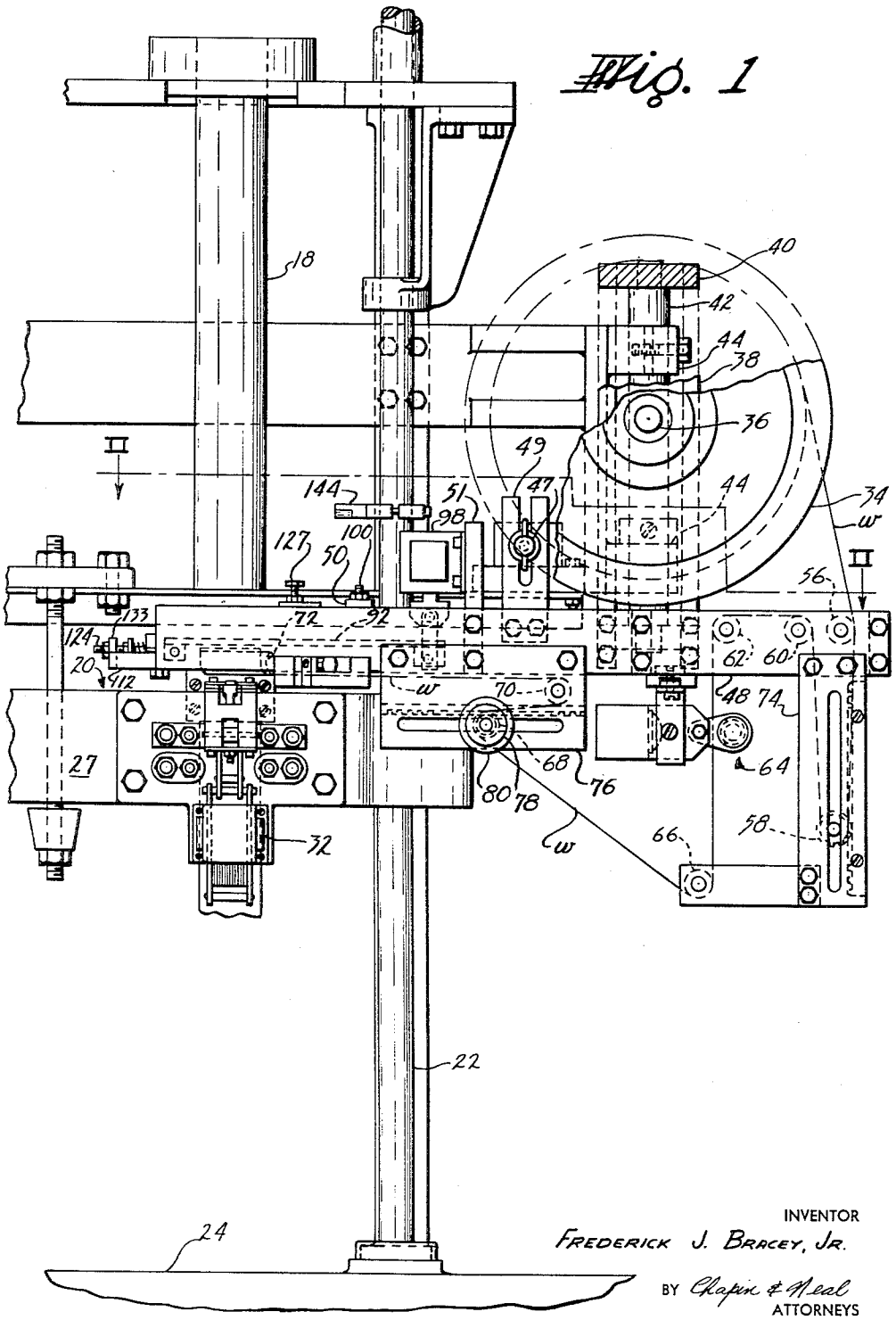
June 14, 1960 F. J. BRACEY, JR 2,940,233

