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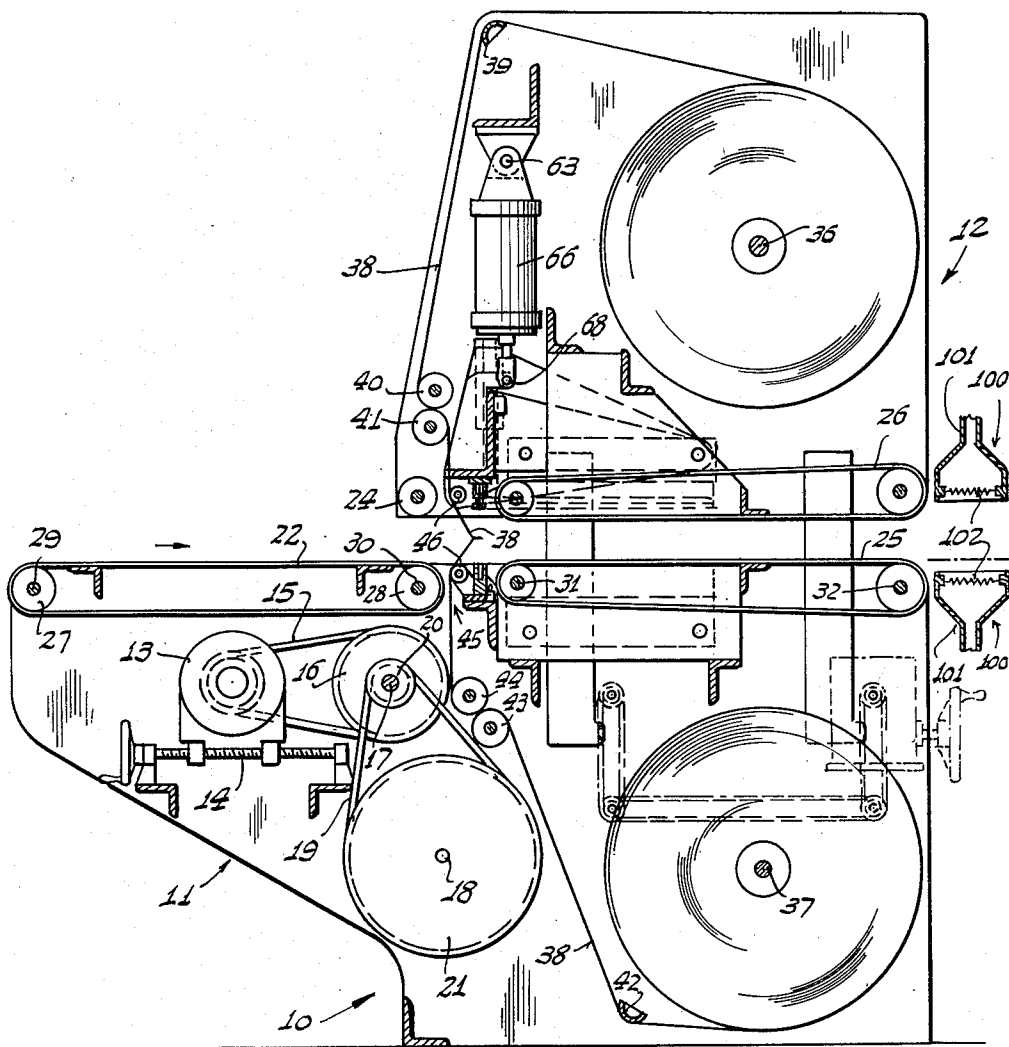
3,158,973

