Nov. 23, 1954 J. W. SMITH 2,694,964

APPARATUS FOR NICKING THE EDGE OF THE WEB PASSING THROUGH A WRAPPING MACHINE

Filed Sept. 8, 1952 5 Sheets-Sheet 1

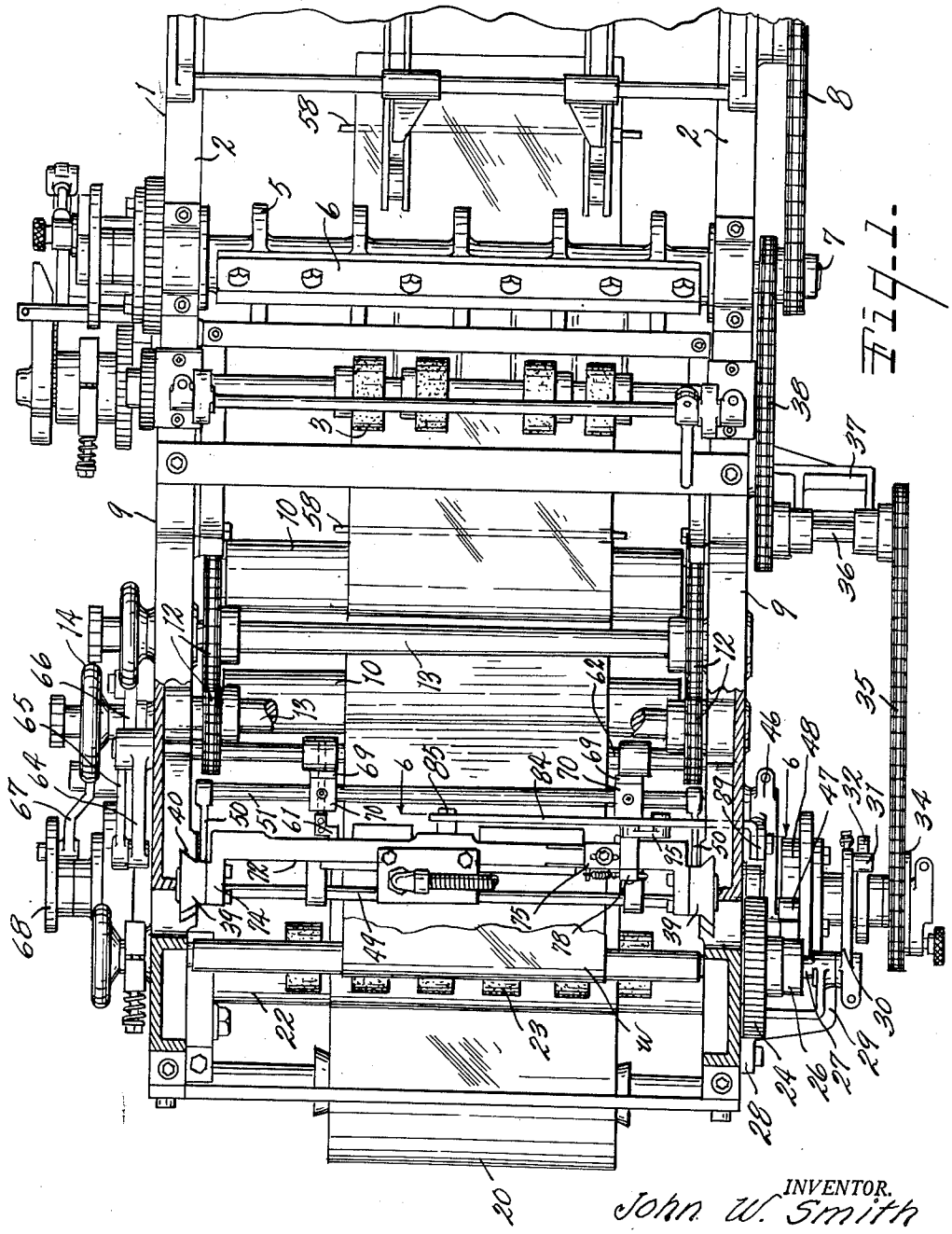

FIG. 1.