COUPON ATTACHING MECHANISM FOR BAG FORMING MACHINES

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Fig. 1



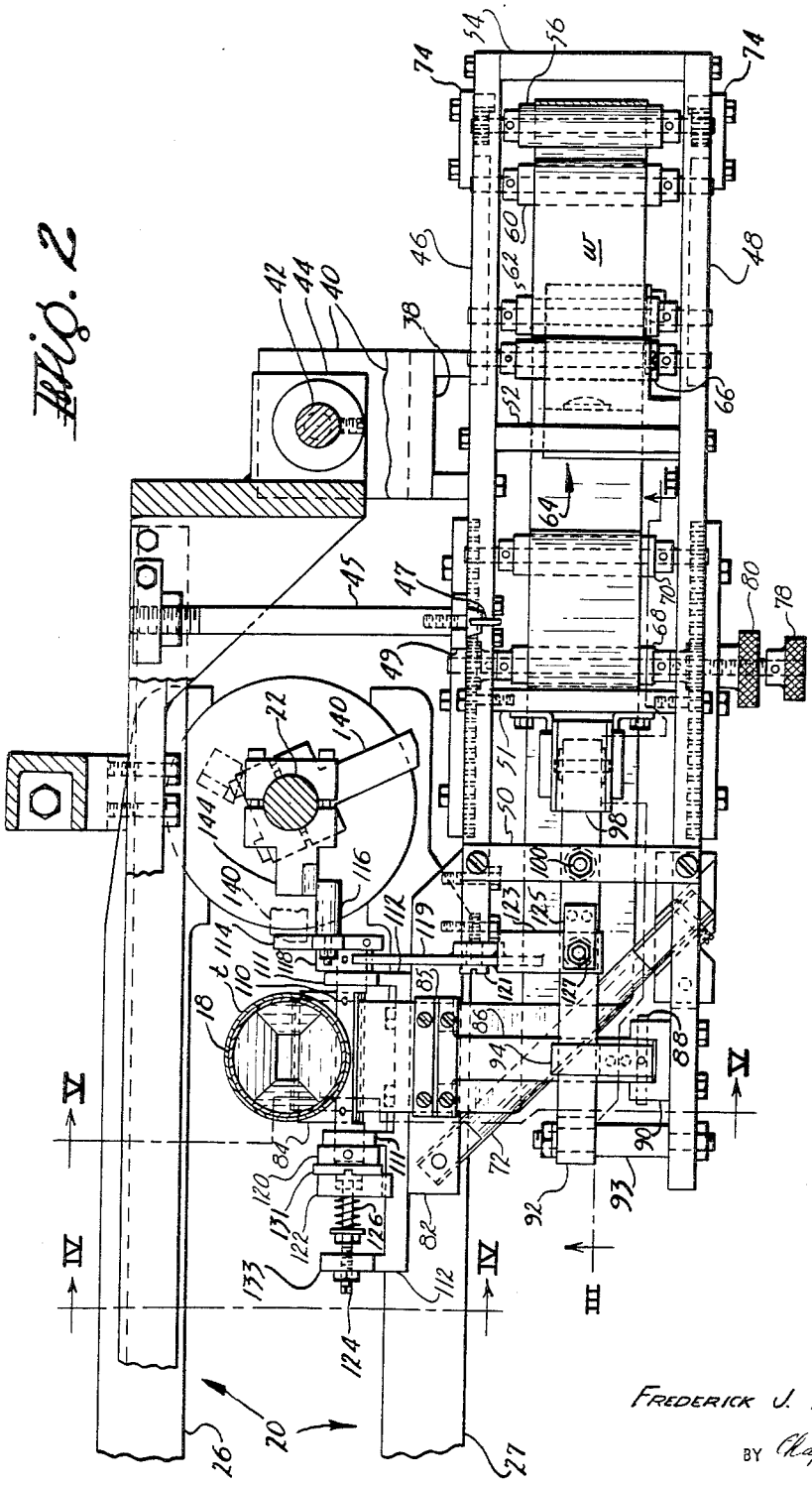
INVENTOR
FREDERICK J. BRACEY, JR.
BY Chapin & Neal
ATTORNEYS

June 14, 1960 F. J. BRACEY, JR 2,940,233

COUPON ATTACHING MECHANISM FOR BAG FORMING MACHINES

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Fig. 2



INVENTOR
FREDERICK J. BRACEY, JR.
BY Chapin & Neal
ATTORNEYS

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COUPON ATTACHING MECHANISM FOR BAG FORMING MACHINES

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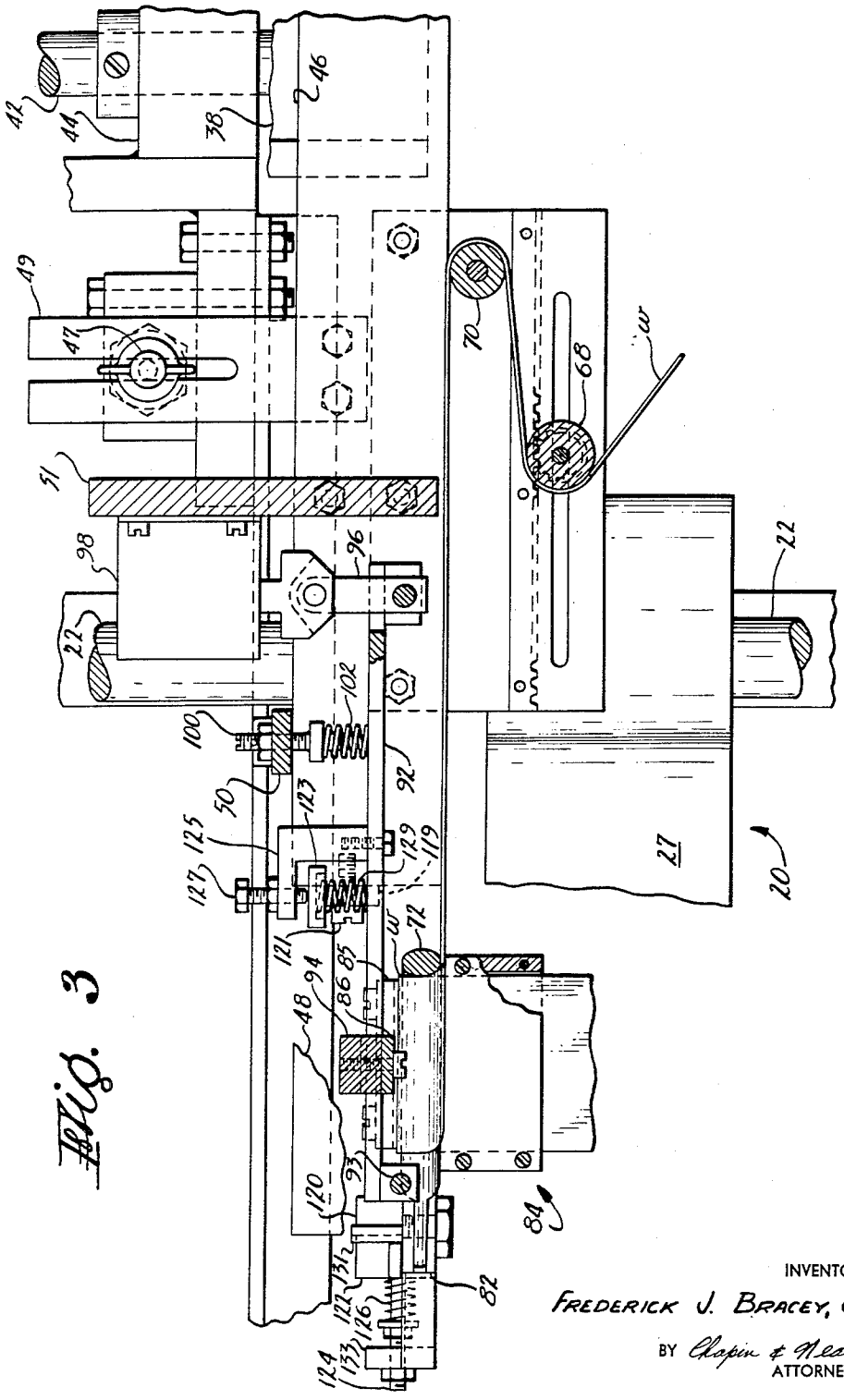