PACKAGING MACHINE

Original Filed Aug. 18, 1960

4 Sheets-Sheet 1

Fig. 1



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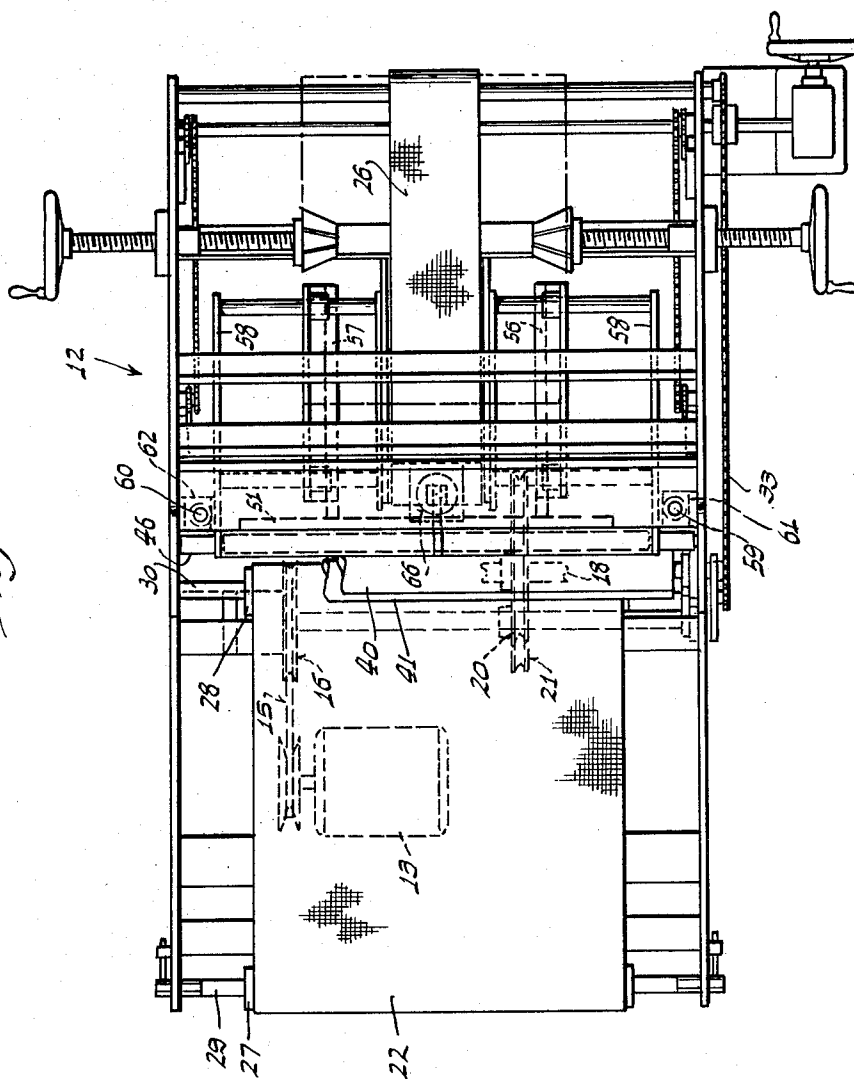
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Fig. 2



