April 22, 1958 J. A. MICHAUD 2,831,304

WRAPPING MACHINE

Filed Oct. 20, 1953 8 Sheets-Sheet 1

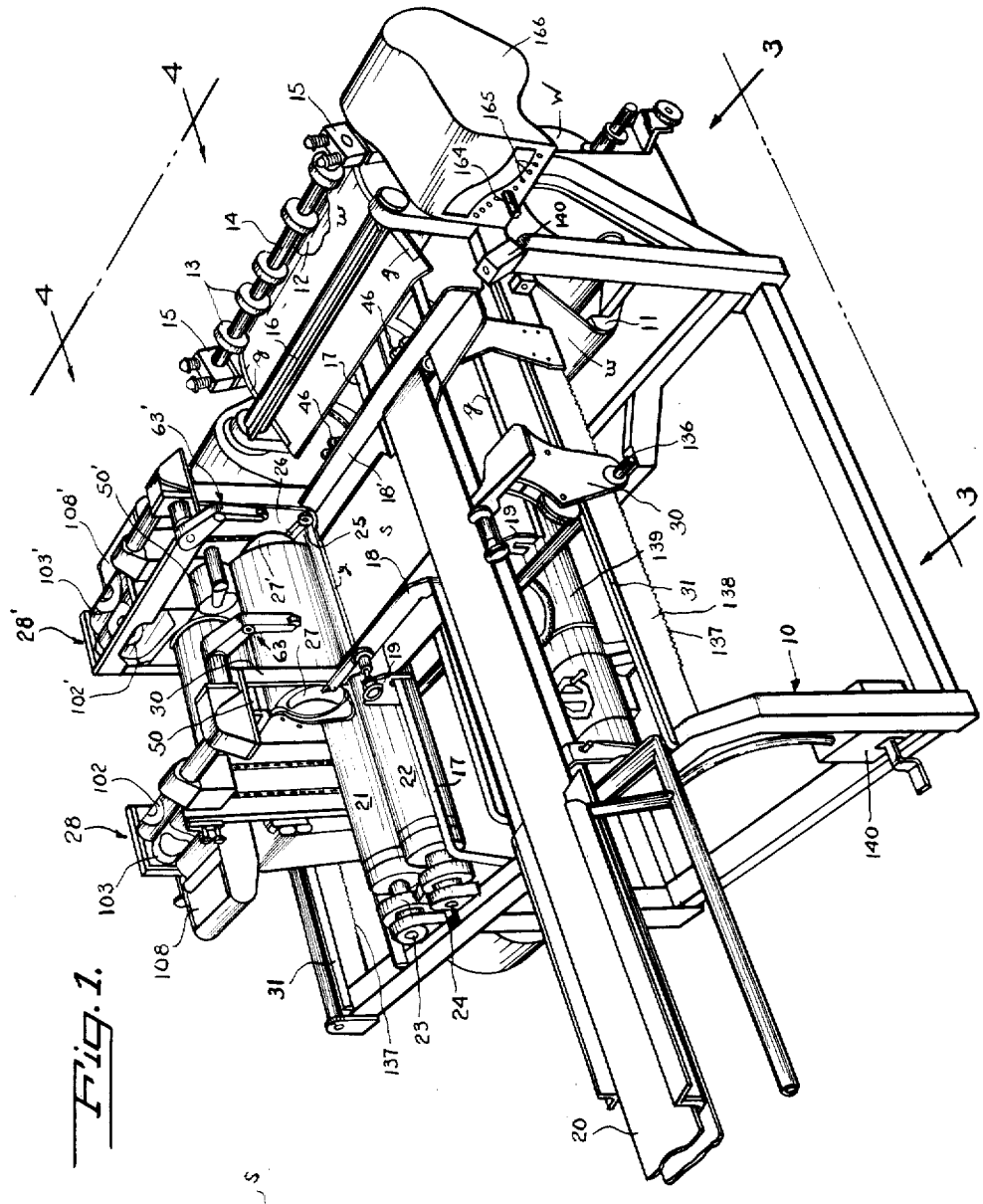


Fig. 1.

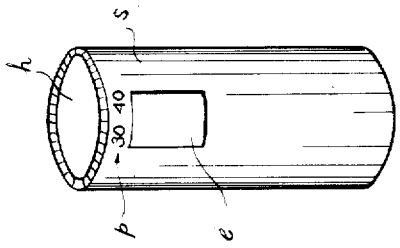


Fig. 13.

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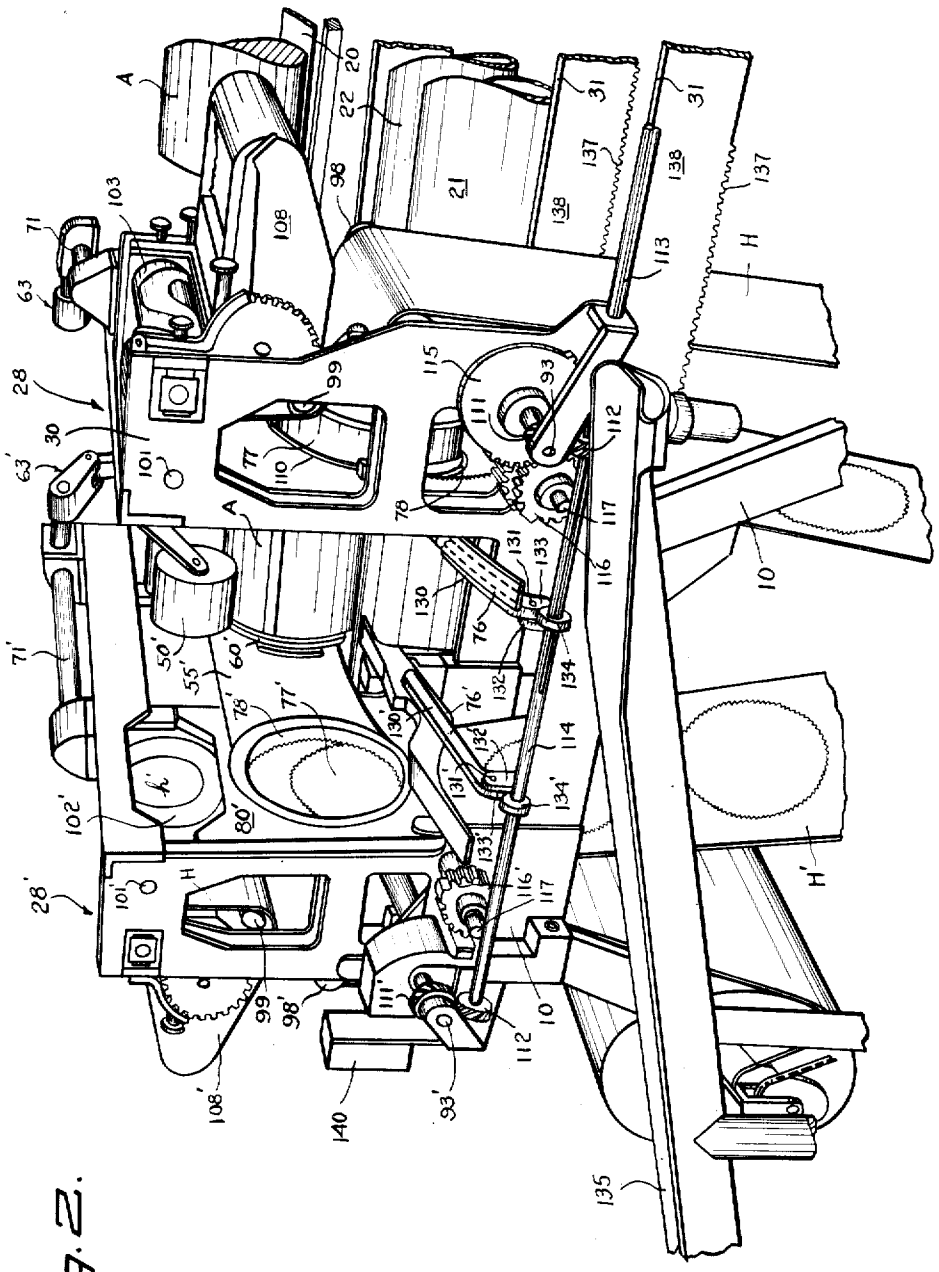


Fig. 2.