Fig. 3

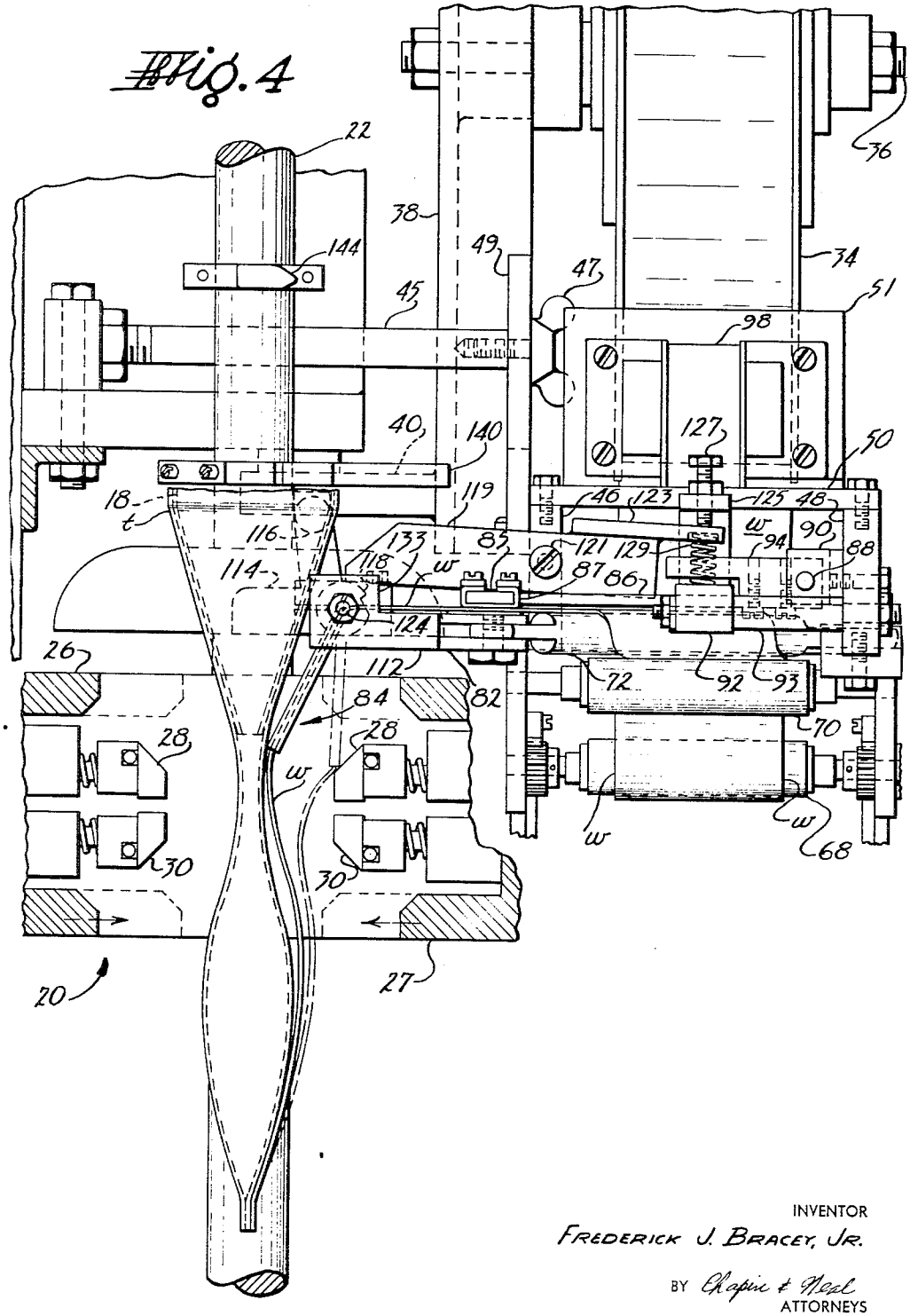
INVENTOR
FREDERICK J. BRACEY, JR.
BY Chapin & Neal
ATTORNEYS

June 14, 1960 F. J. BRACEY, JR 2,940,233

COUPON ATTACHING MECHANISM FOR BAG FORMING MACHINES

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Fig. 4



INVENTOR
FREDERICK J. BRACEY, JR.

