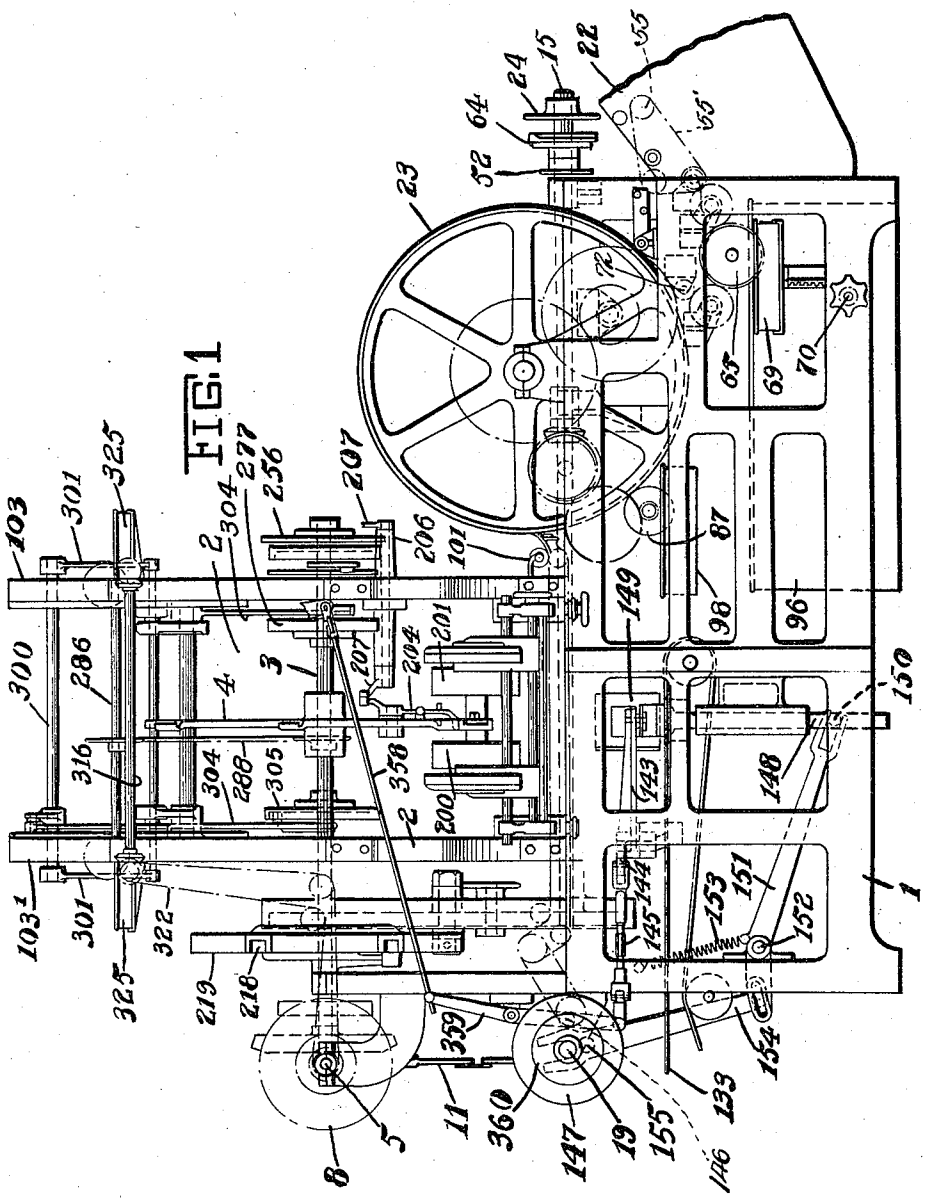
Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 1

FIG. 1



Inventor
William A. Joplin
By Ellis Spear Jr.
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 2

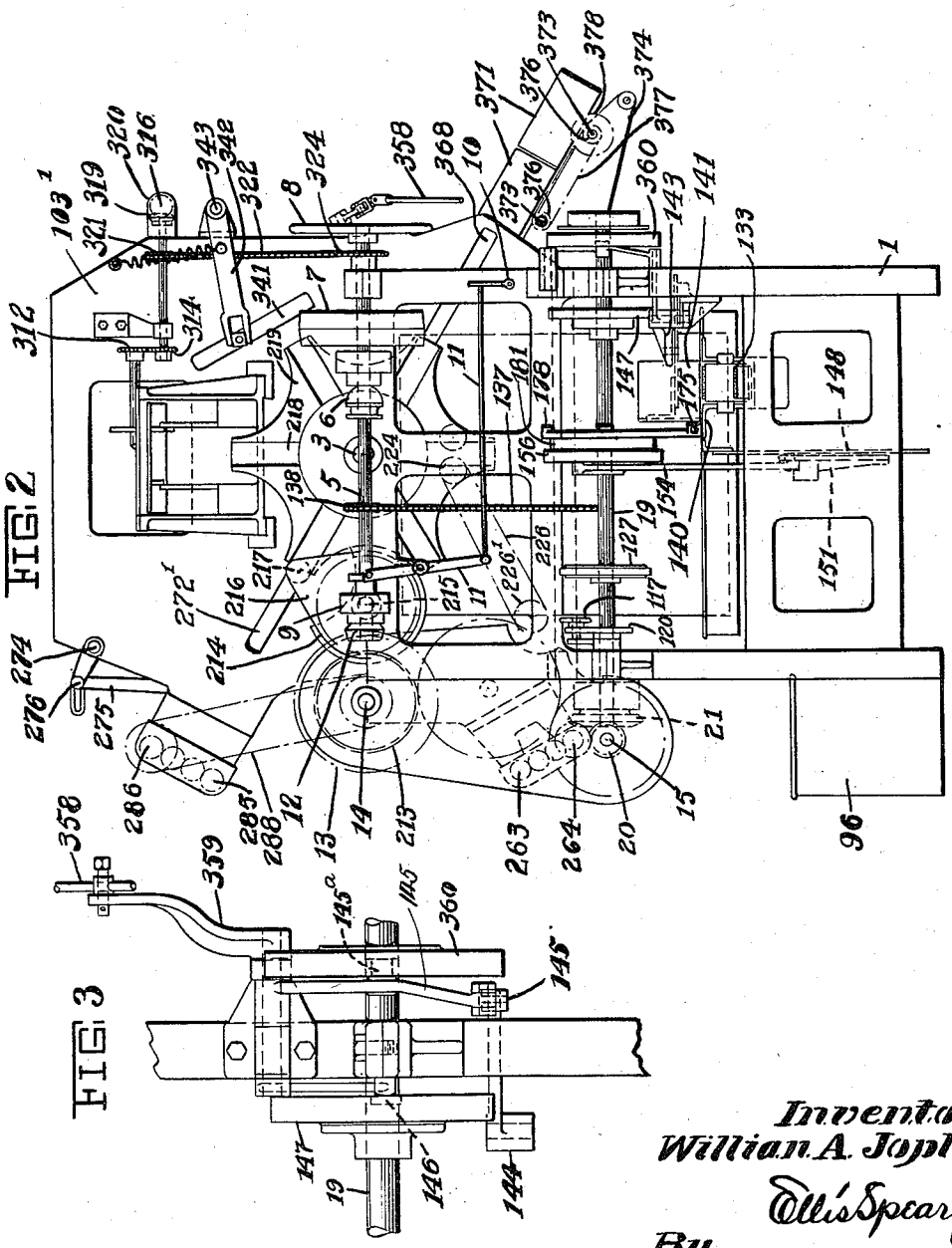


FIG. 2

FIG. 3

Inventor
William A. Joplin
By Ellis Spear Jr.
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 3

FIG. 4

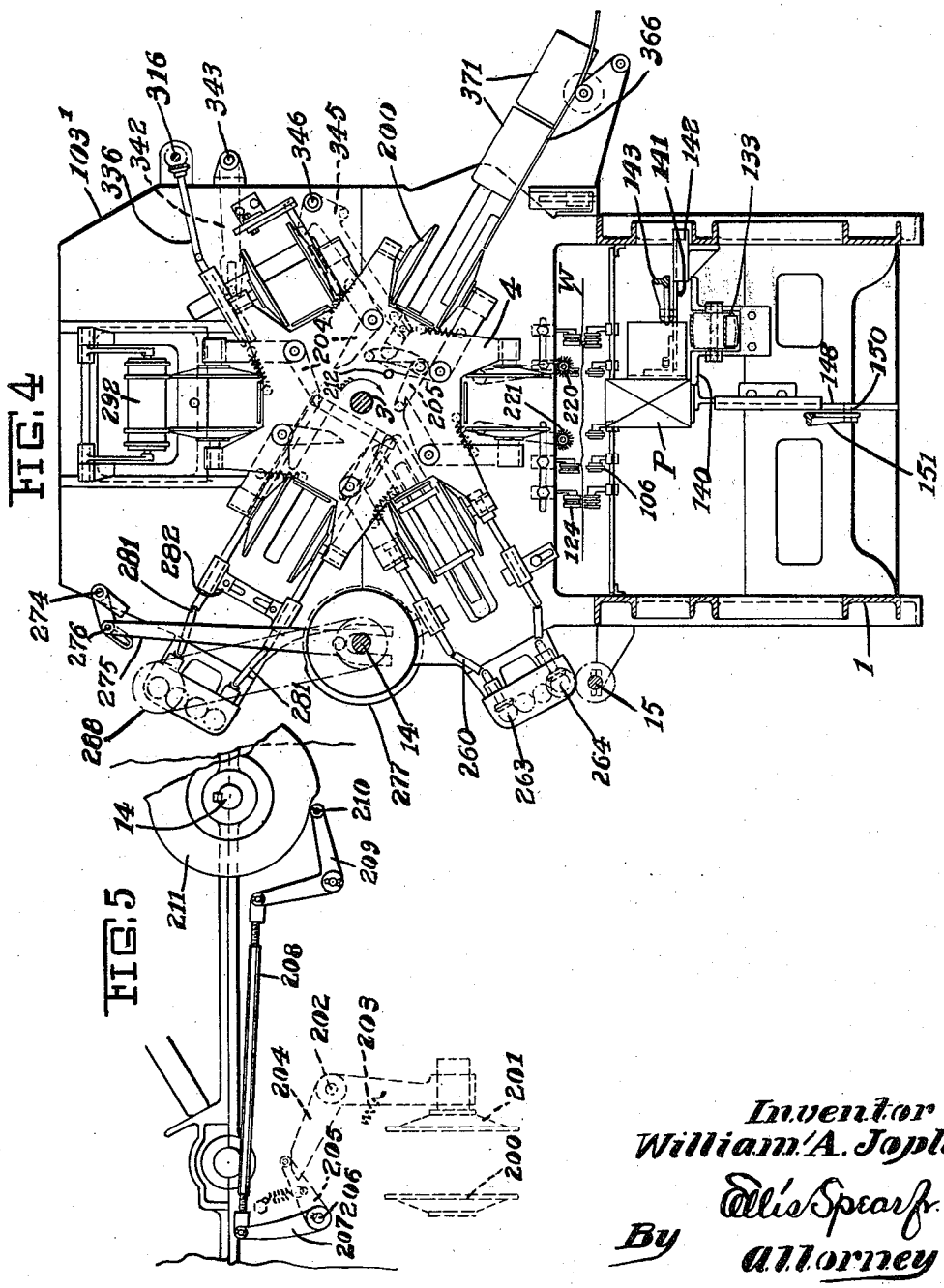


FIG. 5

Inventor
William A. Joplin
By Ellis Spear
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 4

FIG 6

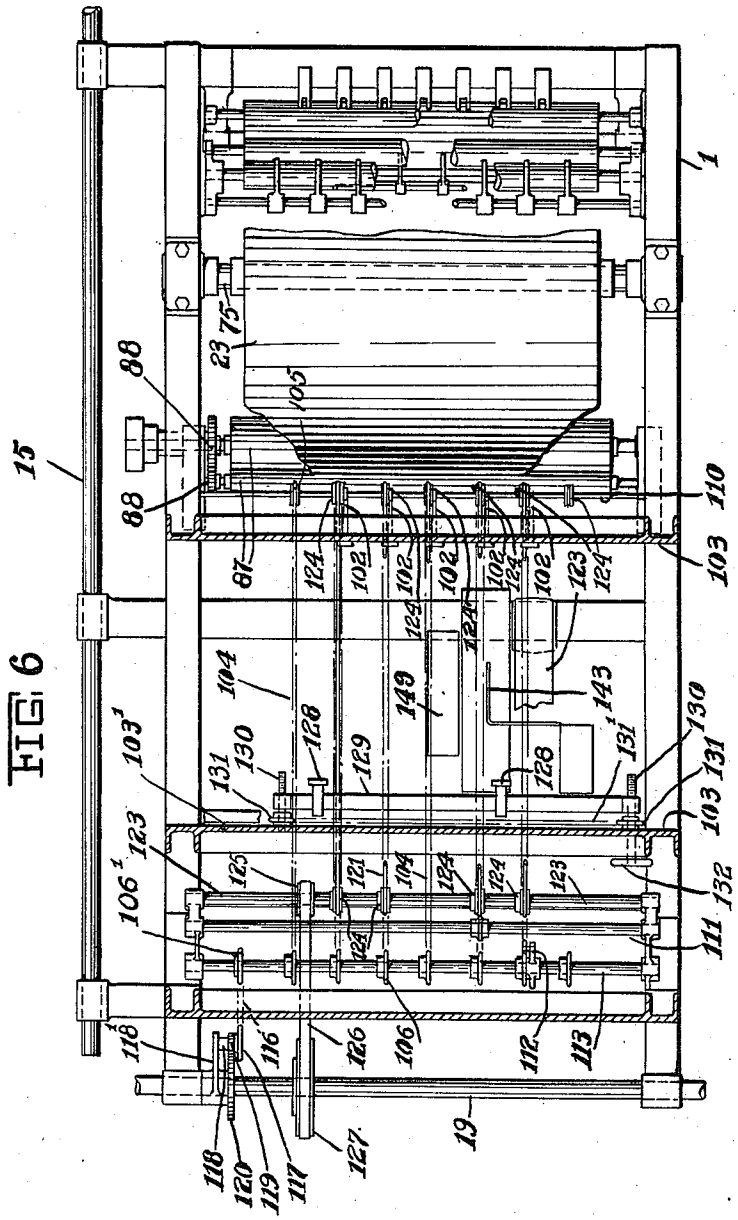
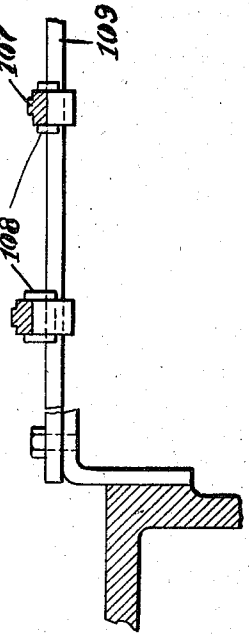


FIG 7



Inventor
William A Joplin
Ellis Spear Jr.
By
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 5

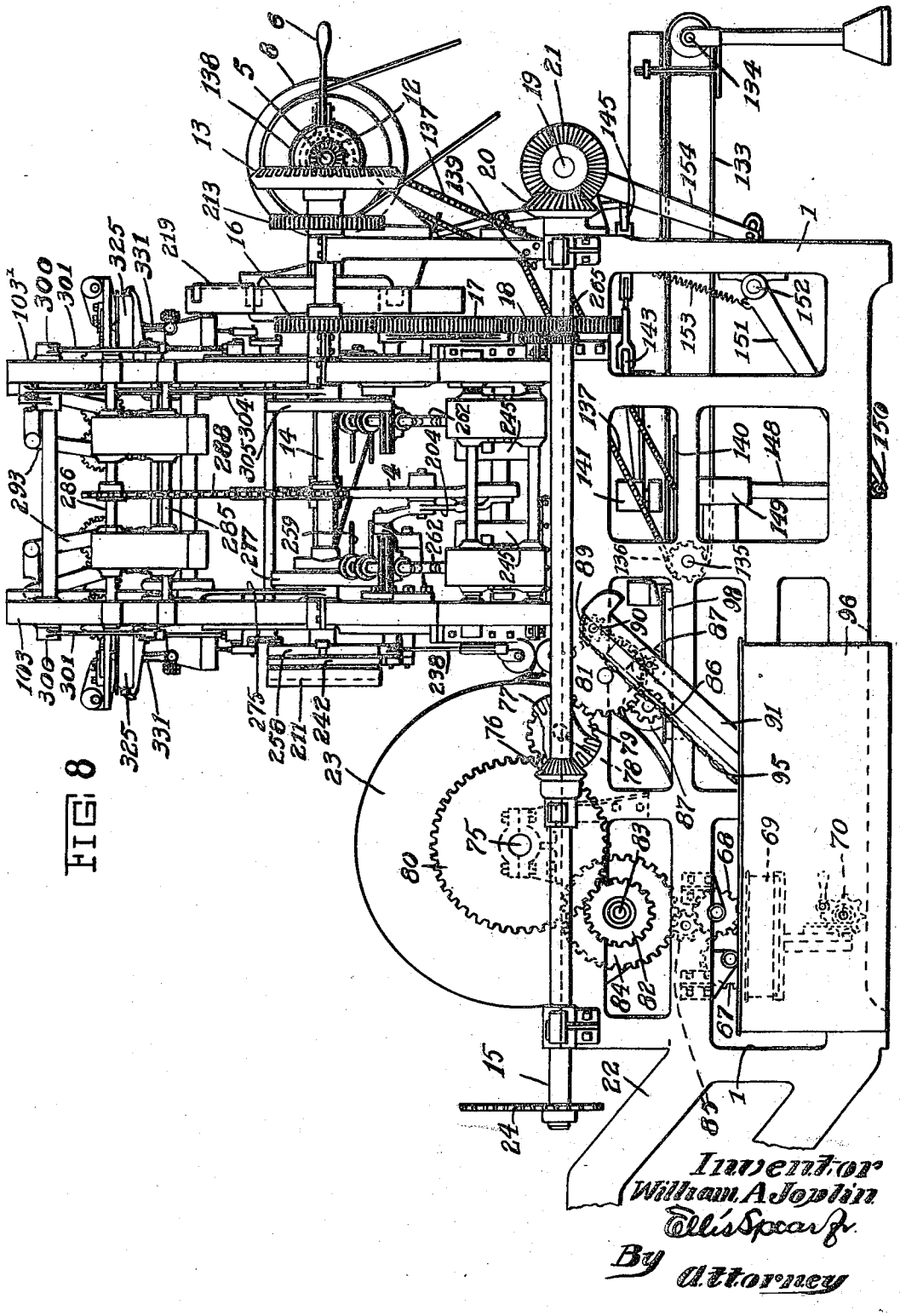


FIG 8

Inventor
William A. Joplin
Ellis Spear Jr.
By Attorney

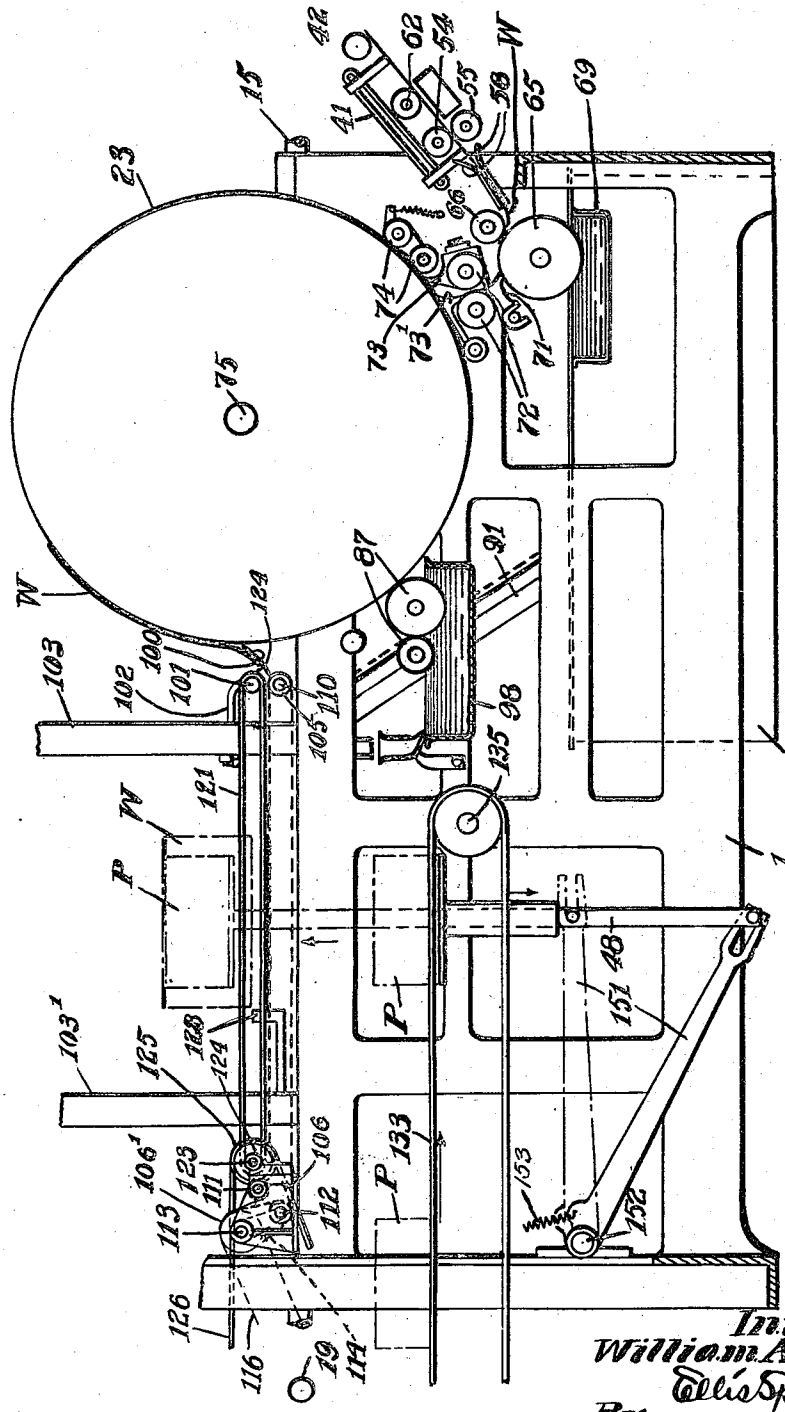
Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 6

