Feb. 25, 1969 F. F. TREIBER 3,429,098

AUTOMATIC WRAPPING MACHINE

Filed Oct. 24, 1965 Sheet 1 of 9

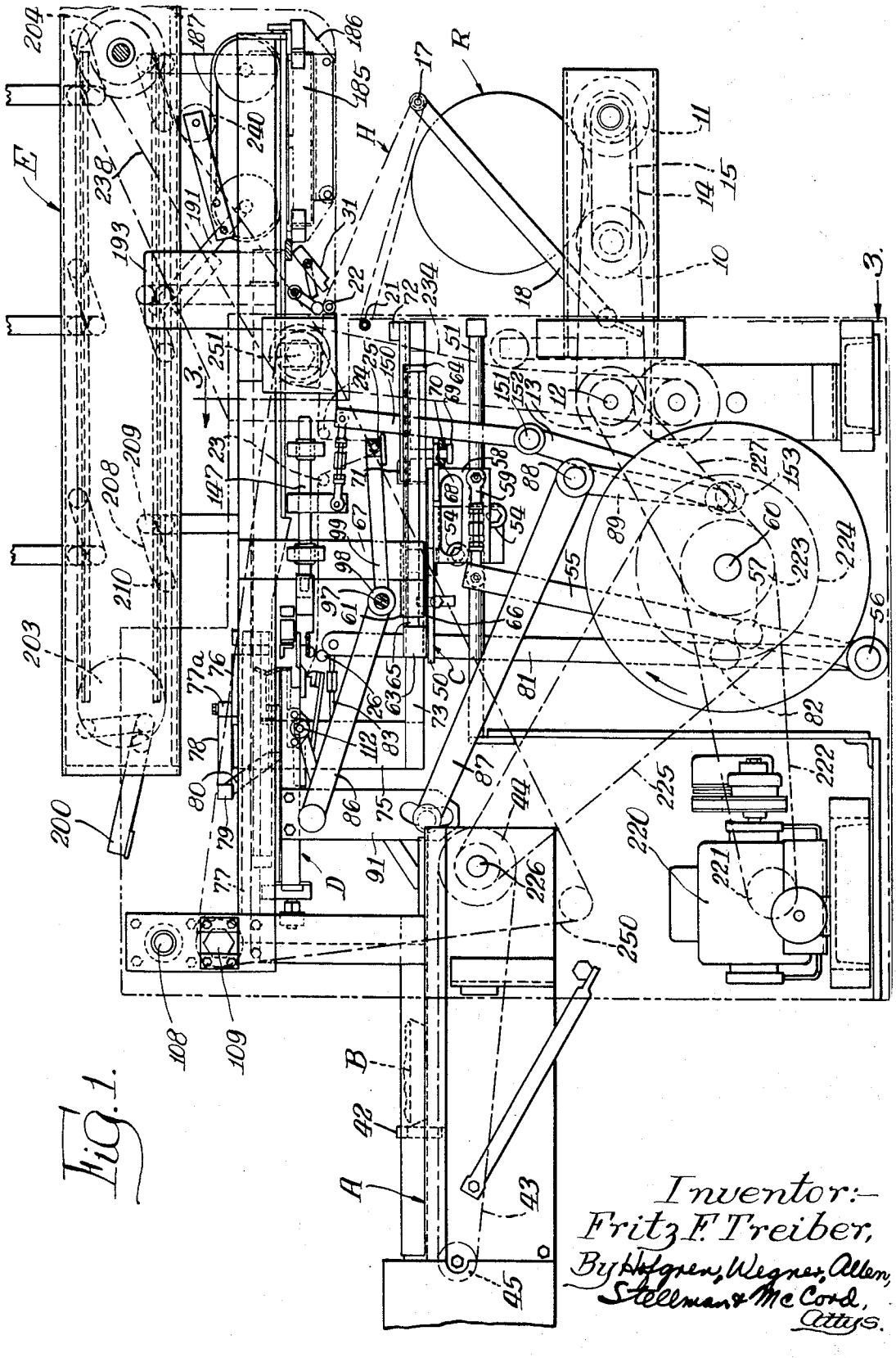


Fig. 1.

Inventor:-
Fritz F. Treiber,
By Hofgren, Wegner, Allen,
Stellman & McCord,
Attys.

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FIG. 3.

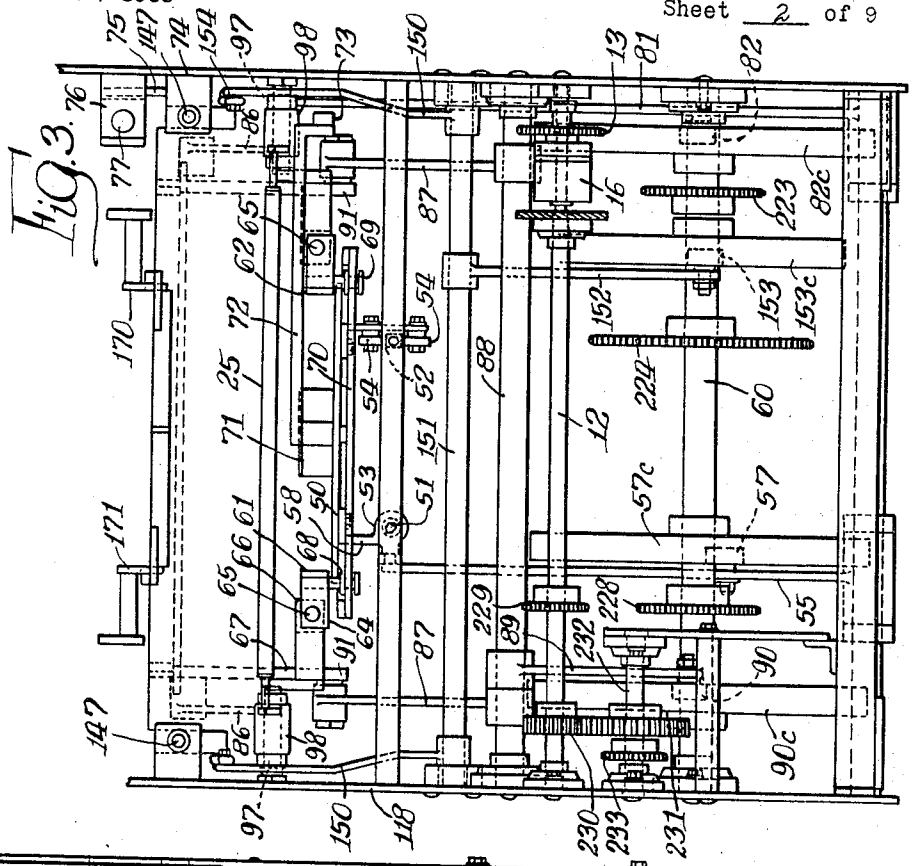
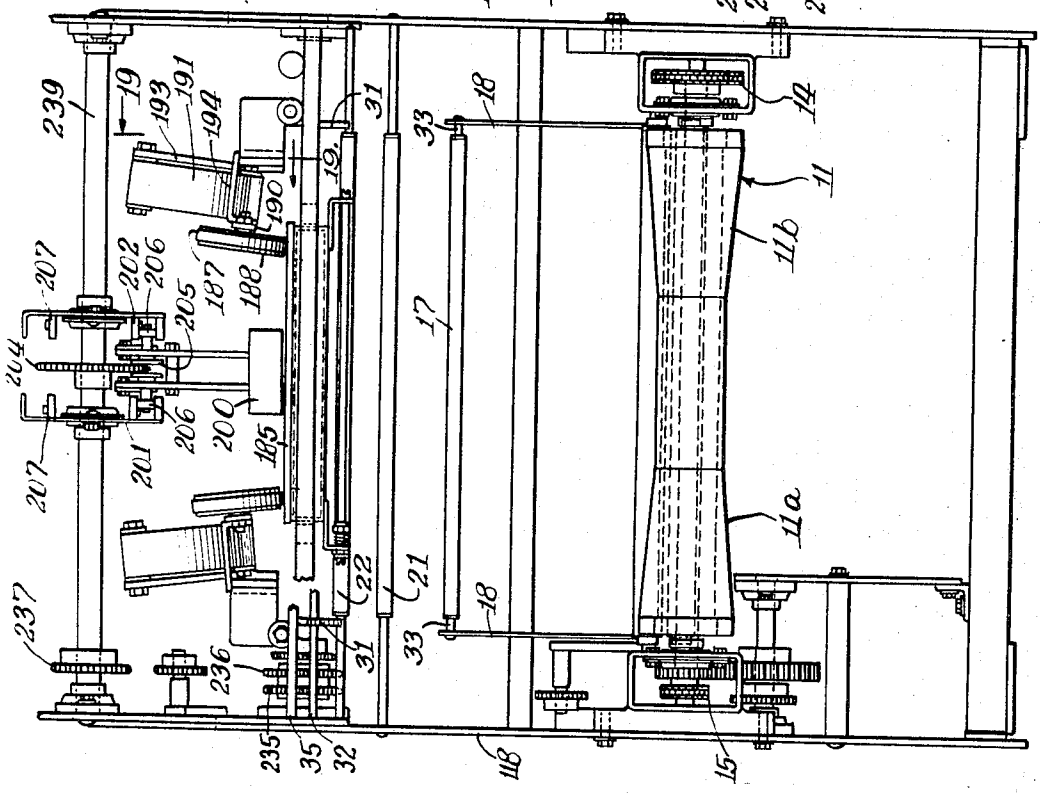


FIG. 2.



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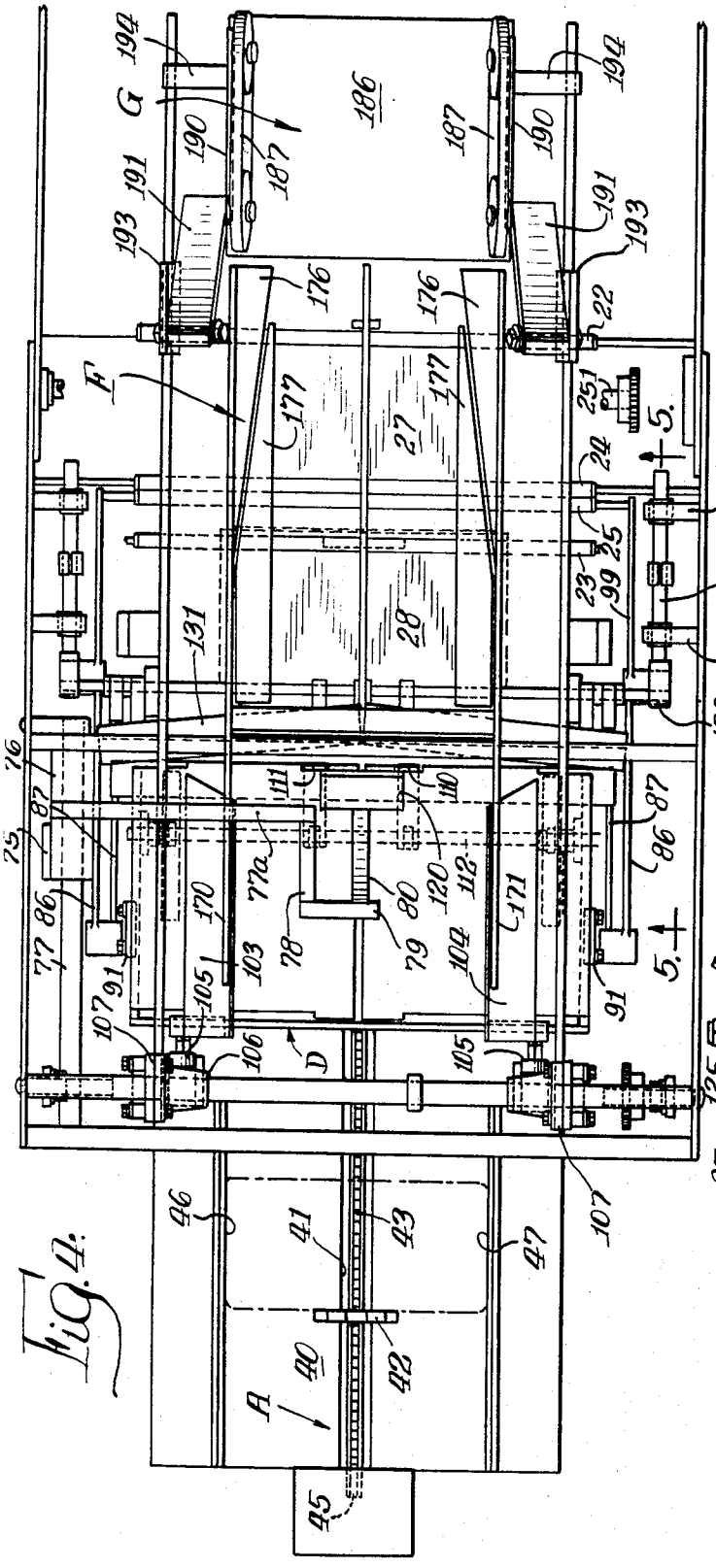


Fig. 4.