BY Chapin & Neal
ATTORNEYS

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COUPON ATTACHING MECHANISM FOR BAG FORMING MACHINES

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Fig. 5

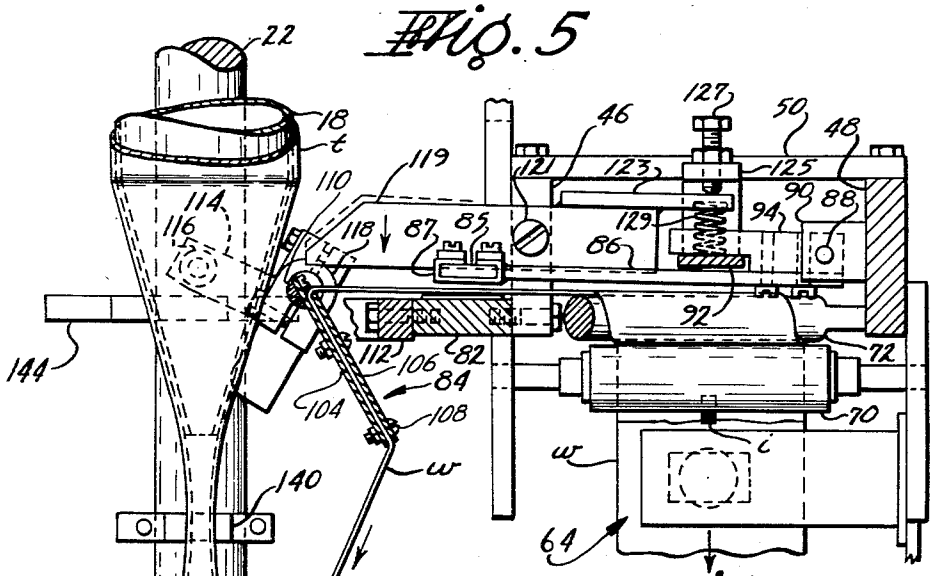
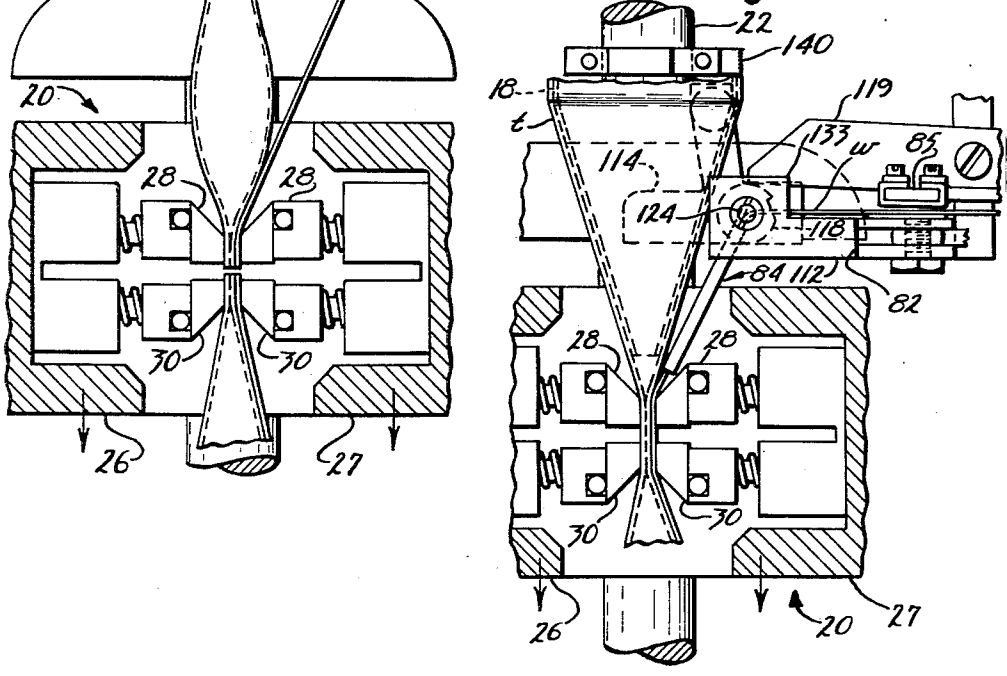


Fig. 6



INVENTOR
FREDERICK J. BRACEY, JR.

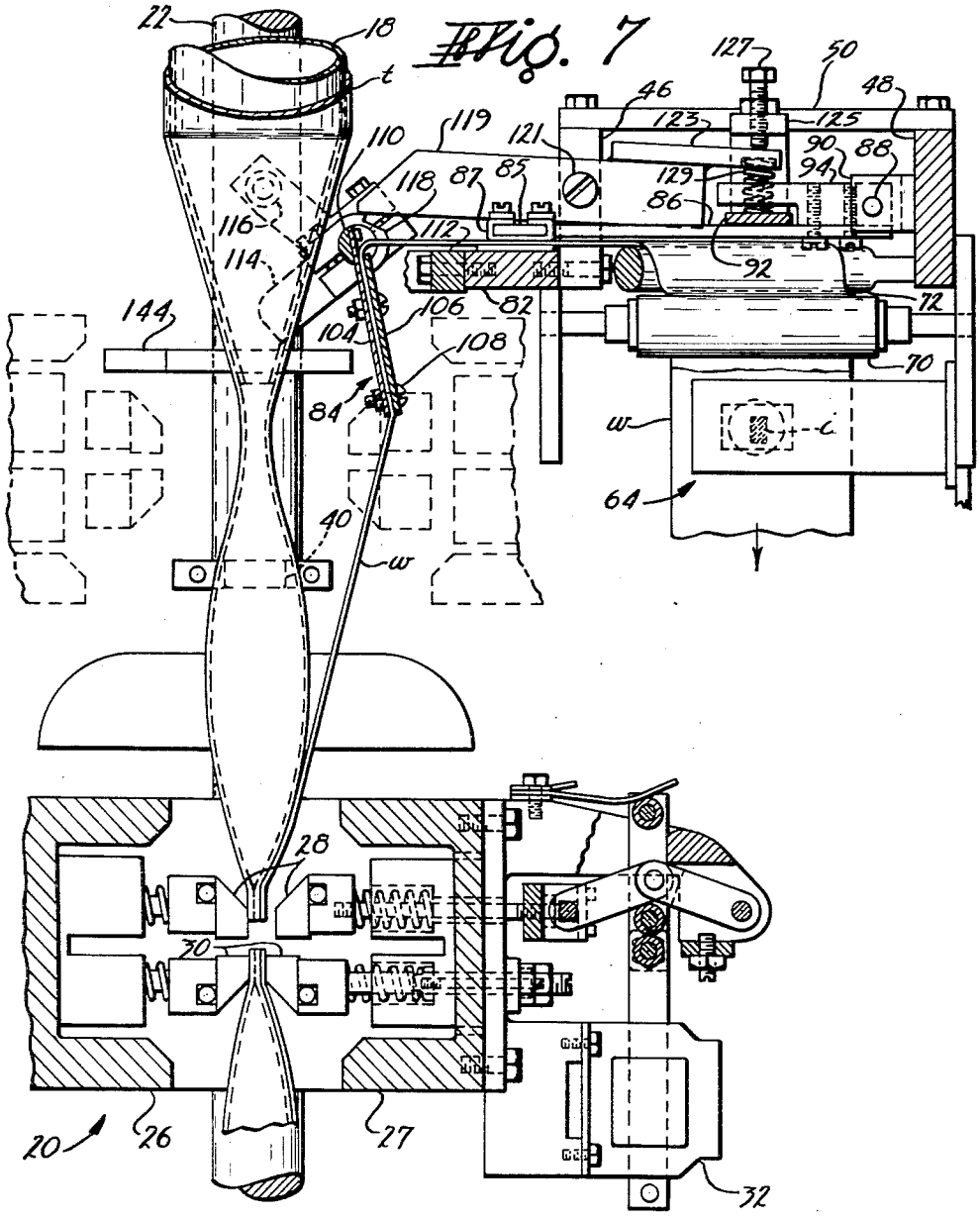
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ATTORNEYS