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5 Sheets-Sheet 2

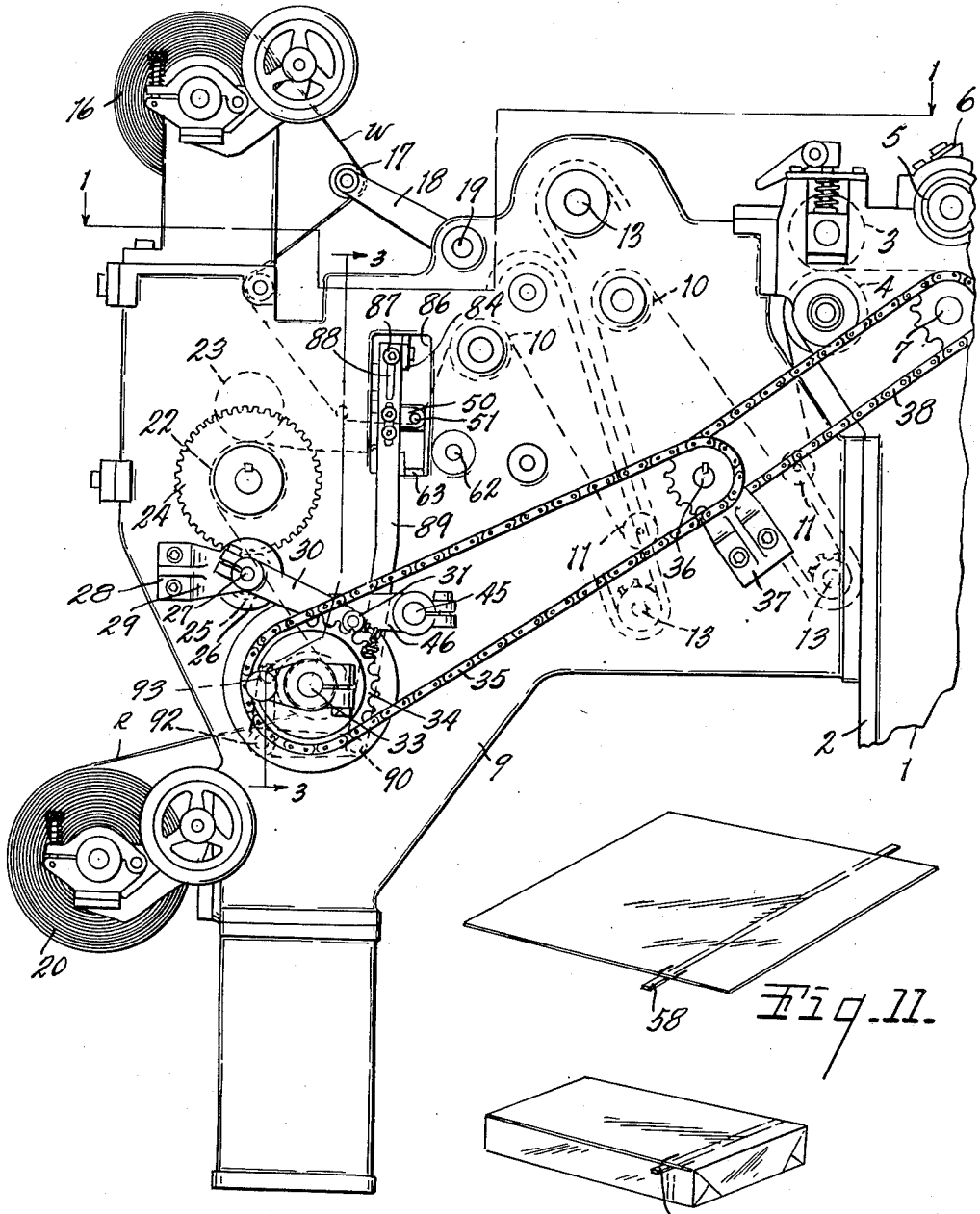

Fig. 2.

Fig. 11.

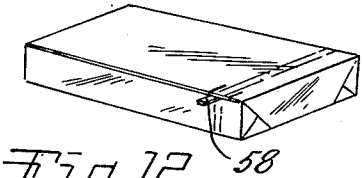

Fig. 12.

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5 Sheets-Sheet 3

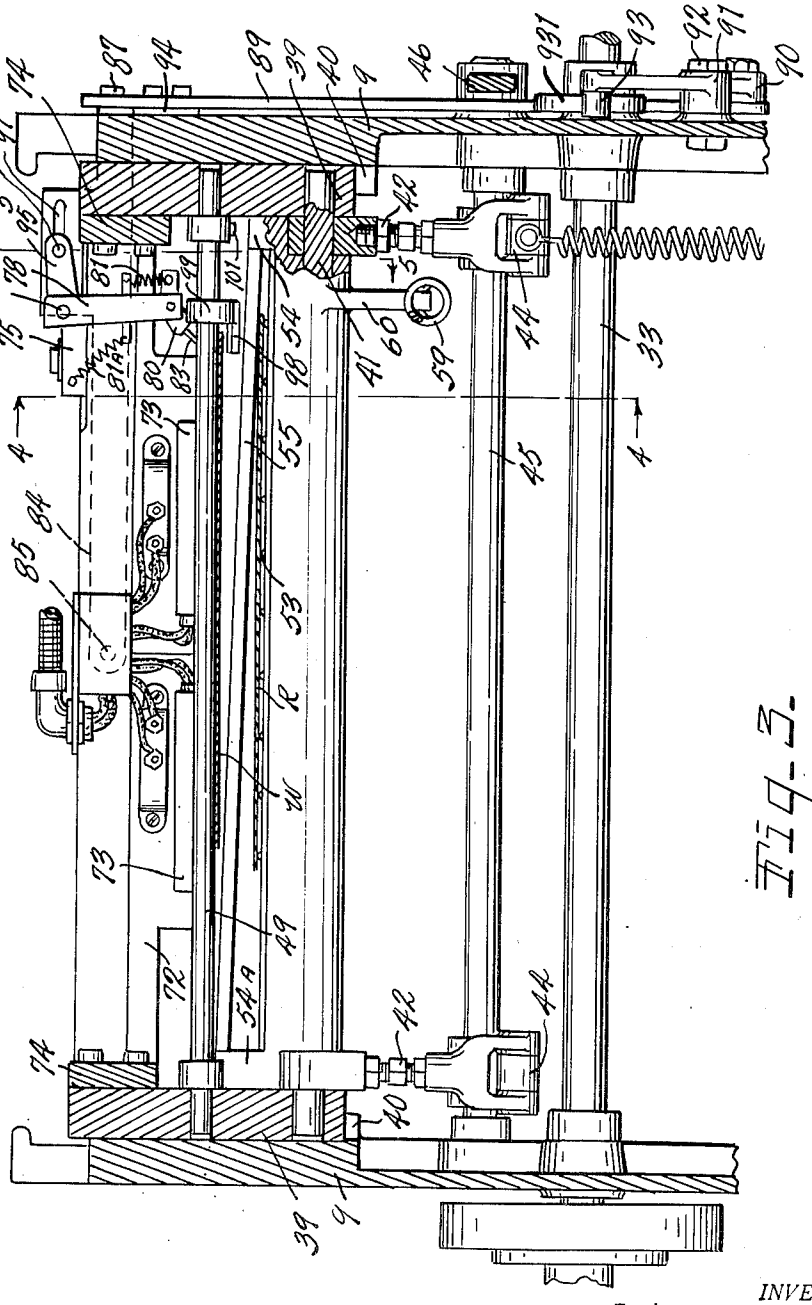

FIG. 3.