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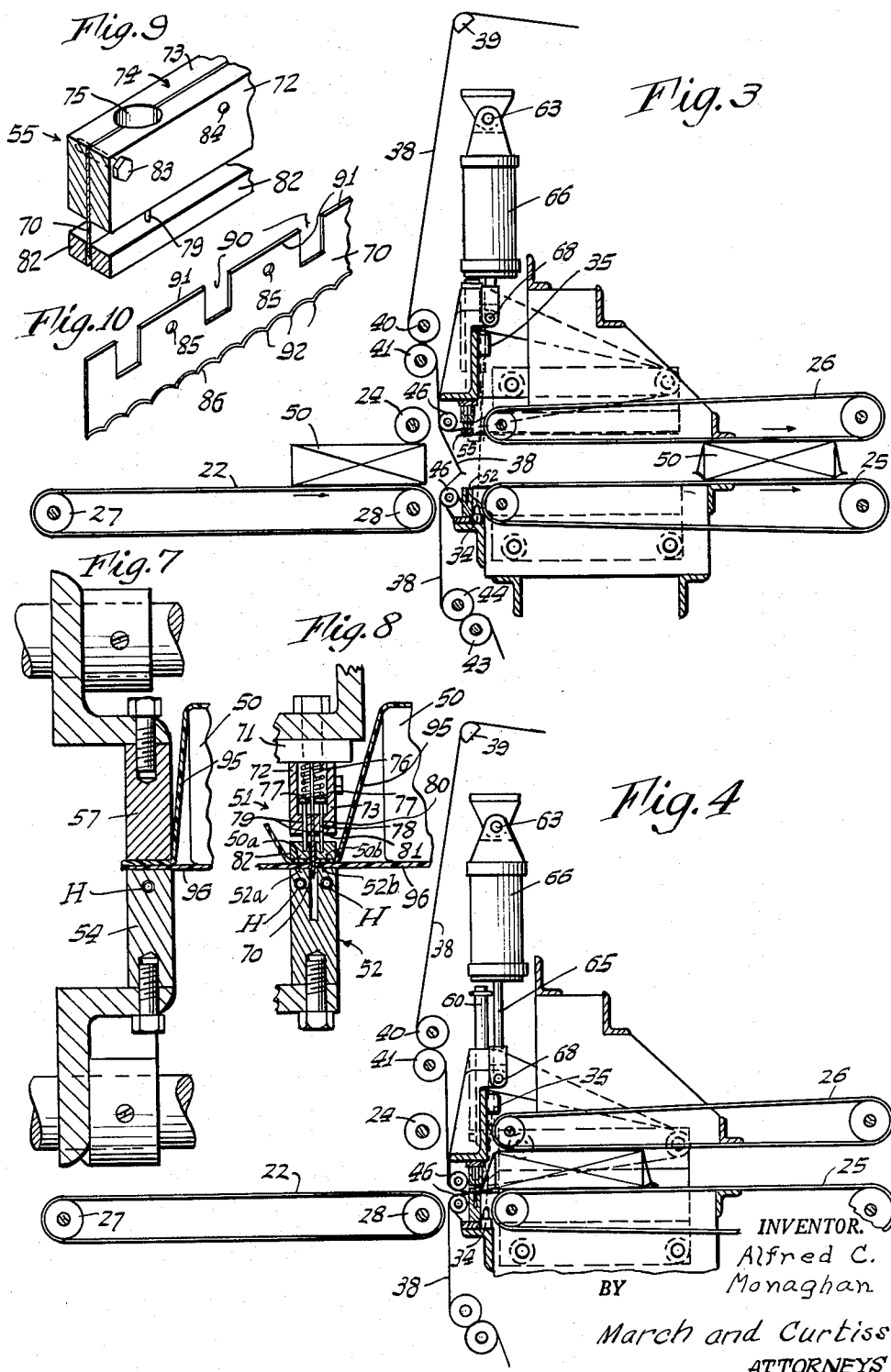
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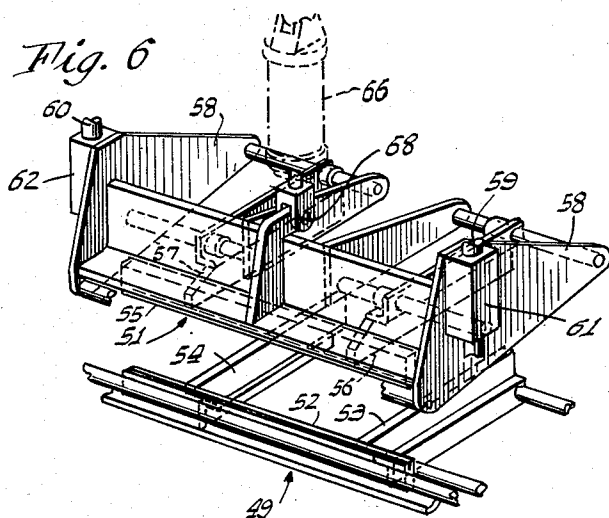
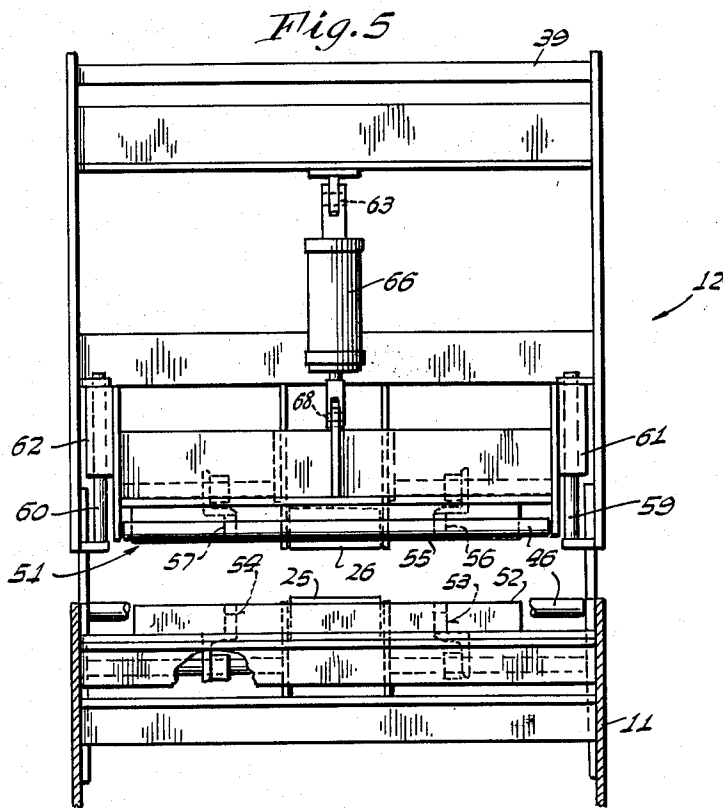
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3,158,973