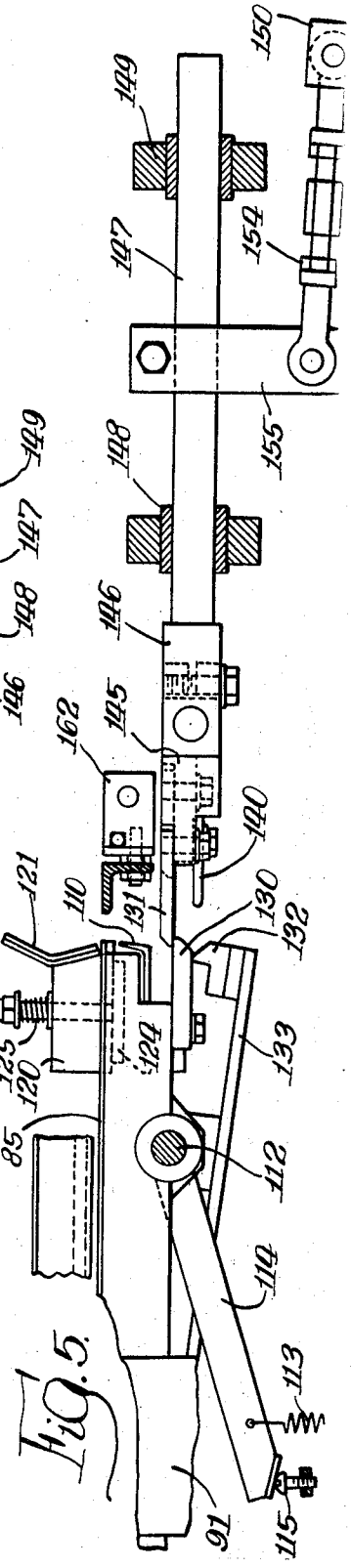


Fig. 5.

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Fig. 6.

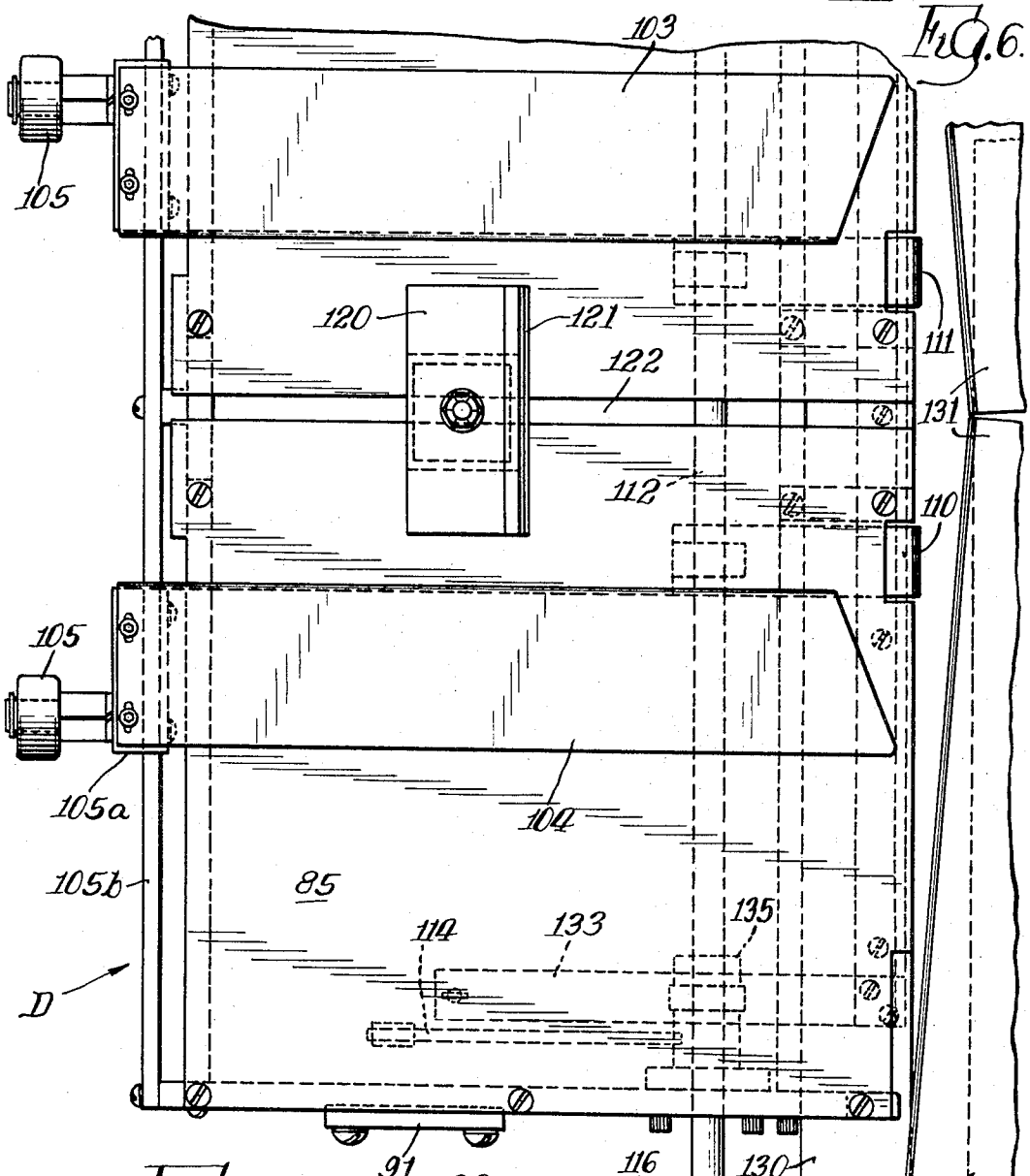
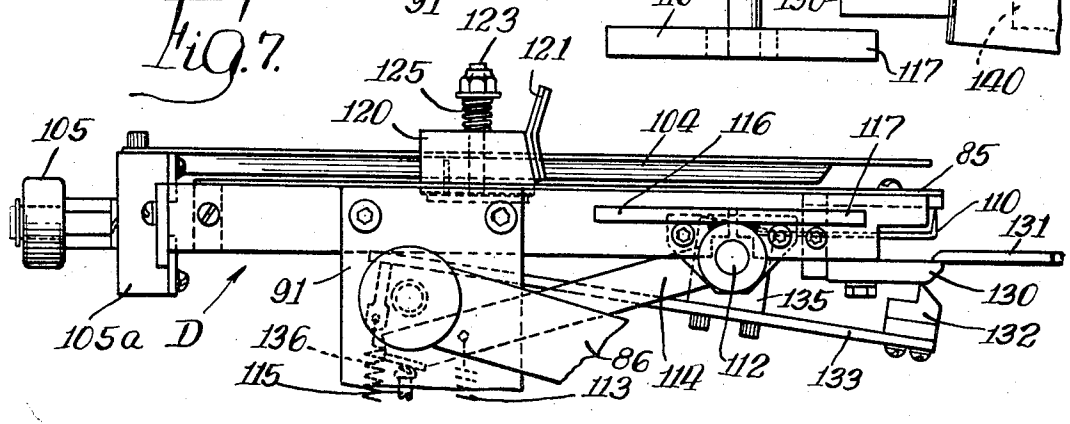


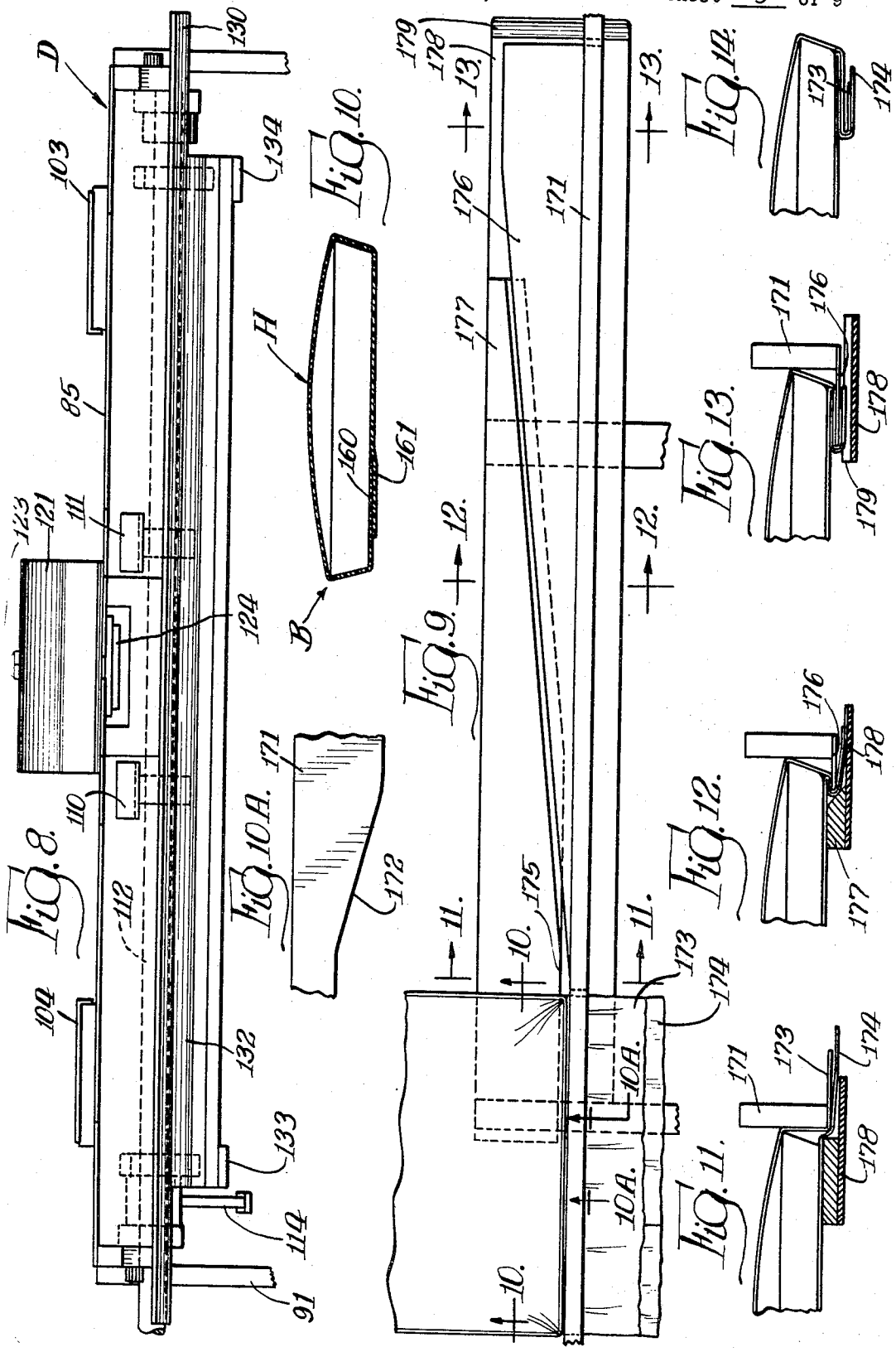
Fig. 7.