FIG 9



Inventor
William A. Joplin.
Ellis Spear Jr.
By
Attorney

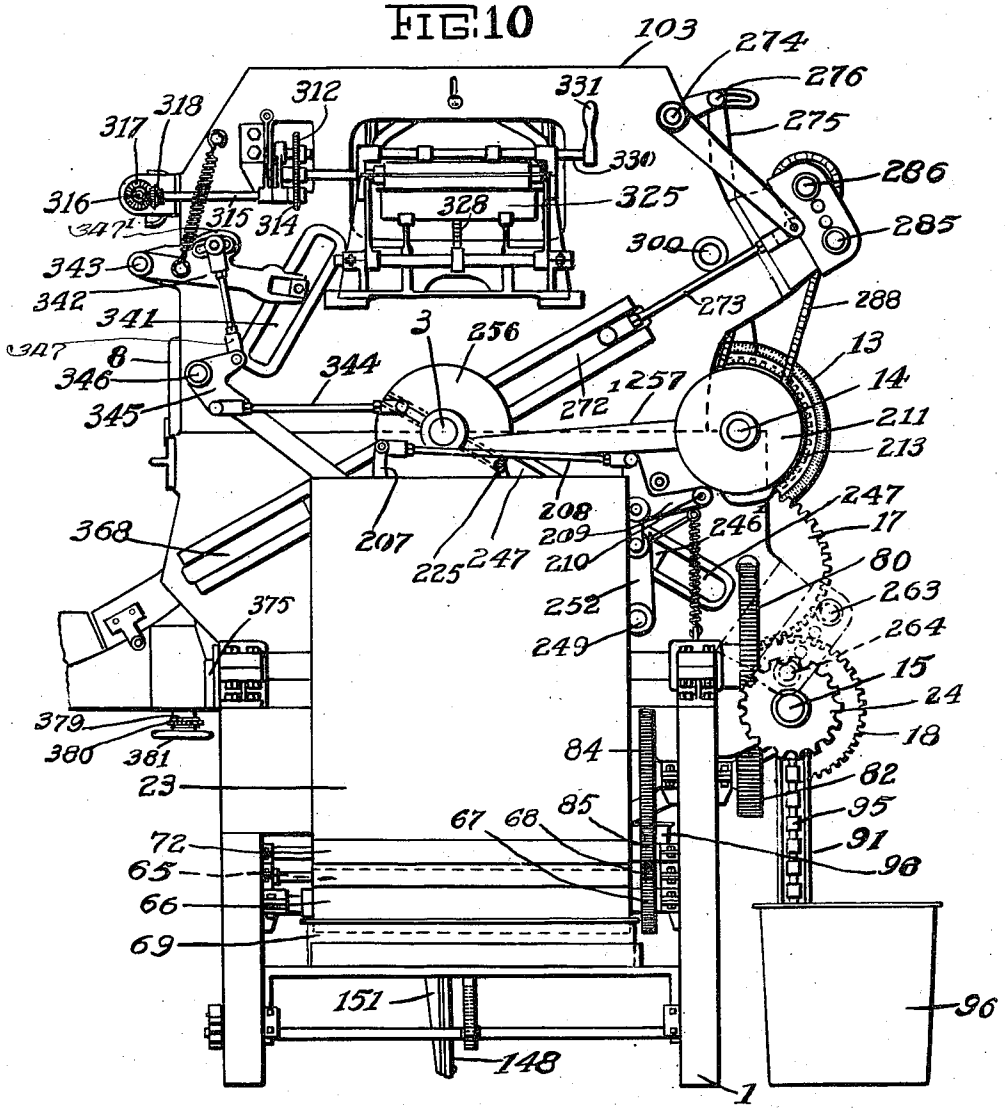
Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 7

FIG. 10



Inventor
William A. Joplin
Ellis Spear Jr.
By Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 8

FIG. 11

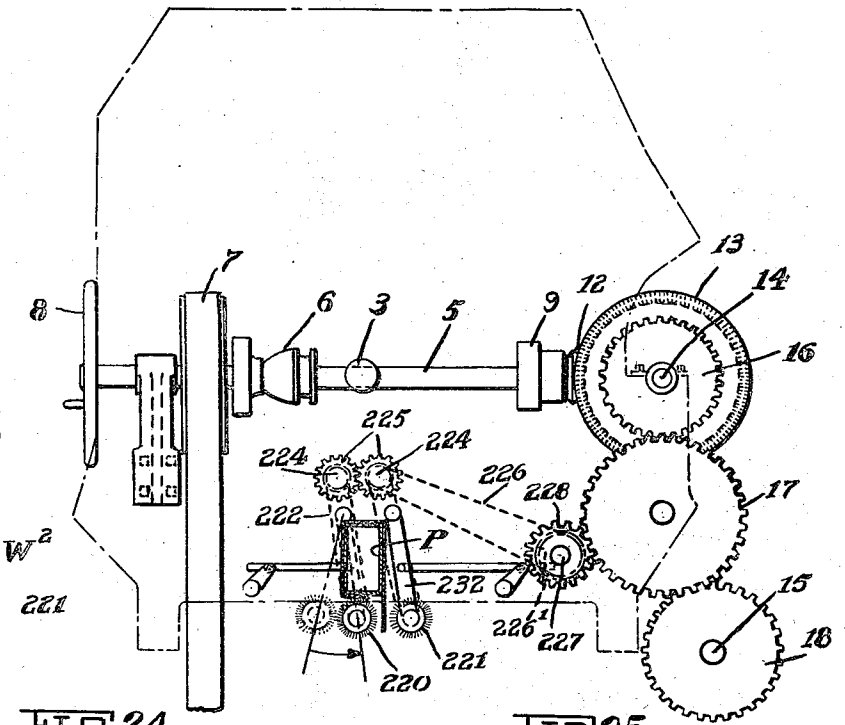


FIG. 12

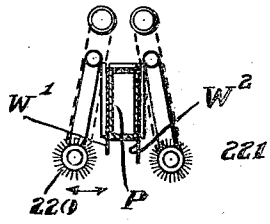


FIG. 24

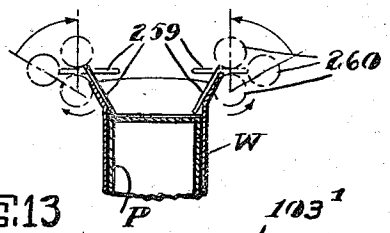


FIG. 25

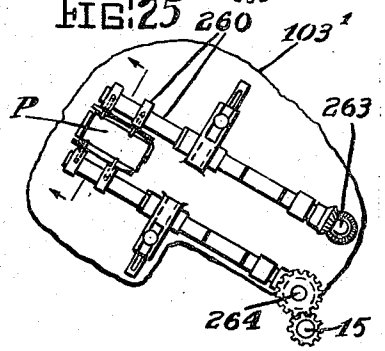
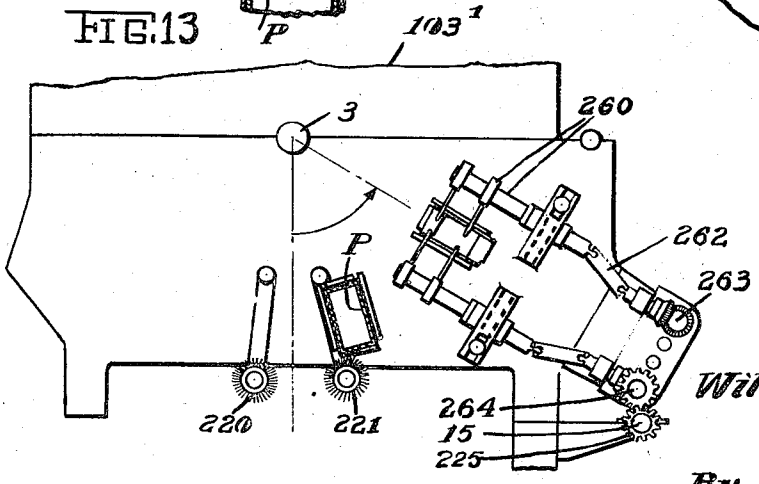


FIG. 13



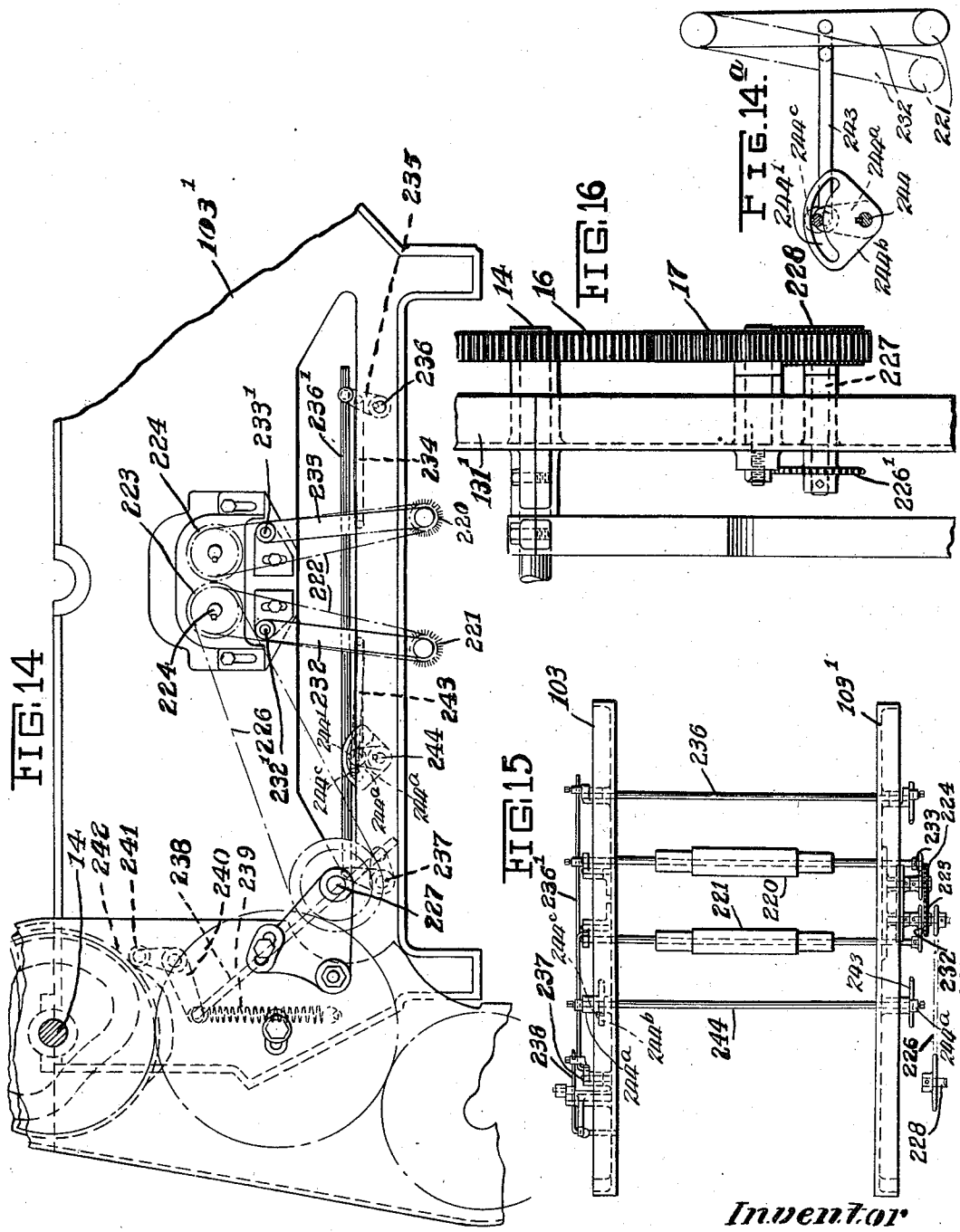
Inventor
William A. Joplin
Ellis Spear Jr.
By
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 9



Inventor
William A. Joplin
Ellis Spear Jr.
By
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 10

FIG. 17

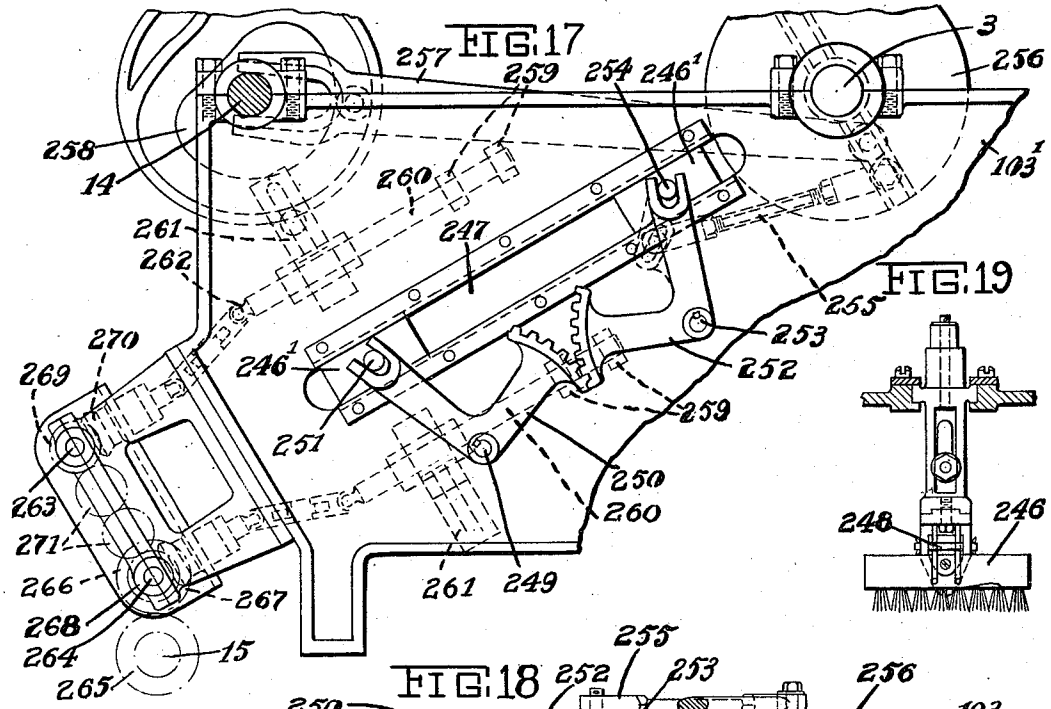
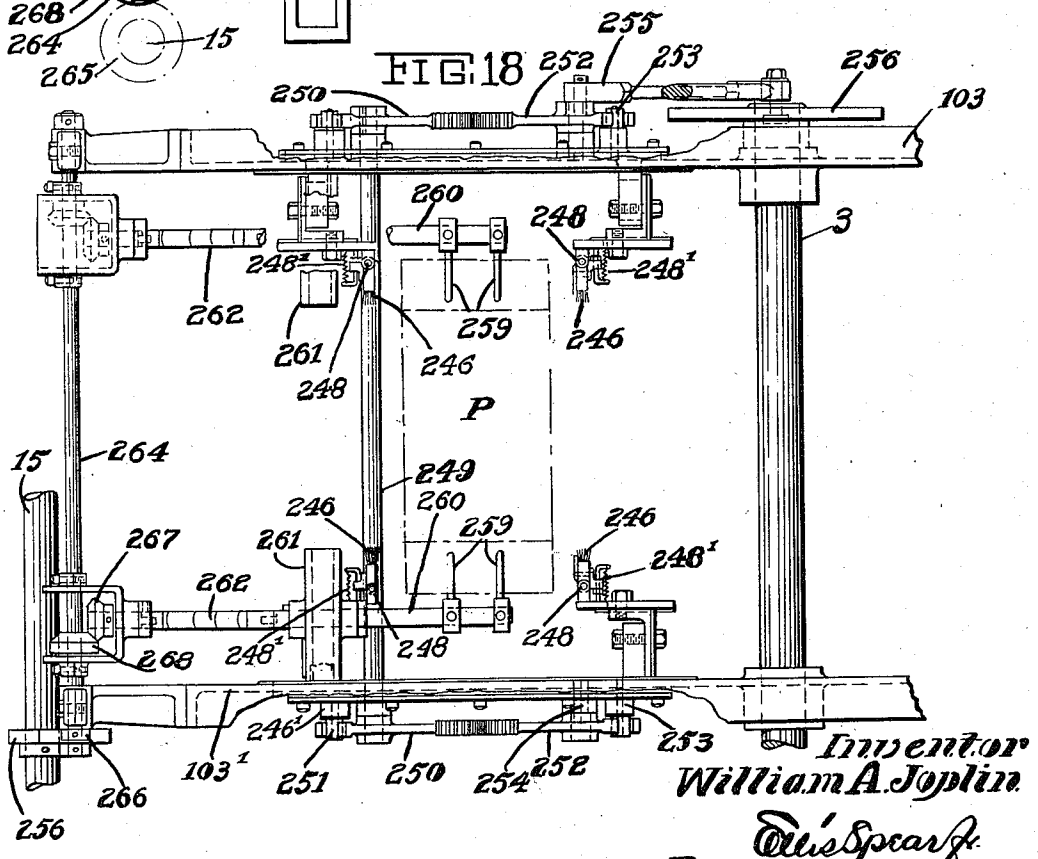


FIG. 19

FIG. 18



Inventor
William A. Joplin
By Otis Spear Jr.
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 11