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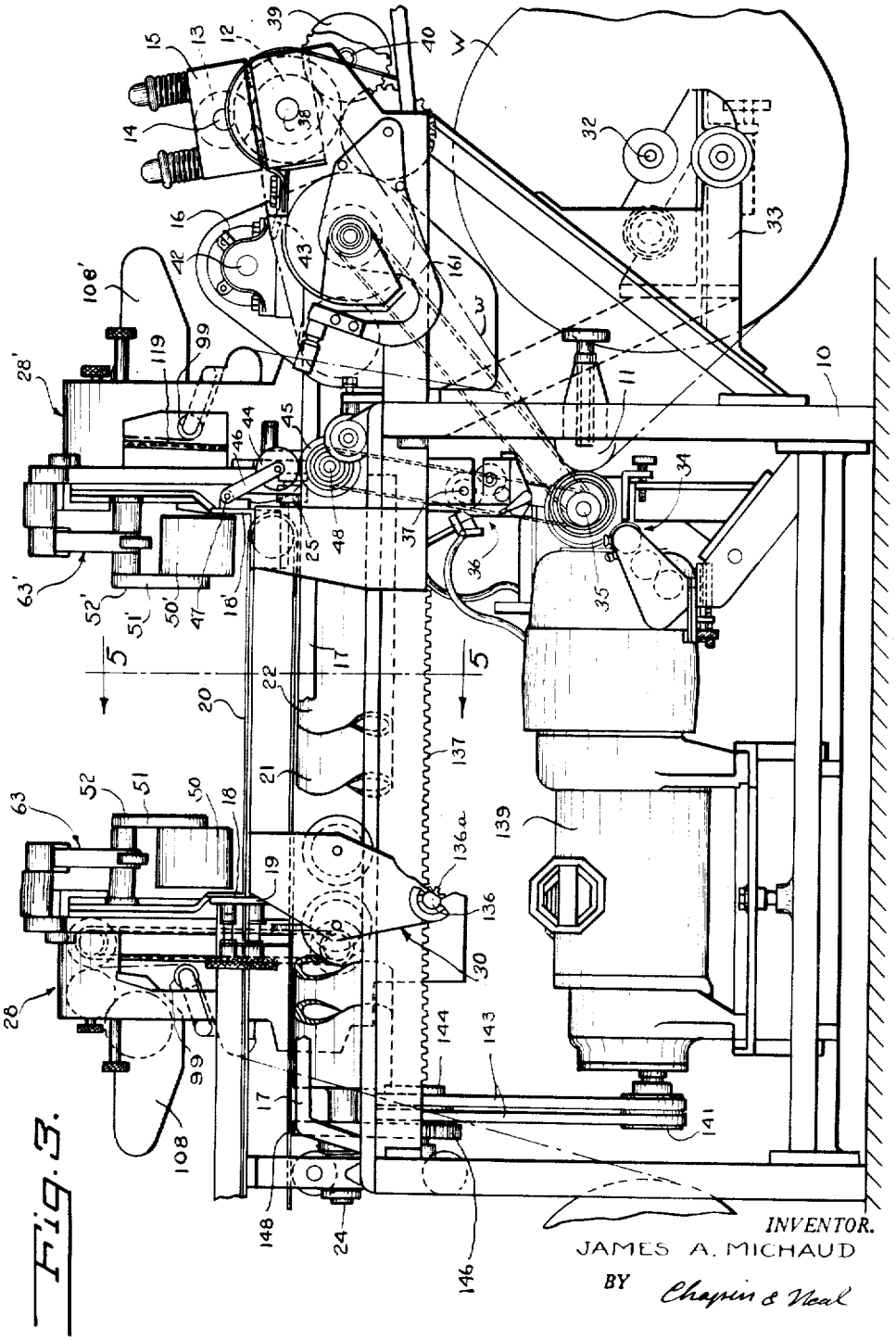


Fig. 3.

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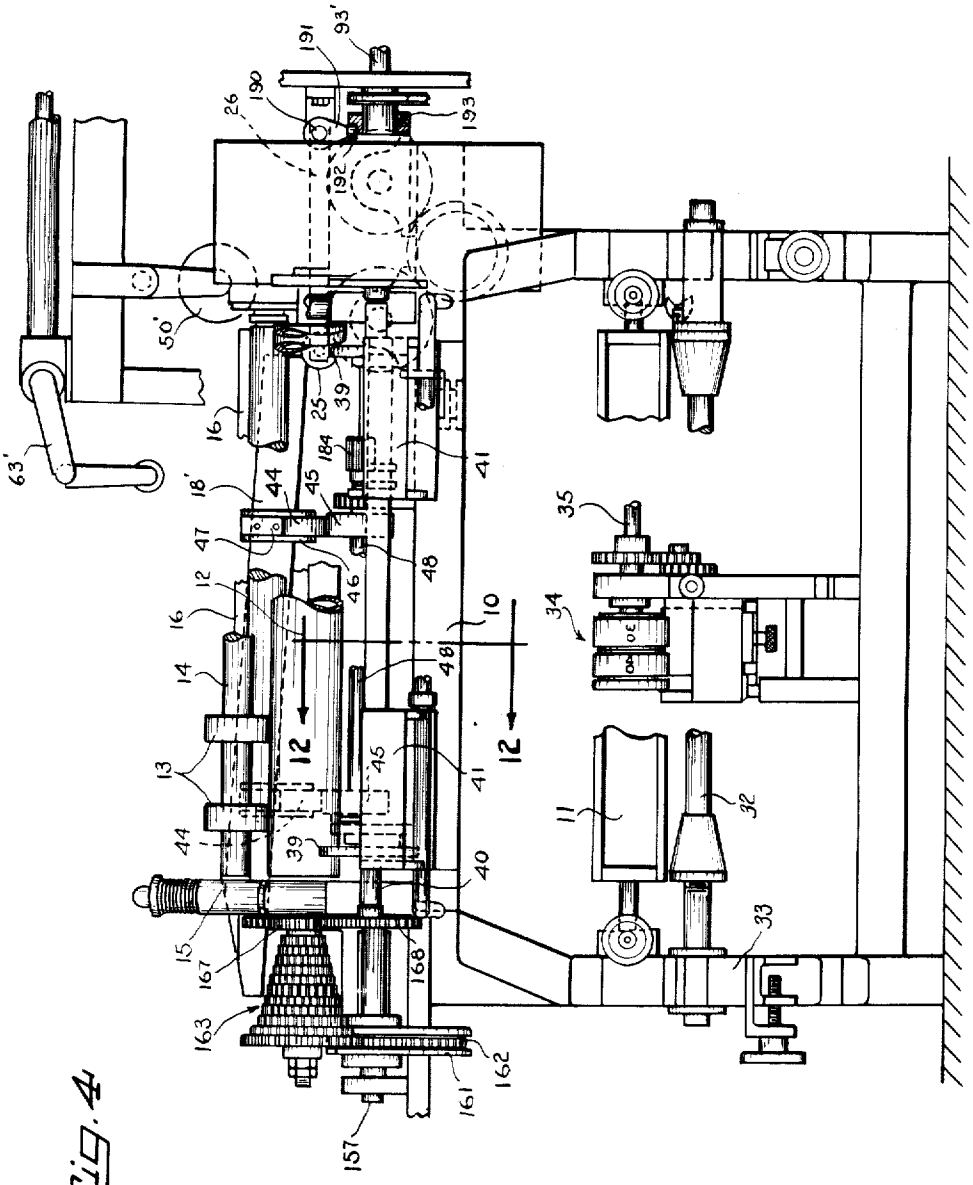