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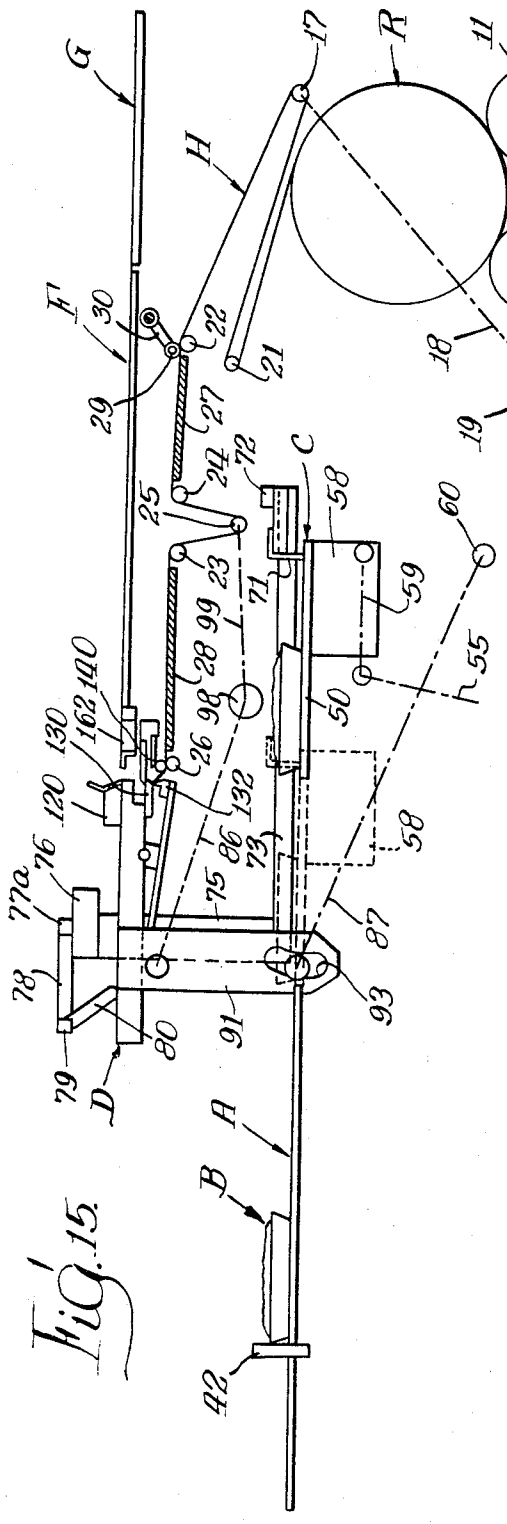


FIG. 15.

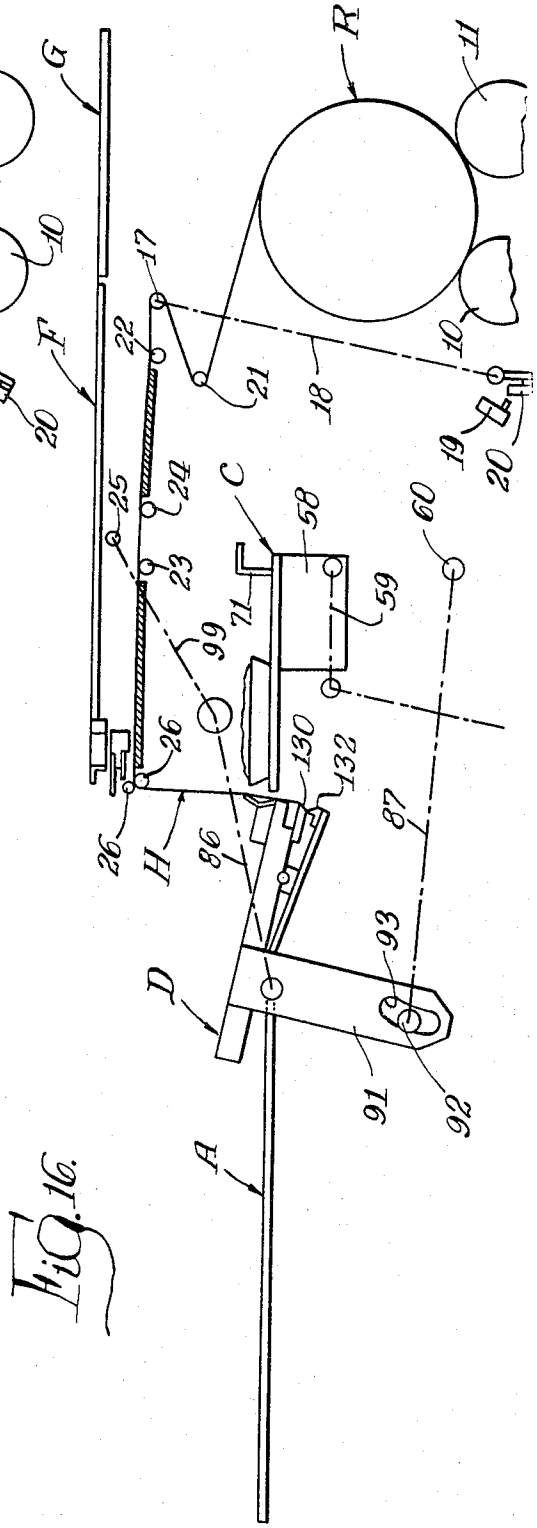


FIG. 16.

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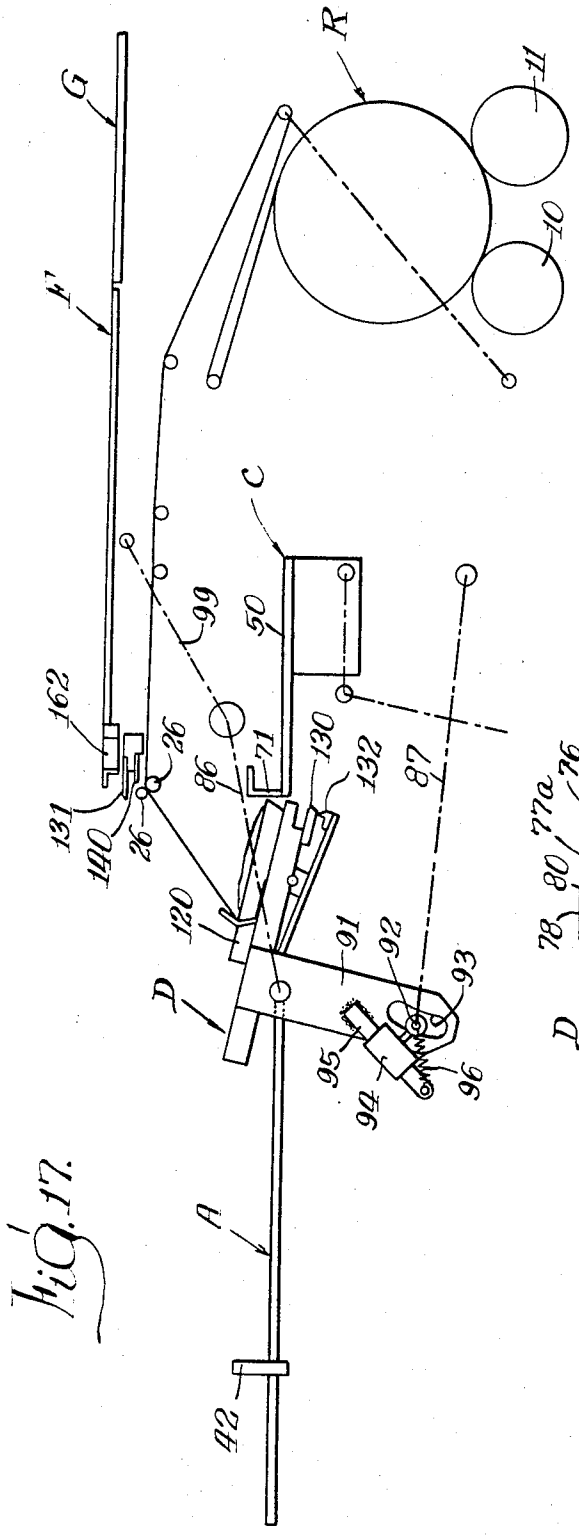


FIG. 17.

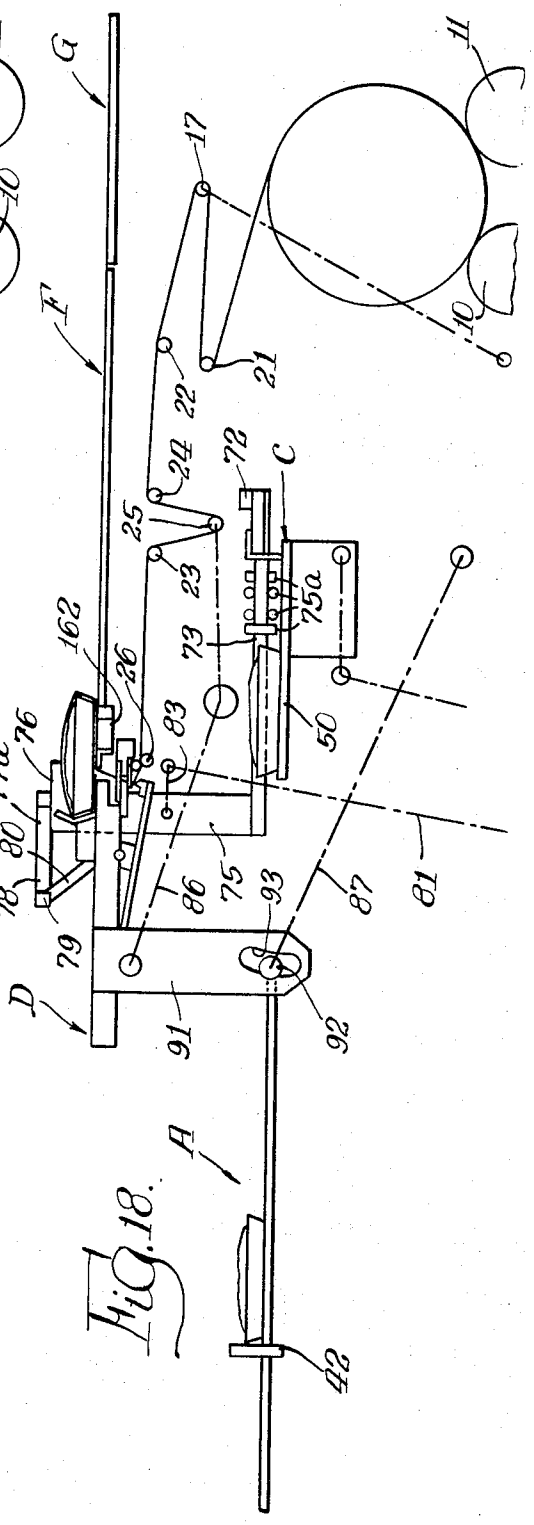


FIG. 18.