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5 Sheets-Sheet 4

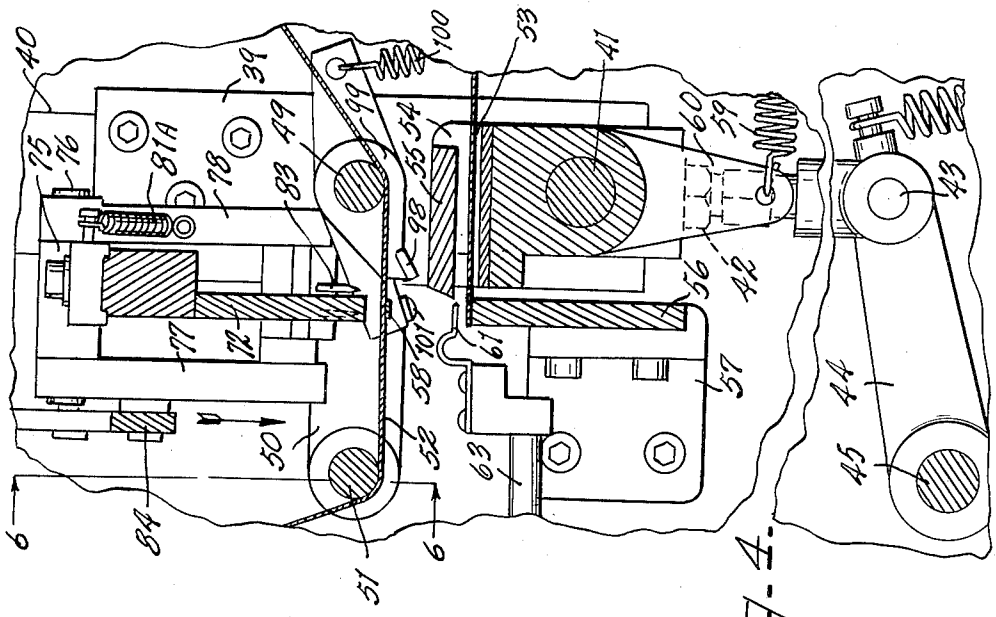

FIG. 4.

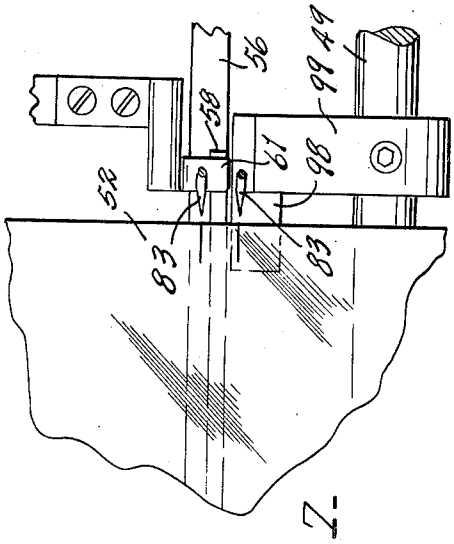

FIG. 7.

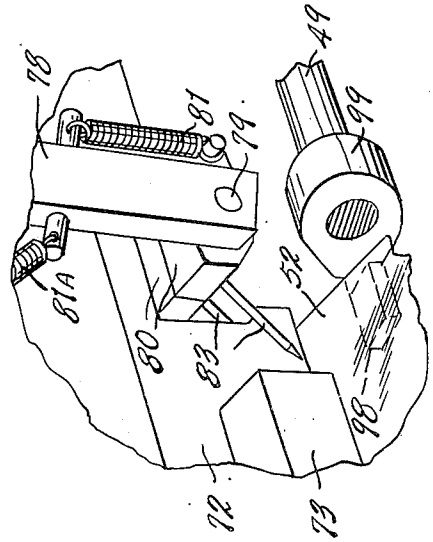

FIG. 8.

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Filed Sept. 8, 1952 5 Sheets-Sheet 5

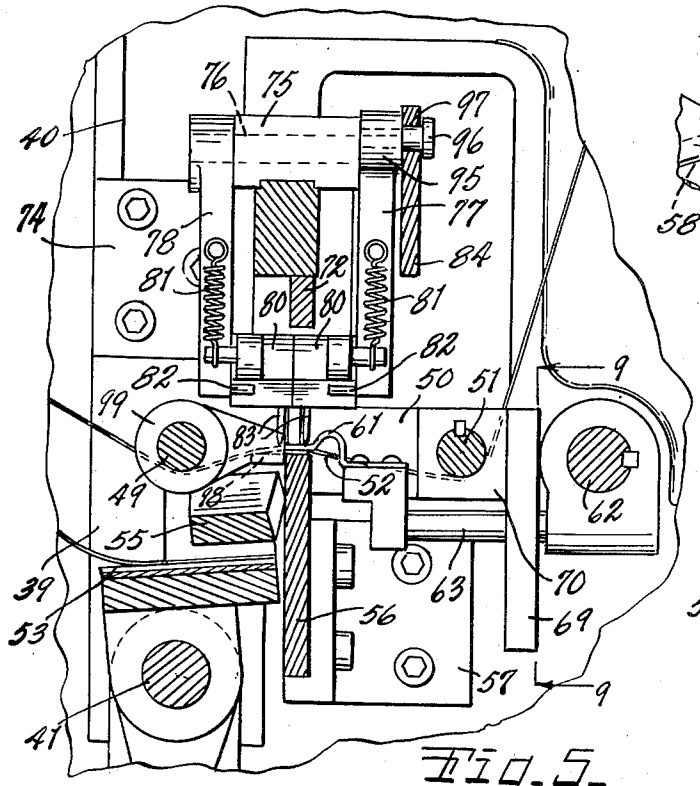

Fig. 5.