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COUPON ATTACHING MECHANISM FOR BAG FORMING MACHINES

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Fig. 7



INVENTOR
FREDERICK J. BRACEY, JR.

BY Chapin & Neal
ATTORNEYS

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2,940,233

COUPON ATTACHING MECHANISM FOR BAG FORMING MACHINES

Frederick J. Bracey, Jr., Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass., a corporation of Massachusetts

Filed Oct. 18, 1957, Ser. No. 691,028

10 Claims. (Cl. 53—137)

The present invention relates to packaging machines and more particularly to the attachment of an auxiliary strip to a bag which is heat sealed at both ends.

It has been found desirable to attach an auxiliary strip of material to bags of packaged articles for various purposes. The strips may be redeemable as coupons for various promotional prizes and when so attached on the exterior of a bag are not soiled by the bag contents. This makes it neater for the purchaser to clip and save the coupons and eases the problems of the manufacturer when they are redeemed.

Such strips may be used for other purposes such as to provide special advertising for short runs without necessitating the printing of special bag materials.

Among the objects of the invention is the provision of apparatus for attaching coupon strips to bags which are formed from a tube of heat sealable sheet material which tube is heat sealed, drawn downwardly, filled with articles and then heat sealed a second time at a point above the articles to form a bag portion in said tube with one of the primary features being that the coupon strip conforms closely to the exterior of the bag as it is bulged out by the articles therein without distorting the normal shape of such a bag.

The above and other related objects and features of the invention will be apparent from a reading of the following description of the disclosure found in the accompanying drawings and the novelty thereof pointed out in the appended claims.

In the drawings:

Fig. 1 is a front elevation of a coupon feeding device embodying this invention and showing its relation to various elements of a bag forming and filling machine;

Fig. 2 is a section taken substantially on line II—II in Fig. 1 and on an enlarged scale;

Fig. 3 is a section taken on line III—III in Fig. 2 and on a further enlarged scale;

Fig. 4 is a section taken on line IV—IV in Fig. 2 and on a further enlarged scale;

Figs. 5, 6 and 7 are views taken substantially on line V—V in Fig. 2, on a further enlarged scale, showing different operating positions of various parts.

The present invention relates to the type of bags produced by bag forming and filling machines of the nature disclosed in the Zwoyer United States Patent No. 1,986,422. Such machines have been improved over the years and are now found in several variant forms, however, the basic mode of operation is the same and well known to persons in the packaging field.

The device of the present invention will now be described in relation to its application to a bag forming and filling machine as described in the said Zwoyer patent, however, the utility of the invention is not limited to any given construction other than what is set forth in the appended claims.

It is common in this type of machine to have dual units arranged in side by side relation. However, for an understanding of the present invention it is necessary to describe but one of these units and the coupon attaching means associated therewith.

Referring first to Fig. 1, certain basic counterparts to the Zwoyer disclosure will be apparent. Fig. 1 is taken from the front of the machine and shows one filling tube 18 around which a web of sheet material is wrapped and heat sealed to form a tube *t* (Figs. 2 and 7) by means not illustrated. The sheet material tube *t* extends to a composite draw bar 20 which is reciprocable to draw with it successive lengths of the sheet material tube *t*. More particularly the draw bar 20 is mounted in fixed axial relation to a pair of vertical rods, one of which is seen at 22. Mechanism beneath a platform 24 (Fig. 1) reciprocates these rods and at the same time imparts an oscillatory movement to said rods. The draw bar 20 comprises a pair of transversely extending frames 26, 27 on which are mounted two pairs of heat sealing grippers 28, 30. In the upper position of the draw bar 20, the rod 22 (and the other rod not shown), are rotated and through existing means bring the grippers 28, 30 from an open position (Fig. 4) to a clamping position (Fig. 6) in which the sheet material tube is heat sealed thereby and firmly gripped therebetween. The draw bar is then moved downward and at this time a charge of articles is released through the tube 18 and received in the sealed off end of the sheet material tube. During this downward movement of the draw bar 20, a knife, not shown, is passed between the grippers 28, 30 to separate a previously filled bag. Just before the draw bar reaches its lowermost position (Fig. 7), the grippers 28 are opened slightly by actuation of a solenoid 32 which controls the illustrated toggle linkage. The solenoid 32 is energized by appropriate electric eye means (not shown) which are responsive to indicia on the tube forming web. The indicia on the tube forming web are spaced apart a fixed distance representing the desired length for forming a bag. The use of solenoid 32 insures that exactly the same length of bag is drawn each time with a slight overtravel of the draw bar 20 being provided. When the draw bar 20 reaches its lowermost position, the grippers 28, 30 are moved to a fully open position, again involving oscillation of rod 22, and the draw bar 20 is then raised to its upper position for repetition of the described process. It will be appreciated that the length of the bag thus formed is dependent upon the length of tube *t* drawn by the bar 20 and as controlled by the indicia on the tube forming web.