Fig. 4

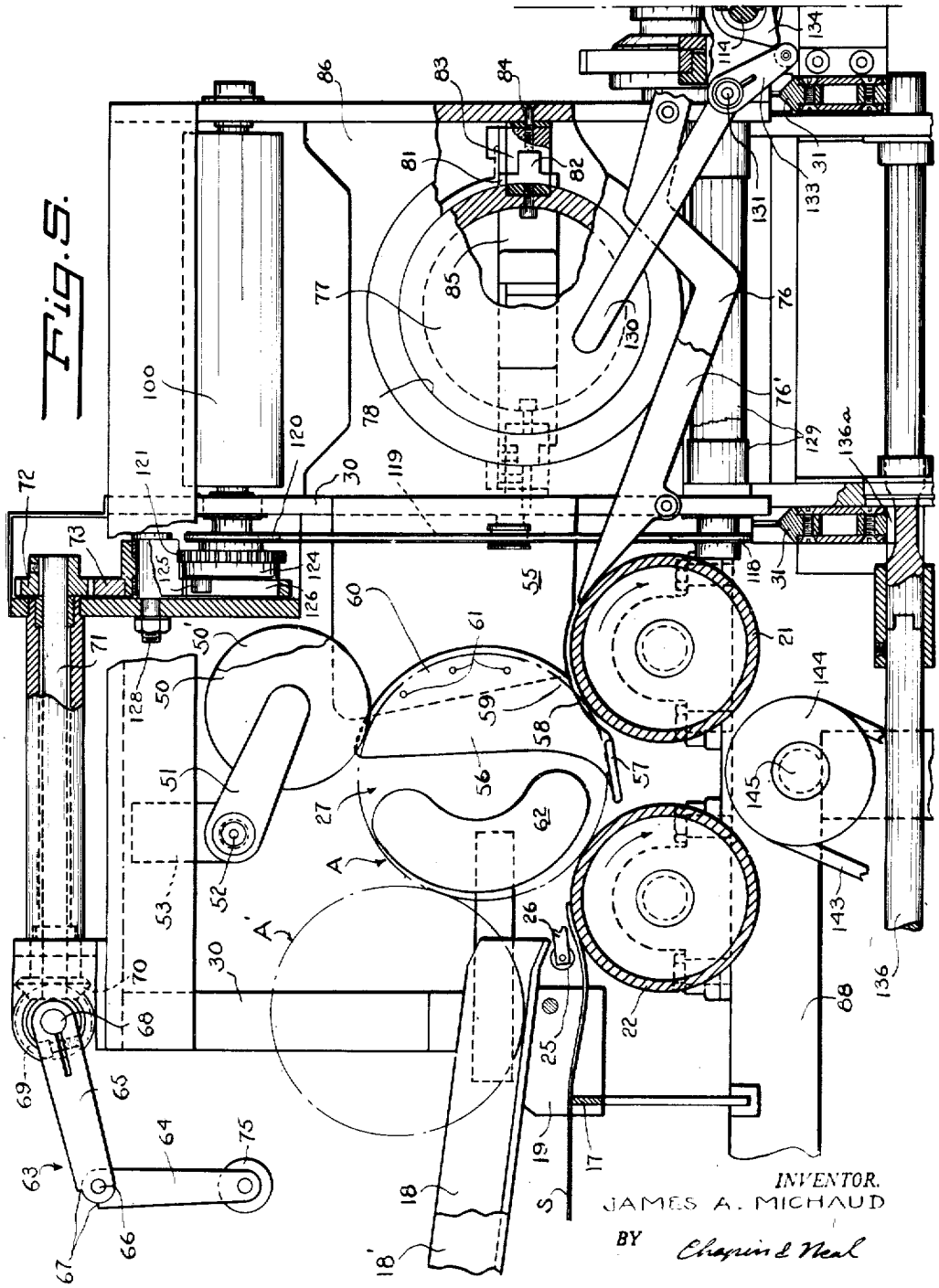
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Fig. 5.



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Fig. 6.

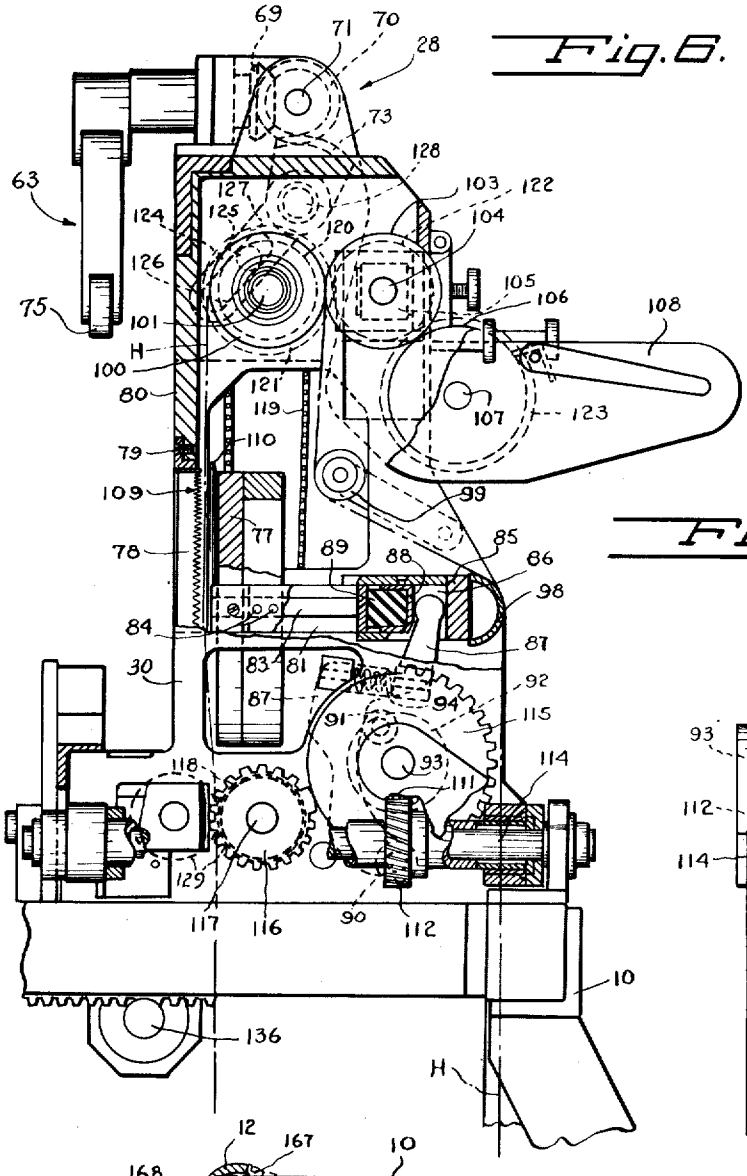
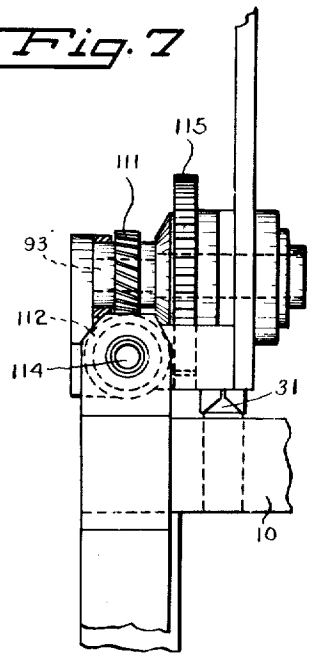


Fig. 7



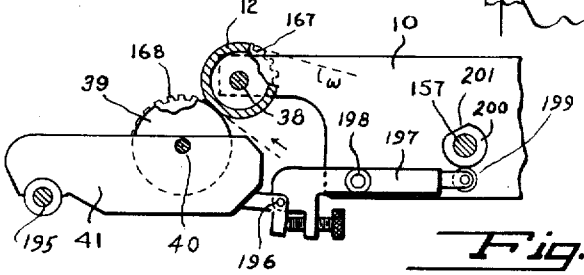


Fig. 12.