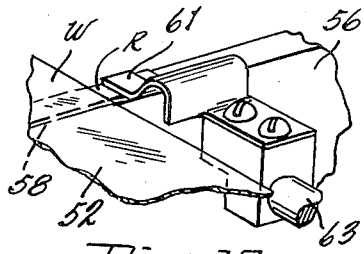

Fig. 10.

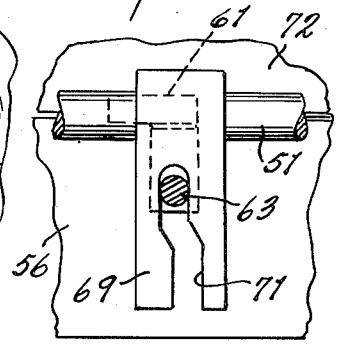

Fig. 9.

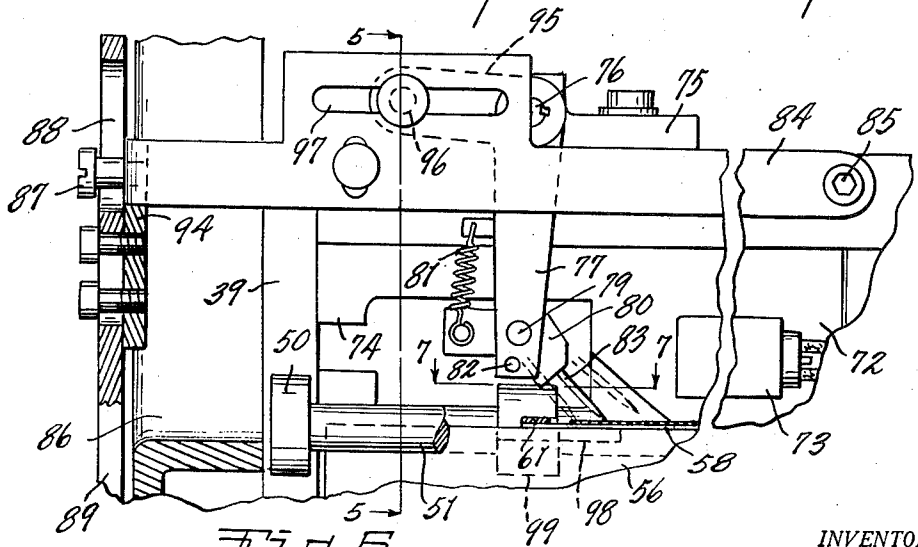

Fig. 6.

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United States Patent Office 2,694,964 Patented Nov. 23, 1954

2,694,964

APPARATUS FOR NICKING THE EDGE OF THE WEB PASSING THROUGH A WRAPPING MACHINE

John W. Smith, Battle Creek, Mich., assignor to Battle Creek Packaging Machines, Inc., a corporation of Michigan

Application September 8, 1952, Serial No. 308,481

10 Claims. (Cl. 93—1)

This invention relates to improvements in apparatus for nicking the edge of the web passing through a wrapping machine.

The principal objects of this invention are:

First, to provide apparatus that will nick the edge of a web of wrapping material on either side of a tear strip on the web.

Second, to provide apparatus that is movably mounted in a wrapping machine to move transversely with respect to the plane of an advancing web of wrapping material and a wider web of tear strip material to sever a narrow strip from the end of the tear strip material and attach the strip transversely across the web of wrapping material, and simultaneously nick the edge of wrapping material on either side of the tear strip so that the web may thereafter be severed into individual wrappers, each carrying a tear strip for wrapping around an article with the end of the tear strip projecting from the finished package and with the wrapper edge nicked for easy tearing of the wrapper by the tear strip.

Third, to provide web nicking or slitting apparatus that is operative upon the edge of an intermittently advanced web of wrapping material without disrupting the web, for continued advancing motions and without undesirable tearing or wrinkling of the web.

Fourth, to provide tear strip applying and web nicking apparatus in a wrapper web feeding structure that permits formation of a nick in the edge of the web in accurate registry with a tear strip applied to the web.

Other objects and advantages of the invention will be apparent from a consideration of the following description and claims.

The drawings, of which there are five sheets, illustrate a highly practical form of the web nicking apparatus associated with tear strip applying and web feeding apparatus.

Fig. 1 is a plan view of a structure for advancing a web of wrapping material to a wrapping machine while applying tear strips to the web at intervals and nicking the edge of the web adjacent to the tear strips. Portions of the apparatus and web are broken away along the plane of the line 1—1 in Fig. 2, and only the end of the wrapping machine is illustrated.

Fig. 2 is a side elevational view of the structure shown in Fig. 1.

Fig. 3 is a fragmentary transverse cross sectional view through the web feeding and nicking apparatus and the tear strip applying structure taken along the plane of the line 3—3 in Fig. 2.

Fig. 4 is a fragmentary longitudinal cross sectional view taken along the plane of the line 4—4 in Fig. 3 and looking in the direction of the arrows.