As will have been noticed from the various figures, during the filling and forming, i.e., sealing, of the bag a strip of coupon material was also sealed to the tube *t* by the grippers 28 and 30. This strip is provided from a supply roll 34 (Figs. 1 and 4) which is pivotally mounted on a stud 36 extending outwardly from a vertical bar 38. Ears 40 (see also Fig. 2) extend rearwardly from the bar 40 and receive a vertical shaft 42. This shaft 42 is secured to and spaced from frame projections 44 to provide a rigid support for the present coupon attaching device while also permitting it to be swung about the shaft 42 to permit access to the front of the machine or when it is desired to use the machine without the device. When the coupon attaching device is in its operative position, further rigidity is provided by a rod 45 secured at one end to the frame of the machine. A swing screw 47 is threaded into the other end of the rod 45 and clamps a slotted plate 49 thereagainst. The plate is rigidly connected to the attaching device in a manner which will further appear.

The basic framework (Figs. 1 and 2) for the present device comprises a horizontal bar 46 secured to the vertical bar 38 and a second parallel horizontal bar 48 spaced therefrom by cross pieces 50, 51, 52 and 54. The slotted plate 49 is secured to the bar 46. A web *w* is

drawn from the supply roll 34 and extends downwardly over a roller 56, around a vertically movable slackener roll 58, upwardly and over rollers 60, 62 downwardly past an electric eye unit 64 and then around a roller 66, then around an adjustable roller 68 and a fixed roller 70 to an angle rod 72 around which the web *w* passes and in doing so changes its direction 90° so that it may extend toward the filling tube 18 in a direction normal to the front of the machine.

The rolls 56, 60, 62, 66 and 70 are journaled or otherwise mounted on the bars 46, 48 or on plates secured thereto in a convenient manner. The slackener roll 58 is guided for parallel vertical movement by slotted plates 74 and the illustrated rack and pinion arrangement. The weight of the roll 58 is sufficient to maintain the coupon web *w* taut at all times.

The electric eye 64 is arranged to detect the passage of indicia *i* (Fig. 7) on the coupon web *w*. The indicia *i* are spaced apart along the length of the web, the distance desired for each length of coupon. The roll 68 is guided for parallel horizontal movement by slotted plates 76 (secured to bars 46 and 48) and the illustrated rack and pinion arrangement (Figs. 1 and 2). A knob 78 is provided to facilitate adjustment of the roll 68 in order to correlate the length of web *w* between the electric eye 64 and its point of attachment to the tube *t* to the length of the particular coupon. This results in proper registration of whatever printing is on the coupon when it is attached to a finished bag. A threaded knob 80 is provided to clamp the roller 68 in this adjusted position.

After the coupon web bends over the angle rod 72 it passes over a plate 82 and then enters a chute 84 (Fig. 7). The plate 82 is secured to the bar 46 and further rigidity is provided by the rod 72 which is secured at one end to the plate 82 and at its other end to the bar 48. A brake member 85 is faced with a strap 87 of appropriate friction material and friction material is provided therebeneath on the plate 82. A tail 86 extends from the brake member 85 and is pivotally mounted on a pin 88 which in turn is mounted on the bar 48 by way of a bracket 90 (Fig. 2). A lever 92 (Figs. 2 and 3) is pivotally mounted on a shoulder bolt 93 extending from the bar 48. The lever 92 overlies the tail 86 and in turn is captured in this overlying relation by an undercut lug 94 secured to the tail 86. The other end of the bar 92, is connected by a link 96 to the plunger of a solenoid 98 which is secured to the cross member 51. A screw 100 (Fig. 3) is threaded into the cross member 50 to position and maintain a compression spring 102 in engagement with the bar 92 and thus provide a braking force to the brake member 85. When the solenoid 98 is energized, bar 92 will be raised against the force of spring 102 and the brake member 85 lifted away from the coupon web as the bar 92 engages the lug 94 (Fig. 5).

The chute 84 (Figs. 5 and 6) comprises a pair of plates 104, 106 which are spaced apart a distance sufficient for free passage of the coupon web and secured together by screws 108. The plate 104 is secured at its upper end to a flatted portion of a pivot rod 110 which is journaled in outstanding ears 111 (Fig. 2) of a bracket 112 which in turn is secured to the bar 82. At one end of the pivot rod 110 is an L-shaped lever 114 with a cam roll 116 extending from the upper leg of said lever. A single tooth ratchet 118 is pinned to the pivot rod 110 next to the lever 114. A latch 119 is disposed above the ratchet 118 and pivotally mounted on a screw 121 threaded into the end of bar 46 (Figs. 2, 3 and 4). Beyond the screw 121, the latch 119 is provided with a flat tail 123 which extends over the lever 92. A lug 125 is secured to the lever 92 and screw 127 positions the tail 123 (and latch 119) against the action of a compression spring 129.