FIG. 20

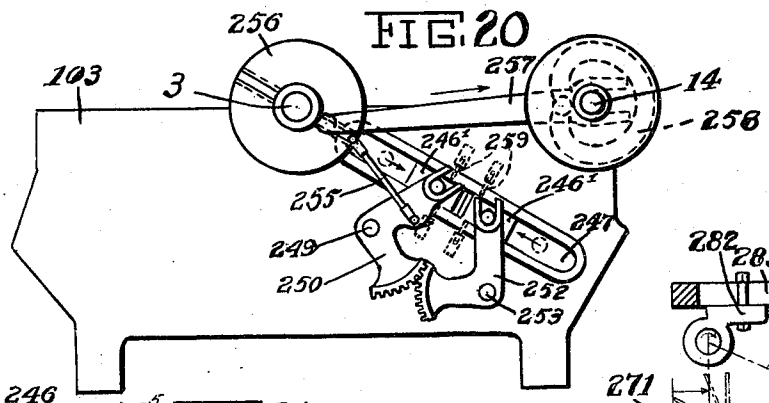


FIG. 28

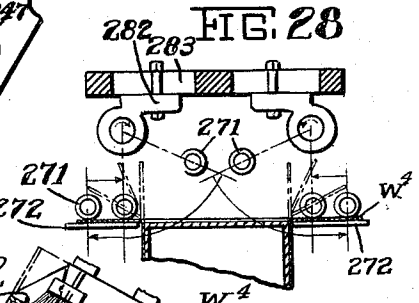


FIG. 21

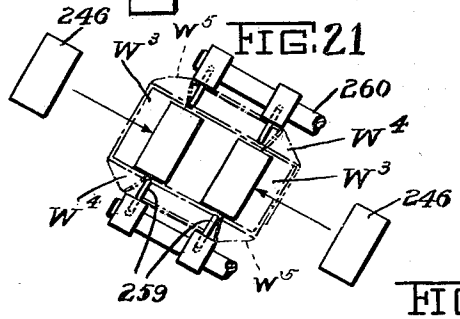


FIG. 22

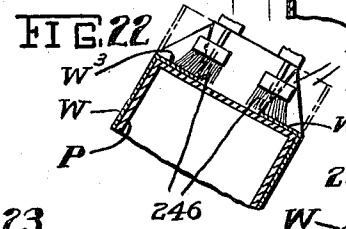


FIG. 29

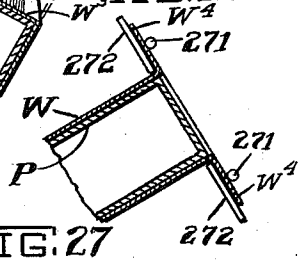


FIG. 23

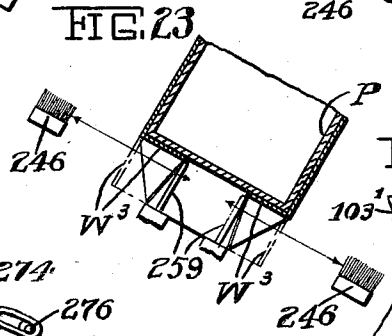


FIG. 26

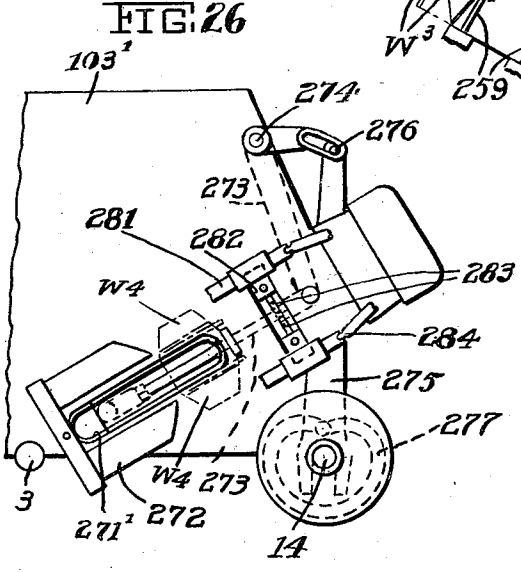
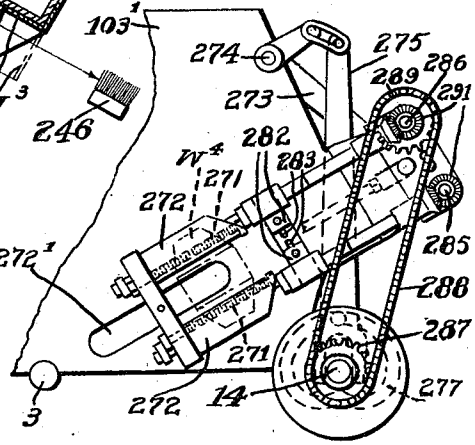


FIG. 27



Inventor
William A. Joplin
By Ellis Spear Jr.
attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11. 1921 20 Sheets-Sheet 12

FIG. 30

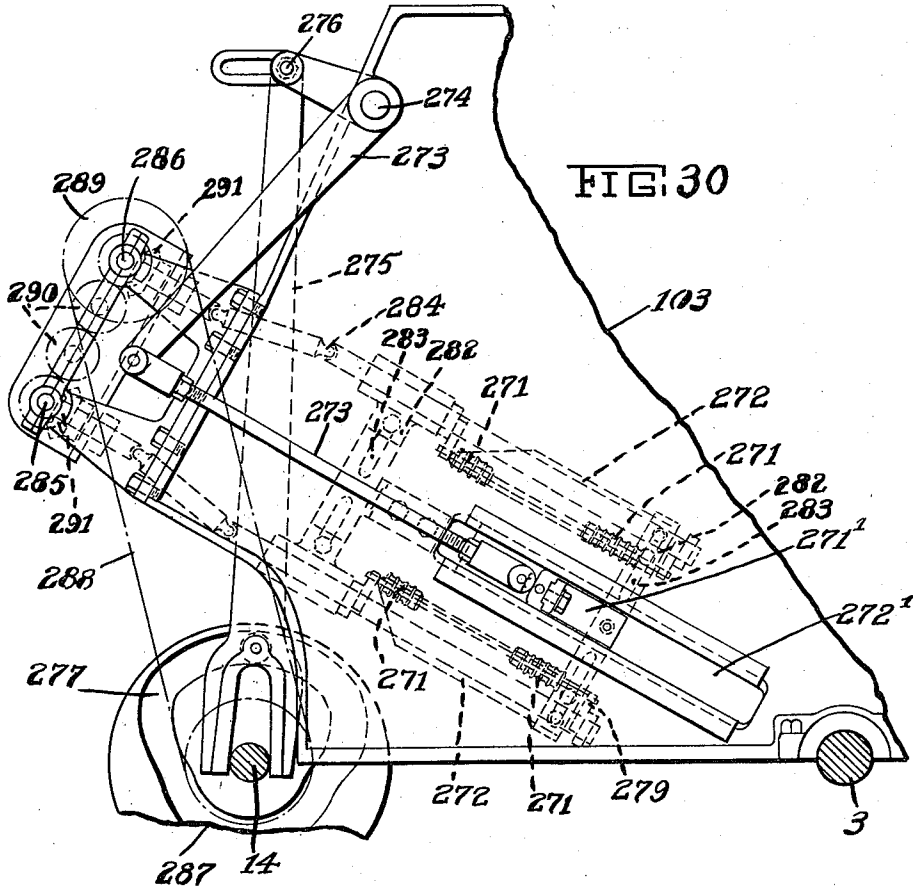


FIG. 31

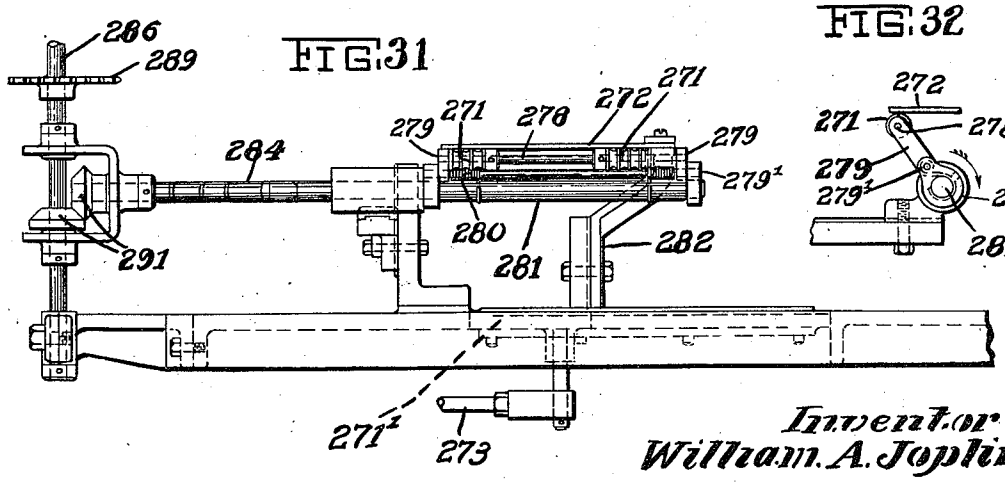


FIG. 32

Inventor
William A. Joplin.

By Ellis Spear Jr.
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 13

FIG. 33

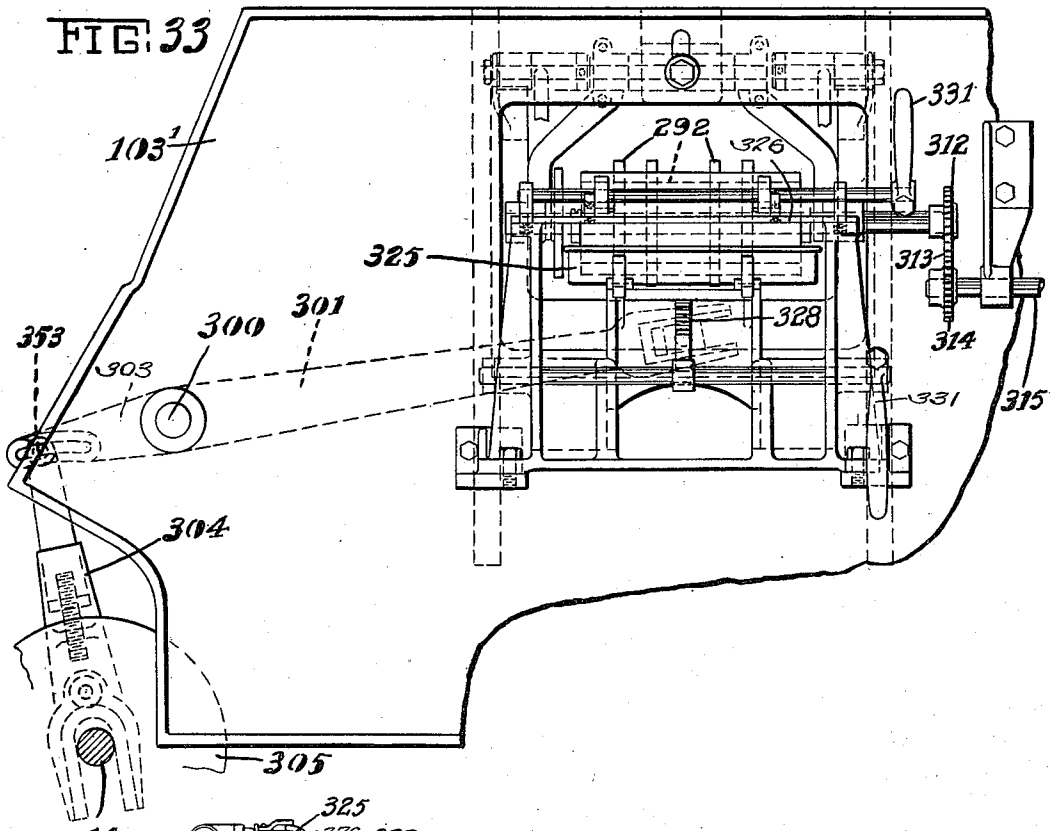
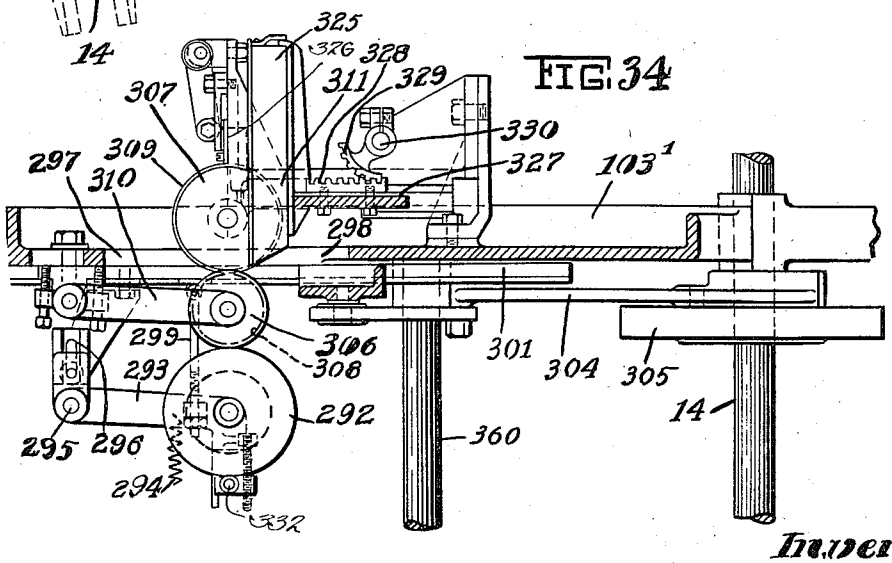


FIG. 34



Inventor
William A Joplin
Ellis Spear Jr.
By Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 14

FIG. 35

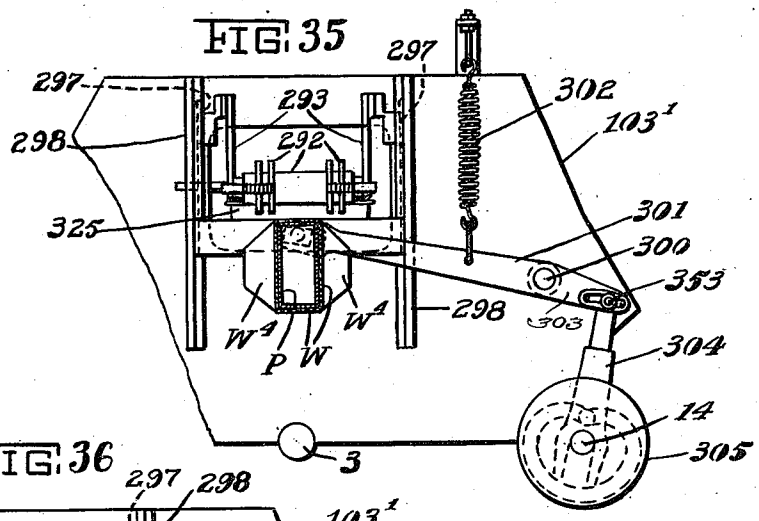


FIG. 36

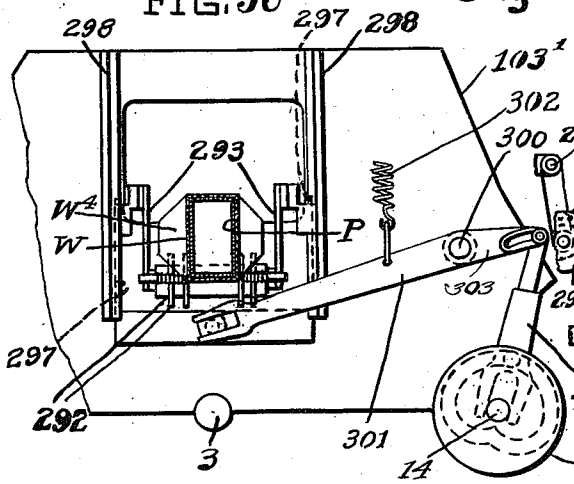


FIG. 37

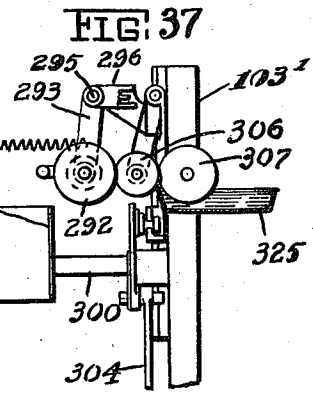


FIG. 38

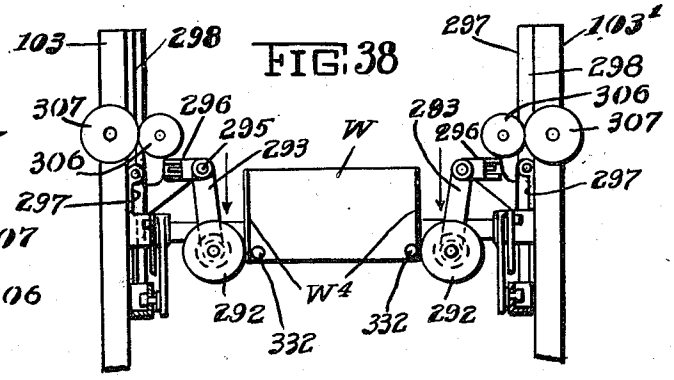
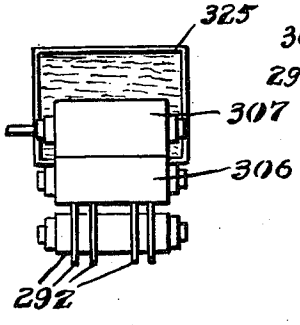


FIG. 39



Inventor
William A. Joplin

By Ellis Spear Jr.
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 15

FIG. 40

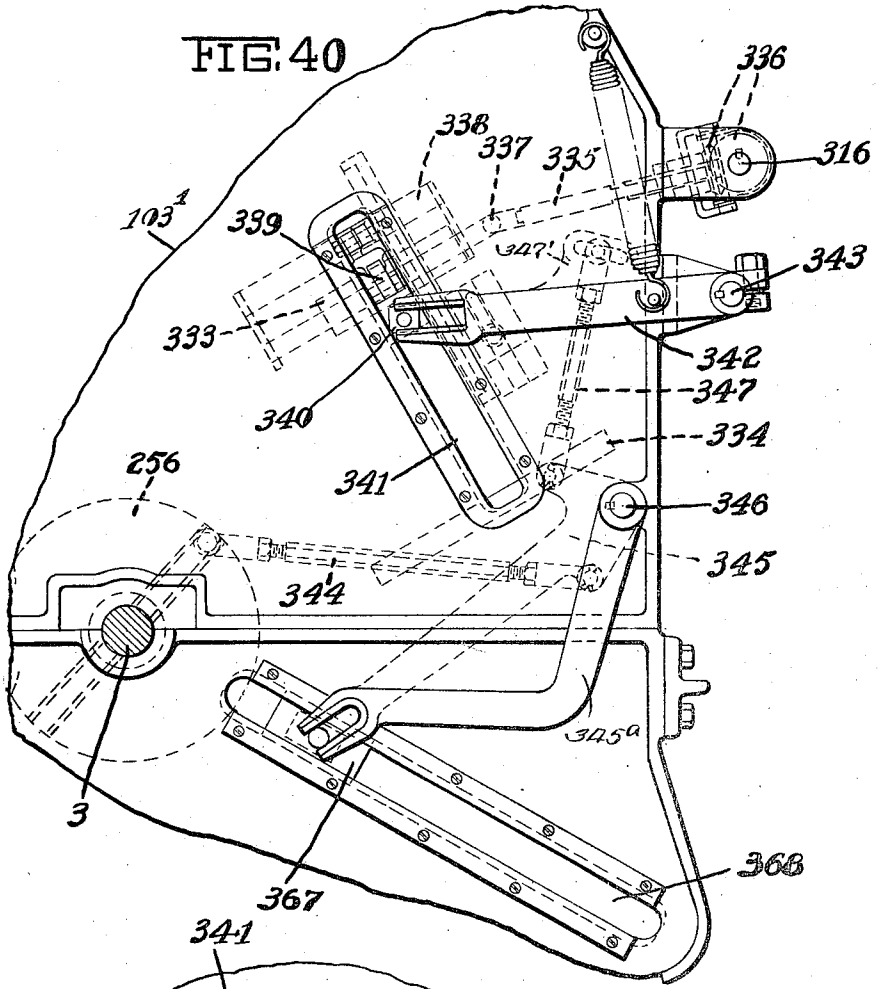
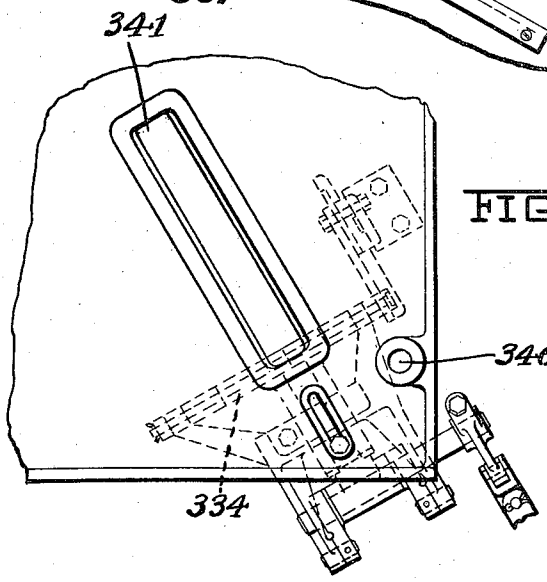