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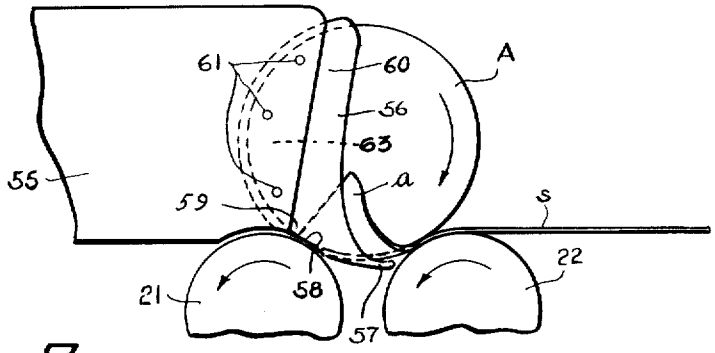


Fig. 8.

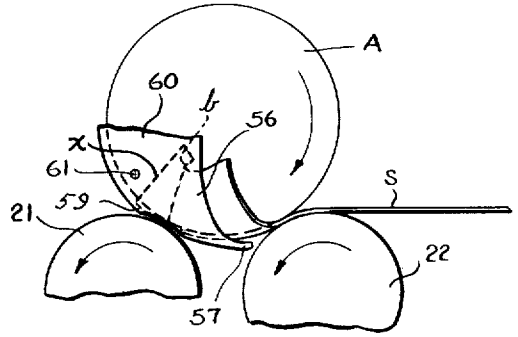


Fig. 9.

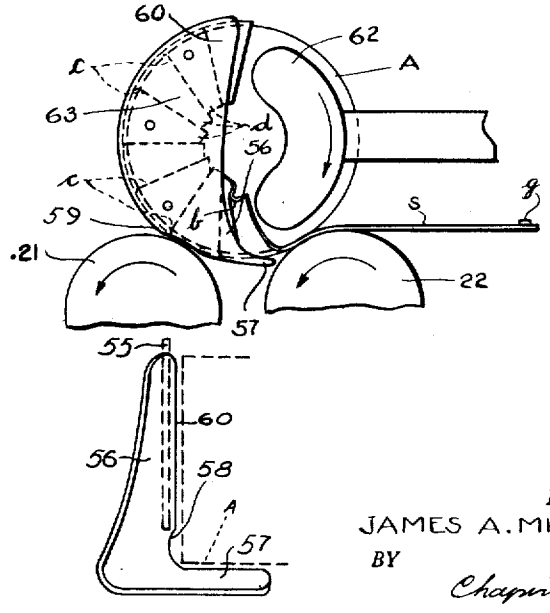


Fig. 10.

Fig 10A

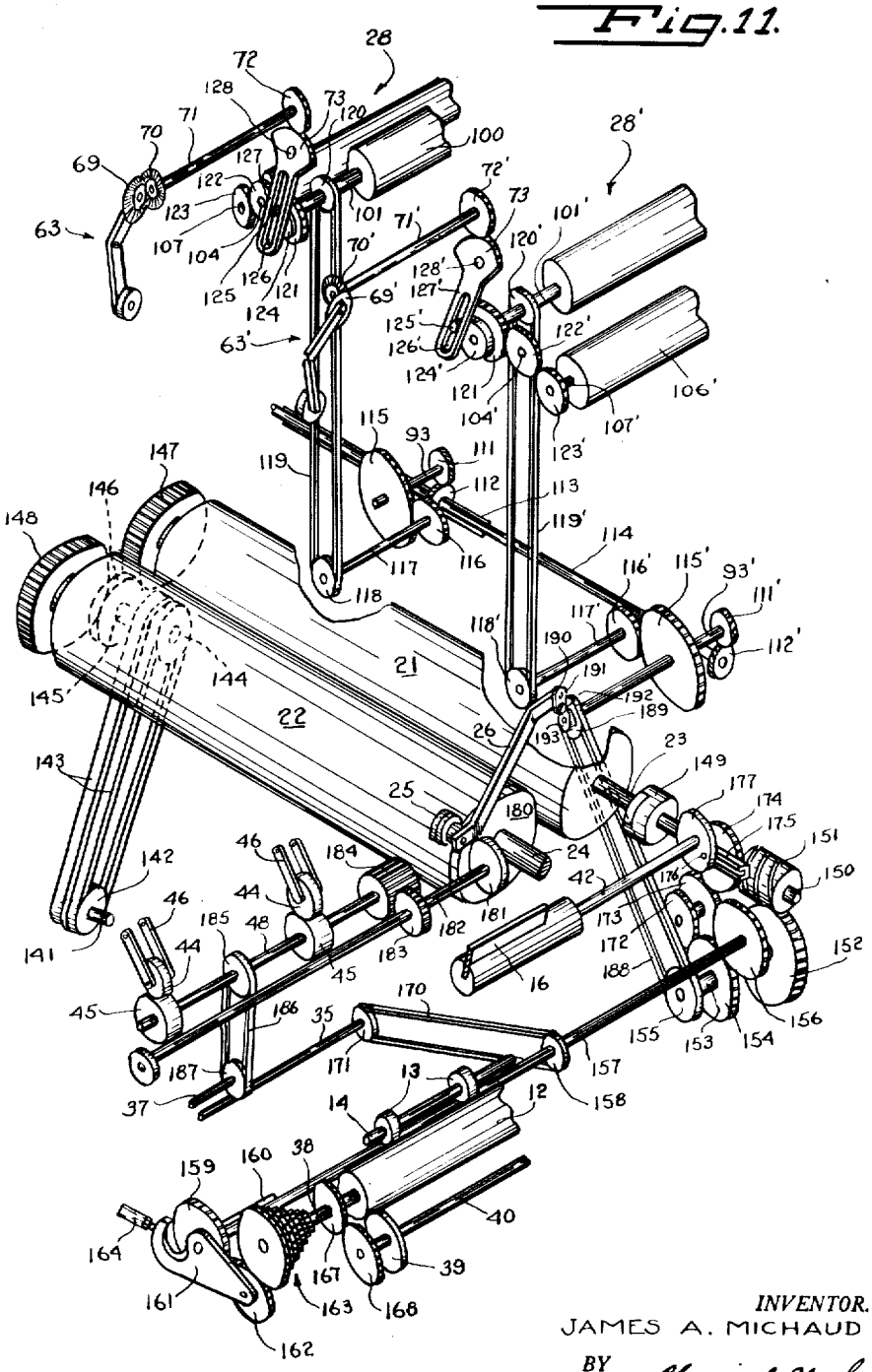
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Fig. 11.



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United States Patent Office 2,831,304 Patented Apr. 22, 1958

2,831,304

WRAPPING MACHINE

James A. Michaud, Hodge, La., assignor, by mesne assignments, to Continental Can Company, Inc., a corporation of New York

Application October 20, 1953, Serial No. 387,142

15 Claims. (Cl. 53—211)

This invention relates to a machine for wrapping rolls of paper and the like. More particularly it relates to a machine for that purpose in which the roll to be wrapped is encircled by a sheet of wrapping material with portions extending beyond the ends of the article, which ends are pleated against the ends of the roll, and discs or caps are adhesively secured over the pleated end portions to hold the pleats in place.

Once object of the invention is to provide a device of the above character which is more compact and efficient in operation than prior machines.

Another object is to provide a machine which is adaptable to the wrapping of rolls of different length, with a minimum of adjustment.

Another object is to provide pleating means which in combination with the arrangement of the wrapper and article feeding means facilitates handling of the article during the wrapping and capping operations.

Another object is the provision of a machine, the arrangement of the elements of which facilitates the printing of the wrapper and the applications of labels thereto.

Other and further objects residing in the details and arrangements of the parts will be made apparent in the disclosure of the drawings and in the following specification and claims.