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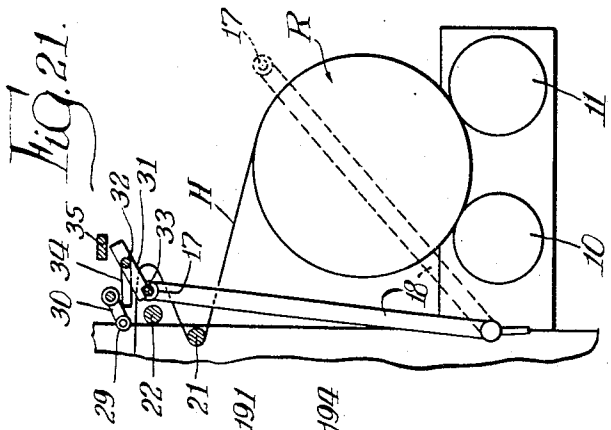


FIG. 21.

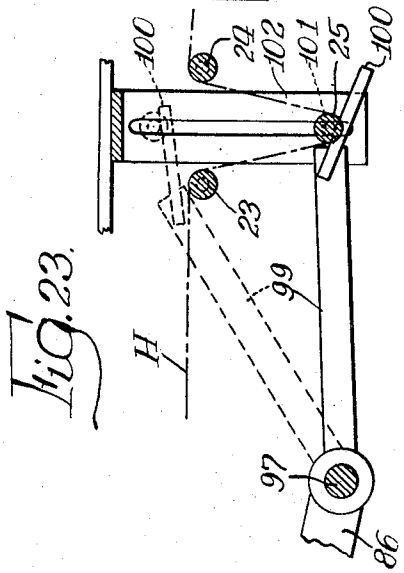


FIG. 23.

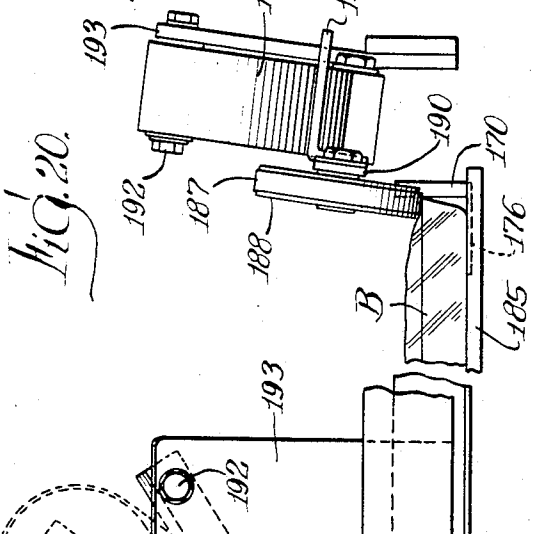


FIG. 20.

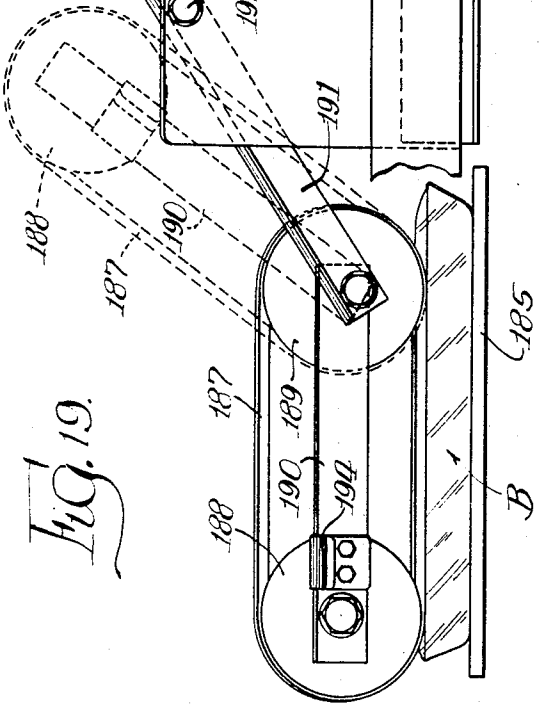


FIG. 19.

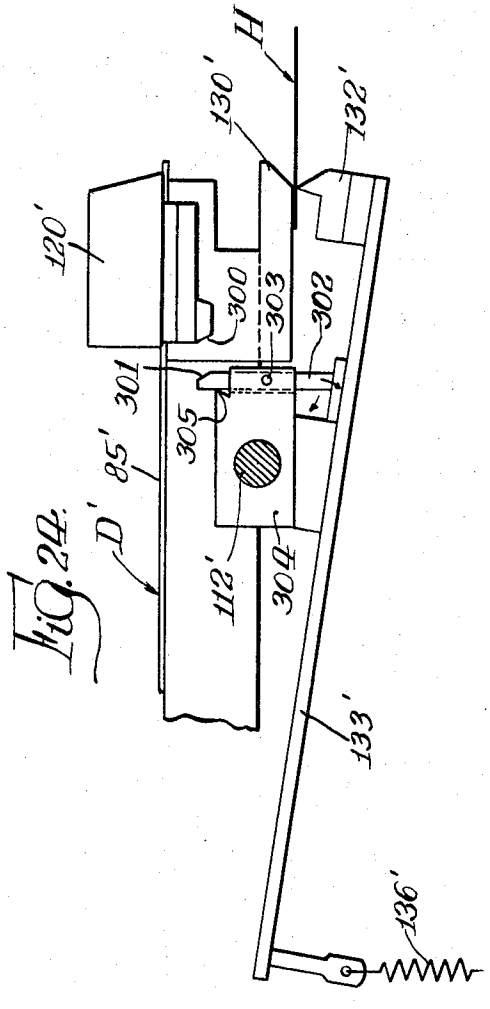


FIG. 24.

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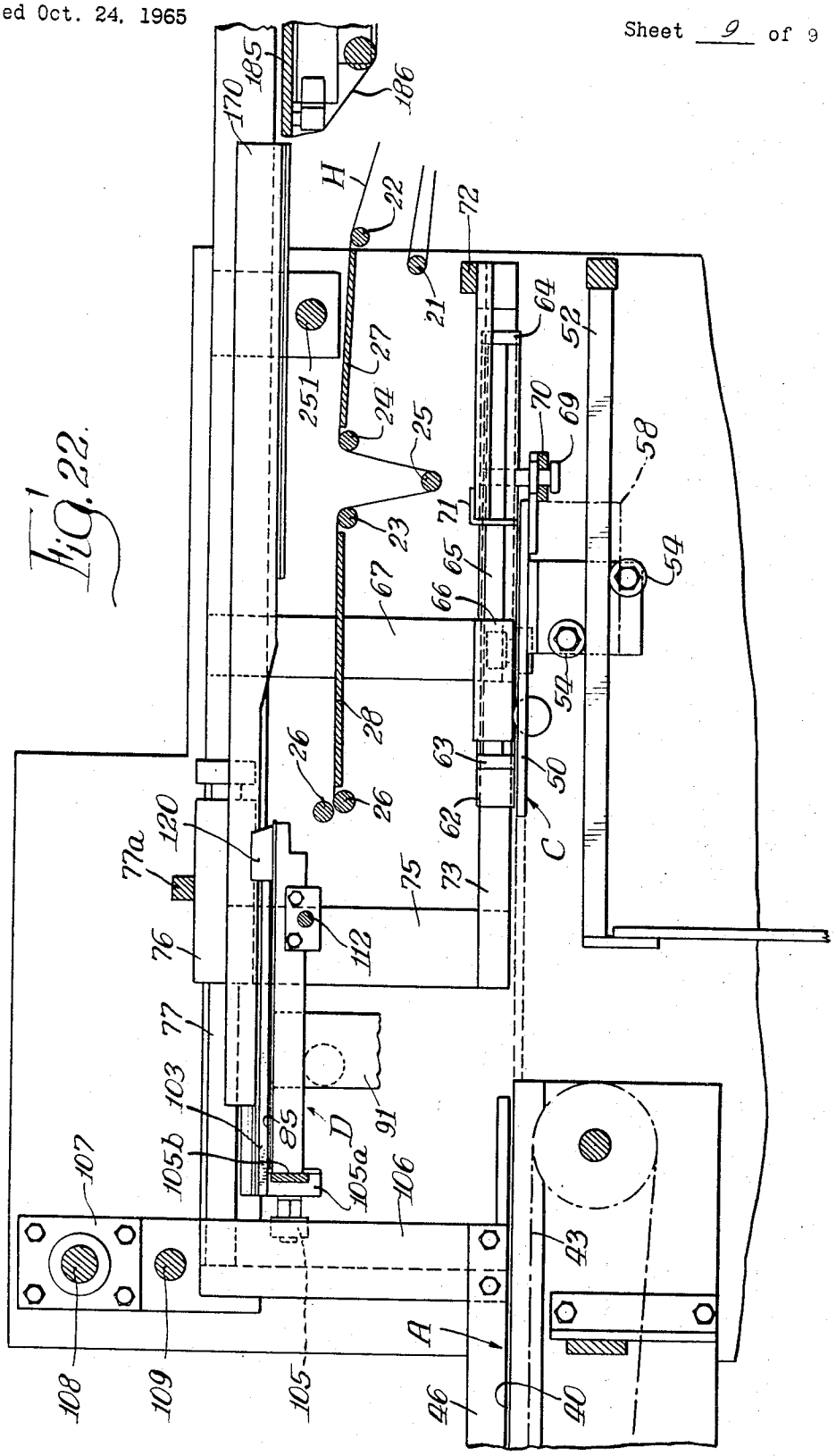


Fig. 22.

United States Patent Office 3,429,098
Patented Feb. 25, 1969

3,429,098

AUTOMATIC WRAPPING MACHINE

Fritz F. Treiber, Niles, Ill., assignor to Corley-Miller, Inc., a corporation of Ohio

Filed Oct. 24, 1965, Ser. No. 504,350
U.S. Cl. 53—77 18 Claims
Int. Cl. B65b 57/00, 11/48, 51/10

ABSTRACT OF THE DISCLOSURE

An automatic wrapping machine having package forming means extending along a path and with structure for preliminarily placing wrapping film around the package including an in-feed conveyor beneath the path, a transfer platform adjacent the in-feed conveyor and movable toward and away from the in-feed conveyor to receive a package from the in-feed conveyor and then move to a spaced location whereby the package elevator can move downwardly to a position adjacent the transfer platform and the in-feed conveyor and with the elevator having clamping means for the leading edge of the wrapping film to draw the film downwardly whereby movement of the package onto the elevator will cause preliminary wrapping of the film about the package. The package elevator is movable upwardly and the package movable from the elevator into said path to complete the wrapping of the film about the package. The wrapping film is positively controlled at all times with positive gripping means on the elevator and with structure to cut off the film and at the same time insure the insertion of the new leading edge into the gripping means. Additionally, better control of the film is provided by a concave roller for support of the supply roll of film and positive cycled means which maintain the film taut as the package elevator moves upwardly with the package thereon. Additionally, the pressure and time of pressure application and final sealing of the package by pressing it on a hot plate are variably controlled by pressure roller means movable to different positions to provide the variable control.

This invention relates to automatic package wrapping equipment and more particularly to automatic wrapping machine as well as the methods performed and package made by the machine.

An object of this invention is to provide an automatic package wrapping machine wherein successive packages are each wrapped in an individual length of film with the film length being cut from a film web and of a size as determined by the package size and wherein successive packages can enter an entry end of the machine and are wrapped and delivered from the opposite exit end of the machine, with the machine including a package elevator and means for receiving a package at the entry end of the machine and conveying the package across the path of the elevator to a position for coaction with the package elevator.