PACKAGING MACHINE

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6 Claims. (Cl. 53--66)

The present invention relates to packaging machines, and more particularly to a machine for, and the method of, automatically wrapping articles in a film of material of the type which is fusible under pressure in the presence of heat. Machines of this character comprise a very crowded and complex art and fall into many categories, since their development has resulted from attempts to keep pace with the rapid and diversified requirements of the modern packaging of a multitude of different products. As is well known, such products take various forms and present a variety of problems dealing with such things as difficulty in handling, perishability in storage, peculiar characteristics as to packaging requirements in the field of marketing, and many others. Also, rapid advances have been made in recent years in the development of packaging materials with regard to their physical and chemical compositions and in their functional characteristics. Furthermore, advances have been made in the category which concerns itself with packaging techniques to best accomplish the wrapping or packaging of an article in a new, or simplified, or better manner than heretofore.

The present invention falls in the latter category and has as its objective the provision of a novel means and method for automatically wrapping articles in a film of the so-called thermoplastic type of materials which are transparent, fusible by the application thereto of heat and pressure and, in some instances, shrinkable in the presence of heat whereby it may be caused to conform snugly to the contour of the article around which it has been previously wrapped.

In its broader aspects, the present invention contemplates a means and method for the wrapping of an article in a film of material of the type which is fusible under pressure in the presence of heat, wherein the article to be wrapped is utilized by the movement thereof to engage a sheet of the wrapping material and measure off the necessary length of material required to wrap it, whereby the loose edges of the material along the sides of the article and an area thereof following the article are in position to be brought into contact under the application of pressure and heat to fuse the material and thus envelop the article, and the material is then severed in the fused area following the wrapped article to release the latter as a seal-wrapped unit.

More specifically, the invention provides a machine wherein a sheet of film material of the character referred to is stretched under tension between two sources of supply of the material and in the path of the article to be wrapped. The film is releasable from both supply sources upon the tension thereof being overcome and this is accomplished by moving the article into engagement with the film, which is wider than the article, and continuing to move the article and the film in the same direction for a distance greater than the length of the article, whereby the film becomes folded around the leading edge of the article and along opposite faces thereof. At this stage a heat sealing or fusing unit including a pressure bar, shaped to the contour of the sides and following end of the article, is moved to place the side margins and a portion of the film at the following end of the article in contact under pressure and apply heat thereto to fuse the film, thus enclosing and sealing the article

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therein. The film is then severed throughout its width in the fused area at the following end of the article, whereby the wrapped article is released as a free unitary structure and the film, by virtue of its fusion in the area of severance, remains extending as a continuous sheet between the supply sources ready for engagement by a succeeding article for a repetition of the wrapping operation. When heat shrinkable material is employed, the wrapped article can be momentarily subjected to heat sufficient to cause it to shrink into snug contact with the article to form a smooth, neat covering therefor, the shrinking heat having an effect on the fused portions of the film whereby they contract into an almost inconspicuous bead.