In the accompanying drawings,

Fig. 1 is a generally perspective view of a machine embodying the invention;

Fig. 2 is a generally perspective view, on a larger scale showing the discharge side of the machine and the cap applying mechanism;

Fig. 3 is an elevational view, looking in the direction of the arrows 3—3 in Fig. 1, parts being broken away;

Fig. 4 is an elevational view, looking in the direction of the arrows 4—4 in Fig. 1, parts being broken away;

Fig. 5 is a sectional view, substantially on line 5—5 of Fig. 3, on a larger scale;

Fig. 6 is a rear elevational view, partly in section, of the adjustable cap applying unit;

Fig. 7 is a detail elevational view of the header drive viewed from the right in Fig. 6;

Figs. 8, 9 and 10 are diagrammatic views showing successive steps in the wrapping operation;

Fig. 10A is a view of the folders shown in Fig. 8 as viewed from the right in Fig. 8;

Fig. 11 is a schematic generally perspective view showing the driving mechanisms;

Fig. 12 is a detail sectional view, substantially on line 12—12 of Fig. 4; and

Fig. 13 is a generally perspective view of an article as wrapped by the machine.

Before describing the construction in detail the general arrangement and operation of the machine will be described with reference to Figs. 1 and 2, where the main frame of the machine is indicated at 10. Referring to Fig. 1 a web *w* of suitable wrapping material such as paper is drawn from a supply roll W over an adjustable guide bar 11 and over a driven feed roll 12 against which

the web is pressed by spaced rolls 13 carried by a shaft 14 mounted in spring loaded bearings 15. As the web passes over feed roll 12 spaced bands of glue or other suitable adhesive *g* are applied to the edges of the web which then passes beneath a rotary knife 16. The wrapper sheets *s* severed from the web *w* are advanced along guides 17, beneath article supporting rails 18 and 18' and against adjustable paper stops 19 carried by guide rail 18. The articles A to be wrapped, such as rolls of paper are brought into the machine on a conveyor belt 20 from which the articles are moved transveresly onto flanged rails 18—18' from which they are discharged onto a pair of constantly rotating bed rolls 21 and 22 secured on respective shafts 23 and 24, the flange of rail 18' extending over the conveyor 20 to stop the articles in proper position with respect to the bed rolls. One glued edge of the wrapper sheet *s* rests on bed roll 22 and is pressed against roll 22 by an oscillating roll 25 carried by an arm 26 to cause the sheet to be fed between the article A and roll 22. The leading edge of the wrapper sheet is stuck to the article by the glue strip *g* and is drawn around the article as the latter is rotated by the bed rolls. Pleating or folding instrumentalities generally indicated at 27 and 27' are positioned at opposite ends of the article on the bed rolls and progressively pleat the edge portions of the wrapper against the ends of the articles. From bed rolls 21 and 22 the article is advanced between spaced cap forming and applying units 28 and 28' from which the article is discharged completely wrapped and capped.

The rail 18, pleating unit 27, capping or heading unit 28 and the parts associated therewith, are carried by a cross frame, generally indicated at 30, which is reciprocably mounted on ways 31 forming part of frame 10. By moving frame 30 toward and from the wrapper feed mechanism, rail 18' and units 27' and 28' all of which are fixed to frame 10, articles of different length may be wrapped without further adjustment except for a decrease or increase in the speed of the web feed as later more fully described.

The machine will now be described in detail reference being had to Figs. 3 and 4. As best shown in Fig. 3, the web roll W is adjustably carried by an arbor 32 mounted on an adjustable bracket 33. From roll W the web *w* is drawn around guide bar 11 and over feed roll 12 and beneath rolls 13. As the web passes around guide bar 11 it is provided with printed indicia *p*, such as the weight and yardage of the paper in the wrapped article, by a suitable printing unit generally indicated at 34. The printing unit may be any suitable form of rotary printer, that shown being operated from a shaft 35, the printing roll being frictionally driven at the speed of the web by contact therewith. As the web passes from guide 11 to feed roll 12 a label *l*, indicating the character of the paper or carrying other desired information, is applied to the web by any suitable labeling device, generally indicated at 36 and operated from a shaft 37.

As the printed and labeled web *w* passes around feed roll 12, which is secured to a shaft 38, bands of glue or other suitable adhesive are applied to the edges of the web by suitable glue applying rolls 39 (Figs. 3 and 4), secured to a shaft 40. Rolls 39 are supplied with glue from respective reservoirs 41 which carry shaft 40.

From web feed rolls 12—13 the web passes beneath the rotary knife 16 which is carried by a shaft 42. Rotary knife 16 cooperates with a fixed bed knife 43 (Fig. 3) to periodically sever wrapping sheets *s* from the web. As later described the knife 16 is rotated at a constant speed while the speed of feed roll 12 may be varied to feed greater or less lengths of web over the bed knife during one rotation of the knife 16, to provide wrapper sheets to accommodate different lengths of articles.

As the wrapper sheets *s* are severed from the web they

are advanced against stops **19** beneath article supporting rails **18—18'** and by opposed pairs of upper and lower rolls **44—45**. Rolls **44** are carried by arms **46** pivoted at **47** to the side of article supporting rail **18'**, and rest by gravity on lower rolls **45** which are fixed on a shaft **48**, driven as later described.

The cut sheet *s* comes to rest against stops **19**. As best shown in Fig. 5 the sheet lies on sheet guides **17** with one gummed edge resting on the adjacent bed roll **22** which is constantly rotating. In Fig. 5 an article A is shown in broken lines in wrapping position on bed rolls **21** and **22** with a succeeding article A' resting on the end portions of ways **18—18'** in contact with article A but out of contact with bed roll **22** and the wrapper sheet. Article A is pressed against the bed rolls by a pair of weighted rolls **50—50'**. As shown in Fig. 5, roll **50** is carried by an arm **51** pivoted at **52** to a bracket **53** fixed to the adjustable cross frame **30**. The roll **50'** is similarly supported by the fixed frame **10** (Fig. 3).

Immediately after the arrival of the article A on the bed rolls **21** and **22** the leading gummed edge of the sheet *s* is momentarily pressed into feeding contact with roll **22** by the roll **25**, carried by arm **26**, to advance the sheet into the bite of bed roll **22** and the article A. As the sheet is thus advanced and engaged between the article and roll **22** it is stuck to the article by the band of glue *g* and the wrapper is drawn around the article as the latter is rotated by the rolls. As the article is rotated and the wrapper drawn therearound the edge portions of the wrapper extending outwardly of the ends of the article are progressively folded or pleated against the ends of the article by the stationary pleating units **27—27'**.

The folding units **27** and **27'** are mirror images of each other and a description of the unit **27** will serve for a description of both. The inner face of unit **27** is shown in Fig. 5, the outer face of the same unit being shown in Figs. 8, 9 and 10 which show successive steps in the folding operations. Referring to Figs. 8, 9 and 10 the unit is shown as comprising a spring steel plate member **55** to which folding member **60** is secured as by rivets **61** or by welding. Spring steel plate **55** extends cantilever fashion from frame **30** and supports the folding member over the bed rolls **21** and **20**, the steel plate providing the desired tension to member **60** for ironing the wrapper pleats, formed by the latter as shortly to be described, against the end of the roll. Member **60** has an outwardly flared portion **56**, as shown in Figs. 8 and 10A, and an inwardly flared portion **57** which latter portion extends beneath the article between bed rolls **21** and **22**. As the wrapper sheet *s*, having its forward end adhered to the article, is drawn around the article as the latter is rotated by the bed rolls, the side edge portion of the wrapper extending outwardly beyond the end of the article is turned upwardly and inwardly toward the end of the article, as shown at *a* in Fig. 8 by the portions **57** and **56**. The member **60** is formed at **58** to bring that portion of the wrapper which is closely adjacent to the peripheral edge of the article against the end face of the article, the unflared portion **63** of member **60** immediately beyond the portion **58** laying the leading part of the extending edge portion of the wrapper against the end face of the article as indicated at *x*. With the portion at *x* (Fig. 9) thus held flatly against the end of the article the adjacent following portion of the wrapper is curved into a generally conical fold *b* which is set at its apex by the portion **59** which forms a small irregular crush fold closely adjacent the peripheral edge of the article as indicated at *c* in Fig. 10.

As shown in Fig. 10 the successive generally conical folds *b*, upon continued rotation of the article and advance of the wrapper against portion **63**, are pressed against the end of the article by portion **63** and creased into flat pleats *d*. In the continued rotation of the article the pleats pass under a member **62** which as shown is generally kidney shaped, and which irons the pleats sufficiently tightly against the end of the article to maintain their position until fixed in place by a disc cap or header as shortly described.