Other objects of the invention are to provide an automatic package wrapping machine as defined in the preceding paragraph in which an in-feed conveyor at the entry end of the machine conveys successive packages to a transfer platform which can move to a position adjacent the in-feed conveyor and in a space which is cyclically occupied by the package elevator and which retracts to a position whereby the package elevator can move to the cyclically occupied position and a package is then transferred from the platform to the elevator to initiate wrapping of film about the package; in which the elevator is mounted for movement between an upper generally horizontal position and a lower slightly tilted position between the in-feed conveyor and the platform with the tilted position requiring a lesser space between the

conveyor and platform to shorten the path of movement required for the platform and to reduce the vertical space required for the elevator; in which means are provided for moving the package elevator through its cycle of movement with means responsive to a jam of the elevator either in up or down movement to release the drive of the elevator and discontinue operation of the machine; in which the package elevator engages a leading edge of the continuous film and pulls the film down as the package elevator moves to a position adjacent the transfer platform to place a length of the film in the path of a package to be transferred from the platform to the elevator with the film leading edge being positively gripped by gripping members on the elevator and with the film being positively positioned within the gripping members as a part of the film cut-off cycle during the wrapping of a preceding package; and in which structure is optionally useable for obtaining positive release of the gripping members from the leading edge of the film as a package is placed onto the elevator and in response thereto to reduce the pull on the film by the package when a soft product is being packaged.

Further objects of the invention are to provide an automatic package wrapping machine in which a package elevator operates as defined in the preceding paragraphs and wherein the film is supplied to the elevator from a supply roll mounted by means providing a peripheral drive for the supply roll and the drive occurring intermittently in response to the size of a loop of film and the peripheral drive providing a constant rate of feed off of film from the roll and wherein the supply roll is mounted by roller structure providing constant centering of the roll; wherein a back feed roll is disposed between the elevator and the supply roll and positioned in a loop of film to maintain the film under some tension and which operates to draw back film as required as the elevator is elevated to maintain a fairly tight wrap of the film about a package on the elevator which is being wrapped and said back feed roll moving with the elevator at all times so that the elevator can repeatedly cycle with back feed of the film if no package should be advanced onto the elevator.

Still further objects of the invention are to provide a wrapping structure and method performed thereby for providing a more tightly sealed package in which the ends of the wrapping material are folded partially under the package with the ends reversed on themselves and heat sealed to effect sealing of the end portions of the film to each other as well as to other portions of the film wrapped about the package to effect a doubled back seal which is particularly desirable with film coated with a heat sealable material on one side only so there can be no open path through the film layers from the interior to the exterior of the package.

Further objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a front elevational view of the automatic wrapping machine showing a package positioned at the entry end of the machine;

FIG. 2 is an end elevational view looking toward the right-hand end of the machine as shown in FIG. 1;

FIG. 3 is a vertical section taken generally along the line 3—3 in FIG. 1 and with drive chains omitted for clarity;

FIG. 4 is a plan view of the machine with the overhead conveyor omitted for clarity;

FIG. 5 is a vertical section on an enlarged scale taken generally along the line 5—5 in FIG. 4;

FIG. 6 is a fragmentary plan view of the package elevator on an enlarged scale and showing a portion of the film cutter associated therewith;

FIG. 7 is a fragmentary side elevational view of the structure shown in FIG. 6 looking toward the lower end thereof as viewed in FIG. 6;

FIG. 8 is an end elevational view of the package elevator looking toward the right-hand thereof as viewed in FIG. 6;

FIG. 9 is a plan detail view of a portion of the under folding structure for the package shown generally in FIG. 4;

FIG. 10 is a vertical section through a package prior to completing the wrapping thereof and taken generally along the line **10—10** in FIG. 9;

FIG. 10–A is a fragmentary elevational view of a down-folding plow;

FIG. 11 is a fragmentary vertical section taken generally along the line **11—11** in FIG. 9 and showing a package as the under folding operation begins;

FIG. 12 is a view similar to FIG. 11 taken generally along the line **12—12** in FIG. 9;

FIG. 13 is a view similar to FIG. 11 showing the package more fully formed and taken generally along the line **13—13** in FIG. 9;

FIG. 14 is a view of the package after it has left the folding station shown in FIG. 13 and prior to heat sealing of the film layers together with the space between layers shown slightly enlarged for clarity;

FIG. 15 is the first of a series of views showing the sequence of operation of the automatic wrapping machine;

FIG. 16 is a view similar to FIG. 15 showing a succeeding step in the wrapping cycle;

FIG. 17 is a view similar to FIG. 15 showing a third step of the wrapping cycle;

FIG. 18 is a view similar to FIG. 15 showing a fourth step in the wrapping cycle;

FIG. 19 is a detailed side elevation of the package holddown structure shown in one operative position in full line and a second operative position in broken line;

FIG. 20 is an end elevational view of the structure shown in FIG. 19;

FIG. 21 is a view of latch structure for the film loop control roller and the snubbing roll;

FIG. 22 is a fragmentary view of the package guiding structure disposed along one side of the machine;

FIG. 23 is a fragmentary elevational view of the back feed roll and its mounting and actuating structure; and

FIG. 24 is a side elevational view of a modified form of package elevator.

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail an embodiment of the invention together with a modification thereof with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiments illustrated. The scope of the invention will be pointed out in the appended claims.

The wrapping machine is shown generally in FIG. 1 and includes an in-feed conveyor, indicated generally at A, at one end of the machine which receives a package of meat or the like having a tray or board on which the product is placed, as indicated generally at B, with the in-feed conveyor advancing the product onto a transfer platform, indicated generally at C, which can move between the retracted position shown in FIG. 1 and an advanced position adjacent the in-feed conveyor A when it is to receive a package. After the package is received on the platform C the platform returns to the position shown in FIG. 1 for transfer of the package to an elevator indicated generally at D, with the initial wrapping occurring as the package is advanced onto the elevator and further being accomplished as the elevator is elevated from a lower position to the position shown in FIG. 1 where banding the wrapping film about the ptackage is completed as the package is moved substantially off the elevator. An overhead conveyor system, indicated generally at E, advances the package through a wrapping station, indicated generally at F, in FIG. 4, where the end sections of the wrapping material are folded progressively under the package as shown in FIGS. 11–13. The film layers at the underside of the package are then heat sealed on a hot plate, indicated generally at G, and the package is then discharged from the machine at an exit end opposite from the entry end.

The sequence of operation can be best understood generally by reference to FIGS. 15 to 18 which show steps of the operating cycle and a description with reference to these figures is given prior to a detailed description of the structure of the machine. As shown in FIG. 15, a package B advances from the initial position on the in-feed conveyor A to a position on the transfer platform C which in broken line is shown in its advanced position adjacent the in-feed conveyor. During this time the elevator D is in its upper position to provide an unobstructed path for movement of the transfer platform C. Following delivery of the package onto the transfer platform, the platform returns to its right-hand retracted position, as shown in full line in FIG. 15, to provide a gap between it and the in-feed conveyor A so that the elevator D can descend to an inclined position in the space as shown in FIG. 16.

During the lowering movement of the elevator film H is drawn downwardly by the gripping mechanism on the elevator to extend vertically across the path of a package which is pushed off the transfer platform C onto the elevator, as shown in FIG. 17. This action of pushing the package into the film results in release of the film from the gripper structure on the elevator to have the leading edge of the film underneath the package as shown in FIGS. 10 and 17 and with the adjacent film extending over the package. The elevator D then ascends to its upper horizontal position shown in FIG. 18 to substantially complete the wrapping of the film about the package and as the package is pushed off the elevator D the wrapping is completed and a hot plate seals the overlapped film at the underside of the package, forming an intial tack seal with opposite ends of the film extending from the package as shown in FIG. 11. As shown in FIG. 18, the film wrapped about the package is cut off from the supply length thereof by cutting mechanism in part carried by the elevator and simultaneously the leading edge of the film supply is inserted within the gripping structure on the underside of the elevator. As will be noted in FIG. 18, a succeeding package has been placed on the transfer platform C and the platform has returned to its retracted position awaiting the next descent of the elevator D for wrapping of the next package.

Film feed

The film is supplied to the wrapping machine from a roll of film indicated generally at R which is supported at the periphery thereof by a pair of relatively large driven rollers **10** and **11**. The rollers **10** and **11** are selectively driven as required from a driven shaft **12** having a gear **13** (FIG. 3) thereon which is connected by a chain **14** to a sprocket on the shaft of roller **11** for rotating the roller in a clockwise direction as viewed in FIG. 1. A chain **15** at one end interconnects rollers **10** and **11** so that roller **10** is driven by roller **11** and both driven rollers rotate in a clockwise direction for delivering film from the supply roll R when required. The drive of sprocket **13** is controlled by a magnetic clutch **16** (FIG. 3) with the engagement of the clutch under the control of an idler or dancer roller **17** mounted on spaced pivotal arms **18** and positioned within a loop of the film H. The clutch **16** is controlled by a limit switch **19** (FIGS. 15 and 16) mounted on the frame of the machine whereby the normally closed limit switch is held open when the loop of film is relatively large as shown in FIGS.

1 and 15 and is permitted to close when the loop shortens as shown in FIG. 16. The operation of switch **19** is controlled from an actuator plate **20** carried on the lower end of one of the idler supporting arms **18**. When the loop shortens to the extent shown in FIG. 16, the limit switch **19** has closed and the clutch **16** engaged to drive the rollers **10** and **11** to add additional film to the loop in which the idler **17** engages.

In order to keep the roll R centered relative to the machine the roller **11** is contoured as shown in FIG. 2 to have inclined outer sections **11***a* and **11***b* defining a generally concave contour for the roller which results in maintaining the supply roll centered relative to the machine since the supply roll will resist climbing up either of the inclines **11***a* and **11***b* and will remain in a position in which the forces acting on the supply roll R are balanced. This action requires that the roller **10** be straight.

The loop of film in which the idler **17** rests is defined by a pair of rollers **21** and **22** fixed to the frame of the machine and extending transversely thereof. The film travels from roller **22** over a pair of rollers **23** and **24** spaced from each other to provide a gap therebetween in which an intermediate film loop can be formed and in which a back-feed roll **25** rests to exert tension on the film intermediate the loop at the supply roll and the wrapping station having elevator D. The film then passes between rollers **26** extending transversely of the frame and the film partially wraps about one or the other of these during the wrapping operation. For additional support of the film through the machine, a pair of support plates **27** and **28** are mounted to the frame with the plate **27** spanning the space between the rollers **22** and **24** and the plate **28** spanning the space between the rollers **23** and **26**. In order to prevent retrograde movement of the film a non-rotating snubbing roll **29** is mounted on a pivoted arm **30** disposed at an angle whereby film can readily travel from right to left as viewed in FIG. 15 but any tendency for movement in the opposite direction will be prevented by the wedge action of the snubbing roll **29**.

To facilitate threading the film initially through the machine in setting up the film supply a latch structure is provided including a latch member **31** which as shown in FIG. 21 is pivoted by means of a pivotal shaft **32** to a position to engage a reduced end **33** of the idler roller **17** to latch the idler roll **17** in an extreme position of rotation adjacent the rollers **21** and **22** with a centrally located finger **34** positioned to engage the arm **30** of the snubbing roll **29** to raise the snubbing roll at the same time as the idler roll **17** is latched with the result that film can be easily threaded through the machine. When the latch is released by slight clockwise pivoting from the position shown in FIG. 21 the idler roll **17** is free to move in a clockwise direction and snubbing roll **29** to return to engagement with the film. Pivotal movement of the latch **31** is restrained to a limit position by the upper end thereof engaging a stop bar **35**.