Fig. 5 is a fragmentary longitudinal cross sectional view taken along the plane of the line 5—5 in Fig. 3 and looking oppositely from Fig. 4.

Fig. 6 is a fragmentary transverse cross sectional view illustrating the actuating mechanism for the web nicking apparatus and taken along the plane of the line 6—6 in Figs. 1 and 4.

Fig. 7 is a fragmentary plan view of the web nicking apparatus taken along the plane of the line 7—7 in Fig. 6.

Fig. 8 is a fragmentary perspective view of the nicking apparatus shown in Fig. 7.

Fig. 9 is a fragmentary transverse cross sectional view taken along the plane of line 9—9 in Fig. 5 and illustrating the tear strip holding and stretching aparatus coacting with the web nicking apparatus.

Fig. 10 is a fragmentary perspective view of the tear strip holding shoe.

Fig. 11 is a perspective view of a single nicked wrapper with attached tear strip as provided by the apparatus.

Fig. 12 is a perspective view of a package wrapped in the wrapper shown in Fig. 11.

The web nicking apparatus described and claimed herein is designed to coact with tear strip applying mechanism such as is disclosed and claimed more completely in my copending application, Serial 242,365, filed August 17, 1951, now Patent No. 2,683,401, for Method and Apparatus for Applying Rip Strips to Wrapping Sheets. The rip strip applying apparatus disclosed herein has been modified somewhat for coaction with the web nicking apparatus, but is essentially the same as the prior application. The entire apparatus is designed for attachment to and coaction with a machine for wrapping individual articles in wrappers formed from a continuous web of wrapping material.

The intake end of a wrapping machine is indicated at 1. The wrapping machine includes suitable frame elements 2 and infeeding rolls 3 and 4 for drawing a continuous web of wrapping material into the machine. A cutter roll 5 having a knife 6 thereon is cooperative with a backing roll on the shaft 5 to cut the incoming web into individual wrapper sheets of the desired length. The shaft 7 is driven from the main driving source of the wrapping machine by a chain 8. The other details of the wrapping machine are unimportant to an understanding of the present invention and so are not described in detail.

The rip strip attaching apparatus and web nicking apparatus are incorporated in an attachment for the wrapping machine. The attachment includes suitable interconnected side members 9 that are secured to the ends of the frame members 2 of the wrapping machine. The attachment includes a pair of fixed guide rolls 10 for the web of wrapping material and a pair of bodily movable slack take-up rolls 11. The rolls 11 extend transversely intermediate of the frame members 9 and are carried by loops of chain 12 trained around the rock shafts 13 in downwardly and forwardly inclined loops. Oscillation of the shafts 13 causes the take-up rolls 11 to move upwardly and downwardly, while the web of wrapping material is traveling thereover. A series of crank wheels and connecting rods illustrated generally at 14 in Fig. 1 are operative to oscillate the shafts 13. The slack take-up rolls and their driving mechanism permit the infeed rolls 3 and 4 of the wrapping machine to operate continuously, while the web itself is stopped periodically for the attachment of rip strips thereto as will be described. The incoming web W of wrapping material is taken from a supply roll 16 and trained over an oscillating take-up idler shaft 7 carried on the swinging ends of arms 18 mounted on the shaft 19. The shaft 19 is oscillated by a connecting rod (not illustrated) in timed relationship with the slack take-up rolls 11. Slack take-up and pay out devices of this type are old and so are not discussed in detail.

A supply roll 20 of rip strip forming material is supported near the bottom of the attachment and delivers a web R of the material around an idler roll 21 to a feed roll 22. A pressure roll 23 coacts with the feed roll 22 and the feed roll 22 is intermittently driven by a gear 24 on the front of the machine. The gear 24 is in turn driven by a pinion 25 and the pinion is driven through a one way clutch 26 from the rock shaft 27. The shaft 27 is carried by a bracket 28 secured on one side frame of the machine and having an outwardly spaced shaft supporting arm 29. A crank arm 30 secured to the shaft 27 carries a cam follower 31 (see Fig. 1) that is drivingly engaged with a cam 32 on the main drive shaft 33 of the attachment. A sprocket 34 angularly adjustably secured to the shaft 33 by a clutch 34 is driven by a chain 35 from the stub shaft 36 secured to the side of the attachment by a bracket 37. The stub shaft 36 is in turn driven by a chain 38 from the shaft 7 of the wrapping machine.

The web W of the wrapping material and the web R of rip strip material are thus driven or advanced into the wrapping machine in timed relationship. The wrapper web W is fed continuously, while the rip strip forming web is driven intermittently in short increments of ad-

vancing motion. The two webs are brought into lapped engagement at a head structure extending transversely between the side frames **9**. The head structure includes a pair of slide members **39** that are vertically slidably mounted on the inner sides of the side members **9** by slideway forming elements **40**.

The slide members are interconnected at their lower ends by a rockable cross bar **41** having depending adjustable links **42** secured to its ends. The links **42** are connected at their lower ends to pivots **43** swingably supported at the ends of crank arms **44**. The arms **44** are secured to a rock shaft **45** and the shaft **45** is oscillated in timed relationship with the other portions of the attachment by being connected to a crank arm **46** located at the front of the machine. The crank **46** has a cam follower **47** engageable with a cam **48** on the main drive shaft **33** of the attachment. The slides **39** are thus pulled downwardly and returned once during each rotational cycle of the shaft **33**. With the infeed rolls **3** and **4** operating in predetermined timed relationship with the shaft **33**, a known length of wrapper web will be drawn through the head after each oscillation of the slides **39**.