FIG. 41



Inventor
William A. Joplin
Ellis Spear
By
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 16

FIG. 42

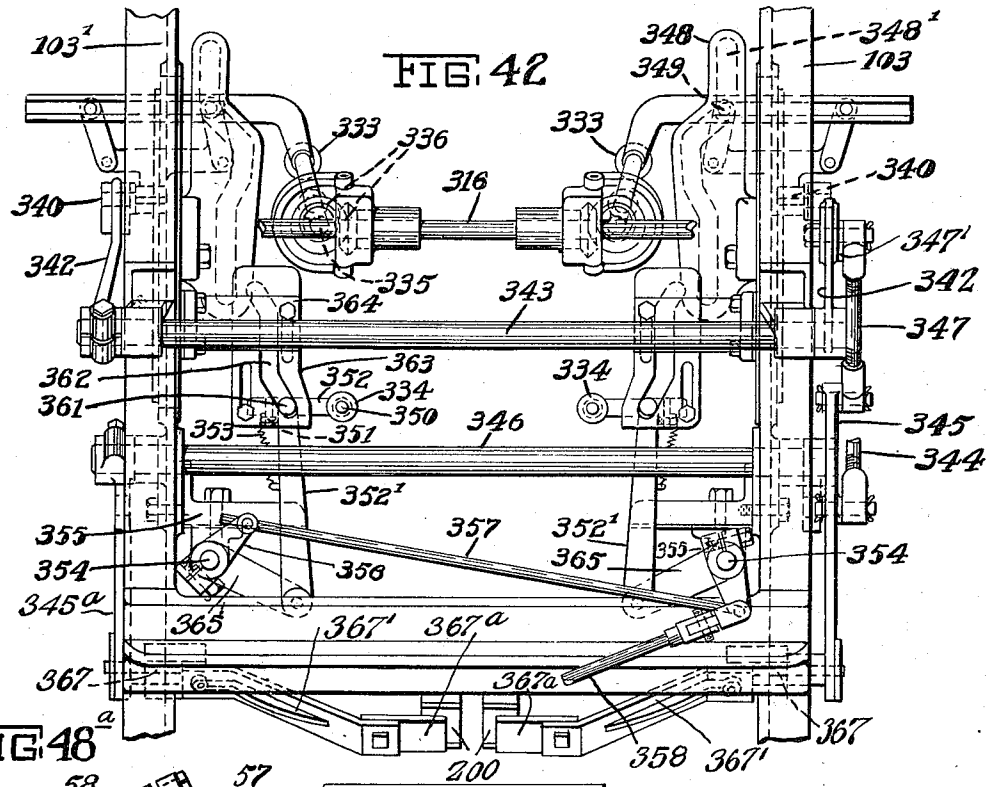


FIG. 48a

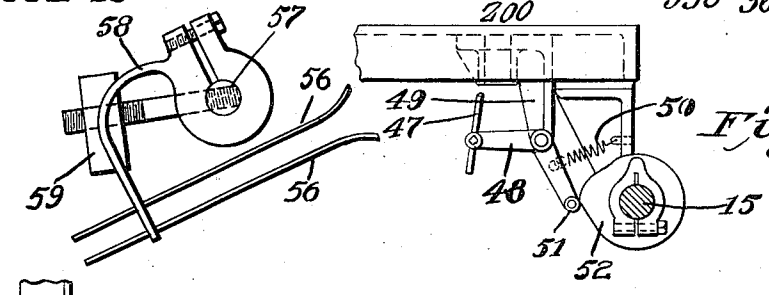
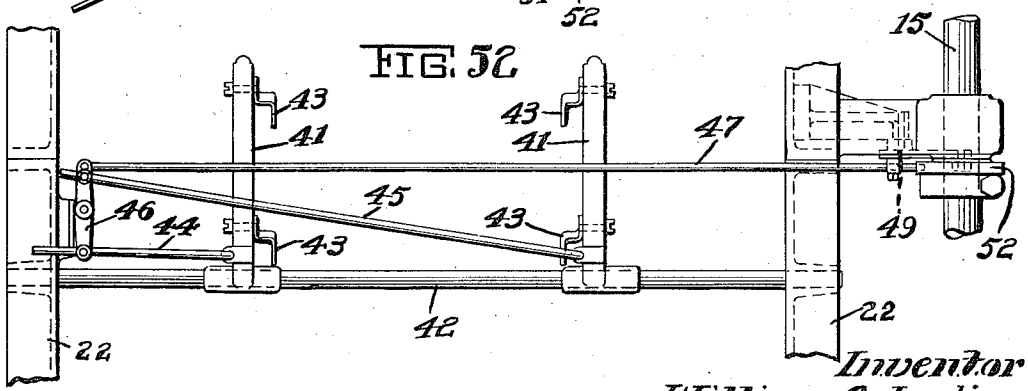


Fig. 53.

FIG. 52



Inventor
William A. Joplin
By Ellis Spear Jr.
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 17

FIG. 45

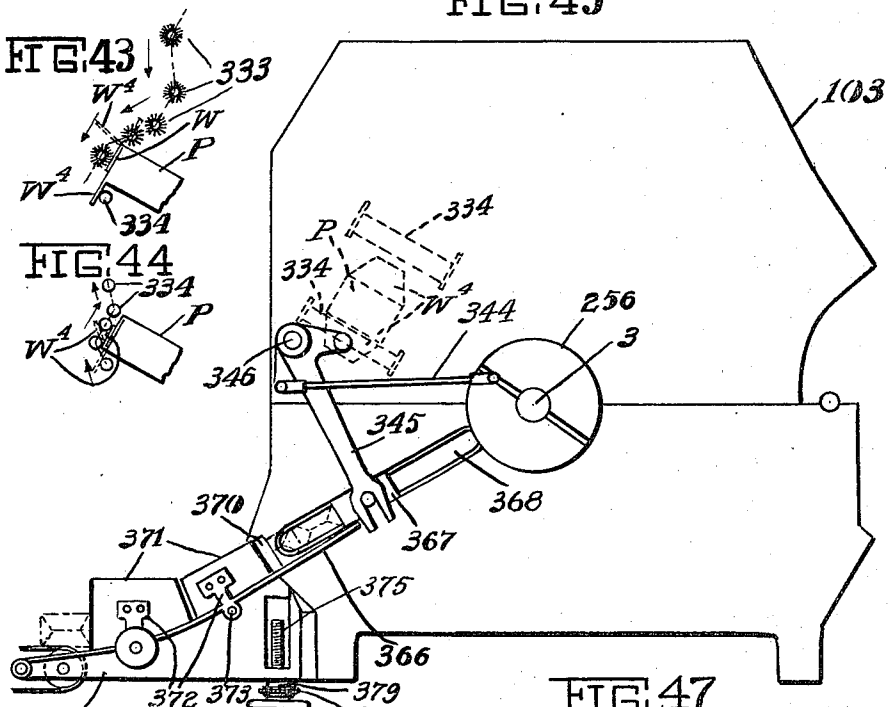


FIG. 43

FIG. 44

FIG. 46

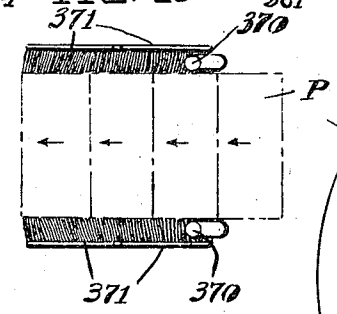
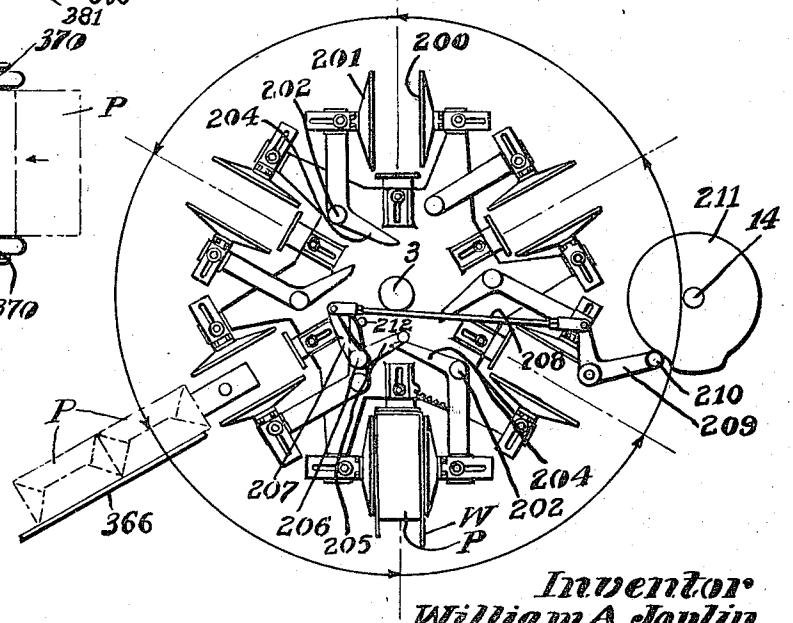


FIG. 47



Inventor
William A. Joplin
Wm. Spear Jr.
By
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 18

FIG. 48

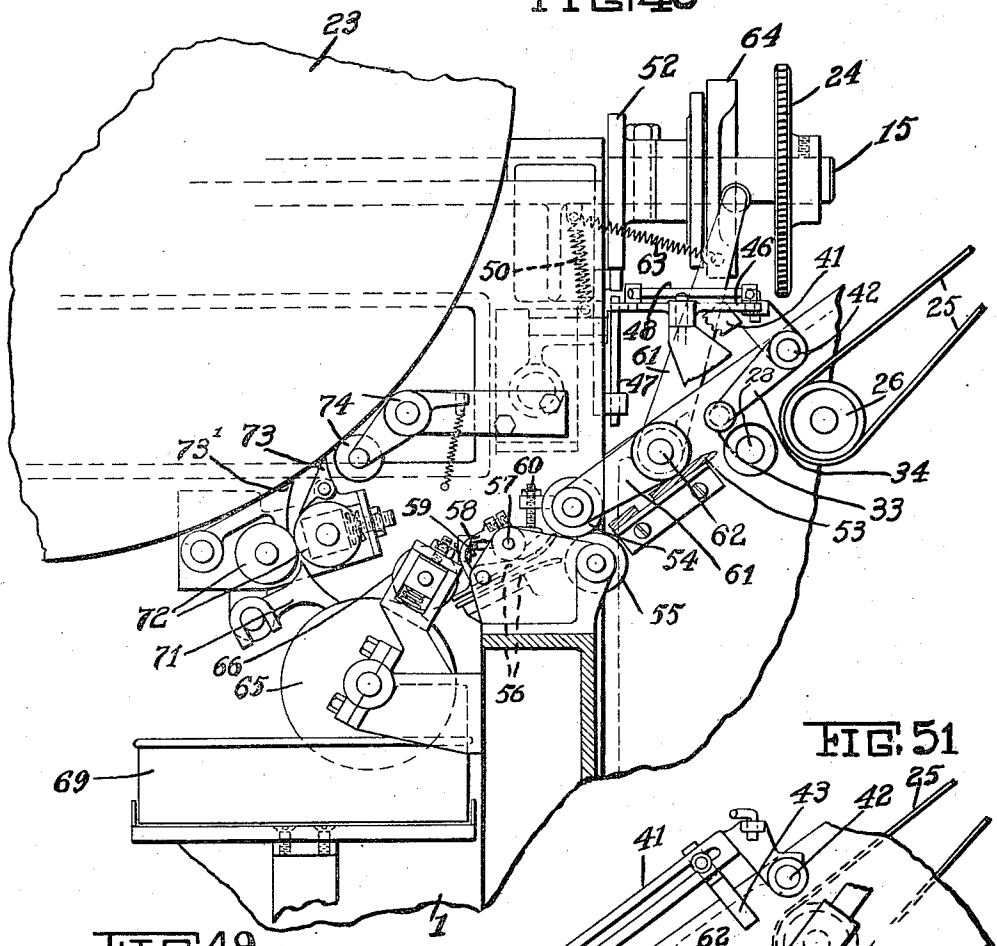


FIG. 51

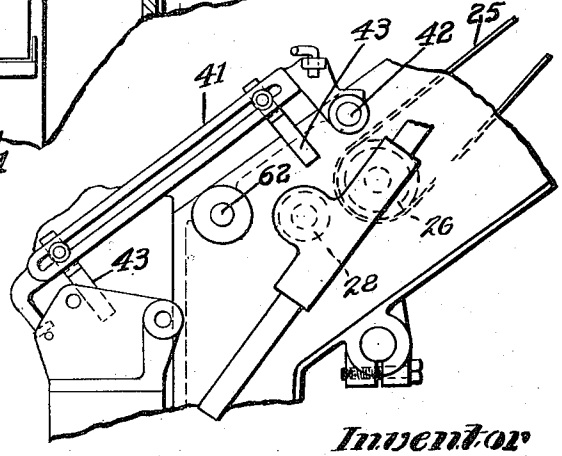
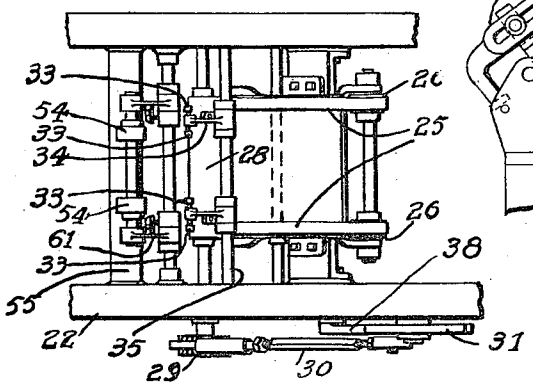


FIG. 49



Inventor
William A. Joplin
Ellis Spear Jr.
By
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 19