In-feed conveyor

The in-feed conveyor A extends from the left-hand end of the machine as viewed in FIG. 1 and embodies a platform **40** having central slot **41** through which a single pusher **42** can travel with the pusher **42** being fastened to an endless chain **43** passing about a drive sprocket **44** and an idler sprocket **45**. The in-feed conveyor also has a pair of package guides **46** and **47** (FIG. 4) extending along the length thereof and which are adjustable toward and away from each other dependent upon the size of package to be wrapped. The in-feed conveyor is timed relative to the cycle of the remainder of the wrapping machine whereby the pusher **42** will deliver a package to the transfer platform C when the latter is in position adjacent the in-feed conveyor platform **40** to receive the package.

Transfer platform

The transfer platform C embodies a platform base **50** shown in FIGS. 1, 3 and 15 to 18 which is generally square in plan view and which can move between the full line and broken line positions shown in FIG. 15. The platform base is supported from beneath by a longitudinally extending rod **51** and a transversely spaced bar **52** for movement between limit positions. A downwardly depending collar **53** is movable on the rod **51** and upper and lower rollers **54** are movable on the bar **52** with the collar and rollers being mounted on brackets depending from the platform base **50**. The transfer platform is operated in a cycle by a cam arm **55** which is pivotal on a shaft **56** extending across the machine near the bottom thereof and having a cam follower roller **57** engageable in a suitable cam track of cam **57***c* mounted on a cam shaft **60**. The upper end of the arm **55** is connected to a bracket **58** which supports the mounting collar **53** through an adjustable linkage **59** extending from the upper end of the arm **55**. In one cycle of operation the cam shaft **60** is rotated through one revolution and the drive cam **57***c* for the cam arm **55** cycles the arm to move the transfer platform C in an operating sequence of movements as previously described in connection with FIGS. 15–18.

The transfer platform C has a pair of package guides associated with it which align with the package guides **46** and **47** of the in-feed conveyor A. As shown in FIG. 3, these guides comprise spaced apart upright elongate plates **61** and **62** which are interconnected for movement with the package guides **46** and **47** by structures subsequently to be described whereby rotation of a single handle will adjust the machine for handling differing package sizes. Each of the package guides **61** and **62** are similarly mounted and constructed. The package guide **61** has front and rear transverse plates **63** and **64** which have a rod **65** extending therebetween which is movable in a collar **66** fixedly connected to a depending bracket **67** which is connected to a frame structure for accomplishing lateral adjustment of the package guides. Since the guides **61** and **62** must move with the transfer platform C in its movements the movement is permitted by the movable mounting of the rod **65** in the collar **66** and the movement is cause by providing each of the guide plates **61** and **62** with a depending roller **68** and **69**, respectively, which engage in a guide track extending transversely of the platform and which is formed by a pair of bars **70** secured to the platform. This causes the movement of the side guides with the platform while permitting their lateral adjustment by the rollers **68** and **69** being movable in the guide track formed by the bars **70**.

The transfer platform C also has a package pusher **71** which overlies the platform base **50** and is cycled to be in a rearward position as shown in FIG. 15 in full line when a package is received on the transfer platform and subsequently to push a package off the transfer platform onto the elevator D as shown in FIG. 17. The pusher **71** is suspended over the platform base **50** by a laterally extending arm **72** which extends toward the back side of the machine where it connects with a longitudinally extending bar **73** which is guided for movement longitudinally of the machine from the back frame panel **74** by a plurality of vertical and horizontal guide rollers **75***a* shown in FIG. 18. The bar **73** is connected to a vertical plate **75** at the rear of the machine which extends upwardly to connection with a block **76** which, as shown in FIG. 3, can move along a frame mounted rod **77**. The block **76** has an arm **77***a* extending toward the center line of the machine and having a short arm **78** at a right angle thereto extending toward the entry end of the machine with a further arm **79** extending to the center line of the machine and having a downwardly angled pusher for pushing a package off the elevator D as described hereinafter.

The movement of platform pusher **71** and the elevator pusher **80** is derived from a cam arm **81** pivotal on the

lower transverse shaft **56** and which has a cam follower roller **82** engageable in the groove of a cam **82***c* mounted on the cam shaft **60**. The upper end of cam arm **81** is connected to the vertical plate **75** through a connecting linkage **83**. In one cycle of operation the cam arm **81** causes simultaneous package advancing movement of the platform pusher **71** and retracting movement of the elevator pusher **80** and then retracting movement of the platform pusher **71** and package advancing movement of the elevator pusher **80**.

Package elevator

The package elevator D embodies an elevator base **85** which is generally rectangular in plan view which operates at a wrapping station between an upper package discharge level as shown in FIG. 18 where the elevator is generally horizontal and a lower package receiving position at which the elevator is in an inclined position to receive a package from the transfer platform C as shown in FIG. 17. The elevator is mounted for movement between the positions on a four arm linkage system having upper arms **86** and lower arm **87** at front and rear of the machine with the lower arms **87** being the power arms and affixed to a transverse rotatable shaft **88** extending from front to rear of the machine as shown in FIG. 3 and having a cam arm **89** affixed thereto having a cam follower roller **90** engageable in a cam track of cam **90***c* mounted on cam shaft **60**.

The lower power arms **87** each connect to plates **91** near the lower end thereof with there being a plate depending from each side of the elevator base **85**. As a safety feature, the ends of the arms **87** are yieldably connected to the elevator base plates **91** in the manner shown in FIG. 18 whereby a jam of the elevator in either direction of movement will result in turning off power to the machine until the jam is corrected. This structure includes a roller **92** at the end of each of the arms **87** engageable in a central notch in a slot **93** at the lower end of the plates **91**. If the elevator should resist following the power arms **87** at any time in either direction the roller **92** can shift in the slot **93** with the result that a switch **94** will be disengaged by the roller **92** to open the power circuit for the machine. The switch **94** is mounted on an arm **95** fixed to one of the plates **91** and a fairly strong spring **96** is connected between the arm **95** and the roller **92** to cause the roller to remain in the notch in the slot **93** during normal operation.

The upper arms **86** are merely follower and guiding arms and are pivotal on stub shafts **97** at the front and rear of the machine. The arms intermediate their ends have collars **98** rotatably mounted on the stub shafts **97** and extensions **99** of the arms **86** are each provided with an abutment plate **100** as shown particularly in FIG. 23 which coacts with the opposite ends of the back-feed roller **25**. The back-feed roller has reduced diameter sections at opposite ends thereof forming a pair of guide pins one of which is shown at **101** in FIG. 23 for guiding the back feed roller in up and down movement in a pair of slotted plates **102** at the front and rear of the machine. The roller is free to descend under gravity as permitted by the position of the arms **99** and is positively elevated by the abutment plates **100** as the arms **99** move up. Through these interconnections the back feed roller **25** is caused to cycle in timed relation with the package elevator D whereby as the elevator is descending the back-feed roller **25** is positively raised and as the elevator D is ascending the back-feed roller **25** is permitted to descend to maintain the film taut as it is being wrapped around a package. This also causes back-feed of the film if no package is present.

The relationship of the lengths of arms **86, 97** and their pivot axes results in inclination of the elevator when in the lower position so that, as shown in FIGS. 16 and 17, the elevator can be positioned between the in-feed conveyor A and the transfer platform C with a reduction in the required amount of movement of the transfer platform C. More specifically the transfer platform C does not have to move backward a distance equal to the width of the elevator as viewed in FIG. 16 due to the inclined orientation thereof which reduces the distance and therefore the time required for movement of the transfer platform C.

The elevator base **85** has a pair of package guides **103** and **104** associated therewith which guide a package while on the elevator and which also function to tuck the film at the rear corners of the package as it is advanced from the transfer platform C onto the elevator D. These package guides and tuckers are relatively thin in height and overlie the elevator base **85** as shown particularly in FIGS. 7 and 8. These package guides are simultaneously adjusted for lateral spacing along with the guides **46** and **47** of the in-feed conveyor and guides **61** and **62** of the transfer platform C. This guiding is accomplished by having the forward ends of the guides each provided with a roller **105** which is movable in an upright channel **106** which extends downwardly from a block **107** to connect with a guide of the in-feed conveyor. The rollers **105** each extend from a block **105***a* which is transversely movable on a bar **105***b* extending across the rear of the elevator. The block **107** is mounted on a pair of vertically spaced transverse shafts with the shaft **108** being a guide shaft and the shaft **109** being threaded and operable from an end of the machine to be rotated. Reverse threading at opposite ends of the shaft causes the blocks **107** at said opposite ends to move either toward or away from each other to obtain lateral spacing of the guide structures previously described and also of the underfolding plow structure and guiding structure at station F to be described subsequently.

The package elevator has a pair of movable fingers **110** and **111** at the front side thereof which are movable between a lowered position beneath the level of the surface of the elevator base **85** and an upper position blocking the front of the elevator to hold a package on the elevator during elevation thereof from the position shown in FIG. 17 to the upper position. The fingers **110** and **111** are fixed to a rock shaft **112** extending across and beneath the elevator base **85** for rocking movement with the rock shaft. The fingers **110** and **111** are urged upwardly by a spring **113** (FIG. 7) engaging an arm **114** affixed to and extending from the rock shaft **112** with the movement being limited by an abutment screw **115** secured to one of the elevator mounting plates **91**. The fingers **110** and **111** must be depressed when the elevator D is in the lower package receiving position as shown in FIG. 16 and also in its upper position as shown in FIG. 18 to permit ingress and egress of a package relative thereto. This action is caused by a lever bar **116** affixed to an end of the rock shaft **112** which has an end **117** engaged by a pin (not shown) affixed to the interior of a front frame member **118** whereby as the elevator reaches its upper position the pin is contacted by the upper surface of the lever bar end **117** to rock the fingers **110** and **111** downwardly. When the elevator reaches its bottom position the opposite ends of the lever bar **116** is engaged from beneath by another pin (not shown) on the frame member **118** to again rock the fingers downwardly out of obstructing relation with the travel of the package.

The package elevator has a package pusher block **120** mounted on the upper side thereof and extending for a height sufficient to substantially engage a package through the front plate **121** thereof which engages the trailing edge of a package on the elevator at all times and which functions to hold the film around the package during the wrapping operation as shown in FIG. 17. The pusher block is engaged by the package pusher **80** to discharge a package from the elevator as shown in FIG. 18. The block overlies a slot **122** in the elevator base **85** and is

movably secured to the elevator by means of a bolt **123** passing therethrough and connected at its lower end to a plate **124** captured beneath the slot **122** and with a spring **125** on the bolt exerting downward pressure on the block to cause the block **120** to frictionally engage the elevator base **85** so that the block is restrained but free to move as external forces are applied to it.

The package pusher performs the important function of gripping the leading end of the film to the package as the package advances from the position of FIG. 16 to that of FIG. 17 in moving onto the elevator so that the film will be released from a film gripper to be described with the leading edge disposed under the package as shown in FIG. 17 and also shown in FIG. 10. It is a characteristic of the machine that the leading edge of the film will extend across beneath the package along the same line regardless of the package size since it is a constant length of film which extends from the package pusher to the film gripper.

The package elevator D also has mounted along the edge thereof and beneath the base **85** a transversely extending knife member **130** which coacts with a cyclically movable knife **131** movably mounted on the frame of the machine and cycled in a manner later to be described.

The elevator also has film gripping structure for gripping the leading edge of a film with this structure including an upper gripper member extending transversely of the elevator and defined by the under surface of the knife blade **130** carried by the elevator. The other part of the gripping structure includes a transversely extending plastic rib **132** mounted at the ends of a pair of spaced arms **133** and **134** which extend beneath the elevator and are rotatably journalled on the shaft **112** by spaced bearing blocks, one of which is indicated at **135**. The gripping member **132** is urged against the knife member **130** by means of a spring **136** connected to the rear end of the lever arm **133** as shown in FIG. 7.