Other objects, and features of the present invention, will appear and be clear to those skilled in the art from the detailed description, with reference to the drawings, which follows.

In the accompanying drawings, the invention has been shown merely by way of example and in preferred form and obviously many variations and modifications thereof may be made which will still be comprised within its spirit. It is to be understood, therefore, that the invention is not limited to any specific form or embodiment, except insofar as such limitations are set forth in the appended claims.

Referring to the drawings:

FIG. 1 is a side elevation, partly in section, of a machine embodying the present invention;

FIG. 2 is a top plan view of the lower part of the machine shown in FIG. 1;

FIG. 3 is a vertical fore and aft section, showing the heat fusing mechanism in article receiving position;

FIG. 4 is a view similar to FIG. 3, showing the mechanism in film fusing position;

FIG. 5 is a rear elevation, partly in section and partly broken away, of the film fusing mechanism;

FIG. 6 is a front perspective view, partly broken away and partly in phantom, of the film fusing mechanism;

FIG. 7 is a vertical section, showing the means for fusing of the film at a side of the article;

FIG. 8 is a vertical section, showing the means for fusing and severing of the film at the following end of the article;

FIG. 9 is a fragmentary detail view of a cross bar structure; and

FIG. 10 is a fragmentary detail view of a knife blade.

In the drawings, the machine has been shown in its entirety. However, for the sake of clarity, the detailed description will be confined to those portions of the machine which have to do with the novel features resulting from the conception of the present invention. Other parts of the machine will be referred to in general terms for the purpose of orientation of the structure and functions of the machine as a whole.

The machine as shown in FIG. 1 comprises a frame structure 10 which supports two main units, the power drive and article delivery or feed unit 11, and the article wrapping unit 12. The power drive comprises an electric motor 13 adjustably mounted on a screw support 14 and connected by a belt 15 to a pulley 16 fixed to a rotatable power take-off shaft 17, the shaft 17 being connected to a second shaft 18 by a belt 19 running over pulleys 20 and 21. The article delivery unit 11 also includes an endless belt conveyor 22 and an associated roller 24 mounted in upwardly spaced relation thereto at the delivery end of the conveyor.

In the wrapping unit 12 there are mounted in spaced relation one above the other a pair of endless conveyor belts 25 and 26, the upper run of the lowermost belt 25 being in the same horizontal plane and the same direction as the upper run of the delivery conveyor belt 22;

and the lower run of the belt 26 being driven at the same speed and driven in the same direction as that of the upper run of the belt 25. The conveyor belts 22, 25 and 26 are adjustable vertically so that the belts 22 and 25 can be aligned with their upper runs in the same horizontal plane and the space between the belts 25 and 26 can be varied to accommodate articles of different height or size. The conveyor 22 extends between rollers 27 and 28 mounted on shafts 29 and 30, respectively, and the belt 25 extends between rollers carried by shafts 31 and 32. The shafts 30 and 32 are equipped with sprocket gears and are driven at equal speeds through a chain 33 running on the sprocket gears (see FIG. 2), and through a chain and sprocket connection (not shown) the upper belt 26 is driven at the same speed as the lower belt 25.

In operation, an article 50 placed on the belt 22 is carried thereby to the belts 25 and 26, where its forward end is picked up by those belts to continue its movement in the same direction. Although it deals with the control of the operation of the machine, it may be well to point out now that the machine is equipped with a control comprising an electric eye arrangement comprising a source of light 34 and a photocell 35 (FIG. 4); and when the article 50 is transferred from the belt 22 to the belt 25 it breaks the beam of light affecting the operation of the machine, as will be described hereinafter.