The trailing end of the wrapper is secured in overlapped position to the leading portion of the wrapper by the line of glue *g* on the trailing wrapper edge as the pleating operation is completed.

Upon completion of the pleating operation the so-partially enclosed article is advanced from the bed rolls **21** and **22**. Figs. 1 and 5, by oscillating fingers **63—63'**. The fingers **63—63'** are similar in construction and a description of finger **63** as shown in Fig. 5 will serve for both. As there shown the finger comprises two arms **64** and **65** pivoted together at **66**. Adjacent pivot **66** the arms are provided with shoulders **67** which prevent pivoting of arm **64**, clockwise as viewed in Fig. 5, beyond a position of alignment with arm **65**. Arm **65** is fixed to a shaft **68** which carries a bevel gear **69** meshing with a bevel gear **70** fixed on one end of a shaft **71**. Shaft **71** carries a gear **72** which meshes with gear segment **73** which is oscillated, as later described to oscillate arm **65** downward at the end of each pleating operation. As will be apparent from Fig. 5, as arm **65** swings downwardly arm **64** is brought into alignment therewith and the waiting article A' is engaged by a roll **75** and forced thereby onto bed rolls **22** and **21**, simultaneously advancing article A from the bed rolls and onto fixed cradle members **76—76'** which position it between, and in alignment with, heading plungers **77—77'**.

Referring more particularly to Figs. 2, 5 and 6 the article when positioned on cradle **76—76'** is positioned in alignment with annular cutting dies **78—78'** through which plungers **77—77'** respectively operate. The cutting dies **78—78'**, which may be formed in sections if desired, are respectively secured by machine screws **79** to face plates **80** and **80'** forming parts of the movable frame structure **30** and main frame **10** respectively.

Plungers **77** and **77'** are entirely similar in construction and mounting and a description of plunger **77**, as shown in Figs. 5 and 6, will serve equally for the opposed plunger **77'**, the corresponding operating members for plunger **77'**, where shown, being designated by primed reference characters. As shown in Figs. 5 and 6 plunger **77** is carried by a slide **81** having its edges provided with guides **82** engaging in ways **83** secured to the adjacent frame member as by machine screws **84**. Slide **81** includes adjacent its rear end, a cross head **85** which is formed with a recess **86** in which the free end of a lever **87** engages a driving plate **88**, which is cushioned against the forward wall of the recess as by a block of rubber **89**. Lever **87** is pivoted at **90** to the frame **30** and is engaged intermediate its ends by a roll **91** carried by a crank disc **92** secured to shaft **93**. A spring **94** maintains lever **87** in contact with roll **91**. Shaft **93** and its counterpart **93'** are constantly driven, as later described, to periodically advance plungers **77** and **77'** simultaneously through their respective cutting dies **78** and **78'**. Webs of paper H and H' are fed between the plungers and dies, and heads or cap discs *h* are cut from the web by the plungers and dies and carried by the plungers against the ends of the article supported on cradle **76—76'**.

As shown in Fig. 6 the web H is intermittently drawn, as later described, from a supply roll not shown, over a guide bar **98** around a pivoted take up roll **99** and over a driven roll **100** mounted on a shaft **101**. As the web passes over roll **100** it receives an annular pattern of glue or paste, as indicated at **102** (Fig. 1) from a roll **103** mounted on a shaft **104** carried in adjustable bearings **105** to press roll **103** into glue transferring engagement with the web on roll **100**. The patterned surface of roll **103** receives glue or other suitable adhesive from a feed roll **106** carried by a shaft **107** and rotating in a suitable glue reservoir **108**.

From roll **100** the web H with its glue patterns, passes

downwardly between die **78** and the retracted plunger **77** where it comes to rest with a glue pattern in line with die **78**. Upon actuation of plunger **77** a glued cap dish *h* is cut by the serrated edges **109** of die **78** from web H and carried forward and applied to the end of the article, covering the pleats *d* and securing them in place. As will be understood a cap *h'* is simultaneously applied to the opposite end of the article by die **78'** and plunger **77'** thus completing the wrapping enclosure of the article. A spring stripper ring **110** prevents the web from adhering to the plunger.

Shaft **93**, which carries crank disc **92**, is constantly driven through a worm gear **111** fixed to shaft **93** and meshing with a worm gear **112** splined at **113** (Fig. 2) on a constantly driven shaft **114**. Shaft **93** carries a multilated gear **115** which meshes with a gear **116** on shaft **117** to intermittently drive the latter. Shaft **117** carries one of a pair of web feed rolls **129** between which web H passes to be intermittently drawn thereby through the header gluing and cutting means as above described. Shaft **117** also carries a sprocket **118** (Fig. 5) which is connected by a sprocket chain **119** with a sprocket **120** on shaft **101** of feed roll **100** to intermittently drive the latter in timed relation with the web feed. Shaft **101** carries a gear **121** which meshes with a gear **122** on shaft **104** of the patterned glue roll **103**, gear **122** meshing with a gear **123** on shaft **107** of glue supply roll **106**.

Shaft **101** also carries a crank **124** (Fig. 5) having a crank pin **125** which rides in a slot **126** formed in an arm **127** which is pivoted to the frame at **128** and carries gear segment **73** which oscillates article advancing fingers **63** as previously described. While the heading plungers are retracted, web H is advanced to apply glue to the web and position a glued area in line with the dies and plungers. During the dwell in the rotation of shafts **117—117'** plungers **77—77'** are advanced to cut caps or headers *h* from webs H and apply them to the ends of the waiting articles. Following the heading operation fingers **63—63'** are actuated to advance an article from the bed rolls **21—22** to cradle **76—76'** and position a succeeding article on the bed rolls.

Simultaneously with the actuation of fingers **63—63'** the article which was being capped, as the preceding article was being wrapped, is discharged from the cradle **76—76'** by ejector levers **130—130'**, Figs. 2 and 5. Levers **130—130'** normally lie below the supporting surfaces of the cradle members as shown in Fig. 2. Levers **130—130'** are pivoted at **131—131'** in respective brackets **132** and **132'**, respectively carried by movable frame **30** and fixed frame **10**. The ejection levers have extensions **133—133'** which are periodically engaged by respective cams **134—134'** carried by shaft **144**—cam **134** being connected to shaft **114** by spline **113** to move with frame **30**. The ejected articles are shown received by a gravity chute **135**.

Frame **30** is adjusted by ways **31** by a shaft **136** (Fig. 1) journaled in frame **30** and carrying pinions **136***a* (Fig. 3) meshing with racks **137** formed on the under side of members **138** of fixed frame **10**.

The various instrumentalities above described are driven from a motor **139**, controlled from suitably located switches as indicated at **140** in Fig. 1, or from any other suitable source of power. The motor shaft **141**, Fig. 11, carries a multiple pulley **142** which is connected by multiple V belts **143** to a multiple pulley **144** secured to a shaft **145**. Shaft **145** carries a gear **146** which meshes with gears **147** and **148** on the respective shafts **23** and **24** of bed rolls **21** and **22** to constantly drive the latter. Shaft **23** of roll **21** is coupled by any suitable overload release clutch **149** to a shaft **150** which carries a worm **151**. Worm **151** meshes with a worm gear **152** fixed to a shaft **153** which carries a gear **154** and a pulley **155**. Gear **154** meshes with a gear **156** on a shaft **157** which carries a pulley **158** and, at its opposite end, a gear **159** slidably mounted on shaft **157** as by a spline **160**. An arm **161** is pivotally mounted on gear **159** concentric therewith and arm **161** carries a gear **162** which meshes with and is constantly driven by gear **159** in all positions of pivotal movement of the arm. Gear **159** may be slide along its shaft **157** to selectively engage gear **162** with any one of several change speed gears **163** secured to the end of shaft **38** on which web feed roll **12** is secured. The arm **161** is provided with a lock pin **164** which may be engaged in any one of several openings 165 (Fig. 1) in the gear housing **166**, to hold gear **162** in mesh with the selected gear **163**. Shaft **38** carries a gear **167** which meshes with a gear **168** secured to shaft **40** of the glue rolls **39** to drive the latter. The pulley **158** is connected by a belt **170** to a pulley **171** secured to shaft **35** of the printing unit **34**.