A disc 120 (Figs. 2 and 3) is pinned to the other end of the pivot rod 110 and is engaged by a non-rotatable disc of friction material 131 which is replaceably secured to a block 122 having wings which embrace a portion of the bracket 112 and hold it in non-rotatable relation. A screw 124 is threaded into a further outstanding ear 133 of the bracket 112 and carries a compression spring 126 which bears against the block 122 and forces the friction disc 121 into engagement with the pivot rod disc 120.

Operation

The operation of the present type of bag forming and filling machine is continuous and, as has been alluded, requires two cycles of movement of the draw bar to complete each bag. Referring to Fig. 4, the draw bar 20 is in its upper, open position with the grippers 28, 30 ready to simultaneously seal the upper end of a filled bag and also the lower end of the next successive bag. When the grippers 28, 30 are brought into contact with the bag material (Fig. 6) the right hand gripper 28 engages the chute 84, to bring it to the full line position of Figs. 4 and 6. When the grippers close, appropriate timing means actuate the solenoid 98, raising the lever 92, thus raising the brake member 85 away from the coupon web *w* and also pressing the latch 119 yieldingly against the ratchet member 118 (Fig. 6).

After the draw bar 20 is closed and the coupon web *w* sealed to the bag tube the draw bar moves downwardly, drawing with it the sheet material bag tube and also the coupon web *w*. At this time a charge of articles is released through the tube 18. Shortly after this downward movement begins, a lug 140 secured to the vertical rod 22 engages the horizontal arm of the L-shaped lever 114 swinging the chute 84 to its outermost position (as seen in Fig. 5). The lug 140 is best seen in Fig. 2 when the draw bar 20 is in its open position. It will be remembered that the rod 22 rotates as the draw bar is closed and in doing so brings the projection 140 to the indicated phantom position. Thus when the draw bar begins its downward movement the lever 140 overlies the horizontal arm of lever 114.

When the chute 84 is so swung, it draws a length of coupon web *w* additional to what is drawn by movement of the draw bar. The length of web *w* drawn by this combined action is somewhat greater than the length of bag material, i.e. tube *t*, drawn by the draw bar 20. Remembering that the lever 92 is raised yieldingly forcing the latch 119 against the ratchet 118, the latch 119 will be seated against the single tooth of ratchet 118 when the chute is so swung by the lug 140. The chute 84 will thereby positively be held in its outermost position (Fig. 5).

When the draw bar has reached a point somewhat above its lowermost position, the next succeeding indicium *i* (Fig. 7) on the coupon web *w* will trigger the electric eye 64 which in turn is arranged to cause deenergization of the solenoid 98. At this point, further feed of the coupon web *w* is immediately stopped as the brake member 85 is pressed against the web *w* by spring 102. Simultaneously the latch 119 is raised from the ratchet 118 permitting movement of the chute 84. Thereafter the chute 84 will be swung inwardly a short distance to the position seen in Fig. 7 as the draw bar 20 continues its downward movement. When the draw bar reaches the position seen in Fig. 7, the grippers 28 are opened a short distance by the solenoid 32 as it is energized by the next succeeding indicia on the tube forming web by the above-mentioned electric eye means. Thereafter the draw bar is moved to its fully open position with the frames 26, 27 separated and then the draw bar is raised to its upper position (Fig. 4). As this raising movement occurs, the roller 116 is deflected by a lug 144 also secured to the rod 22. It will again be remembered that this rod 22 rotates or oscillates as the draw bar is moved between its open and closed positions. And thus on upward movement of the draw bar (open position) the lug 144 is positioned to engage the roll 116 and swing the chute 84 inwardly at least to the intermediate phantom

position of Fig. 4 to prevent the chute from being struck by the rising draw bar 20. The friction disc 131 prevents free swinging movement of the chute to insure against any rebound thereof.

The coupon web is thus draped along the length of the bag just filled during upward movement of the draw bar. The grippers again move in and seal the top of this bag and the bottom of the next bag and at the same time seal the coupon to the bag. The bag itself is bulged out by the articles therein and it has been found that the above described means, and particularly the movable chute 84, which insure the provision of a coupon slightly longer than the bag length will insure the coupon fitting snugly against the bulged out bag without distorting it from its generally symmetrical appearance. It has been found that for a bag 5 or 6 inches in length, the coupon should be about 1/16 of an inch longer than the length of the bag.

Many variations in form and structure within the scope of the teachings of the present invention will be apparent and without otherwise limiting such scope, note should be taken that the discharge end of the chute 84 could be replaced by a pair of parallel rods which might not be spaced as close together as the plates 104 and 106.

Having thus described the invention, what is novel and desired to be secured by Letters Patent of the United States is:

1. In a packaging machine of the type having a composite draw bar on which are mounted heat sealing grippers, means for vertically reciprocating said draw bar, means for closing said grippers against the end of a tube of heat sealable sheet material when the draw bar is in an upper position and maintaining said grippers closed as the draw bar is lowered to draw the tube therewith, means for separating said grippers at a lower position of the draw bar preparatory to its return to its upper position, and means for releasing a charge of articles into said sealed tube prior to the grippers being reclosed against said tube; coupon attaching mechanism comprising means for guiding a web of coupon stock from a given point towards said grippers whereby the web may be gripped therebetween and heat sealed to said tube and then drawn therewith as the draw bar is lowered, a member engageable with said web between said given point and said draw bars, and means operable while said draw bars are being lowered for displacing said member against said web so that a small additional length of web is drawn supplemental to the length drawn by said draw bars, whereby the coupon will properly conform to the shape of the filled tube when the grippers again close to seal off a bag portion thereof and at the same time seal the coupon thereto.