The wrapping unit 12 includes a pair of shafts 36 and 37 journaled in the frame 10, each of which carries a roll of thermoplastic film 38. The shafts 36 and 37 are located, respectively, above and below the conveyor belts 25 and 26. The film 38 from the upper roll is threaded over an idler roll or guide 39 and downwardly between feed rollers 40 and 41 to a point in advance of the conveyor belts 25 and 26. Similarly, the film from the roll carried by the shaft 37 is threaded over an idler roll or guide 42 and upwardly through feed rollers 43 and 44 to meet the free end of the other film and the two films are joined by fusion to form a continuous sheet extending through a space 45, FIG. 1, between the conveyors 22 and 25. It is to be noted that in advance of the point of fusion there are provided a pair of idler tension rollers 46 which are rockably supported on the frame 12 and operate by their weight to keep the sheet of film under a degree of tension necessary to keep it in a smooth condition whereby its side edges, when later in overlapping relation with respect to the article 50, will be in registry.

To outline the operation of the machine as thus far described, the article 50 is placed on the upper run of the conveyor belt 22 which carries it beneath the roller 24 toward the pair of conveyor belts 25 and 26. In its movement, its forward end engages the sheet of film 38 and carries the film with it between the conveyor belts 25 and 26. The belts 25 and 26 pick up the article 50 and the enveloping sheet of film and continue to move them until the following end of the article has passed beyond the light source 34, which then activates the photocell 35 and in so doing actuates control mechanism to stop the movement of the belts 25 and 26 and effect the operation of a wrapper fastener means comprising the heat-sealing mechanism. In passing, it is noted that the article has been moved between the conveyor belts 25 and 26 a distance slightly greater than its length.

Turning now to the wrapper fastener means or heat-sealing mechanism, shown in detail in FIGS. 5 and 6, in general it comprises a platen 49, which has a fixed position, and pressure bar 51, which is movable vertically into and out of contact with the platen. The platen 49 is U-shaped, comprising a cross bar 52 with rearwardly extending legs 53 and 54, the upper surfaces of the cross bar and legs lying in the same horizontal plane. As shown in FIG. 8, the cross bar 52 is bifurcated and presents two spaced-apart fusing surfaces 52a and 52b, each of which and the legs 53 and 54 are formed and equipped

with electrical resistance heating units indicated by the letter H.

The pressure bar 51 is complementary to the platen and comprises a cross bar 55 and rearwardly extending legs 56 and 57. The pressure bar 51 is a unitary component which is carried by a subframe 58, FIG. 6, mounted for vertical movement on guide rods 59 and 60 slidably fitted in bearings 61 and 62 projecting laterally from the opposite sides of subframe 58. The motive power for moving the subframe 58 to carry the pressure bar 51 downward into engagement with the platen 49 is supplied by an air cylinder 66 through its piston rod 65, the air cylinder being pivotally mounted as at 63 on the frame 12 and the piston rod 65 being pivotally connected as at 68 to the subframe 58. Such pivotal mounting renders the air cylinder adaptable at all times to compensate for any tendency of the subframe 58 to vary from a true vertical movement and thus insure a uniform application of pressure by the pressure bar 51 on the film between it and the platen 49, which pressure is in the neighborhood of 20 lbs. per square inch.