Gear **154** on shaft **153** meshes with a gear **172** of a gear-pair, the other gear **173** of the pair meshing with gear **174** which carries a crank slide **175**. A crank pin **176** carried by a disc **177** secured to shaft **42** of the cutter **16** engages in slide **175** by which an accelerating and decelerating rotation is imparted to shaft **42** and knife **16**.

The end of bed roll **22**, opposite gear **148**, is provided with a friction facing **180** which is engaged by a friction disc **181** secured to the end of a shaft **182** mounted for sliding movement radially of facing **180**. As will be apparent, a shaft **182** is shifted to move disc toward or from the axis roll **22** the speed of shaft **182** is decreased or increased. Shaft **182** carries a gear **183** which meshes, throughout the range of shifting movement of shaft **182** with a drum gear **184** fixed to the end of shaft **48** which carries the sheet feed rolls **45**. Shaft **48** carries a pulley **185** connected by a belt **186** to a pulley **187** secured to shaft **37** of the labeling unit **36** to drive the latter.

Pulley **155** on shaft **153** is connected by a belt **188** to a pulley **189** fixed to shaft **93'** from which the mechanism of header units **28—28** are driven as previously described.

Arm **26**, which carries the sheet feeding roll **25**, is in the form of a bell crank pivoted at **190** and having a short arm **191**. Arm **191** carries a cam roll **192** which engages a face cam **193** secured on shaft **93'**. Cam **193** oscillates roll **25** to periodically feed a wrapper sheet between bed roll **22** and an article resting thereon as previously described.

Preferably, and as shown in Fig. 12, the application of glue to the edges of web *w* as the latter passes around roll **12** is periodically interrupted. Each glue pot **41** is supported, as shown in Fig. 12, at one end of a rod **195** for pivotal movement, and at the other end is pivotally connected at **196** to one end of a lever **197** which is pivoted intermediate its ends to frame **10** at **198**. The free end of lever **197** carries a cam roll **199** which engages a cam **200** secured to shaft **157**. Through the major portion of the rotation of shaft **157** cam **200** maintains the glue roll in contact with the web but when the low **201** of the cam engages cam roll **199** lever **197** tilts under the weight of the blue pot lowering glue roll **39** out of contact with the web, thus interrupting the application of glue to the web until roll **199** again rides onto the high face of the cam. The downward movement of the glue pot and glue roll is insufficient to completely unmesh gears **167** and **168** through which the glue roll is driven as previously described. Cam **200** is so positioned on shaft **157** that the portion of web *w* which is free of glue is that engaged by knife **16**, thus preventing an accumulation of glue on the knife and spacing the ends of glue lines *g* from the side edges of the severed wrapper, assuring that no glue is squeezed out onto the end folders when the edges of the wrapper are pleated against the end of the article.

As is apparent from the above description, and from

Fig. 1, in order to wrap articles of different length it is only necessary to adjust frame **30**, which carries folding unit **27** and header unit **28** on the ways **31** of the fixed frame to space the units **27—28** the needed distance from the corresponding units **27'—28'** which are mounted on the fixed frame, and to change the speed of web feed roll **12** by change speed gearing **159—162—163**, in housing **166**.

The simplicity of adjustment to different article lengths is made possible by the adjustable frame arrangement, the arrangement of the wrapper web feeding and cutting means at the side of the wrapping path along which the fixed pleating and heading units are located, the feeding of the web transversely of the wrapping path, the fixed special relation of the cutter to the fixed wrapping and heading instrumentalities, and the independent adjustment of the means which control the cut sheet and the amount of the extension of the wrapper sheet at the ends of the article. These features together with the use of long bed rolls rotatably mounted in the fixed frame, the method of pleating which permits the use of pleating members which are stationary relative to each other and complete the pleating operation in substantially a single rotation of the article on the bed rolls and the means by which the articles are advanced through the machine, all contribute to provide a machine far more compact and simpler in operation than machines for the purpose heretofore available.

What is claimed is:

1. A machine for wrapping rolls of paper and the like which comprises a frame, a pair of bed rolls carried by the frame for supporting a roll to be wrapped, a conveyor extending parallel to and spaced from said bed rolls for feeding rolls to the machine, rails extending between said conveyor and bed rolls for guiding rolls from the conveyor to the bed rolls, means to feed a web of wrapping material beneath and transversely of said rails, means to apply adhesive to the edge portions of the web, means to sever a wrapper from said web, means to feed said severed wrapper transversely of the direction of web travel and into adhering engagement with the roll on said bed rolls, means to rotate said bed rolls to rotate the roll and wind the wrapper thereabout, stationary means positioned above said bed rolls adjacent each end of the roll to fold and pleat the edge portions of the wrapper against the end of the roll as the latter is rotated, a roll support positioned forwardly of the bed rolls, means to transfer the roll from the bed rolls to said support and simultaneously transfer a second roll from said rails to the bed rolls, header forming and applying means positioned above said support adjacent the ends of the roll on said support to form and apply a header to each end of the roll, and means to remove the roll from said support.

2. A machine for wrapping rolls of paper and the like which comprises, a fixed frame and a movable frame, means to move said movable frame toward and from the fixed frame, opposed end wrapping units respectively carried by said fixed and movable frames, means for supporting a roll to be wrapped between said units, means carried by the fixed frame to feed a web of paper from the fixed frame toward the movable frame rearwardly of said article supporting means, intermittently actuated cutting means carried by the fixed frame to sever a wrapper length from said web, means to advance said severed wrapper length transversely to the direction of web feed and into engagement with the roll on said support, and means to adjust the speed of the web feeding means to vary the length of web fed past said web severing means between the actuations of the latter.

3. A machine for wrapping rolls of paper and the like which comprises a fixed frame and a movable frame, means to move said movable frame toward and from the fixed frame, opposed end wrapping units respectively carried by said frames, means for supporting a roll to be wrapped between said units, means to advance the roll to and past said support, means to feed a web of wrapping material transversely of said frames and rearwardly of said support, means to sever a wrapper length from said web, means to advance said severed wrapper length transversely of the direction of web travel and into engagement with the roll on said support and means to adjust the length of the material severed from the web.

4. A machine for wrapping rolls of paper and the like which comprises a pair of spaced frames, one of said frames being movable toward and from the other, said other frame being fixed, rotatable means extending between the frames to support and rotate the roll to be wrapped, opposed end folding and pleating units respectively mounted on said frames above said supporting means, opposed header forming and applying units respectively mounted on said frames forwardly of the folding and pleating units, a second supporting means for supporting the roll between said last-named units, means to advance an article to said first support and from said first support to the second support, means mounted on said fixed frame for feeding a web of wrapping material transversely of the direction of advance of the rolls from the first to the second support and rearwardly of said first support, cutting means mounted on the fixed frame for intermittently engaging the web to sever wrapper lengths therefrom, means to feed the severed wrapper length in a direction transverse to the direction of web feed and into winding engagement with the roll on the first support, means to operate said article advancing means, said rotatable support, said header forming and applying units, said cutting means and said severed wrapper feeding means in a fixed timed relation, means to adjust said movable frame toward and from the fixed frame to adjust the space between said frames to the length of the roll to be wrapped, means to drive the web feeding means and means to vary the speed of said web feeding means to adjust the length of wrapper cut from the web by the cutting means.