2. In a packaging machine of the type having a composite draw bar on which are mounted heat sealing grippers, means for vertically reciprocating said draw bar, means for closing said grippers against the end of a tube of heat sealable sheet material when the draw bar is in an upper position and maintaining said grippers closed as the draw bar is lowered to draw the tube therewith, means for separating said grippers at a lower position of the draw bar preparatory to its return to its upper position, and means for releasing a charge of articles into said sealed tube prior to the grippers being reclosed against said tube; coupon attaching mechanism comprising means for guiding a web of coupon stock towards said grippers whereby the web may be gripped therebetween and heat sealed to said tube and then drawn therewith as the draw bar is lowered, said guiding means including a depending chute terminating in a discharge end adjacent the draw bar grippers in their upper position and means for moving said discharge end away from the tube as the draw bar is lowered to draw a slightly greater length of coupon than the length of tube material drawn by the draw bar, whereby the coupon will properly conform to the shape of a filled bag when the grippers again close to seal off a bag portion thereof and at the same time seal the coupon thereto.

3. Coupon attaching mechanism as in claim 2 wherein the chute is pivotally mounted at a point remote from its discharge end and projections movable with the draw bar swing the discharge end of the chute towards and away from the tube.

4. In a packaging machine of the type having a composite draw bar on which are mounted heat sealing grippers, means for vertically reciprocating said draw bar, means for closing said grippers against the end of a tube of heat sealable sheet material when the draw bar is in an upper position and maintaining said grippers closed as the draw bar is lowered to draw the tube therewith, means for separating said grippers at a lower position of the draw bar preparatory to its return to its upper position, and means for releasing a charge of articles into said sealed tube prior to the grippers being reclosed against said tube; coupon attaching mechanism comprising a rotatable supply roll of coupon stock having indicia spaced along its length a distance representing the desired coupon length and a distance somewhat greater than the length of tube drawn by the draw bar during its downward movement, means for guiding a web of coupon stock from the supply roll to a point adjacent the upper position of the draw bar, an electric eye for scanning said web and responsive to passage of said indicia, a brake for controlling movement of said web, means for deactuating said brake to permit the coupon web to be drawn with the tube as the draw bar is lowered and means for actuating said brake in response to passage of an indicium past the electric eye.

5. In a packaging machine of the type having a composite draw bar on which are mounted heat sealing grippers, means for vertically reciprocating said draw bar, means for closing said grippers against the end of a tube of heat sealable sheet material when the draw bar is in an upper position and maintaining said grippers closed as the draw bar is lowered to draw the tube therewith, means for separating said grippers at a lower position of the draw bar preparatory to its return to its upper position, and means for releasing a charge of articles into said sealed tube prior to the grippers being reclosed against said tube; coupon attaching mechanism comprising a rotatable supply roll of coupon stock having indicia spaced along its length a distance representing the desired coupon length and a distance somewhat greater than the length of tube drawn by the draw bar during its downward movement, means for guiding a web of coupon stock from the supply roll to a point adjacent the upper position of the draw bar whereby the coupon web may be gripped by the grippers and heat sealed to said tube, an electric eye for scanning said web and responsive to passage of said indicia, a brake for controlling movement of said web, means for deactuating said brake during at least a portion of the downward movement of said draw bar to permit the coupon web to be drawn from said supply roll, auxiliary means for drawing said web so that the next successive indicium is brought to the electric eye by the combined action of the draw bar and the auxiliary means at least by the time the draw bar has reached its lowermost position, and means responsive to the electric eye sensing said indicium for actuating said brake.

6. In a packaging machine of the type having a composite draw bar on which are mounted heat sealing grippers, means for vertically reciprocating said draw bar, means for closing said grippers against the end of a tube of heat sealable sheet material when the draw bar is in an upper position and maintaining said grippers closed as the draw bar is lowered to draw the tube therewith, means for separating said grippers at a lower position of the draw bar preparatory to its return to its upper position, and means for releasing a charge of articles into said sealed tube prior to the grippers being reclosed against said tube; coupon attaching mechanism comprising a rotatable supply roll of coupon stock having indicia spaced

along its length a distance representing the desired coupon length and a distance somewhat greater than the length of tube drawn by the draw bar during its downward movement, means for guiding a web of coupon stock from the supply roll to a point adjacent the upper position of the draw bar, said guiding means including a pivotally mounted depending chute terminating in a discharge end adjacent the grippers of said draw bar whereby the coupon web may be gripped by the grippers and heat sealed to said tube, an electric eye mounted to scan said web and responsive to the passage of said indicia, a brake for controlling movement of said web, means operative upon closure of said grippers to deactuate said brake to permit the coupon web to be drawn by the draw bar during its downward movement, means for swinging the discharge end of said chute away from said tube to increase the amount of web so drawn so that the next successive indicium is brought to the electric eye by the combined action of the chute and the draw bar prior to completion of downward movement of the draw bar, and means responsive to said electric eye sensing said indicium for reactuating said brake.

7. Coupon attaching mechanism as in claim 6 wherein means are provided for locking said chute in the position most remote from said tube until the brake is actuated.

8. Coupon attaching mechanism as in claim 7 wherein the locking means comprise a latch and a single tooth ratchet rotatable with said chute and engageable by said latch when the discharge end of the chute is in its furthest position from said tube, and the means for actuating and deactuating said brake include a solenoid which is energized when the grippers close and deenergized in response to said indicium being sensed by said electric eye, and said latch is mounted to be yieldingly forced against said ratchet in response to energization of said solenoid.

9. In a wrapping machine as in claim 6 wherein the coupon attaching mechanism is disposed at the front of the machine and wherein the web guiding means includes an angularly disposed bar and the web is guided along a path laterally of the machine and then passes over said angular bar to approach the grippers in a path which is normal to the front of the machine.

10. In a wrapping machine as in claim 6 wherein the coupon attaching mechanism is disposed at the front of the machine and pivotally mounting means are provided for swinging the coupon attaching mechanism about a vertical axis to provide access to the front of the machine.

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