Again referring to FIG. 8, and also to FIG. 9, it will be seen that the cross bar 55 of the pressure bar 51 is complementary to the cross bar 52 of the platen 49 in that it is bifurcated to present two spaced-apart surfaces 50a and 50b which engage the platen surfaces 52a and 52b, respectively. Such bifurcated construction of both cross bars is provided to adapt the movable cross bar 55 for supporting a knife blade 70 therein and the platen cross bar 52 for accommodating the cutting edge of the knife blade 70 between its surfaces 52a and 52b when the pressure bar and platen are brought into fusing and film severing relation. Thus the cross bar 55 is a composite component of the pressure bar 51 and comprises a base mount 71 to which are attached two spaced-apart bars or carrier elements 72 and 73. The composite bar 55 is drilled at spaced intervals inward from its top edge 74 to provide for a spring mount of a cutter, said mount comprising a series of sockets 75 for containing compression springs 76 and the heads 77 of plungers 78, the plunger shafts 79 extending in smaller drill holes 80 through and projecting beyond the bottom edge 81 of the said bar for connection (as by screw thread attachment) to bar sections comprising a pressure element 82. The spring mount is also hereinafter referred to as a "spring-charged mounting means." With this arrangement the pressure element 82 is mounted to "float" relatively to the carrying element 72 (and 73) its normal inactive position being in downwardly spaced relation to the carrying element under the expansion influence of the springs 76, whereas under the heavy pressure exerted by the air cylinder 66 in effecting the film fusing and severing operation the springs 76 are easily compressed and the plungers 78 recede into the sockets 75 until the pressure element 82 banks directly against the bottom surface 81 of the respective carrying element.

As already stated, the knife blade 70 is mounted rearwardly of the rear edge of the undersurface of bar 72 between the bars or carrying elements 72 and 73, and it is secured in position by a connector device including a spring mount which couples it to the cross bar 55 of the fastener means, said connector device comprising a plurality of removable set screws 83 extending through drill holes 84 in the bar 72, registering openings 85 in the knife blade 70, and being screwed in tapped openings (not shown) in the bar 73. When thus mounted, the cutting edge 86 extends substantially to the plane of the platen engaging surfaces of the floating pressure elements 82 when the latter are extended by the springs 76 of the spring mount, and it will project beyond said elements and into the space between the platen surfaces 52a and 52b when the elements 82 recede under film fusing and severing pressure and in so doing cut the film 38 transversely thereof at a point about midway of the portion thereof fused by the pressure and heat of the cross bar

surfaces 50a, 52a and 50b, 52b. Thus, the surfaces 50a, 52a fuse the film at the following end of the article 50, the knife blade severs the film rearwardly adjacent the lower rear edge of pressure bar 72 and frees the sealed-in article, while the surfaces 50b, 52b fuse the film 38 to leave a continuous sheet thereof extending through the space 45 ready to be picked up by the movement of the succeeding article from the delivery conveyor 22 to the conveyors 25 and 26.

Referring to the formation of the knife blade 70 as shown in FIG. 10, its upper edge is formed with a series of cut-outs 90 which provide spaced-apart risers 91. The cut-outs 90 register with the sockets 75 when the blade is assembled between the bars 72 and 73 to provide clearance for the springs 76 and plunger heads 77, and the risers 91 lie between the sockets 75 with holes 85 in register with the holes 84 in the bar 72 so that the screws 83 can pass therethrough. The cutting edge 86 of the knife blade 70 is ground to present a more or less "scallop" appearance, and thus present spaced points 92 which are the first portions of the knife edge to touch the film 38 during the fusing and severing operation. The reason for this is as follows:

In the fusing and severing operation, the downward movement of the sub-frame 58 brings the pressure surfaces 50a, 50b of the pressure elements 82 into engagement with the upper wrap 95 of the film 38 (see FIG. 8) and carries it into contact with the film of the lower wrap 96, where through the power of the springs 76 the two wraps 95 and 96 are initially clamped against the surfaces 52a, 52b of the platen cross bar 52. Continued downward movement of the sub-frame 58 compresses the springs 76 allowing the elements 82 to remain stationary while the cutting edge 86 moves downward relative thereto, passing through the wraps of film 95 and 96 to sever them and project into the space between the fusing surfaces 52a, 52b of the platen. A straight edged knife blade has a tendency to cause relative shifting of the wraps 95 and 96 in its movement to exert a cutting pressure thereon, since at this time the film is being heated but it has not reached the melting point for fusion nor has the sub-frame completed its descent to exert maximum pressure by the air cylinder 66. It has been found that with the form of knife blade 70 the points 92 will readily puncture the wraps 95 and 96 and prevent displacement thereof as the blade continues to move through and sever the as yet unfused film.