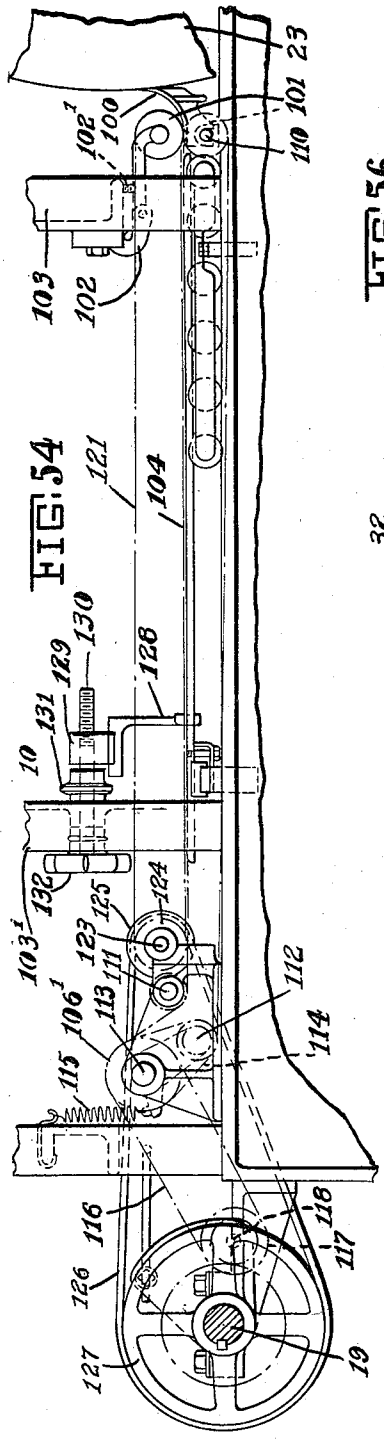


FIG. 54

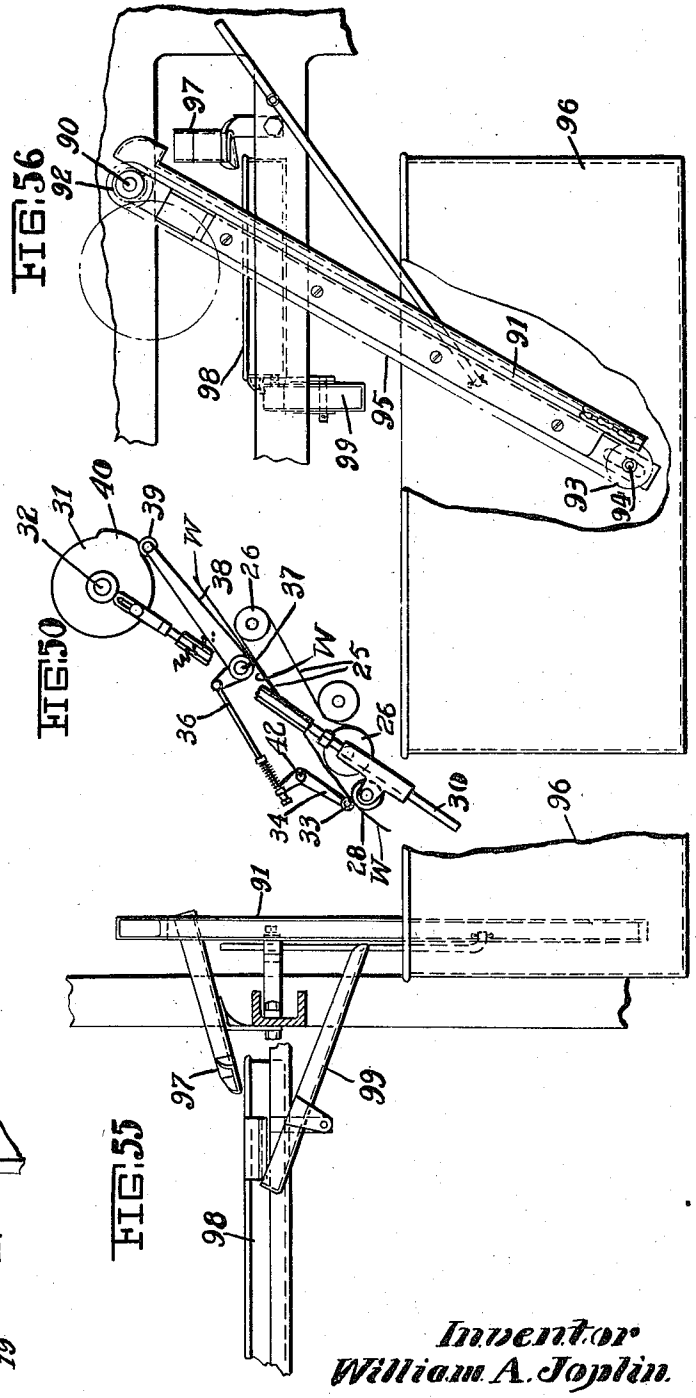


FIG. 56

FIG. 50

FIG. 55

Inventor
William A. Joplin
By Ellis Spear Jr.
Attorney

Nov. 9, 1926. 1,606,233

W. A. JOPLIN

PACKAGE WRAPPING MACHINE

Filed Jan. 11, 1921 20 Sheets-Sheet 20

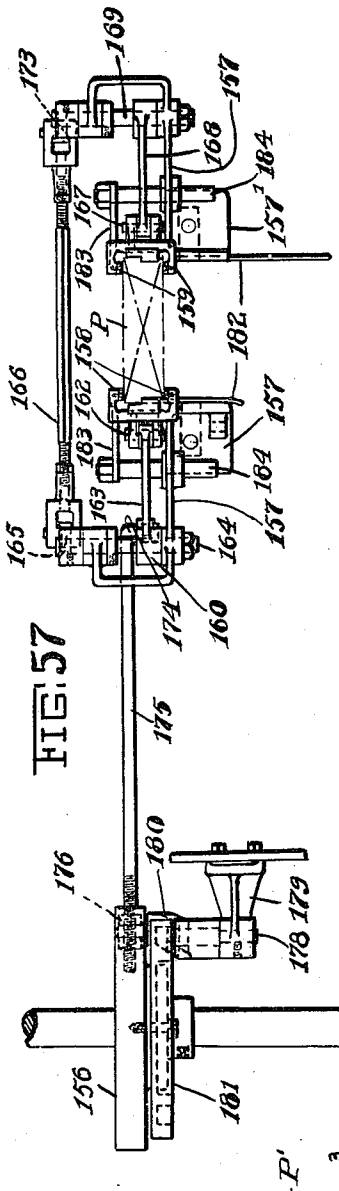


FIG. 57

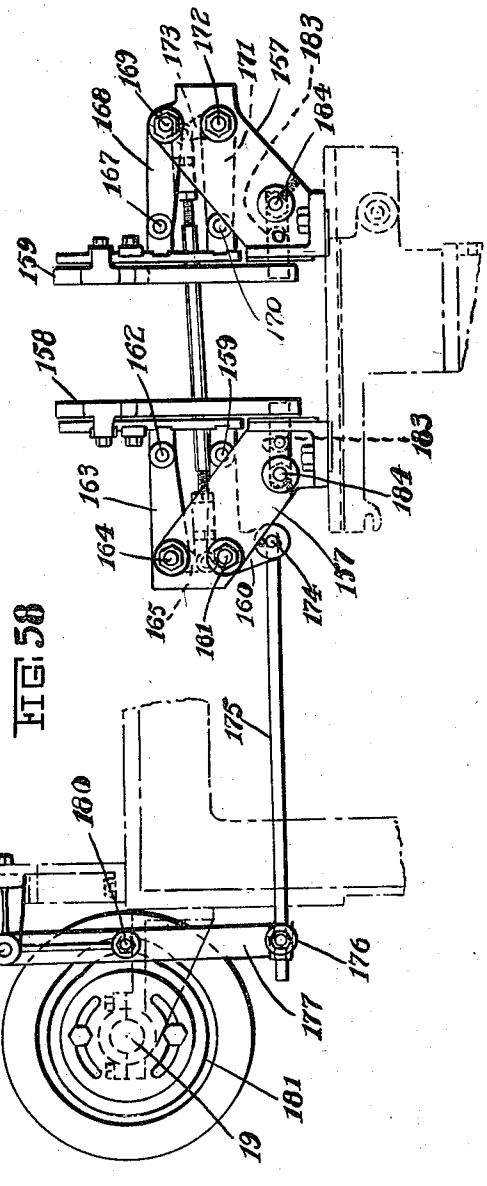


FIG. 58

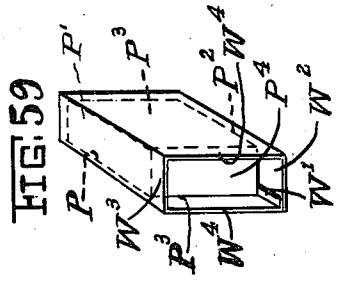


FIG. 59

Inventor
William A. Joplin
Ellis Spear Jr.
By
Attorney

Patented Nov. 9, 1926. 1,606,233

UNITED STATES PATENT OFFICE.

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PACKAGE-WRAPPING MACHINE.

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This invention relates to package wrapping machines, and particularly to a machine for applying an adhesively coated wrapper about a box or package in such manner as to exclude all air or moisture. Such packages are known in the art as "sealed wrapped" packages, and are generally used as containers for certain food products which are peculiarly susceptible to atmospheric changes and conditions. It is therefore of the utmost importance that the enclosing wrapper be adherently attached to all of the exterior walls of the package so as to entirely close the package and protect the contents from deterioration.

To the end therefore of providing a machine which will reliably and efficiently apply the wrapper in the foregoing manner, I have devised my present invention. My invention is characterized by a completeness and perfection of seal which has not been attained heretofore in prior machines. This is due in part to the nicety of operation of the successive fold laying mechanisms and in part to the introduction into the sequence of operation of an additional application of glue to the uncoated faces of the overlap of the wrapper at the ends of the package and to the ends of the package itself. In the ordinary wrapped package of this class the folds at the end of the carton are simply sealed down one upon the other, the adhesive which was initially applied to the wrapper being relied upon to maintain the engagement. This results in a looseness and imperfection of seal at the ends of the package, due in part to the extended areas of unglued contact surfaces which are brought together as compared with the relatively slight glued contact areas, and in part to the fact that where the contact surfaces are not united, spaces are left through which air or moisture may penetrate and injure the package contents.

According to my invention the wide flaps of the wrapper at the ends of the carton are initially held out to permit the narrow flaps to be sealed down squarely across the package ends, whereupon the wide flaps are pressed outwardly and creased along definite lines to define the fold of the flaps and to permit additional adhesive to be applied close to the edges of the carton adjacent the lines of fold of said wide flaps where the seal is apt to be quite loose. The wide flaps are then successively overfolded one upon the other and sealed down to the narrow flaps. This results in a tightly wrapped and sealed package which is air and moisture tight.

The construction and operation of my invention, together with a selected embodiment which well illustrates the principles involved, is described and shown in the accompanying specification and drawings, and the novel features thereof particularly pointed out in the appended claims. Throughout the specification and drawings like reference characters are correspondingly applied, and in the drawings:—

Fig. 1 is a partial side elevation of a wrapping machine in accordance with my invention, the discharge chute for the wrapped packages and portions of the wrapping mechanism being omitted for clearness of illustration.

Fig. 2 is a rear elevation as viewed from the left in Fig. 1.

Fig. 3 is a detail view of the cams and associated mechanism for actuating the package set-over mechanism and the last end fold mechanism.

Fig. 4 is a vertical section through the wrapping head of the machine.

Fig. 5 is a detail view of the mechanism for opening and closing the chucks or pockets of the rotatable wrapping spider.

Fig. 6 is a partially stripped horizontal section particularly illustrating the wrapper transfer mechanism.

Fig. 7 is a detail section particularly illustrating the supports for the wrapper transfer chains.

Fig. 8 is a partial side elevation of the machine as viewed from the opposite side to that of Fig. 1.

Fig. 9 is a partial longitudinal section particularly illustrating the package elevator.

Fig. 10 is a front elevation of the wrapping head as viewed from the right in Fig. 1.

Figs. 11 to 16 inclusive are views particularly illustrating the mechanism for and method of folding and sealing the overhanging ends of the wrapper to the bottom edge of the carton.

Figs. 17 to 25 inclusive are details and

diagrams showing the mechanism for and manner of sealing down the narrow end flaps of the wrapper while holding out the wide end flaps of the wrapper.

Figs. 26 to 32 inclusive are details and diagrams showing the mechanism for and manner of holding out and creasing the wide end flaps of the package to define the folds of said flaps and to permit an application of glue to the uncoated faces of the sealed down narrow end flaps adjacent the lines of fold of the wide flaps and on the wide flaps also.

Figs. 33 to 39 inclusive are details and diagrams showing the mechanism for and manner of applying such additional adhesive.

Figs. 40 to 44 inclusive are details and diagrams illustrating the construction and operation of last end fold mechanism.

Figs. 45 to 47 are views illustrating the discharge of the wrapped and sealed package from the wrapping spider.

Fig. 48 is a partial side elevation at the glue drum and as viewed from the near side of the machine in Fig. 1.

Fig. 48[a] a detail of release fingers.

Fig. 49 is a partial plan view of the reversible register roll to control the feed of the wrapper to the glue drum.

Fig. 50 is a side elevation thereof and showing the wrapper release which operates from a cam on the same crank which operates the register roll.

Figs. 51 and 52 are a side and a plan view, respectively, of the final paper register mechanism for registering the wrapper with the glue drum.

Fig. 53 is a detail view showing a portion of the operating mechanism for such register.

Fig. 54 is a detail view illustrating a portion of the wrapper transfer mechanism.

Figs. 55 and 56 are views of the glue pump or elevator.

Figs. 57 and 58 are detail views of the package guide mechanism for guiding the package from the package elevator into the registering pocket of the rotatable wrapping spider, and

Fig. 59 is a view of the package with wrapper laid thereover.

Terminology.

For the purposes of this application the adhesively coated covering sheet will be referred to hereinafter as the wrapper W and the box, carton or other article to be wrapped will be referred to as the package P. As shown herein such package is a walled container of oblong shape having a top edge P^1, a bottom edge P^2, front and back panels P^3, and end walls P^4. The wrapper W is of sufficient length to completely envelop all faces of the package and of sufficient width to overlap the package ends, so that when the overlaps are folded and sealed the package ends are completely covered.

General method of operation.

The packages P and wrappers W are fed from opposite ends of the machine and in different horizontal planes towards each other, meeting at a central wrapping station where each package is inserted into a wrapper correctly positioned with respect thereto. In its feed towards the wrapping station, each wrapper has its inner face automatically coated throughout with adhesive and if desired such face may also be moistened with water prior to the application of the adhesive thereto.

The wrapping station is an intermittently rotatable spider having a plurality of radially disposed pockets, (here shown as six), corresponding to the successive stages or phases in the cycle of wrapping and delivering a wrapped, sealed package at the completion of each revolution.

The first step in the wrapping cycle consists in inserting the package with wrapper laid about it into the lowermost pocket of the spider, which is then open to receive the package but immediately closes to firmly clamp the inserted package.

In this step the first portion of the package to contact the coated face of the wrapper is the top edge P^1 which is laid against the wrapper substantially centrally thereof so that the adjacent portions of the wrapper will contact and cover the front and back panels P^3 of the package. As the spider begins its initial phase of rotation the pocket thereof is closed about the inserted package and wrapper and the overhanging ends W^1 and W^2 of the wrapper are next successively laid against the bottom edge P^2 of the package. At this stage the package is disposed completely within the wrapper which is laid about and sealed to it in two different dimensions, while in the third dimension it overhangs each end of the package in a closed extension or overlap, which is next overfolded and sealed down to the package ends at the next or second step in the rotation of the spider. In such action two opposite portions of the overhang at each end of the package are first turned inwardly towards each other while the intermediate portions of the overhang are held out from each other, thereby producing respectively the narrow end flaps W^3 and the wide end flaps W^4. At this point I introduce a novel step of great practical importance consisting in determining the diagonal folds W^5 which define the ultimate shape of the wide end flaps W^4 and at the same time uniting the contacting faces of said portions W^5 and W^4, thus securing a permanency of fold and

a definite set of the wide end flaps in the plane of the package end and forming a right angle crease with said package end. This occurs at the succeeding or third step in the cycle of the wrapping spider and not only removes the wide end flaps from any possible interference in the further steps of wrapping, but it exposes the outer uncoated faces of the sealed down narrow end flaps and the inner faces of the wide flaps themselves for an application of adhesive which is applied at the succeeding or fourth step in the spider cycle. After such application the wide end flaps are successively sealed across the ends of the package. This is the fifth step in the spider cycle. The sixth and final step opens the pocket to permit the discharge of the sealed and wrapped package.

General structure and relation of parts.

Briefly stated, my machine comprises a wrapper feed mechanism including guides, registers and stops for the wrapper, a moistening device, a primary gluing mechanism, a wrapper transfer mechanism operating between the gluing mechanism and the wrapping station, a wrapping station in the form of an intermittently rotating spider having a plurality of radially disposed package receiving jaws or pockets, a package feed mechanism, a package set-over for moving the packages successively from the package feed mechanism into alignment beneath the wrappers, a package elevator for carrying each package and its overlying wrapper into the lowermost pocket of the wrapping spider, mechanism for sealing down the overhanging ends of the wrapper to the bottom edge of the package, mechanism for holding out the wide end flaps of the wrapper and for sealing down the narrow end flaps, mechanism for folding back and creasing the wide end flaps, mechanism for applying glue to the sealed down narrow end flaps, mechanism for successively laying the wide end flaps over the ends of the package, and mechanism for ejecting the sealed and wrapped package from the spider.

Main frame and drives.

Mounted between the ends of the frame 1 is a pair of spaced vertical uprights constituting the wrapping head 2 of the machine. Journaled longitudinally of the machine between said uprights is the shaft 3 of the intermittently revoluble wrapping spider 4. The wrapper feed mechanism is at the front end of the machine, as viewed in Fig. 1, the package feed mechanism at the rear end, and the wrapped packages discharge laterally from the spider at the rear side of the machine in said figure, and as clearly shown in Fig. 2.

Referring to Fig. 2, the main drive shaft 5 of the machine is journaled transversely thereof in rear of the wrapping spider. The shaft 5 is driven from any suitable power source, subject to the clutch 6 by the pulley 7, and is provided at one end with a hand wheel 8 whereby it may be slowly rotated by hand when desired, as in testing changed adjustments, etc. Near the opposite end said shaft is provided with an independent clutch 9, subject to the main clutch 6, for throwing out the drive of the wrapping spider and associated wrapping instrumentalities when desired. The clutch 9 is manually shifted by means of a shipper lever 10 linked thereto as at 11.

Beyond the clutch 9 the shaft 5 has a bevel pinion 12 which meshes with a bevel gear 13 on the main cam shaft 14 of the machine, which shaft extends longitudinally of the machine at the far side thereof, as viewed in Fig. 1. The wrapping spider and wrapping instrumentalities are driven from the main cam shaft 14 in properly timed sequence, as will be explained in detail hereinafter in connection with the description of the individual wrapping elements.

Journaled beneath the cam shaft 14 and parallel thereto, is a shaft 15 for driving the wrapper feeding, wrapper transfer, and package feeding mechanisms and their associated parts, as well as certain of the wrapping elements. Shaft 15 is driven from cam shaft 14 by the gear train 16, 17, 18, (see Fig. 8), and in turn drives a cam shaft 19 journaled transversely across the rear end of the machine parallel to and beneath the main drive shaft 5, as appears in Figs. 2 and 8, through intermeshing bevel gears 20 and 21.

Wrapper feed.

The wrappers W are stacked on a wrapper elevator at the forward end of the machine and are fed singly down an inclined platen or bed 22 (Figs. 48, 51) to a glue drum 23 journaled transversely of the machine in advance of the wrapping head. The particular mechanism for elevating and feeding the wrappers to the bed 22 forms no part of the present invention, although it may be noted that such mechanism is driven from the shaft 15 through the sprocket 24.

The wrappers are fed singly down the inclined platen 22 by traveling belts 25 operating over sheaves 26 and are suitably guided in such travel. At a predetermined point in its travel, each wrapper is temporarily checked and squared or registered to insure accurate positioning upon the glue drum 23.

Wrapper register.

Such register comprises a reversibly rotatable roll 28, Fig. 49, over which the wrapper passes. The rotation of the roll 28 is alternately reversed by a pinion 29 fast

thereon and a rack bar 30 meshing with said pinion and reciprocated by a drive 31, on the paper feed shaft 32 of the machine. (See Fig. 50.) When the roll 28 is rotated in reverse direction to the feed of the wrapper, the wrapper is temporarily checked in its travel and is automatically squared or registered, so that it will be fed accurately forward when the rotation of said roll is reversed in the return throw of the rack bar.

Such registration is effected by a pair of laterally shiftable longitudinally slotted registry arms 41 (Fig. 52), slidably mounted on a bearing rod 42 and having wrapper guiding fingers 43 (Fig. 51) adjustable in the slots thereof and adapted to engage the lateral edges of the wrapper which feeds down the platen 22 between said arms and to shift the wrapper as required to properly line it up relative to the glue drum.

The arms 41 are adjustably linked at 44, 45 to a lever 46 which is connected at 47 to a bell crank lever 48. The lever 48 is mounted in a bracket 49 carried by one side rail of the main frame of the machine, (Fig. 53), is under spring control, as indicated at 50, and has a roll 51 actuated by a cam 52 on the shaft 15. The actuation of the cam 52 through the described connections shifts the arms 41 towards and from each other to line up the wrapper.

Wrapper release.

Cooperative with the register roll, is an overlying guide and release mechanism comprising two or more pairs of release rolls 33, (Fig. 49) overlying the roll 28 and carried by arms 34 which are mounted to turn about the transverse rod 42. The rolls 33 alternately engage and release the wrapper as the arms 34 are rocked on said rod, and have extensions in which are pinned spring-tensioned rods 36, (Fig. 50). The rods 36 are connected with and rocked from a rock shaft 37 by a spring-tensioned lever 38 having a cam roll 39 disposed for actuation by a cam surface 40 on the crank disc 31 of the paper feed shaft 32. The release rolls 33 are therefore raised and lowered relative to the wrapper in properly timed relation with the reversing roll 28, since both the rack bar 30 for reversing the roll 28 and the lever 38 for rocking the release rolls 33 receive their actuation from the same element, viz, the crank disc 31.

Water rolls.

From the registry mechanism, the wrapper passed by gravity over a guide plate 53 (Fig. 48). The rolls 54 and 55 are normally separated and the wrapper passes between them while separated and into a pair of opposed guide fingers 56 above which is pivoted at 57 a plurality of stop fingers 58. The fingers 58 mounted on rock shaft 57 are retained in their lowered position by means of the weight 59 on arm 57. The shaft 57 is rocked by the contact between a lug on the opposite end of the weight arm with a screw 60 mounted on the arm of a lever 61 which is pivoted at 62, is under spring control as indicated at 63, and is actuated by a cam 64 on the shaft 15. The release of the wrapper by the stop finger 58 is effected by the drop of the lever 61 carrying the roll 54. The roll 54 therefore presses the wrapper immediately upon its release by the fingers 58 down against the roll 55, which is continuously driven in any suitable manner. As here shown the roll 55 is driven from the train of gears which drives the glue drum 23 by a sprocket and chain drive 55′ indicated in dotted lines, Fig. 1. The wrapper then feeds between a water drum 65 and an overlying spring backed distributing roll 66 which are intergeared as indicated at 67, 68 (Fig. 8) to rotate in unison. The drum 65 operates in a water tank 69, (Figs. 8 and 48) which may be adjustably mounted relative to the drum as indicated at 70, Fig. 8.

The moistened wrapper is stripped from the water drum by a stripper 71 and is guided between a pair of suitably driven feed rolls 72, from which it is stripped by strippers 73 and 73^1 and firmly pressed against the periphery of the rotating glue drum 23 by the spring tensioned presser rolls 74, and the drum 23 now assumes the feed of the wrapper. The rolls 72 are driven from the gearing between the water drum 65 and the glue drum 23 shown in Fig. 8.

Glue drum drive and supply.

The glue drum 23 is a cylinder mounted on a shaft 75 journaled transversely of the machine in advance of the wrapping head and is continuously driven from the shaft 15 by a pinion 76 thereon (Fig. 8) meshing with a bevel gear 77 on a stub staft 78. Fast on the stub shaft is a compound gear 79 with which meshes gears 80 and 81. Gear 80 is fast on the glue drum shaft 75 and meshes with a small pinion 82 rotatably mounted on a fixed stud 83. A large pinion 84 pinned to pinion 82 and free on the stud 83 meshes with the pinion 85 of the water roll drive 68, 67. Gear 81 meshes with a pinion 86 on the shaft of one of a pair of glue supply rolls 87 which are geared together to rotate in unison, as indicated at 88, Fig. 6, and also with a pinion 89 on the upper shaft 90 of a glue pump or elevator 91, (Figs. 55 and 56). Said shaft has a sprocket 92 over which and a sprocket 93 on the lower shaft 94 of the pump runs a sprocket chain 95. The glue from the glue tank 96 is carried upwardly by the glue elevator and discharged at 97 into a glue pan

98 within which one of the glue rolls 87 rotates. Overflow glue from the pan 98 is returned to the tank 96 by spillway 99.

Wrapper transfer.