The slide members **39** are further interconnected by a second cross bar **49** of circular cross section that extends between the slide members in spaced relationship above the cross bar **41**. The round cross bar **49** acts as a guide for the incoming web W of wrapper material. Arms **50** integrally connected to the slides **39** and projecting forwardly therefrom carry a third cross bar **51** of circular cross section which further guides the incoming web across a generally horizontal reach indicated at **52**, which reach moves upwardly and downwardly with movement of the slide members and the head. The first cross bar **41** of the head structure is flattened across the top to form a table **53** across which the incoming web R of rip strip material is fed. Upstanding ends **54** and **54A** on the cross bar **41** support a blade **55** in transversely inclined spaced relationship above the table **53**. The blade **55** coacts with a fixed shear plate **56** supported transversely between the side frames **9** by brackets **57**. The web R is fed across the table **53** and over the top of the fixed shear plate **56** when the head and cross bar **41** are in elevated position. This condition of the apparatus is illustrated most clearly in Figs. 3 and 4.

Downward movement of the cross bar **41** and cutter blade **55** brings the blade **55** into shearing engagement with the fixed shear plate **56** to shear off a narrow rip strip **58**. A spring **59** connected to an arm **60** depending from the cross bar **41** yieldingly biases the movable cutter blade **55** into cutting engagement with the shear plate **56**. The position of the head and the cutting elements after completing a cut is illustrated in Fig. 5. The individual rip strip **58** is retained on top of the fixed shear plate **56** by holding fingers **61** that project toward the infeed end of the attachment from the rock shaft **62** on arms **63**. The arms **63** and shaft **62** are oscillated in timed relationship with reciprocation of the cross bar **41** by a crank arm **64** secured to the rear end of the shaft **62**. The arm **64** is oscillatably driven by a link **65** (see Fig. 1) from one of the oscillating wheels **66** which forms part of the driving assembly **14** to the rock shafts **12**. The wheel **66** is oscillated by a connecting rod **67** secured to a crank wheel **68** on the rear end of the shaft **33**.

The arms **63** project through vertical plates **69** that are secured to the blocks **70** mounted on the cross bar **51** (see Figs. 5 and 9). The plates **69** have cam slots **71** formed therein and passing the arms **63** as is best illustrated in Fig. 9 so that downward swinging motion of the arms **63** and the fingers **61** causes the arms and fingers to move outwardly and stretch the individual rip strip **58** taut along the surface of the fixed shear plate **56**.

Downward motion of the head structure carried by the slides **39** brings the horizontal reach **52** of the wrapper web into slightly upwardly deflected position over the shear plate **56** as is shown in Fig. 5. It also brings a sealing plate **72** into sealing engagement with the deflected web and the sub-adjacent rip strip to seal the rip strip to the web. Electric heaters **73** are carried on the seal plate **72** for this purpose. The seal plate **72** is connected by brackets **74** to the slide member **39** for reciprocation therewith.

The foregoing web feeding and rip strip applying apparatus is substantially the same as that disclosed in my above mentioned application. The mechanism for nicking the edge of the web adjacent to the rip strip will now be described in detail.

Secured to the top of the seal plate **72** at the front end thereof is a carrier block **75** that is adjustable longitudinal of the seal plate to adjust the nicking mechanism to various width webs. Pivotally supported on each side of the carrier block by a common pivot **76** are a pair of cranks **77** and **78**. The depending arms of the cranks **77** and **78** terminate in spaced relationship above the horizontal reach **52** of the wrapper web and are each provided with pivots **79** on which the fingers **80** are pivotally supported. Springs **81** connected to the outer ends of the fingers bias the trasversely inner ends of the fingers downwardly against stop pins **82**. Downwardly and inwardly inclined needles **83** are carried by the fingers and arranged with respect to the seal plate **72** so that they closely approach the wrapper web when the seal plate is lowered. Springs **81A** bias the depending arms of the cranks inwardly and upwardly from the web.

A lever **84** has its inner end pivotally connected to the seal plate **72** adjacent the middle thereof at **85** (see Figs. 1, 3, and 6). The lever **84** extends forwardly through a slot or opening **86** provided therefore in the side frame of the attachment and is bent laterally to receive the projecting screw **87**. The screw **87** extends through a vertical slot **88** in an upright link **89** disposed alongside the attachment. The link **89** extends downwardly and is connected as at **90** to one arm of a crank **91** (see Fig. 2). The crank **91** is pivoted to the frame at **92** and its other arm carries a cam follower **93** engageable with the cam **931** on the shaft **33** to force the link **89** and the outer end of the lever **84** upwardly in timed relationship with the vertical reciprocation of the seal plate **72**. The length of the slot **88** permits downward movement of the lever **84** with the seal plate **72** without movement of the lever with respect to the seal plate. This brings the structure into the position illustrated in full lines in Fig. 6. At this time upward movement of the link **89** and a shoe **94** adjustably secured thereto engages the outer end of the lever **84** to move lever upwardly. The crank member **77** has an outwardly extending arm thereon indicated at **95** and the arm carries a pin **96** extending slidably through a slot **97** in the lever **84**. Thus upward movement of the lever **84** with respect to the seal plate **72** causes the crank **77** to swing outwardly of the machine. The two cranks **77** and **78** being keyed to the common pivot **76** move in unison to swing the needles **83** downwardly and outwardly into penetrating and ripping engagement with the edge of the web on either side of the rip strip **58**.

It has been found that the points of the needles **83** penetrate easily through the wrapper web and that it is thereafter easy to form two slits or nicks in the web by downward and outward swinging motion of the needles. In order to support the edge of the web against deflection under the influence of the needles **83**, a backing lug **98** is provided on an arm **99** swingably supported on the cross bar **49**. A spring **100** biases the arm **99** downwardly while a tappet **101** on the arm is engageable with the top of the shear plate **56** to swing the lug **98** into supporting engagement with the bottom of the web adjacent the edge of the web that is to be nicked.