5. A machine for wrapping rolls of paper and the like which comprises a pair of spaced frames, one of said frames being movable toward and from the other, said other frame being fixed, rotatable means extending between the frames for supporting and rotating the roll to be wrapped, opposed folding and pleating units respectively fixed to said frames above said rotatable supporting means and positioned in fixed axial and radial relation with respect to a roll on said support, opposed header forming and applying units respectively carried by said frames forwardly of said roll supporting means, a second roll supporting means for supporting a roll in axial alignment with and between said header forming and applying units, means to successively advance a roll to said first support, from said first support to said second support and from said second support, means mounted on said fixed frame for feeding a web of wrapping material transversely across the path of movement of the rolls from the first to the second support and rearwardly of said first support, means to apply adhesive to the edges of the web, cutting means mounted on the fixed frame for engaging said web to sever wrapper lengths therefrom, means to feed a severed wrapper length in a direction transverse to the direction of web feed and into winding engagement with a roll on the first support, means to continuously rotate said first article supporting means, means to actuate said article advancing means, said header forming and applying units, said cutting means and severed wrapper feeding means intermittently in fixed timed relation to each other, means to adjust said movable frame toward and from the fixed frame to adjust the space between said frames to the length of the roll to be wrapped, means to continuously drive said web feeding means and means to vary the speed of said web feeding means to adjust the length of wrapper cut from the web by the cutting means.

6. A machine for wrapping rolls of paper and the like which comprises, a pair of spaced frames, one of said frames being movable toward and from the other, said other frame being fixed, a pair of bed rolls rotatably mounted on the fixed frame and extending between the frames for supporting and rotating a roll to be wrapped, said bed rolls having a length at least equal to the maximum separation permitted the frames, opposed folding and pleating units respectively fixed to said frames above said rotatable supporting means and positioned in fixed axial and radial relation with respect to a roll on said support, opposed header forming and applying units respectively carried by said frames forwardly of said roll supporting means, a second roll supporting means for supporting a roll in axial alignment with and between said header forming and applying units, means to successively advance a roll to the bed rolls, from the bed rolls to said second support and from said second support, means mounted on said fixed frame for feeding a web of wrapping material transversely across the path of movement of the rolls and rearwardly of said first support, means to apply adhesive to the edges of the web, cutting means mounted on the fixed frame for engaging said web to sever wrapper lengths therefrom, means to feed a severed wrapper length in a direction transverse to the direction of web feed and into winding engagement with a roll on the bed rolls, means to continuously drive the bed rolls at a fixed speed, means driven from the bed rolls to actuate said article advancing means, said header forming and applying units, said cutting means and said severed wrapper feeding means intermittently in fixed timed relation to each other, means including a change speed gearing to continuously drive said web feeding means from the bed rolls and means to adjust said movable frame toward and from the fixed frame.

7. A machine for wrapping rolls of paper and the like which comprises a fixed frame and a movable frame, opposed end wrapping units respectively carried by said frames, rotatable supporting means for supporting and rotating a roll to be wrapped between said units, means carried by the fixed frame to feed a web of paper transversely between the frames and rearwardly of said roll supporting means, intermittently actuated cutting means carried by the fixed frame to sever a wrapper length from the so-fed web, means to feed the severed length transversely of the direction of web fed and between the support and the roll thereon, means to effect an adhesive engagement between the roll and the leading edge of the severed wrapper length to cause the latter to be drawn around the roll upon rotation of the latter by the support, said wrapper units each comprising a stationary member having an outwardly flared portion to fold the end portions of the wrapper upwardly over the peripheral portions of the ends of the roll to form successive substantially generally conical folds as the wrapper is drawn around the roll, and a second portion engaging the points of the successive generally conical folds at the peripheral portions of the ends of the roll to crush the engaged portions of the folds against the ends of the roll, and a third portion extending over the end of the roll to press said successive folds into flat pleats against the end of the roll as the latter is rotated, means to advance a roll to and past said support, means to actuate said roll advancing means in fixed timed relation, means to adjust said movable frame toward and from said fixed frame to accommodate rolls of different length and means to vary the speed of said web feeding means.

8. In a machine for wrapping rolls of paper and the like, a pair of spaced frames, one of said frames being movable toward and from the other, said other frame being fixed, a pair of bed rolls rotatably mounted in the fixed frame and extending between said frames for supporting and rotating a roll to be wrapped, said bed rolls having a length at least equal to the maximum separation of the frames, means to constantly rotate said rolls, means to position an article on said rolls, means mounted on said fixed frame for feeding a web of wrapping material parallel to and rearwardly of said bed rolls, means to apply adhesive to the edge portions of said web, cutting means mounted on said fixed frame for intermittently engaging said web to sever wrapper lengths therefrom, means to feed a severed wrapper length transversely of the direction of web travel and between the adjacent bed roll and the roll thereon to cause the adhesively coated edge of the wrapper to adhere to the roll to be wound therearound as the latter is rotated by the bed rolls, opposed folding and pleating units respectively mounted on said fixed and movable frames above said bed rolls, each said unit comprising a stationary folding member having a portion extending beneath the article and between the rolls and an upwardly and outwardly flaring portion to fold an end edge portion of the wrapper, as it is drawn around the article by the rotation of the latter, closely against the peripheral edge portion of the end of the article to induce successive generally conical folds in the edge portion of the wrapper, said folding member having a second portion successively engaging the points of said generally conical folds at said peripheral edge portions to initiate a pleat, and having a third portion extending inwardly of the periphery of the end of the article to progressively crease said generally conical folds against the end of the article in overlapping pleats, means to actuate said cutting means in fixed timed relation to the speed of the bed rolls, means to adjust the spacing of said frames to the length of the article to be wrapped, and means to vary the speed of said web feed to adjust the length of the wrapper cut from the web.

9. In a wrapping machine, spaced frames forming a wrapping channel, wrapping instrumentalities carried by said frames at the sides of said channel, one frame being fixed, means to adjust the other frame toward and from said fixed frame to accommodate articles of different length, means to advance articles through said channel, means to feed a web of wrapping material transversely of the channel at the entrance thereof, opposed cutting members mounted on said fixed frame and between which said web is fed, to sever wrapper sheets from the web, means to feed said sheets transversely to the direction of the web feed and into wrapping engagement with an article in the channel, means to actuate said wrapping instrumentalities, said article advancing means, said cutting means and said sheet feeding means at fixed speeds and in a fixed timed relation to each other and means to drive the web feeding means at various speeds to vary the length of wrapper web fed through the cutting members between successive actuations thereof.

10. In a machine for wrapping rolls of paper and the like, a fixed frame and a movable frame, means to adjust the movable frame toward and from the fixed frame, a support for a roll being wrapped carried by the fixed frame and extending between the frames, said support being of a length to accommodate the maximum separation of the frames, a second support for the roll being wrapped comprising members carried by each of said frames engaging the adjacent end portions of the roll and means carried by each frame for engaging the adjacent end of a roll and advancing it onto the first support and simultaneously advancing a roll on the first support to the second support.

11. In a machine for wrapping cylindrical articles, means to rotate the article about its axis and draw a wrapper sheet therearound with edge portions of the wrapper extending outwardly from the ends of the article, and sationary folding units positioned one at each end of the article to pleat said extending edge portions of the wrapper against the adjacent end of the article, each said unit comprising a member extending beneath the article and between the rolls and flared upwardly and outwardly to fold said edge portion of the wrapper, as it is drawn around the article by the rotation of the

latter, closely against the peripheral edge of the end of the article to induce successive generally conical folds in the free edge portions of the wrapper, a second member successively engaging the points of said generally conical folds at said peripheral edge to crush fold said points against the end face of the article adjacent the edge thereof to initiate a pleat and a third member extending inwardly of the periphery of the end of the article to progressively crease said generally conical folds against the end of the article in overlapping pleats upon continued rotation of the article.

12. The combination recited in claim 11 in which the members of said units are mounted for yielding pressure against the end of the article.

13. The combination recited in claim 11 in which the members of said units are formed integral with each other.

14. The combination recited in claim 11 in which the members of said units are formed integral with each other and are mounted at the end of a spring plate for yielding pressure against the end of the article.

15. The method of pleating the edge portion of a

wrapper against the end of a cylindrical article which comprises holding the leading edge of the wrapper against the article, rotating the article about its axis to draw the wrapper therearound, progressively bending the edge portion of the wrapper around the peripheral end edge of the article to form a succession of generally conical folds in the free edge portions of the wrapper, successively crush folding the points of said successive generally conical folds against the end face of the article adjacent the edge thereof to initiate a pleat and progressively creasing said successive generally conical folds inwardly from said crush folds and against the end of the article to form flat pleats.

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