The coated wrappers are individually stripped from the glue drum 23 by the strippers 100 (Fig. 54). Each wrapper thus stripped from the drum is guided beneath a transverse series of spaced rolls 101 which are grooved to receive belts 121, Figs. 6, 9 and 54, running over pulleys 124 on a transverse shaft 123 at the opposite end of the wrapper transfer. The belts 121 overlie sprocket feed chains 104 operating over sprockets 105 mounted on a shaft 110 which is journaled beneath the arms 102 which carry the rolls 101, said arms being yieldably mounted at 102′ on the forward upright 103 of the wrapping head uprights 103, 103′. The feed chain sprockets at the opposite end of the wrapper transfer are indicated at 106 and are mounted on the shaft 113 (see Fig. 6). As here shown, there are six feed chains, of which the two outer chains are disposed at slightly higher levels than the inner chains whereby to cause the wrapper to sag towards its center, and thereby to prevent any tendency to curl in the opposite direction when it strikes the stops. Each chain operates over a longitudinally extending chain support bar 107. The bars 107 are adjustably clamped at 108 onto transverse supports 109 (Fig. 7) carried by the side rails of the machine frame, and are capable of adjustment towards and from each other. The sprockets for the chains are likewise adjustable along their shafts and with the bars 107 thus permit adjustment of the chains towards and from each other for wrappers of varying width.

Feed chain drive.

The shaft 113 is a driving shaft and its sprockets are fixed thereon. The shaft 111 and the stud 112 carry idler sprockets, the studs 112 being on idler arms 114 loosely mounted upon the shaft 113, and are spring tensioned as indicated at 115, Fig. 54, thereby to admit of varying the tension of the feed chains. The shafts 111, 112 and 113 have idler sprockets past which the feed chains run.

The shaft 113 receives the drive, and is driven at increased speed from the cam shaft 19 by sprocket 106^1 on shaft 113, chain 116, sprocket 117 loose on a shaft 118, adjacent shaft 19 and is driven therefrom by the intermeshing pinion 119 fast to sprocket 117 and pinion 120 fast on said shaft 19. Said shaft 118 is mounted in an adjustable bracket 118^1 (see Fig. 6) for the purpose of tightening chain 116.

Overhead bearing on the wrapper as it travels along the feed chains is maintained by the lower runs of the series of guide belts 121 which travel above the chains. The belts 121 travel over the grooved rolls 101 and the pulleys 124 on shaft 123. The belt sheaves are capable of adjustment laterally of the feed chains. The belt shaft 123 has a pulley 125 thereon over which runs a belt 126 driven from a pulley 127 on the shaft 19.

Wrapper stops.

Each wrapper is stopped at a predetermined point in its travel along the feed chains in position to meet its corresponding package upon movement of the package upwardly. The wrapper stops are indicated at 128, Figs. 6 and 54, and are adjustable towards and from each other along a carrier bar 129 extending transversely of the feed chains. The bar 129 itself is adjustable longitudinally of the chains by screws 130 having sprockets 131 over which runs a sprocket chain 131^1. One of the screws is extended and provided with a hand wheel 132 by means of which and the sprocket chain the screws may be simultaneously rotated to effect such adjustment.

Package feed.

The packages are fed along an endless conveyor 133 to the wrapping spider. The shafts for the conveyor are indicated at 134 and 135. Shaft 135 is driven through a sprocket 136 thereon connected by a sprocket chain 137(Fig. 8) with a sprocket 138 on the drive shaft 5, the chain 137 running over the guiding sprockets 139.

Package offsetter.

At the delivery end of the package conveyor 133, the packages are successively offset into the line of the wrapper feed. The package offsetting mechanism comprises an offset package receiving table 140 and offsetting slide 141. The slide 141 has a package pusher head comprising a wall at right angles to the path of feed of the packages and a wall parallel thereto, (see Fig. 4), and has its tail guided in a suitable way 142.

The slide is reciprocated transversely to the path of feed of the packages in properly timed relation to the package feed by a crank 143, (Fig. 1), pinned thereto as shown and pivoted to the frame of the machine. Said crank has an arm 144 fastened to a pitman 145. The pitman 145 is connected to a lever 145^1 having a roll 145^2 working in the groove of a cam 360 on the cam shaft 19, (see Fig. 3).

Package elevator.

After each package P is offset by the slide 141, it is raised by a package elevator 148 to meet the overlying wrapper W therefor. The elevator 148 operates through a verti-

cally disposed package guideway 149 in properly timed relation to the offsetting slide 141. As here shown, the elevator is a flat headed reciprocable plunger pinned at 150 to a bell crank lever 151 which is pivoted to the machine frame at 152. The weight of the elevator 148 and of the lever 151 is counterbalanced by the action of the spring 153, and said lever has a cam yoke 154 fastened to its shorter arm and carrying a roll 155 operating in the groove of a cam 156 on the cam shaft 19.

Package guideway.

The package guideway is detailed in Figs. 57 and 58 and comprises a pair of spaced brackets 157 and 157[1] upon which are slidably mounted a pair of oppositely disposed vertically channeled guides 158, 159 for the package ends. The guides 158, 159 move vertically upward with the package as it is raised by the package elevator thereby to insure proper transfer of the package to the overlying wrapper.

The guide 158 is pivotally connected below its center at 159[1] to one arm of a bell crank lever 160 which is pivoted at 161 in the bracket 157, and above its center said guide is pivotally connected at 162 to the arm 163 of a rock shaft 164 which has a depending rocker arm 165 to which is fastened one end of a connecting rod 166. The opposite guide 159 above its center is pivotally connected at 167 to the arm 168 of a rock shaft 169 which is journaled in the bracket 157[1] and below its center said guide 159 is pivotally connected at 170 to the arm 171 of a rock shaft 172 which has a rocker arm 173 fast to the opposite end of the connecting rod 166.

The bell crank lever 160 is connected at 174 to one end of a connecting rod 175, the opposite end of which has a swivel connection at 176 with a cam lever 177 which is pivoted at 178 in a bracket 179 projecting from the machine frame and has a cam roll 180 between its ends disposed for actuation by a cam 181 on the cam shaft 19.

The actuation of the cam 181 is thus transmitted through the described connections to the guide plates 158 and 159 and said plates are thus raised to correspond with the elevation of the package elevator.

The package is guided into the guideway, as it is pushed laterally by the package offsetting pusher slide, by a pair of horizontally disposed guide plates 182. The vertically disposed guide plates 158 and 159 are supported in their lowest position by a pair of plates 183 which are held against said guide plates on the studs 184.

Wrapping spider.

The package wrapping spider is fast on the shaft 3 and as here shown has six radially disposed package holding pockets or jaws 200 into which the packages with their wrapper laid thereover are successively inserted by the package elevator. The pockets are successively automatically opened as they rotate into package receiving position and upon insertion of the package each pocket automatically closes and remains closed throughout the several successive steps in the method of wrapping and automatically opens at the final step to release the sealed and wrapped package which is automatically ejected therefrom.

Each pocket comprises a relatively fixed jaw 200 and a relatively movable jaw 201, which are capable of adjustment towards and from each other to accommodate packages of varying sizes. The jaw 201 (see Fig. 5) is pivoted at 202 to the spider and is under spring control as indicated at 203. Each pivoted jaw has a lever arm 204 extending beyond its pivot 202 and disposed for timed actuation by a spring-tensioned rocker 205, which is fast on the inner end of a rock shaft 206 journaled longitudinally of the wrapping head and provided at its outer end with a rocker 207 which is connected at 208 to one arm of a bell crank lever 209. The opposite arm of the bell crank lever carries a cam roll 210 which is actuated by a cam 211 on the cam shaft 14 of the machine, whereby the pockets are successively opened in properly timed relation to the other wrapping instrumentalities. The pockets are automatically opened at the proper delivery position, the contact of the end of the lever 204 with a stud 212 projecting from the frame 103 as the lever arms 204 successively come into contact with this stud at each partial rotation of the spider (see Fig. 47).

Drive for wrapping spider.

The spider shaft 3 is intermittently revolved from the cam shaft 14 through a Geneva drive (see Fig. 2). To this end, the cam shaft 14 has a pinion 213 thereon meshing with a pinion 214 on a countershaft 215. Fast on shaft 215 is a cam 216 having a cam roll 217 adapted to successively enter the slideways 218 of a six pointed star wheel 219 fast on the spider shaft 3 whereby to intermittently rotate said wrapping spider.

Wrapping cycle, first step.

The first step in the wrapping cycle consists in entering the package with the wrapper laid about it into the aligning open pocket of the spider which immediately closes to firmly clamp the inserted package and wrapper. In this step the top edge P[1] of the package contacts the underneath

coated face of the wrapper substantially centrally thereof, the adjacent portions of the wrapper are laid against the front and back panels P^3 of the package, and the overhanging ends W^1 and W^2 of the wrapper are successively laid against the bottom edge P^2 of the package.

This is effected by a pair of longitudinally disposed spaced parallel revolving brushes 220 and 221, which are arranged above the wrapper feed chains on either side of the package elevator. The shafts for the brushes 220, 221 have sprockets thereon over which runs sprocket chains 222 (see Figs. 11 and 14), driven from sprockets 223 on stub shafts 224 journaled longitudinally of the wrapping head and intergeared to rotate in unison as indicated at 225, Fig. 11. One of the shafts 224 is provided with a sprocket over which runs a chain 226 driven from a sprocket 226^1 on a counter shaft 227. The shaft 227 is driven at increased speed from the shaft 14 by the gear train 16, 17, 18, the idler gear 17 of which meshes with a pinion 228 on said shaft 227.

One of the brushes 220, 221, here shown as the brush 220, has an in and out travel relative to the package effective to fold the overhanging end W^1 of the wrapper down against the bottom edge of the package.

The shafts for the brushes 220 and 221 are journaled in pairs of pivotally mounted arms 232 and 233. The arms 233 are rocker arms and are linked at 234 to rockers 235 fast on the ends of a rock shaft 236 journaled longitudinally of the wrapping head (Figs. 14 and 15). Fast to the rocker arm 235 at the forward end of the wrapping head is a transversely extending link 236^1. The opposite end of said link is fast to a second rocker 237 at the opposite side of the machine. The rocker 237 is actuated by a link 238 which is under spring control as indicated at 239 and is actuated by a cam lever 240 having a cam roll 241 operated by a cam 242 on the cam shaft 14. In order to permit adjustment of the brush 221 relative to the brush 220, the arms 232 are linked at 243 to the upper ends of arms 244^a fast to the ends of a rock shaft 244 which is journaled through the end frames 103 and 103^1. Fast to said shaft 244 at one end thereof is a plate 244^b having an arcuate slot 244^1 within which works a cap screw 244^c set through the adjacent end frame 103. By loosening the screw 244^c the plate 244^b and with it the rock shaft 244 may be swung to adjust the brush 221 towards or away from the brush 220.

The transverse movement thus imparted to the brush 220 lays down the flap W^1 of the wrapper, as indicated in Fig. 11. As the spider begins to rotate the opposite flap W^2 is laid down by the brush 221, as indicated in Fig. 13.

Wrapping cycle, second step.

In this step, the narrow end flaps W^3 are sealed down to the ends of the package while the wide end flaps W^4 are held out to permit said narrow flaps to be completely sealed down.

The narrow flaps W^3 are sealed down by two pairs of oppositely sliding brushes 246, Fig. 18, which are mounted to slide in downwardly inclined slots 247 in the end frames of the wrapping head. Each brush pair is adjustable longitudinally towards and from the opposite pair and each brush of a brush pair is also adjustable transversely towards and from its cooperating brush to accommodate packages of varying sizes. In addition, the brushes themselves are hingedly mounted upon their holders as at 248 and under spring control as indicated at 248^1, whereby they may yield slightly on the return stroke of the wiping operation.

The mechanism for sliding the brushes towards and from each other comprises a rock shaft 249 journaled longitudinally of the wrapping head, a gear segment 250 fast on said shaft at each end thereof and operatively connected at 251 with the slides 246^1 for the lower brush pair, a gear segment 252 pivoted at 253 to each end frame of the wrapping head and meshing with said gear segments 252 and operatively connected at 254 with the slides 246^1 for the upper brush pair, and a link 255 fast to one of the segments 252 and to a crank disc 256 on the spider shaft 3 (see Fig. 17).

The crank disc 256 is driven in properly timed relation from the cam shaft 14 by a crank arm 257 which is fastened at one end to the disc eccentrically thereof and at its opposite end receives the actuation of a cam 258 on the cam shaft.

The wide end flaps W^4 are held out while the narrow end flaps W^3 are sealed by upper and lower pairs of spreaders 259. The spreaders of the upper spreader pair rotate in opposite direction to those of the lower pair whereby to spread the wide flaps at each end of the package in opposite directions away from each other.

Each spreader unit comprises one or more spaced fingers fast to the upper inner ends of the spreader shafts 260. Said shafts are journaled in vertically and horizontally slotted brackets 261 to permit the fingers to be adjusted to accommodate packages of different sizes. The shafts are universally jointed between said fingers and their driving shafts as indicated at 262 to permit such adjustment.

The spreader shafts 260 are driven from the shaft 15 through superposed drive shafts 263 and 264. The shaft 264 receives the drive from shaft 15 through the intermeshing gears 265, 266 and is in turn geared to

the shafts 260 of the lower pair of spreaders, as indicated at 267, 268. The shafts 260 of the upper spreader pair are driven from the shaft 263 through the intermeshing gears 269, 270, and the shaft 263 is driven from the shaft 264 by the gear train 271.

The combinative action of the brushes 246 and hold-out fingers 259 is indicated diagrammatically in Figs. 20 to 25 inclusive, wherein it will be seen that the fingers 259 engage and hold out the wide end flaps W^4 while the brushes 246 seal down the narrow end flaps W^3 to the ends of the carton.

Wrapping cycle, third step.

In this step, the diagonal folds which define the ultimate shape of the wide end flaps W^4 are formed and the contacting faces of the folded portions are united, (Fig. 29). This results in a permanency of fold and a definite set of the wide end flaps in the plane of the package ends and removes said flaps from any possible interference in the further steps of wrapping. It also exposes the uncoated outer faces of the sealed down narrow end flaps W^3 and the inner faces of the wide end flaps W^4 themselves for an application of adhesive.

The wide end flaps as out turned by the fingers 259 are folded over at right angles to the package ends by a pair of creasers 271 which engage and press the flaps over a pair of supporting blades or plates 272 that are automatically inserted under the flaps in properly timed relation to the operation of the creasers 271, (Fig. 28).

The flap supporting blades 272 are adjustably mounted on slides 271^1 operating in inclined slots 272^1 in the end frames of the wrapping head. The slides 271^1 are actuated from the cam shaft 14 in properly timed relation through jointed rocker arms 273 fastened to said slides and mounted on a rock shaft 274 journaled longitudinally of the wrapping head near the top thereof. (Fig. 30). The shaft 274 is rocked from the cam shaft 14 by a cam lever 275 which is operatively connected at one end at 276 to the rock shaft and at its opposite end receives the actuation of a cam 277, on said cam shaft 14.

The supporting blades 272 slide under the projecting wide flaps W^4 of the wrapper at this stage of the wrapping operation and define for flaps a position substantially in the plane of the package end into which they are folded by the operation of the superposed pairs of flap creasers 271.

Each creaser 271 comprises a series of closely adjacent thin-edged rolls, (Fig. 31) disposed with their peripheries transverse to the plane of the pocket position and rotatably journaled on a bearing rod 278. The bearing rods are hung from arms 279 pivoted at 279^1 to collars 281^1. The arms 279 are held under spring tension as indicated at 280 so as to turn at first on the creaser operating shafts 281 as centers but upon contact with the flap to yield and turn on their pivots 279 as centers to permit the rolls 271 to pass across the blades 272. The shafts 281 are journaled in slides 282 which are adjustable in slots 283 in suitable brackets mounted on the end frames of the wrapping head. The connections between the slides and creaser hangers is such as to permit longitudinal and transverse adjustment of the creasers relative to the pocket position to accommodate packages of varying sizes, the creaser shafts themselves having universal joints 284 to permit such adjustment.

The creaser shafts 281 are driven from the cam shaft 14 by counter shafts 285 and 286, the upper pair of creasers turning in one direction and the lower creaser pair turning in the opposite direction. Cam shaft 14 has a sprocket 287 thereon which is connected by chain 288 with a sprocket 289 on shaft 286. The rotation of shaft 286 is transmitted to shaft 285 by the gear train 290 and each shaft 285, 286 is coupled with its respective creaser shaft by the gear drives 291.

The combined action of the flap pressers and creasers is therefore to turn the projecting wide end flaps into planes at substantially right angles to the ends of the package and to crease said flaps at their line of fold. Such action is indicated diagrammatically in Figs. 28 and 29. The presser plates 272 swing under the wide end flaps W^4 just before the creasers 271 engage the flaps, thereby providing underneath support for the flaps as the creasers 271 move over them from the center towards the sides of the package ends. (See particularly Fig. 28). The resistance provided by the springs 280 causes the creasers to bear firmly against the flaps as the creasers travel outwardly thereover.

At the next succeeding phase of rotation of the spider, additional glue is applied to the surfaces at the package ends exposed by the preceding step, as illustrated in Figs. 33 to 38 inclusive, wherein the glue applying rolls 292 are mounted in hangers 293 at either side of the pocket position to swing about horizontal axes towards and from the sides of the package and are yieldingly connected to each other as indicated at 294. The pintles 295 for the hangers 293 are adjustably mounted in brackets 296 projecting inwardly towards each other from a pair of vertical slides 297 operating in slideways 298 formed in the end frames of the wrapping head. The hangers are connected near their lower ends to slides 297 by links 299. The adjustable mounts at 296 for the glue rolls permit said rolls to be adjusted to oper-

ate upon packages of varying sizes. (See Figs. 33 to 39.)

The slides 297 are reciprocated from the cam shaft 14 by a rock shaft 300 having rocker arms 301 under spring control as indicated at 302 and connected each to a slide 297. One of the arms 301 is extended and connected at 303 with a cam lever 304, which is operated by the cam 305 on cam shaft 14. (See Figs. 33 and 34.)

Glue is supplied to each glue roll 292 by a pair of glue transfer rolls 306, 307 which are geared to rotate in unison, as indicated at 308, 309. The inner rolls 306 are journaled in hangers 310 suspended from the inner faces of the end frames and the outer rolls 307 are journaled in brackets 311 bolted exteriorly to the end frames of the wrapping head. The shafts for the rolls 307 have sprockets 312 connected by chains 313 with sprockets 314 on sprocket shafts 315. Shafts 315 are connected with each other by cross shaft 316 and gear drives 317, 318 and 319, 320. The shaft 315 at the rear end of the machine has a sprocket 321 connected by a chain 322 with a sprocket 324 on the main driving shaft 5 of the machine, (Fig. 2).

The outer glue rolls 307 operate in glue pans 325 and are kept clean by manually operable scrapers 326. See Fig. 33. The glue pans are mounted upon vertical slides 327 and each may be adjusted towards its roll 307 as the glue supply diminishes by means of a rack 328 on said slide, a gear segment 329 on shaft 330 meshing with said rack and an operating handle 331 for rotating each shaft 330.

During the passage of the glue rolls 292 past the package ends, the wide end flaps of the wrapper are backed and supported by oppositely disposed supporting rolls 332 which are mounted on the slides 297 to follow the movement of said rolls 292.

As the glue rolls 292 move past the package they supply glue across the outer uncoated faces of the sealed down narrow flaps W^3 at substantially the lines of fold of the wide end flaps W^4 so that when said flaps W^4 are subsequently sealed down, the ends of the package will be tightly sealed at the very edges where there is ordinarily a looseness of seal. The rolls 307, moreover, apply glue across the exposed faces of the wide end flaps and across the ends of the package itself, thus insuring a permanent seal of the flaps W^4 to the package ends.

Wrapping cycle, fifth step.

In the next phase of rotation of the wrapping spider, the wide end flaps W^4 are successively overfolded and sealed down. The flaps W^4 at the upper edges of the package, considering the package in the position it occupies during this step (see Fig. 43) are engaged and sealed down by a pair of oppositely disposed revolving folders 333, which are here shown as brushes, and the flaps W^4 at the lower edge of the package (see Fig. 44) are subsequently engaged and sealed down by a pair of oppositely disposed revolving folders 334 which are here shown as rolls mounted below the brushes 333. The brush pair 333 and the roll pair 334 are disposed adjacent either end of the package which thus lies between said pairs of folders.

The shafts 335 for the brushes 333 are driven from the cross shaft 316 through gear drives 336, at their outer ends, and are universally jointed at 337, (Fig. 40) between the gear drives and the brushes to permit the brushes to swing downwardly and inwardly to seal down the upper pair of end flaps W^4.