A film tucker in the form of a rectangular plastic bar **140** is positioned beneath the movable knife **131** and movable therewith whereby as the length of film wrapped about the package is cut off from the film supply the new leading edge is inserted in between the gripping members **130** and **132** by the tucker bar **140**. As shown in FIG. 6, the tucker bar **140** is substantially aligned with the cutting edge of the cutter **131** at the center line of the machine so that the tucker **140** will extend into the space between the grippers during the cut-off operation for the film. The tucker bar **140** will cam open the gripping members against the action of the spring **136** connected to the mounting arm **133** and the film will be retained between the gripping members as they are caused to close by the spring and as the tucker bar is withdrawn because of the relatively slippery nature of the material used in forming the tucker bar. Alternatively, the tucker bar could be suitably coated.

The operation of the elevator in handling the film can now be more completely described with reference to FIGS. 15 to 18 wherein it will be seen that in FIG. 15 the leading edge of the film H has been inserted between the gripping members. The elevator D then lowers to the position shown in FIG. 16 with the film being drawn downwardly by the gripping members on the elevator. At this same time the back-feed roller **25** is elevated through the upper mounting arms **86–99** of the elevator to remove the restraint of this roller as the film is drawn down. In FIG. 17, the package is shown as having moved onto the elevator and engaging the package pusher **120** with the film being released from the gripping members **130** and **132**. In FIG. 18, the film has been completely wrapped around the package and the package is departing from the elevator with the film about the package being cut off by the cut-off knife **131** coacting with knife blade **130** on the elevator and at the same time the new leading edge of film is inserted between the gripping members for the next operation.

Knife and tucker

The knife blade **131** and tucker bar **140** are mounted on a transversely extending mounting member **145** which at each of its ends is mounted to a block **146** secured to a rod **147** which is movable within a pair of fixed guide blocks **148** and **149** (FIG. 5). The rod **147** is actuated by a cam arm **150** fixed to a shaft **151** extending transversely of the machine and rockably mounted therewith with a further cam arm **152** having a cam follower roller **153** coacting with a slot in a cam **153***c* mounted on the cam shaft **60**. The upper end of the cam arms **150** are each connected to their respective guide rod **147** through an adjustable link **154** and a bracket **155** attached to the guide rod. The cam **153***c* is related to the other cams whereby to advance the knife and tucker bar when the package has in part moved off the elevator as shown in FIG. 18.

Package completion

Up to this point structure has been described to initially band a rectangular sheet of film about a package as cut off from a supply of film and with the amount of film required for the package being automatically determined by the size of the package itself since as the package moves onto the elevator and the elevator rises, the requisite amount of film will be drawn from the film supply loop. As the banding of the article is completed by movement of the elevator to the position shown in FIG. 18 the back-feed roller **25** maintains the film taut about the package because of its downward movement as the elevator ascends with the weight of the roller being controlling as to the tautness of the film about the package.

As the package leaves the elevator the portion of the film adjacent the cut-off line is caused to move under the package and overlap the leading edge of the film as shown in FIG. 10 in which the leading portion is shown at **160** and the overlapping portion is shown at **161**. The overlapped portions of the film are then heat sealed together by the package being moved onto a hot plate **162** as the package leaves the elevator.

An overhead conveyor mechanism E subsequently to be described picks up the package resting on the hot plate **162** and then advances the package through a plow station F to complete the packaging.

As the package is brought up by the elevator to the upper position the lengths of film extending beyond the ends of the package are brought up beneath guide rails **170** and **171** which as shown in FIG. 4 extend for substantially the entire length of the machine and a portion is shown in greater detail in FIGS. 9 and 10A. Each of these guide rails **170** and **171** have a downwardly inclined section **172** adjacent the heat sealing plate **162** whereby the upper film section **173** is drawn down about an end of the package as shown in FIG. 11 into contact with the lower film section **174**. The package is then advanced by the overhead conveyor mechanism E to advance the film sections **173** and **174** into an entry opening **175** between a plow member **176** and a reactive plow member **177**. The plow member **176** is sloped inwardly toward the center line of the machine to progressively move the film section underneath the package as shown in FIGS. 12 and 13 with the reactive plow member **177** causing the flaps to reversely fold backwardly onto themselves to form a doubled back fold of the sections **173** and **174** as shown in FIG. 14. A bottom plate **178** has an upturned end **179** whereby the doubled back film sections can be brought up against the bottom of the package and to the level of a final heat seal station to be described.

The plow structure performs several distinct functions and results in a package having a better seal than those heretofore known particularly with film having a heat sealing coating on only one side thereof which is the exterior surface of the film about the package. An important function is in drawing the film tightly across the package by having the reactive plow member **177** form

resistance to underfolding of the film section which tightly draws the film about the package. It will also be noted that drawing the upper film section **173** down to the lower section **174** results in an offset of these sections whereby the low section **174** extends beyond the upper section **173**. As seen in FIG. 14, when the final heat seal occurs the upper surface of the exposed portion of section **174** can contact the coated side of the portion of section **173** thereabove to effectively seal the two sections together and avoid any air passages from the exterior to the interior of the package. The seal is further enhanced by having adjacent portions of section **173** both of which would be coated, engage each other for sealing.

Added novel results, regardless of the film used, are that the underside of the package is clearly visible to permit easy reading of printed matter, such as recipes, on the bottom of the packaged material; also, if a transparent meat tray is used, then the underside of the meat on the tray is visible.

The final heat seal station G is shown in FIGS. 1 and 4 and embodies a hot plate **185** enclosed within a movable belt **186** of material, such as Teflon, which permits free movement of the package over the hot plate. After leaving the hot plate, the package is discharged from the exit end of the machine.

Means are provided for effectively sealing the underfolded section of the package including pressure members for the package including a pair of endles belts mounted one on each of the side guides **170** and **171** for adjustable movement thereof with the remainder of the guides previously described. Each of these belts **187** is mounted on a pair of grooved rollers **188** and **189** which are rotatably mounted on a bar **190** pivotally connected at one end thereof to a plate **191** which is pivoted at its upper end by a pin **192** to a mounting plate **193** secured to the adjacent side guide. The rollers are constructed of relatively heavy material so that pressure can be exerted through the endless belt against a package to insure that a good heat seal is effected. If quite soft materials are in the package, it is possible to reduce the amount of force exerted by the pressure means easily by pivoting the arm **190** to an upper position shown in broken line in FIG. 19 in which the weight of roller **188** is effectively removed from the system by having the support bar **194** rest on the top of the mounting plate **193**. The bar **194**, as shown in FIG. 20, also controls the lower position of the belt by engaging either the side guide **171** or **172**.

If only rollers **188** and **189** were used, then a roller could fall into a vacant part of the package and loosen the film. The use of the belts around the rollers reduces this action.

Overhead conveyor

The overhead conveyor E is continuously driven and embodies a frame above the wrapping station and plow station F with a series of chain carried paddles **200** which as shown in FIG. 1 travel in an arcuate path at one end of their travel to come down behind a package resting on the hot plate **162** and advance the package through the plow station F, the heat sealing station G, and out of the machine. The paddle that picks up the package on the hot plate **162** is not interfered with by the package pusher block **120** on the elevator D since the elevator D will already have descended and left a package resting on the hot plate.

More specifically, the overhead conveyor has a pair of side plates **201** and **202** which mount chain sprockets **203** and **204** about which a chain **205** passes. Each paddle **200** has a pair of pins carrying rollers **206** at the opposite ends movable in lower tracks as shown in FIG. 2 and also movable in upper tracks formed by plates **207**. The orientation of the paddles is controlled by a linkage **208** pivoted to the upper end of the paddle arm at **209** and having rollers **210** movable in the tracks in trailing relation with the rollers **206** of the paddle members.

Drive mechanism

The drive is obtained from a motor **220** which through a gear reduction unit (not shown) drives a sprocket **221** which through a chain **222** drives a sprocket **223** on the cam shaft **60**. The cam shaft **60** has a sprocket **224** affixed thereto which through a chain **225** drives a sprocket on a shaft **226** carrying the previously referred to sprocket **44** for driving the conveyor chain **43** of the in-feed conveyor A.

The shaft **12** of the supply roll drive is driven from the shaft **60** through a chain **227** engaging a sprocket **228** on the cam shaft **60** and a sprocket **229** on the shaft **12** (FIG. 3).

The overhead conveyor E is driven from the shaft **12** through reduction gears **230** and **231** with the latter gear being on a shaft **232** having a sprocket **233** which through a chain **234** drives a sprocket **235** (FIG. 2) and through a connected sprocket **236** drives a sprocket **237** by chain **238** which is on a shaft **239** connected to the sprocket **204** of the overhead conveyor. An idler **240** is provided to take up slack in the chain **238**.

Side adjustment

The side adjustment to the guide structures previously described can be derived from rotation of the threaded shaft **109** at the entry end of the machine which through a chain **250** passing about the threaded shaft **109** and a second threaded shaft **251** (FIG. 22) results in a variation of the spacing between the guides on the in-feed conveyor A, the transfer platform C and the guides **170** and **171** which carry the plow members **176** and **177** as well as the pressure belts **187**. Also adjusted at the same time are the plow guide members **103** and **104** on the elevator D.

Operation

The initial step in the operation is for an operator to place a package of meat or the like on the in-feed conveyor A and the pusher **42** advances the package onto the transfer platform C which is in its advanced position with the elevator D in its upper position. With the package then on the transfer platform C, the transfer platform returns to its withdrawn position to provide a space in which the elevator D can descend to the inclined position shown in FIG. 16 with the grippers **130** and **132** drawing the leading edge of the film downwardly to a level beneath transfer platform C. The platform pusher **71** then advances the package onto the elevator as shown in FIG. 17 to start the wrap of the film about the package and drawing the leading edge of the film from the grippers **130** and **132**. The elevator D then begins its ascent to bring the film around the package with the film being maintained taut by descent of the roller **25** as permitted by movement of the elevator arms **86–99**. When the package reaches the upper position, the film has been brought around the package and the package pusher block **120** is then advanced by the package pusher **80** to advance a major part of the package onto the hot plate **162**. The elevator then begins its descent to receive the next package and the overhead conveyor E has a paddle **200** sweep downwardly to the rear of the package and move the package continuously through the plow station F and then onto the hot seal plate at station G and then exit the package from the machine. In the event that a different length of package is to be wrapped, it may be necessary to change the supply roll R to a different width film which can readily be accomplished by latching up the dancer roller **17** and the snub roller **29** and then threading a new film through the machine. The only other operation required is that of adjusting the spacing between the various side guides which can be achieved by rotating the threaded shaft **109** from either the front or back of the machine by a suitable handle.

It will be seen that the machine may repeatedly cycle without a package and in the event a package is not

delivered to the machine by the in-feed conveyor A, the machine can continue a cycle with the leading edge of the film remaining gripped between the gripper members **130** and **132**. There will be no harmful slack created in the film because the idler roll or back feed roll **25** is caused to cycle in timed relation with the elevator.

Additionally, there is no possibility of improper handling of the film since there is no loose leading edge at any time. As the length of film wrapped about a package is cut off, the leading edge of the next section of film is simultaneously placed between the grippers **130** and **132**.

Modification

A modification in the film gripping structure is shown in FIG. 24 in which parts similar to the previous embodiment have been given the same reference numeral with a prime affixed thereto.

At some times a very soft material may be in the package being wrapped and it is desired to avoid pressure on the packaged material as might be caused in drawing the leading edge of the film from the film grippers on the elevator. Accordingly, the modification shown in FIG. 24 provides for positive opening of the film grippers **130'** and **132'** when a package enters onto the elevator D'.