After the rip strip has been applied to the wrapper and the edge of the wrapper has been nicked the slides **39** and the seal plate **72** carried thereby move upwardly carrying the cranks **77** and needles **83** with them. The needles which have penetrated and slit the web thus move freely upwardly through their self-formed slits without disturbing the position of the web. After the needles have been withdrawn from the web the link **89** moves downwardly to permit downward movement of the lever **84** and subsequent inward swinging of the cranks **77** and **78**. The web can then be advanced further to the cutter roll **5** with a rip strip firmly attached to each section of the web. If two nicks or slits are not needed in the edge of the wrapper, either one of the depending crank arms **77** or **78** and its associated needle **83** can be omitted or disconnected from the lever **84**.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination with a wrapping machine having means for advancing a web of wrapping material therethrough and other means for advancing a sheet of rip strip material in step by step motion parallel to and spaced from a portion of said web, means for stopping a reach of said web adjacent the end of said sheet, a cross

head extending transversely of said reach and having a pressure plate disposed on the opposite side of said web from the end of said sheet, a fixed shear plate positioned on the opposite side of said web from said pressure plate and positioned to receive and support the leading end of said sheet, a cutter blade carried by said cross head between said sheet and said web and cooperative with said shear plate, means for reciprocating said cross head in timed relationship with said web and sheet feeding means to cause said cutter blade to sever a rip strip from the end of said sheet and advance said pressure plate against said fixed shear plate to clamp said reach against said strip, fingers rockably driven in timed relation to said head and engageable with the ends of said strip to hold said strip on said fixed plate, crank members pivotally supported on opposite sides of said pressure plate and having arms extending to adjacent the web engaging edge of the pressure plate and located over the longitudinal edge of said web, web piercing needles swingably and yieldably mounted on the ends of said arms, a lever having one end pivotally connected to said pressure plate inwardly of said crank members with respect to the edge of said web, actuating arms on said crank members having a pivotal connection to an intermediate portion of said lever, said connection being slidable longitudinally of said lever, a tappet transversely engageable with the swinging end of said lever to move said lever and said crank members relative to said pressure plate to swing said needles transversely and outwardly through the edge of said web, and means operated in timed relationship with said web feeding means connected to actuate said tappet, said tappet actuating means having a lost motion driving connection to the swinging end of said lever permitting return of the pressure plate to spaced position from said web.

2. In combination with a wrapping machine having means for advancing a web of wrapping material therethrough and other means for advancing a sheet of rip strip material in step by step motion parallel to and spaced from a portion of said web, means for stopping a reach of said web adjacent the end of said sheet, a cross head extending transversely of said reach and having a pressure plate disposed on the opposite side of said web from the end of said sheet, a fixed shear plate positioned on the opposite side of said web from said pressure plate and positioned to receive and support the leading end of said sheet, a cutter blade carried by said cross head between said sheet and said web and cooperative with said shear plate, means for reciprocating said cross head in timed relationship with said web and sheet feeding means to cause said cutter blade to sever a rip strip from the end of said sheet and advance said pressure plate against said fixed shear plate to clamp said reach against said strip, fingers rockably driven in timed relation to said head and engageable with the ends of said strip to hold said strip on said fixed plate, crank members pivotally supported on said pressure plate and having arms extending to adjacent the web engaging edge of the pressure plate and located over the longitudinal edge of said web, web piercing needles yieldably mounted on the ends of said arms, a lever having one end pivotally connected to said pressure plate inwardly of said crank members with respect to the edge of said web, actuating arms on said crank members having a pivotal connection to an intermediate portion of said lever, said connection being slidable longitudinally of said lever, a tappet transversely engageable with the swinging end of said lever to move said lever and said crank members relative to said pressure plate to swing said needles transversely and outwardly through the edge of said web, and means operated in timed relationship with said web feeding means connected to actuate said tappet.

3. In combination with a wrapping machine having means for advancing a web of wrapping material therethrough and other means for advancing a sheet of rip strip material in step by step motion parallel to and spaced from a portion of said web, means for stopping a reach of said web adjacent the end of said sheet, a cross head extending transversely of said reach and having a pressure plate disposed on the opposite side of said web from the end of said sheet, a fixed shear plate positioned on the opposite side of said web from said pressure plate and positioned to receive and support the leading end of said sheet, a cutter blade carried by said cross

head between said sheet and said web and cooperative with said shear plate, means for reciprocating said cross head in timed relationship with said web and sheet feeding means to cause said cutter blade to sever a rip strip from the end of said sheet and advance said pressure plate against said fixed shear plate to clamp said reach against said strip, a crank pivotally supported on said pressure plate and having an arm extending to adjacent the web engaging edge of the pressure plate and located over the longitudinal edge of said web, a web piercing needle mounted on the end of said arm and projecting inwardly over the edge of the web, a lever having one end pivotally connected to said pressure plate in spaced relation to the pivot of said crank, an actuating arm on said crank having a pivotal connection to an intermediate portion of said lever, said connection being slidable longitudinally of said lever, a tappet transversely engageable with the swinging end of said lever to move said lever and said crank member relative to said pressure plate to swing said needle through and transversely and outwardly beyond the edge of said web, and means operated in timed relationship with said web feeding means connected to actuate said tappet.