At their inner ends, the shafts 335 are journaled in brackets 338 which are pivotally connected at 339 to slides 340 operating in inclined slots 341 in the end frames of the wrapping head. The slides 340 are reciprocated in the slots 341 by spring tensioned rocker arm 342, Figs. 10, 40 and 42, fast on the ends of a rock shaft 343 which is journaled longitudinally of the machine below the shaft 316. Said rock shaft is actuated from the crank disc 256 on the spider shaft 3 by means of a connecting rod 344, a pair of rocker levers 345 fast on the ends of a rock shaft 346 journaled beneath the shaft 343, and a connecting rod 347 from one of the levers 345 to one of the arms 342, said arm having a projection 347^1, Figs. 10 and 40, to which the upper end of the rod 347 is adjustably fastened.

The brushes 333 are given an in and out movement during their reciprocation by a pair of cams 348 (Fig. 42) fixed to the inner faces of the end frames of the wrapping head and having cam grooves 348^1 in which travel studs 349 on the slides 340.

The shafts 350 for the brushes 334 are mounted in short arms 352 which are yieldingly hinged at 351 on link 352^1 and under spring tension as indicated at 353. The link 352^1 is connected at its lower end to a rocker arm 365 on shaft 354 which is mounted in bearing 355 projecting inwardly from the end frames of the wrapping head.

The rock shafts 354 have rockers 356 connected to each other at 357 and having a common actuating arm 358 which receives its actuation from a cam lever 359 operated by a cam 360 on the transverse cam shaft 19 of the machines (Figs. 1 and 3).

In addition to the reciprocating motion thus given the rolls 334, they have an in and out motion effective to cause them to initially dip in under the lower flap pair W^4 and wipe them down as the rolls continue their travel. To this end, the links 352^1 have rolls

361 which operate in cam slots 362 formed in cam plates 363 which are adjustably mounted by the brackets 364 in the path of the rolls 361.

The brushes 333 swing inwardly towards each other and engage under the upper flap pair W^4 and firmly press said flaps down against the package ends as the brushes travel downwardly past the package (Fig. 43).

The rolls 334 swing inwardly under the lower flap pair W^4 and firmly press said flaps down against the package ends as the rolls travel upwardly past the package. On the end of the return travel of the brushes 333 the portion 348^1 of the cam 348 causes the brushes to move outwardly away from the package end for enough to clear the end of the next package to be presented at this station on the next movement of the spider. (Fig. 44). At the end of their upward travel, however, the spider begins its next phase of rotation, thus removing the package from the zone of operation of the rolls and leaving the rolls free to make their return movement without danger of disturbing the setting of either the lower pair of flaps which they sealed down or the upper pair of flaps sealed down by the brushes 333. The brushes 333 and rolls 334 are capable of relative adjustment to accommodate packages of varying sizes.

Wrapping cycle, sixth step.

The final phase of rotation of the wrapping spider brings the now wrapped and sealed package into alinement with a package discharge chute 366 along which the packages successively discharge as the spider pockets open and the packages are ejected.

When the wrapping spider reaches this position, the appropriate pocket is automatically opened, as heretofore explained, and the package released and automatically removed from the spider (Fig. 47). The package ejecting mechanism comprises a pair of oppositely disposed pusher slides 367 working in downwardly inclined slots 368 (Fig. 45) in the end frames of the wrapping head. Adjustably mounted on said slides 367 is a pair of oppositely disposed arms 367^1 carrying at their free ends package ejector plates 367^a (Fig. 42). The slides 367 are actuated from the crank disc 256 through the same rocker levers 345 which actuate the shafts 346 for the end fold brushes 333, one of said levers 345 being bent between its ends as indicated at 345^a, Fig. 40, to clear one of the tie rods for the frame structure.

Package discharge chute.

The pushers reach into the pockets as they rotate into package discharging position and are automatically opened, and withdraw the wrapped packages along the downwardly inclined discharge chute 366 at the near side of the machine Fig. 1. In its descent, each package is given a final wiping to cause the folded flaps to firmly set. This is effected by the combined action of a pair of vertically disposed wiping rolls 370 mounted at either side of the package discharge chute in advance of one or more pairs of brushes 371.

The width of the package discharge chute may be adjusted, as desired, to accommodate packages of varying dimensions. To this end, the strips constituting the discharge way and the brushes 371 and rolls 370 are all mounted for simultaneous adjustment both vertically and towards and from each other by means of the brackets 372 which are journaled on screw threaded shafts 373 set in a frame 374 which itself has vertically sliding connection at 375 with the main frame of the machine. The shafts 373 are provided with sprockets 376 connected by a chain 377 and operated by a hand wheel 378 whereby they may be simultaneously rotated to move the package ways 366, rolls 370 and brushes 371 towards and from each other. The screws 375 are mounted in suitable bearings on the main frame and each similarly provided with sprockets 379, connecting chains 380 and hand wheel 381 for effecting simultaneous vertical adjustment of the entire chute frame relative to the main frame.

Various modifications in the form and construction of my device may obviously be resorted to, all without departing from the spirit of my invention if within the limits of the appended claims.

What I therefore claim and desire to secure by Letters Patent is:

1. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping adhesively coated covering sheet about a package with an overlap at each end thereof and with its coated face disposed to the package, means for turning and pressing the overlap from two opposite sides of each end, means for holding out the overlap of the intermediate sides, means for creasing each side overlap to define its fold as a flap and for simultaneously pressing together and sealing to each other the mutually contacting coated portions of said flaps, and means for sealing the flaps to each other in overlapping relation to the ends of the package.

2. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping adhesively coated covering sheet about a package with an overlap at each end thereof, and with its coated face disposed to the package, means for turning and pressing the overlap from two opposite sides of each end, means for holding out the overlap of the intermediate sides, and means for uniting the flaps to each other in overlapping relation.

3. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping adhesively coated covering sheet about a package with an overlap at each end thereof and with its coated face disposed to the package, means for turning and pressing the overlap from two opposite sides of each end, means for holding out the overlap of the intermediate sides, means for creasing each side overlap to define its fold as a flap and for simultaneously pressing together and sealing to each other the mutually contacting coated portions of said flaps, means for gumming the ends of the package, and means for successively sealing the flaps.

4. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping adhesively coated covering sheet about a package with an overlap at each end thereof and with its coated face disposed to the package, means for turning and pressing the overlap from two opposite sides of each end, means for holding out the overlap of the intermediate sides, means for gumming the ends of the package, and means for successively sealing the flaps against said gummed ends of the package with their mutally contacting coated portions united to each other.

5. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping adhesively coated covering sheet about a package with an overlap at each end thereof and with its coated face disposed to the package, means for turning and pressing the overlap from two opposite sides of each end, means for holding out said overlap of the intermediate sides, means for creasing each side overlap to define its fold as a flap and for simultaneously pressing together and sealing to each other the mutually contacting coated portions of said flaps, means for sealing the flaps to each other in overlapping relation to the ends of the package, and a package feed and a feed for adherent coated wrappers simultaneously deliverying to said folding and sealing instrumentalities.

6. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping adhesively coated covering sheet about a package with an overlap at each end thereof, and with its coated face disposed to the package, means for turning and pressing the overlap from two opposite sides of each end, means for uniting the flaps to each other in overlapping relation, and a package feed and a feed for adherent coated wrappers simultaneously delivering to said folding and sealing instrumentalities.

7. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping adhesively coated covering sheet about a package with an overlap at each end thereof and with its coated face disposed to the package, means for turning and pressing the overlap from two opposite sides of each end, means for holding out the overlap of the intermediate sides, means for creasing each side overlap to define its fold as a flap and for simultaneously pressing together and sealing to each other the mutually contacting coated portions of said flaps, means for gumming the ends of the package, means for successively sealing the flaps, and a package feed and a feed for adherent coated wrappers simultaneously deliverying to said folding and sealing instrumentalities.

8. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping adhesively coated covering sheet about a package with an overlap at each end thereof and with its coated face disposed to the package, means for turning and pressing the overlap from two opposite sides of each end, means for holding out the overlap of the intermediate sides, means for gumming the ends of the package, means for successively sealing the flaps against said gummed ends of the package with their mutually contacting coated portions united to each other, and a package feed and a feed for adherent coated wrappers simultaneously deliverying to said folding and sealing instrumentalities.

9. In a machine of the class described, folding and sealing instrumentalities including a three sided receiving pocket, a pusher for depositing a package and cover sheet therein, wipers operatively coacting on fourth side to lay the overlapping covering sheet about the package with an overlap at each end thereof, wipers for turning and pressing the overlap from two opposite sides of each end, spreaders for holding out the overlap of the intermediate sides, coacting folders for creasing said side overlap to define its fold as a flap, and wipers for laying the flaps.

10. In a machine of the class described, folding and sealing instrumentalities including a three sided receiving pocket, a pusher for depositing a package and cover sheet therein, wipers operatively coacting on fourth side to lay the overlapping covering sheet about a package with an overlap at each end thereof, wipers for turning and pressing the overlap from two opposite sides of each end, spreaders for holding out said overlap of the intermediate sides, and wipers for laying the flaps.

11. In a machine of the class described, folding and sealing instrumentalities including a three sided receiving pocket, a pusher for depositing a package and cover sheet therein, wipers operatively coacting on fourth side to lay the overlapping covering

sheet about a package with an overlap at each end thereof, wipers for turning and pressing the overlap from two opposite sides of each end, spreaders for holding out the overlap of the intermediate sides, coacting folders for creasing said side overlap to define its fold as a flap, means for gumming the ends of the package, and wipers for laying the flaps.

12. In a machine of the class described, folding and sealing instrumentalities including a three sided receiving pocket, a pusher for depositing a package and cover sheet therein, wipers operatively coacting on fourth side to lay the overlapping covering sheet about a package with an overlap at each end thereof, wipers for turning and pressing the overlap from two opposite sides of each end, spreaders for holding out said overlap of the intermediate sides, means for gumming the ends of the package, and wipers for laying the flaps.

13. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping adhesively coated covering sheet about a package with an overlap at each end thereof and with its coated faces disposed to the package, means for turning and pressing the overlap from two opposite sides of each end, means for holding out the overlap of the intermediate sides, coacting folders for creasing, pressing and turning outwardly each side overlap to define its folds as a flap and expose the package end, means for gumming the ends of the package, and means for sealing the flaps against said gummed ends of the package with their mutually contacting coated portions united to each other.

14. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping covering sheet about a package with an overlap at each end thereof, means for turning and pressing the overlap from two opposite sides of each end, coacting folders for creasing, pressing and turning outwardly the side overlap to define its folds as flaps and expose the package end, means for gumming the ends of the package, and means for laying the flaps.

15. In a machine of the class described, folding and sealing instrumentalities including means for folding an overlapping covering sheet coated on one face about a package with an overlap at each end thereof, means for turning and pressing the overlap from two opposite sides of each end, coacting folders for creasing, pressing and turning back the overlap of the intermediate sides to define flaps disposed in the plane of the package ends and having the coated faces of their component overfolded portions united to each other, means for gumming the ends of the package thus exposed, and means for laying said flaps upon the coated package ends.

16. In a machine of the class described, a plurality of package holders movable in a closed path, a plurality of folding and sealing instrumentalities disposed along said path and divided into organized groups constituting stations of successive function, including means for introducing said holders step by step progressively into the operating influence of each of said groups, said groups comprising means for placing within a holder a package with an enveloping covering sheet disposed about three sides, means for turning and pressing the free edges of said sheet on the fourth side, means for turning and pressing the overlap from two opposite sides of each end of said covering sheet while holding out the overlap of the intermediate sides of the ends, means for creasing the side overlap to define its fold as a flap, means for gumming the ends of the package and the inner faces of the flap so formed, and means for successively laying said flaps.

17. In a machine of the class described, a plurality of package holders movable in a closed path, a plurality of folding and sealing instrumentalities disposed along said path and divided into organized groups constituting stations of successive function, including means for introducing said holders step by step progressively into the operating influence of each of said groups, said groups comprising means for placing within a holder a package with an enveloping covering sheet disposed about three sides, means for turning and pressing the free edges of said sheet on the fourth side, means for turning and pressing the overlap from two opposite sides of each end of said covering sheet while holding out the overlap of the intermediate sides of the ends, means for creasing the side overlap to define its fold as a flap, and means for laying the flaps so formed.

18. In a machine of the class described, a plurality of package holders movable in a closed path, a plurality of folding and sealing instrumentalities disposed along said path and divided into organized groups constituting stations of successive function, including means for introducing said holders step by step progressively into the operating influence of each of said groups, said groups comprising means for placing within a holder a package with an enveloping covering sheet disposed about three sides, means for turning and pressing the free edges of said sheet on the fourth side, means for turning and pressing the overlap from two opposite sides of each end of said covering sheet while holding out the overlap of the intermediate sides of the ends, means for creasing the side overlap to define its fold as a flap, means for gumming the ends of the package

and the inner faces of the flap so formed, means for successively laying said flaps, and means for ejecting the completed package from the holder.

19. In a machine of the class described, a plurality of package holders movable in a closed path, a plurality of folding and sealing instrumentalities disposed along said path and divided into organized groups constituting stations of successive function, including means for introducing said holders step by step progressively into the operating influence of each of said groups, said groups comprising means for placing within a holder a package with an enveloping covering sheet disposed about three sides, means for turning and pressing the free edges of said sheet on the fourth side, means for turning and pressing the overlap from two opposite sides of each end of said covering sheet while holding out the overlap of the intermediate sides of the ends, means for gumming the ends of the package and the inner faces of the flap so formed, means for successively laying said flaps, and means for ejecting the completed package from the holder.

20. In a machine of the class described, a plurality of package holders movable in a closed path, a plurality of folding and sealing instrumentalities disposed along said path and divided into organized groups constituting stations of successive function, means for introducing said holders step by step progressively into the operating influence of each of said groups, said groups comprising means for placing within a holder a package with an enveloping covering sheet disposed about three sides, means for turning and pressing the free edges of said sheet on the fourth side, means for turning and pressing the overlap from two opposite sides of each end of said covering sheet while holding out the overlap of the intermediate sides of the ends, means for gumming the ends of the package and the inner faces of the flap so formed, and means for successively laying said flaps.

21. In a machine of the class described, a plurality of package holders movable in a closed path, a plurality of folding and sealing instrumentalities disposed along said path and divided into organized groups constituting stations of successive function, means for introducing said holders step by step progressively into the operating influence of each of said groups, said groups comprising means for placing within a holder a package with an enveloping covering sheet disposed about three sides, means for turning and pressing the free edges of said sheet on the fourth side, means for turning and pressing the overlap from two opposite sides of each end of said covering sheet, means for creasing the side overlap to define its fold as a flap, means for gumming the ends of the package and the inner faces of the flap so formed, means for successively laying said flaps, and means for ejecting the completed package from the holder.

22. In a machine of the class described, a plurality of package holders movable in a closed path, a plurality of folding and sealing instrumentalities disposed along said path and divided into organized groups constituting stations of successive function, means for introducing said holders step by step progressively into the operating influence of each of said groups, said groups comprising means for placing within a holder a package with an enveloping covering sheet disposed about three sides, means for turning and pressing the free edges of said sheet on the fourth side, means for turning and pressing the overlap from two opposite sides of each end of said covering sheet, means for gumming the ends of the package and the inner faces of the flap so formed, means for successively laying said flaps, and means for ejecting the completed package from the holder.

23. In a machine of the class described, a wrapper feed mechanism including guides, registers and stops for the wrapper, a primary gluing mechanism, a wrapping system, a wrapper transfer mechanism operating between the gluing mechanism and the wrapping system, an intermittently rotating spider having a plurality of package receiving pockets, mechanism for automatically opening and closing the said pockets, a package feed mechanism, a package set over for moving the packages successively from the package feed mechanism into alignment with the wrappers, a package elevator for carrying each package and its overlying wrapper into a pocket of the wrapping spider, a mechanism for sealing down the overhanging ends of the wrapper to the bottom edge of the package, mechanism for holding out the wide end flaps of the wrapper and for sealing down the narrow end flaps, mechanism for applying glue to the sealed down narrow end flaps and mechanism for successively laying the wide end flaps over the ends of the package, and mechanism for ejecting the sealed and wrapped package from the spider.

24. In a machine of the class described, a wrapper feed mechanism including guides, registers and stops for the wrapper, a primary gluing mechanism, a wrapping system, a wrapper transfer mechanism operating between the gluing mechanism and the wrapping system, an intermittently rotating spider having a plurality of package receiving pockets, mechanism for automatically opening and closing the said pockets, a package feed mechanism, a package set over for moving the packages successively

from the package feed mechanism into alignment with the wrappers, a package elevator for carrying each package and its overlying wrapper into a pocket of the wrapping spider, a mechanism for sealing down the overhanging ends of the wrapper to the bottom edge of the package mechanism for holding out the wide end flaps of the wrapper and for sealing down the narrow end flaps, mechanism for folding back and creasing the wide end flaps, mechanism for applying glue to the sealed down narrow end flaps and mechanism for successively laying the wide end flaps over the ends of the package, and mechanism for ejecting the sealed and wrapped package from the spider.

25. In a machine of the class described, a wrapper feed mechanism, a primary gluing mechanism, a wrapping system, a wrapper transfer mechanism operating between the gluing mechanism and the wrapping system, an intermittently rotating spider in said wrapping system having a plurality of package receiving pockets, mechanism for automatically opening and closing the said pockets, a package feed mechanism, a package set over for moving the packages successively from the package feed mechanism into alignment with the wrappers, a package elevator for carrying each package and its overlying wrapper into a pocket of the wrapping spider, a mechanism for sealing down the overhanging ends of the wrapper to the bottom edge of the package mechanism for holding out the wide end flaps of the wrapper and for sealing down the narrow end flaps, mechanism for folding back and creasing the wide end flaps, mechanism for applying glue to the sealed down narrow end flaps and mechanism for successively laying the wide end flaps over the ends of the package, and mechanism for ejecting the sealed and wrapped package from the spider.

26. In a machine of the class described, a wrapper feed mechanism, a primary gluing mechanism, a wrapping system, a wrapper transfer mechanism operating between the gluing mechanism and the wrapping system, a carrier in said system having a plurality of package receiving jaws, mechanism for automatically opening and closing the said jaws, a package feed mechanism, a package set over for moving the packages successively from the package feed mechanism into alignment with the wrappers, a package elevator for carrying each package and its overlying wrapper into a pair of jaws of the wrapper carrier, a mechanism for sealing down the overhanging ends of the wrapper to the bottom edge of the package mechanism for holding out the wide end flaps of the wrapper and for sealing down the narrow end flaps, mechanism for folding back and creasing the wide end flaps, mechanism for applying glue to the sealed down narrow end flaps and mechanism for successively laying the wide end flaps over the ends of the package, and mechanism for releasing the jaws and ejecting the sealed and wrapped package from the spider.

27. In a machine of the class described, a package feed mechanism, a wrapper feed mechanism, a primary gluing mechanism, a wrapping system, a wrapper transfer mechanism operating between the gluing mechanism and the wrapping system, said wrapping system including an intermittently rotating spider having a plurality of package receiving jaws or pockets, mechanism for automatically opening and closing the said pockets, a package set over for moving the packages successively from the package feed mechanism into alignment with the wrappers, a package elevator for carrying each package and its overlying wrapper into a pocket of the wrapping spider, a mechanism for sealing down the overhanging ends of the wrapper to the bottom edge of the package mechanism for holding out the wide end flaps of the wrapper and for sealing down the narrow end flaps, mechanism for folding back and creasing the wide end flaps, mechanism for applying glue to the sealed down narrow end flaps and mechanism for successively laying the wide end flaps over the ends of the package, and mechanism for ejecting the sealed and wrapped package from the spider.

28. In a wrapping machine, a package feed and an overlying wrapper feed, a package elevator for moving a package against a wrapper, and a package guideway within which said elevator operates and comprising a pair of oppositely disposed guides slidable to follow the package as moved by the package elevator.

29. In a wrapping machine, a package feed and an adjacent wrapper feed, a package mover for moving a package against a wrapper, and a moving package guideway within which said mover operates.