This structure includes a cam **300** on the underside of the package pusher block **120'** which when moved across the elevator by entry of a package onto the elevator engages a cam surface **301** at the upper end of a pin **302** pivoted at **303** to a block **304** rotatably mounted on a shaft **112'**. The arm **302** is prevented by an abutment surface **305** on the block from pivoting when the cam **300** engages therewith in rearward movement of the pusher **120'** with the result that as the package moves onto the elevator the arm **302** is lowered to open the film grippers by lowering the gripper **132'**. When the package pusher moves in the opposite direction, the arm **302** is free to pivot about its pivot **303** to permit the pusher to return to the right side thereof as viewed in FIG. 24.

The foregoing structure only operates in response to the presence of a package so that in the event there is no package the machine can still continue to cycle repeatedly without releasing the grip on the leading edge of the film.

I claim:

1. In an automatic wrapping machine, a frame, means on the frame for conveying a package along a path leading to an exit end of the machine, plow means disposed along said path to fold film extending from the ends of the package to the underside thereof comprising, a first plow member adjacent the end of the package to draw the upper film section down across the end of the package, a second plow member to progressively fold the film sections under the package as the package moves along said path and a third plow member extending along beside the second plow member to place a reverse bend in said film sections to double back said sections onto themselves, and means for thermally securing said film sections to each other and to the remainder of the film, and means for receiving a package at an end of the machine opposite from said exit and initially wrapping a length of film from a supply roll around the package prior to the package entering said path comprising, an in-feed conveyor at the package entry end of the machine and at a level beneath said path, a transfer platform at the level of said in-feed conveyor, means for moving said transfer platform between a position adjacent the in-feed conveyor to receive a package from the in-feed conveyor and a position remote therefrom, a package elevator movable between a lower position adjacent said transfer platform when the latter is in said remote position and an upper position at the level of said path, means on the elevator for releasably holding the leading end of a film web, and means for transferring a package from the transfer platform to the elevator in its lower position while simultaneously moving the package into the film and subsequently completing the wrap by raising the elevator to its upper position.

2. In an automatic wrapping machine as defined in claim **1**, first guide means on the in-feed conveyor for laterally guiding a package, second guide means on the transfer platform for laterally guiding a package, means on the elevator for tucking the film around the back corners of the package and laterally guiding the package, and spaced apart brackets movably mounted on said frame, each of said brackets mounting the aforesaid guide means and the plow means for one side of the package.

3. In an automatic wrapping machine as defined in claim **2** in which the distance between the in-feed conveyor and said transfer platform when the latter is in its remote position is less than the width of said elevator, and means mounting the elevator for movement to have the elevator generally horizontal in the upper position thereof and inclined in the lower position to have at least an edge thereof adjacent the transfer platform and the opposite edge overlying said in-feed conveyor.

4. In an automatic wrapping machine as defined in claim **2**, means for moving said elevator between upper and lower positions including a drive connection which is releasable upon restraint imposed on the elevator in either direction of movement, and switch means positioned to sense said release of the drive connection for stopping of said machine.

5. In an automatic wrapping machine, a frame, means on the frame for conveying a package along a path leading to an exit end of the machine, plow means disposed along said path to fold film extending from the ends of the package to the underside thereof and means for receiving a package at an end of the machine opposite from said exit and initially wrapping a length of film from a supply roll around the package pritor to the package entering said path comprising, an in-feed conveyor at the package entry end of the machine and at a level beneath said path, a transfer platform at the level of said in-feed conveyor, means for moving said transfer platform in a path generally coplanar with the surface of the transfer platform between a position adjacent the in-feed conveyor to receive a package from the in-feed conveyor and a position remote therefrom, a package elevator movable between a lower position adjacent and between said in-feed conveyor and transfer platform when the latter is in said remote position and an upper position at the level of said path, and means for transferring a package from the transfer platform to the elevator in its lower position while moving the package into the film and completing the wrap by raising the elevator to its upper position.

6. A wrapping machine as defined in claim **5**, in which the package is sealed on a hot plate, a frame member, pressure means for pressing a package against said hot plate including an endless belt, a pair of wheels about which said belt extends, a pivoted arm rotatably mounting said wheels, and means mounting said arm for pivotal movement between a first position in which both wheels exert their weight on the package through the belt and a second position supported by the frame member in which the wheels are at opposite sides of the frame member and one wheel has a counterbalancing effect on the other wheel which presses the package.

7. In an automatic wrapping machine as defined in claim **5**, first guide means on the in-feed conveyor for laterally guiding a package, second guide means on the transfer platform for laterally guiding a package, means on the elevator for tucking the film around corners of the package and laterally guiding the package, and spaced apart brackets movably mounted on said frame, each of said brackets mounting the aforesaid guide means and the plow means for one side of the package.

8. In an automatic wrapping machine as defined in claim **5**, in which the distance between the in-feed conveyor and said transfer platform when the latter is in its remote position is less than the depth of said elevator, and means mounting the elevator for movement to have the elevator generally horizontal in the upper position

thereof and inclined in the lower position to have at least an edge thereof adjacent the transfer platform and the opposite edge overlying said in-feed conveyor.

9. In an automatic wrapping machine as defined in claim 8, in which the means mounting said elevator includes a pair of laterally spaced pivoted drive arms, a pair of laterally spaced pivoted guide arms above said drive arms, said arms being related to each other by length and pivot axes to provide said horizontal and inclined dispositions, said drive arms being mounted to the elevator by means defining elongated slots with the normal connection being intermediate the length of the slots, and switch means positioned to sense movement in said slots upon the occurrence of a jam for stopping of said machine.

10. In an automatic wrapping machine, means for conveying a package along a path leading to an exit end of the machine, plow means disposed along said path to fold film extending from the ends of the package to the underside thereof, and means for receiving a package at an end of the machine opposite from said exit and initially wrapping a length of film from a supply roll around the package prior to the package entering said path comprising, an in-feed conveyor at the package entry end of the machine and at a level beneath said path, a transfer platform at the level of said in-feed conveyor, means for moving said transfer platform between a position adjacent the in-feed conveyor to receive a package from the in-feed conveyor and a position remote therefrom, a package elevator movable between a lower position adjacent said transfer platform when the latter is in said remote position and an upper position at the level of said path, means on the elevator for releasably holding the leading end of a film web, means for transferring a package from the transfer platform to the elevator in its lower position while moving the package into the film, a back-feed roller disposed in a loop of film in advance of said elevator, means for raising and lowering said elevator, and means operatively connected to said elevator to cycle said back-feed roller in timed relation with said elevator whereby raising of the elevator further urges the film about the package and the film is maintained relatively taut by lowering of the back-feed roller.

11. In an automatic wrapping machine, means for wrapping a length of film around a package prior to cutting of the film from a web of film comprising, means mounting a supply roll of film, means guiding the web of film to a package wrapping station, an elevator at said station movable between an upper position and a lower level, means on said elevator for releasably gripping the leading edge of the film to draw the film across the entry side of the elevator as the elevator moves to said lower level including a pair of gripper members, means for pushing a package into said film while moving the package onto said elevator at said lower level, said elevator in moving to its upper position wrapping the film around the package, and means adjacent the elevator upper position cyclically operable to cut the length of film about the package from the web and positively inserting the leading edge of the film into said releasable gripping means including a tucker bar movable to a position between said gripper members.

12. An automatic wrapping machine as defined in claim 11 in which said elevator has a package supporting surface, a first knife blade fixed to said elevator and extending along an edge of said elevator at a level beneath said surface and wherein one of said gripper members is positioned immediately beneath said blade, and said film cutting and inserting means includes a second knife blade coacting with said first knife blade and said tucker bar is of relatively slippery material and located beneath and movable with said second knife blade into said position between said gripper members to accomplish the film insertion.

13. In an automatic wrapping machine, means for wrapping a length of film around the package prior to cutting of the film from a web of film comprising, means for supplying a continuous length of film, means guiding the web of film to a package wrapping station, a member at said station movable between two positions, means on said member for releasably gripping the leading edge of the film to draw the film across the entry side of the member as the member moves to a package receiving position, means for pushing a package into said film while moving the package onto said member, said member in moving away from the package receiving position wrapping the film around the package, a back-feed roller disposed in a loop of film in advance of said wrapping station, and means moving said feed-back roller in timed relation with the member whereby as the member moves to its package receiving position the back-feed roller is moved up to avoid restraint on the film and as the member moves from the package receiving position the back-feed roller moves down to back feed the film and either assist in tightly wrapping the film around the package or maintain the film relatively taut if no package has moved onto the member.

14. In an automatic wrapping machine, a frame, means on the frame for folding film extending from the ends of the package to the underside thereof, and means for wrapping a length of film around the package prior to cutting of the film from a web of film comprising, means mounting a supply roll of film, means on the frame guiding the web of film to a package wrapping station, an elevator at said station movable between an upper position at the level of said film folding means and a lower level, means on said elevator for releasably gripping the leading edge of the film to draw the film across the entry side of the elevator as the elevator moves to said lower level, means for pushing a package into said film while moving the package onto said elevator, said elevator in moving to its upper position wrapping the film around the package, a back-feed member disposed in a loop of film in advance of said wrapping station and means moving said member in timed relation with the elevator whereby as the elevator moves down to its lower level the member is moved up to avoid restraint on the film and as the elevator moves up the member moves down to back feed the film and either assist in tightly wrapping the film around the package or maintain the film relatively taut if no package has moved onto the elevator.

15. In an automatic wrapping machine, a frame, means on the frame for folding film extending from the ends of the package to the underside thereof, and means for wrapping a length of film around the package prior to cutting of the film from a web of film comprising, means mounting a supply roll of film, means on the frame guiding the web of film to a package wrapping station, an elevator at said station movable between an upper position at the level of said film folding means and a lower level, means on said elevator for releasably gripping the leading edge of the film to draw the film across the entry side of the elevator as the elevator moves to said lower level, means for pushing a package into said film while moving the package onto said elevator, said elevator in moving to its upper position wrapping the film around the package, said supply roll mounting means including a pair of spaced apart rollers on which the supply roll rests, drive means for said rollers including a selectively engageable clutch, and an idler roll mounted in a loop of film for controlling the operation of the clutch, one of said rollers being generally concave and of a width to have inclined outer sections directly engage beneath and support the supply roll to continuously maintain said supply roll centered on said rollers.

16. In an automatic wrapping machine as defined in claim 15 a check member pivotally mounted on the frame and engageable with the film to prevent retrograde movement thereof, and latch means for latching both said idler roll and check member in inoperative positions for threading of film through the machine.

17. In an automatic wrapping machine, means guiding a web of film to a package wrapping location, an elevator at said location movable between an upper position and a lower level, means on said elevator for releasably gripping the leading edge of the film to draw the film across the entry side of the elevator as the elevator moves to said lower level, means for pushing a package into said film while moving the package onto said elevator, said elevator in moving to its upper position wrapping the film around the package, and means on the elevator shifted by a package to positively release said releasable gripping means to release the leading edge of the film.

18. In an automatic wrapping machine, a frame means on the frame for folding film extending from the ends of the package to the underside thereof, and means for wrapping a length of film around the package prior to cutting of the film from a web of film comprising, means mounting a supply roll of film, means on the frame guiding the web of film to a package wrapping location, an elevator at said location movable between an upper position at the level of said film folding means and a lower level, means on said elevator for releasably gripping the leading edge of the film to draw the film across the entry side of the elevator as the elevator moves to said lower level, means for pushing a package into said film while moving the package onto said elevator, said elevator in moving to its upper position wrapping the film around the package, a back-feed member disposed in a loop of film in

advance of said wrapping location, and means moving said member in timed relation with the elevator whereby as the elevator moves down to its lower level the member is moved up to avoid restraint on the film and as the elevator moves up the member moves down to back feed the film and either assist in tightly wrapping the film around the package or maintain the film relatively taut if no package has moved onto the elevator, and means on the elevator shifted by a package to positively release said releasable gripping means whereby film pressure on the packaged material is lessened and the absence of a package will not release the leading edge of the film.

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