4. In combination with a wrapping machine having means for advancing a web of wrapping material therethrough and other means for advancing a sheet of rip strip material in step by step motion parallel to and spaced from a portion of said web, means for stopping a reach of said web adjacent the end of said sheet, a cross head extending transversely of said reach and having a pressure plate disposed on the opposite side of said web from the end of said sheet, a fixed shear plate positioned on the opposite side of said web from said pressure plate and positioned to receive and support the leading end of said sheet, a cutter blade carried by said cross head between said sheet and said web and cooperative with said shear plate, means for reciprocating said cross head in timed relationship with said web and sheet feeding means to cause said cutter blade to sever a rip strip from the end of said sheet and advance said pressure plate against said fixed shear plate to clamp said reach against said strip, a crank pivotally supported on said pressure plate and having an arm extending to adjacent the web engaging edge of the pressure plate and located over the longitudinal edge of said web, a web piercing needle mounted on the end of said arm and projecting inwardly over the edge of the web, a lever having one end pivotally connected to said cross head in spaced relation to the pivot of said crank, an actuating arm on said crank having a driving connection to an intermediate portion of said lever, a tappet transversely engageable with the swinging end of said lever to move said lever and said crank member relative to said pressure plate to swing said needle through and transversely and outwardly beyond the edge of said web, and means operated in timed relationship with said web feeding means connected to actuate said tappet.

5. In combination with a wrapping machine having means for advancing a web of wrapping material therethrough and other means for attaching a rip strip to spaced portions of said web, a cross head extending transversely of said web and having a pressure plate disposed on the opposite side of said web from the line of attachment of the strip to said sheet, a fixed plate positioned on the opposite side of said web from said pressure plate and cooperative therewith to grip said strip and web therebetween, means for reciprocating said cross head in timed relationship with said web feeding means to advance said pressure plate against said fixed plate, a crank pivotally supported on said pressure plate and having an arm extending to adjacent the web engaging edge thereof and over the longitudinal edge of said web, a web piercing needle mounted on the end of said arm, actuating means connected to said crank and carried by said pressure plate for movement therewith, a tappet transversely engageable with said actuating means to move said means and said crank relative to said pressure plate to swing said needle transversely and outwardly through the edge of said web, and means operated in timed relationship with said web feeding means connected to actuate said tappet.

6. In combination with a wrapping machine having means for advancing a web of wrapping material therethrough, means for stopping a reach of said web, a cross head extending transversely of said reach, cranks pivot-

ally supported on opposite sides of said cross head and having arms extending to adjacent the web and swingable in transverse planes over the longitudinal edge of said web, web piercing needles swingably and yieldably mounted on the ends of said arms, a tappet connected to other arms of said cranks and operative to move said cranks relative to said head to swing said needles transversely through and transversely and outwardly across the edge of said web, and means operated in timed relationship with said web feeding means connected to actuate said tappet.

7. In combination with a wrapping machine having means for advancing a web of wrapping material therethrough, a crank pivotally supported on said machine and having an arm extending generally perpendicularly to and adjacent the web and swingable in a transverse plane over the longitudinal edge of said web, a web piercing needle mounted on the end of said arm and extending at an angle therefrom inwardly from the edge of said web, means connected to said crank and operative to move said crank relative to said machine to swing said needle transversely through and transversely and outwardly across the edge of said web, and means operated in time relationship with said web feeding means connected to actuate said crank operating means.

8. In a wrapping machine having means for advancing a web of wrapping material therethrough, a pair of crank members swingable in spaced planes transversely of said web and having arms extending generally perpendicularly toward the edge of said web, fingers pivotally supported on the ends of said arms and having inner ends spaced over said web and yieldably biased to rotate toward said web, stops on said arms limiting the biased movement of said fingers, needles carried by said fingers and directed toward said web and inclined transversely away from the edge of said web and toward the face thereof, a lever having one end pivotally supported on said machine in spaced relationship with the pivots of said crank members, means forming a driving connection between said lever and said crank members, and means for oscillating said lever with respect to said crank members to swing said crank members and the needles carried thereby in transversely and outwardly swinging direction relative to the surface and edge of said web whereby the needles penetrate the web inwardly from the edge thereof and swing outwardly in a tearing action through the edge of the web.

9. In a wrapping machine having means for advancing a web of wrapping material therethrough, a crank member swingable in a plane transversely of said web and having an arm extending generally perpendicular toward the edge of said web and positioned in spaced relationship to said web, a finger pivotally supported on the end of said arm and having an inner end yieldably biased to rotate toward said web, a stop on said arm coacting with said finger, a needle carried by said finger and directed toward said web and inclined transversely away from the edge of said web and toward the face thereof, a lever having one end pivotally supported on said machine in spaced relationship with the pivot of said crank member; means forming a driving connection between said lever and said crank member, and means for oscillating said lever with respect to said crank member to swing said crank member and the needle carried thereby in transversely and outwardly swinging direction relative to the surface and edge of said web whereby the needle penetrates the web inwardly from the edge thereof and swings outwardly in a tearing action through the edge of the web.

10. In a wrapping machine having means for advancing a web of wrapping material therethrough, a crank member swingable in a plane transversely of said web and having an arm extending generally perpendicularly toward the edge of said web and positioned in spaced relationship to said web, a needle carried by said arm and directed toward said web and inclined transversely away from the edge of said web and toward the face thereof, a lever having one end pivotally supported in spaced relationship with the pivot of said crank member, means forming a driving connection between said lever and said crank member, and means for oscillating said lever with respect to said crank member to swing said crank member and the needle carried thereby in transversely and outwardly swinging direction relative to the surface and edge of said web whereby the needle penetrates the web inwardly from the edge thereof and swings outwardly in a tearing action through the edge of the web.

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