30. In a wrapping machine, a package feed and an overlying wrapper feed, a package elevator for moving a package against a wrapper, a package guideway within which said elevator operates and comprising a pair of oppositely disposed guides slidable to follow the package as moved by the package carrier, and an operating mechanism for said guides comprising a rock shaft connected to each guide and having a rocker arm, a rod connecting said arms, a bell crank lever connected to said guides, a cam shaft, a cam thereon, a cam lever actuated by said cam, and a connecting rod from said cam lever to said bell crank lever.

31. In a package wrapping machine of the type wherein the wrapper overhangs the package ends and is sealed thereto from opposite sides of the overhang, spreaders for holding out the intermediate portions of the overhang at each end of the package to permit said opposite sides of the overhang to be sealed down.

32. In a package wrapping machine of the type wherein the wrapper overhangs the package ends and is sealed thereto from opposite sides of the overhang, rotatable spreaders for holding out the intermediate portions of the overhang at each end of the package to permit said opposite sides of the overhang to be sealed down.

33. In a package wrapping machine, a package holder within which the package is disposed with its wrapper overhanging the package ends, and means for holding out the intermediate portions of the wrapper overhang at the ends of the package to permit the opposite portions of said overhang to be sealed down.

34. In a package wrapping machine, a package holder within which the package is disposed with its wrapper overhanging the package ends, and means for holding out the intermediate portions of the wrapper overhang at the ends of the package to permit the opposite portions of said overhang to be sealed down comprising superposed pairs of oppositely rotatable spreaders mounted to rotate about axes substantially parallel to the plane of the package ends.

35. In a package wrapping machine, a main drive shaft, a rotary package holder within which the package is disposed with its wrapper overhanging the package ends, means for holding out the intermediate portions of the wrapper overhang at the ends of the package to permit the opposite portions of said overhang to be sealed down, comprising superposed pairs of spreader shafts mounted to rotate about axes substantially parallel to the plane of the package ends, spreaders fast on said shafts and disposed transversely to the plane of the package ends, and a drive mechanism for said spreader shafts operated from said main drive shaft.

36. In a package wrapper machine, a main drive shaft, a rotary package holder within which the package is disposed with its wrapper overhanging the package ends, means for holding out the intermediate portions of the wrapper overhang at the ends of the package to permit the opposite portions of said overhang to be sealed down, comprising superposed pairs of jointed spreader shafts adjustably mounted to rotate in opposite directions about axes substantially parallel to the plane of the package ends, fingers fast on said shafts and disposed transversely to the plane of the package ends, a drive shaft for one pair of spreader shafts, a drive shaft for the other pair of spreader shafts and operatively connected with said drive shaft for the first-named pair of spreader shafts and driven from said main drive shaft.

37. In a package wrapping machine, a package holder within which the package is disposed with its wrapper overhanging the package ends, pairs of wipers for sealing down the opposite portions of the wrapper overhang at the package ends, and adjacent pairs of spreaders for holding out the intermediate portions of said overhang during such sealing action.

38. In a package wrapping machine, a package holder within which the package is disposed with its wrapper overhanging the package ends, pairs of reciprocating wipers for sealing down the opposite portions of the wrapper overhang at the package ends, and adjacent pairs of rotatable spreaders for holding out the intermediate portions of said overhang during such sealing action.

39. In a package wrapping machine, a drive shaft, a holder shaft, and a cam shaft, a package holder mounted on said holder shaft and disposed to receive the package with its wrapper overhanging the package ends, superposed pairs of reciprocating wipers for sealing down the opposite portions of the wrapper overhang at the package ends, intermeshing gear segments pivotally mounted and operatively connected to said cam shaft and to said wipers for reciprocating said wipers, superposed pairs of rotatable shafts having spreaders for holding out the intermediate portions of said overhang during such sealing action, and driving connections from said drive shaft to said spreader shafts for rotating said spreader shafts in unison.

40. In a package wrapping machine, a drive shaft, a holder shaft having a crank thereon, a cam shaft operatively connected with said crank, a package holder mounted on said holder shaft and disposed to receive the package with its wrapper overhanging the package ends, superposed pairs of reciprocating wipers for sealing down the opposite portions of the wrapper overhang at the package ends, intermeshing gear segments pivotally mounted and operatively connected to said crank and to said wipers for reciprocating said wipers, superposed pairs of rotatable shafts having transversely disposed spreaders for holding out the intermediate portions of said overhang during such sealing action, and driving connections from said drive shaft to said spreader shafts for rotating said spreader shafts in unison.

41. In a package wrapping machine of the type wherein the wrapper overhangs the package ends and is sealed thereto from opposite sides of the overhang, spreaders for

holding out the intermediate portions of the overhang at each end of the package to permit said opposite sides of the overhang to be sealed down, folders for folding back the intermediate portions of the overhang at each end of the package to expose said sealed down portions, and backers for supporting said intermediate portions during such folding action.

42. In a package wrapping machine of the type wherein the wrapper overhangs the package ends and is sealed thereto from opposite sides of the overhang, spreaders for holding out the intermediate portions of the overhang at each end of the package to permit said opposite sides of the overhang to be sealed down, rotatable folders for folding back the intermediate portions of the overhang at each end of the package to expose said sealed down portions, and reciprocating backers for supporting said intermediate portions during such folding action.

43. In a package wrapping machine, a package holder for receiving a package with its wrapper overhanging the package ends, means for sealing down opposite portions of the overhang to each end of the package, spreaders for holding out the intermediate portions of the overhang at each end of the package to permit said opposite sides of the overhang to be sealed down, means for folding back the intermediate portions of the overhang to expose said sealed down portions and means for supporting said intermediate portions of the overhang during such folding action.

44. In a package wrapping machine, a package holder for receiving a package with its wrapper overhanging the packages ends, means for sealing down opposite portions of the overhang to each end of the package, means rotatable about axes substantially parallel to the plane of the package ends for folding back the intermediate portions of the overhang to expose said sealed down portions, and means operating in planes at substantially right angles to the package ends for supporting said intermediate portions of the overhang during such folding action.

45. In a package wrapping machine, a package holder for receiving a package with its wrapper overhanging the package ends, means for sealing down opposite portions of the overhang to each end of the package, superposed pairs of folders rotatable about axes substantially parallel to the plane of the package ends for folding back the intermediate portions of the overhang to expose said sealed down portions, and reciprocating backers operating in planes at substantially right angles to the package for supporting said intermediate portions of the overhang during such folding action.

46. In a package wrapping machine of the type wherein the wrapper overhangs the package ends and is sealed thereto from opposite sides of the overhang, superposed pairs of folder shafts rotatable about axes substantially parallel to the plane of the package ends, folders mounted upon said shafts for engaging and turning said intermediate portions of the overhang at each end of the package outwardly away from each other and reciprocating backers mounted to travel in planes at substantially right angles to the package and insertible beneath said intermediate portions of the overhang to back said portions during such folding action.

47. In a package wrapping machine of the type wherein the wrapper overhangs the package ends and is sealed thereto from opposite sides of the overhang, superposed pairs of folder shafts rotatable about axes substantially parallel to the plane of the package ends, rolls hingedly mounted upon said shafts engaging and turning said intermediate portions of the overhang at each end of the package outwardly away from each other and reciprocating blades mounted to travel in planes at substantially right angles to the package and insertible beneath said intermediate portions of the overhang to back said portions during such folding action.

48. In a package wrapping machine, a cam shaft, a package holder for receiving a package with its wrapper overhanging the package ends, means for sealing down opposite portions of the overhang at each end of the package, superposed pairs of folder shafts mounted adjacent the package ends, folders thereon for turning the intermediate portions of the overhang at each end of the package outwardly away from each other, a driving connection from said cam shaft to said folder shafts, superposed pairs of reciprocating backers mounted to move under the intermediate portions of the overhang to back said portions in such folding action, and a driving connection from said cam shaft to said backers.

49. In a package wrapping machine, a cam shaft, a cam thereon, a package holder for receiving a package with its wrapper overhanging the package ends, means for sealing down opposite portions of the overhang at each end of the package, superposed pairs of folder shafts mounted adjacent the package ends, folders thereon for turning the intermediate portions of the overhang at each end of the package away from each other, interconnected drive shafts for rotating said folder shafts, a driving connection from said cam shafts to one of said

drive shafts, superposed pairs of reciprocating backers mounted to move under the intermediate portions of the overhang to back said portions in such folding action, arms operatively connected with said backers, and a cam lever actuated from said cam and operatively connected with one of said arms.

50. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang at each end of the package, means for folding the intermediate portions of the overhang at each end of the package outwardly away from each other to expose said sealed-down portions and to simultaneously press together and seal to each other the mutually contacting coated faces of said intermediate portions, means for applying adhesive to said sealed-down portions, and means for folding said outwardly folded portions over upon said sealed down portions to unite the same.

51. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang at each end of the package, means for folding the intermediate portions of the overhang at each end of the package outwardly away from each other to expose said sealed-down portions and to simultaneously press together and seal to each other the mutually contacting coated faces of said intermediate portions, means for applying adhesive to said sealed-down portions in zones closely adjacent the lines of fold of said intermediate portions, and means for folding said outwardly folded portions over upon said sealed-down portions to unite the same.

52. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang, means for holding out the intermediate portions of the overhang at each end of the package while said opposite sides thereof are being sealed down, means for folding said intermediate portions of the overhang outwardly away from each other to expose said sealed-down portions and to simultaneously press together and seal to each other the mutually contacting coated faces of said intermediate portions, means for applying adhesive to the inner faces of said outwardly folded portions, and means for folding said outwardly folded portions over upon said sealed-down portions to unite the same along lines closely adjacent the lines of fold of said outwardly folded portions.

53. In a package wrapping machine wherein the wrapper overhangs the package ends, and has two opposite sides thereof sealed to the package ends with its intermediate portions folded outwardly away from each other to expose said sealed down portions, reciprocating rolls for applying adhesive to said sealed down portions, and means for reciprocating said rolls comprising slides carrying said rolls, a cam shaft, a cam thereon, and operative connections from said cam to said slides.

54. In a package wrapping machine wherein the wrapper overhangs the package ends, and has two opposite sides thereof sealed to the package ends with its intermediate portions folded outwardly away from each other to expose said sealed down portions, reciprocating rolls for applying adhesive to said sealed down portions, means for reciprocating said rolls comprising slides carrying said rolls, a cam shaft, a cam thereon, and operative connections from said cam to said slides, and means for applying adhesive to each roll comprising a take-up roll and a transfer roll connected to rotate in unison.

55. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang at each end of the package, means for folding the intermediate portions of the overhang at each end of the package outwardly away from each other to expose said sealed-down portions and to simultaneously press together and seal to each other the mutually contacting faces of said intermediate portions, and means operative upon said intermediate flap portions with a wiping action directed from the side panels towards the center of the package to successively seal said portions across the package ends in overlapping relation to said sealed-down portions.

56. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang at each end of the package, means for folding the intermediate portions of the overhang at each end of the package outwardly away from each other to expose said

sealed-down portions and to simultaneously press together and seal to each other the mutually contacting faces of said intermediate portions, and means disposed in planes normally substantially parallel to the package ends and effective to wipe said intermediate flap portions from the side panels towards the center of the package to successively seal said portions across the package ends in overlapping relation to said sealed-down portions.

57. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang at each end of the package, means for folding the intermediate portions of the overhang at each end of the package outwardly away from each other to expose said sealed down portions and to simultaneously press together and seal to each other the mutually contacting faces of said intermediate portions, and means comprising superposed pairs of wipers disposed in planes normally substantially parallel to the package ends and having a combined rotary and lateral motion relative to said ends effective to wipe said itermediate flap portions from the side panels towards the center of the package to successively seal said portions across the package ends in overlapping relation to said sealed-down portions.

58. In a package wrapping machine of the type wherein the wrapper overlaps the package ends and is sealed thereto from opposite sides of the overhang with its intermediate flap portions folded back, an upper and a lower pair of movable wipers disposed adjacent the package ends, means for causing the wipers of a wiper pair to travel towards each other during a phase of their movement, and means for causing each wiper pair to travel towards the opposite wiper pair whereby to seal down said intermediate flap portions from the side panels towards the center of the package.

59. In a package wrapping machine of the type wherein the wrapper overlaps the package ends and is sealed thereto from opposite sides of the overhang with its intermediate flap portions folded back, an upper and a lower pair of rotatable wipers disposed adjacent the package ends, cam connections for causing the wipers of a wiper pair to travel towards each other during a phase of their rotation, and means for causing one wiper pair to travel towards the opposite wiper pair whereby to seal down said intermediate flap portions from the side panels towards the center of the package.

60. In a package wrapping machine of the type wherein the wrapper overlaps the package ends and is sealed thereto from opposite sides of the overhang with its intermediate flap portions folded back, an upper and a lower pair of rotatably and slidably mounted wipers, a common drive shaft for said upper wiper pair, connections for reciprocating said upper wiper pair towards said lower wiper pair, comprising an intermittently rotating shaft, rocker levers operatively connected with each wiper of the upper wiper pair and with one of said rocker levers, rock shafts operatively connected with the wipers of the lower wiper pair and with each other, and actuating arm for said rock shafts, a cam lever, a cam shaft, a cam thereon for actuating said cam lever, and an operative connection from said cam lever to said actuating arm.

61. In a package wrapping machine of the type wherein the wrapper overlaps the package ends and is sealed thereto from opposite sides of the overhang with its intermediate flap portions folded back, an upper and a lower pair of rotatably and slidably mounted wipers, a common drive shaft for said upper wiper pair, connections for reciprocating said upper wiper pair towards said lower wiper pair, comprising an intermittently rotating shaft, rocker levers operatively connected with each wiper of the upper wiper pair and with one of said rocker levers, rock shafts operatively connected with the wipers of the lower wiper pair and with each other, an actuating arm for said rock shafts, a cam lever, a cam shaft, a cam thereon for actuating said cam lever, and an operative connection from said cam lever to said actuating arm, and cam connections for imparting in and out travel to the wipers of each wiper pair during a phase of their rotation.

62. In a package wrapping machine of the type wherein the wrapper overlaps the package ends and is sealed thereto from opposite sides of the overhang with its intermediate flap portions folded back, an upper and a lower pair of rotatably and slidably mounted wipers, a common drive shaft for said upper wiper pair, connections for reciprocating said upper wiper pair towards said lower wiper pair, comprising an intermittently rotating shaft, rocker levers operatively connected with each wiper of the upper wiper pair and with one of said rocker levers, rock shafts operatively connected with the wipers of the lower wiper pair and with each other, an actuating arm for said rock shafts, a cam lever, a cam shaft, a cam thereon for actuating said cam lever, and cam connections for imparting in and out travel to the wipers of each wiper pair during a phase of their rotation, and package ejectors operated from the same rocker levers which reciprocate said upper wiper pair.

63. In a wrapping machine, a package holder, a pair of reciprocating wipers, a pair of reciprocating package ejectors, and a common operator for reciprocating said wipers and ejectors.

64. In a wrapping machine, a package holder, a pair of reciprocating wipers, rocker levers for reciprocating said wipers, and a pair of reciprocating package ejectors operated by said levers.

65. In a wrapping machine, a cam shaft, a package holder, a pair of reciprocating wipers, rocker levers for reciprocating said wipers, a pair of reciprocating package ejectors operated by said levers, and a cam actuated connection from said cam shaft to one of said rocker levers.

66. In a wrapping machine, a package holder having a plurality of pockets, means for automatically opening each pocket at a determined phase in the revolution of the spider, and package ejectors disposed to enter each pocket as it is opened and eject the wrapped package therefrom.

67. In a wrapping machine, an intermittently revoluble spider having a plurality of radially disposed package pockets, means for automatically opening each pocket at a determined phase in the revolution of the spider, and reciprocating package ejectors disposed to automatically enter each pocket as it is opened and eject the wrapped package therefrom.

68. In a wrapping machine, an intermittently revoluble spider having a plurality of radially disposed package pockets, a cam shaft, cam actuated connections effective to automatically open each pocket at a determined phase in the revolution of the spider, and a pair of reciprocating package ejectors operated from said cam shaft and disposed to enter each pocket as it is opened and eject the wrapped package therefrom.

69. In a wrapping machine, an intermittently revoluble spider having a plurality of radially disposed package pockets, a cam shaft, cam actuated connections effective to automatically open each pocket at a determined phase in the revolution of the spider, a pair of rocker levers operated from said cam shaft, and a pair of reciprocating package ejectors operated from said rocker levers and disposed to enter each pocket as it is opened and eject the wrapped package therefrom.

70. In a wrapping machine, an intermittently revoluble spider having a plurality of radially disposed package pockets, a cam shaft, cam actuated connections effective to automatically open each pocket at a determined phase in the revolution of the spider, a spider shaft having a crank thereon, an operative connection from said cam shaft to said crank, a pair of rocker levers operated from said crank, and a pair of reciprocating package ejectors operated from said rocker levers and disposed to enter each pocket as it is opened and eject the wrapped package therefrom.

71. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang, means for spreading the intermediate portions of the overhang at each end of the package outwardly away from said opposite sides to expose said opposite sides for sealing down to the package ends by said sealing down means, and means for subsequently overfolding said intermediate portions onto said sealed-down portions.

72. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang, rotating means for spreading the intermediate portions of the overhang at each end of the package outwardly away from said opposite sides to expose said opposite sides for sealing down to the package ends by said sealing means, and means for subsequently overfolding said intermediate portions onto said sealed-down portions.

73. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang, means for folding the intermediate portions of the overhang outwardly away from each other as flaps and for simultaneously pressing together and sealing to each other the mutually contacting coated faces of said intermediate portions, and means for folding said outwardly folded flap portions over upon said sealed-down portions.

74. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang, means for spreading the intermediate portions of the overhang at each end of the package outwardly away from said opposite sides to expose said opposite sides for sealing down to the package ends by said sealing down means, means for folding said intermediate portions of the overhang outwardly away from each other as flaps and

for simultaneously pressing together and sealing to each other the mutually contacting coated faces of said intermediate portions, and means for folding said outwardly folded flap portions over upon said sealed-down portions to unite the same along lines closely adjacent the lines of fold of said outwardly folded portions.

75. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang, means for spreading the intermediate portions of the overhang at each end of the package outwardly away from said opposite sides to expose said opposite sides for sealing down to the package ends by said sealing down means, means for folding said intermediate portions of the overhang outwardly away from each other as flaps and for simultaneously pressing together and sealing to each other the mutually contacting coated faces of said intermediate portions, means for applying adhesive to the exposed faces of said outwardly folded portions and to the exposed faces of said sealed down portions, and means for folding said outwardly folded flap portions over upon said sealed-down portions to unite the same along lines closely adjacent the lines of fold of said outwardly folded portions.

76. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang at each end of the package, means for folding the intermediate portions of the overhang at each end of the package outwardly away from each other to expose said sealed-down portions and to simultaneously press together and seal to each other the mutually contacting coated faces of said intermediate portions, and means for folding said outwardly folded portions over upon said sealed-down portions.

77. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang at each end of the package, means for folding the intermediate portions of the overhang at each end of the package outwardly away from each other to expose said sealed-down portions and to simultaneously press together and seal to each other the mutually contacting coated faces of said intermediate portions, means for supporting said intermediate portions during such folding action, and means for folding said outwardly folded portions over upon said sealed-down portions.

78. In a package wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang at each end of the package, rotatable means for folding the intermediate portions of the overhang at each end of the package outwardly away from each other to expose said sealed-down portions and to simultaneously press together and seal to each other the mutually contacting coated faces of said intermediate portions, reciprocating means for supporting said intermediate portions during such folding action, and means for folding said outwardly folded portions over upon said sealed-down portions.

79. In a wrapping machine, means for folding an overlapping adhesively coated covering sheet about a package in overhanging relation to the package ends and with its coated face disposed to the package, means for sealing down to the package ends two opposite sides of the overhang at each end of the package, means rotatable about axes substantially parallel to the plane of the package ends for folding the intermediate portions of the overhang at each end of the package outwardly away from each other to expose said sealed-down portions and to simultaneously press together and seal to each other the mutually contacting coated faces of said intermediate portions, and means for folding said outwardly folded portions over upon said sealed-down portions.

In testimony whereof I affix my signature.

WILLIAM A. JOPLIN.