It may be well to state at this time that the heat for fusion is not supplied continuously by the electrical resistance H but is controlled for intermittent operation by the photocell 35 each time an article 50 passes into the conveyors 25 and 26 and in so doing interrupts the beam from the light 34 to the photocell 35. When the article 50 has passed the light and the beam therefrom again strikes the photocell 35, controls (not shown) are activated thereby to stop the movement of the conveyors 25 and 26 and to effect the operation of the air cylinder 66, and by the time the sub-frame 58 has made its full descent to cause the knife blade 70 to sever the film and apply full pressure to the portions of the film between the platen 49 and the pressure bar 51, sufficient heat has been generated to plasticize the film and cause it to fuse. Thereafter, when the sub-frame 58 has been returned to its uppermost position various controls are activated to stop the operation of the air cylinder 66 and start the conveyors 25 and 26 moving again, which movement of the conveyors transports the article 50 to a heating unit 100.

The heating unit 100 has been shown diagrammatically in FIG. 1, since it may take any well-known form and even be a separate chamber arranged beyond the conveyors 25 and 26. The showing indicates two vertically spaced units 100 comprising the ends of air conduits 101 equipped with electric resistance coils 102

across which a blast of air may be forced and heated thereby to a degree sufficient to cause shrinkage of the film 38 in which the article 50 is wrapped. The primary requisite in such heating is that the film 38 enclosing the article be exposed on all sides so that at one time it receives a substantially uniform application of the heat over its entire area.

As already stated, the machine as a whole has not been described in detail although the machine as a whole has been shown, and certain mechanisms have been indicated diagrammatically. In this connection it is again pointed out that the conveyors 25 and 26 and associated mechanism are relatively adjustable to vary the space between them for adaptation to articles of different thickness. Also, the shafts 36 and 37 which carry the rolls of film 38 are journaled for easy rotation and, therefore, in order to overcome momentum and stop their continued rotation when the article 50 comes to rest between the conveyors 25 and 26 for the fusing and severing operation, a brake mechanism, not shown, is rendered operative by control means under the influence of the photocell 35. Moreover, while the platen 49 and pressure bar 51 have been shown and described each as comprising a unitary structure having a cross bar with spaced-apart legs extending rearwardly therefrom, it is to be understood that such elements may be separated with the leg components disposed at any point along the line of travel of the partially wrapped article. It is also to be noted that with the many different types of film available, and with certain films being desirable for packaging specific articles, the invention is not limited to impulse heating. Rather, the electrical resistances H may be connected in circuit for continuous heating whenever desired. Furthermore, in the preferred embodiment of the invention there has been shown and described a knife blade 70 for severing the fused film 38, but any other means, such as a heated wire, may be employed as the knife or severing means if desired; and, of course, there are other arrangements and modifications which will occur to those skilled in the art for accomplishing the same results.

Therefore, as stated heretofore, the invention has been set forth herein merely by way of example and in preferred form, and it is to be understood that the invention is not limited to any specific form or embodiment except insofar as such limitations are set forth in the appended claims.

This application constitutes a continuation application of a corresponding application Serial No. 50,532, filed August 18, 1960, now abandoned.

I claim:

1. A packaging machine for automatically wrapping articles in a film of material of the type which is fusible under pressure in the presence of heat comprising: a first conveyor for conveying said articles along a predetermined path, said conveyor having an entrance end and an exit end in that order along said path, a second conveyor having an entrance end adjacent to but spaced from said exit end of said first conveyor to transport said articles along an extension of said path, said conveyors adapted to be driven at equal speeds, a wrapping unit including a plurality of rolls of thermoplastic film, said rolls being arranged above and below said conveyors, said films being fused together between said spaced conveyors to form a sheet extending transverse to said path through the space between said exit end of said first conveyor and said entrance end of said second conveyor whereby the article to be wrapped strikes said sheet at said exit end of said first conveyor and pulls off the necessary length of material required to wrap it, a control means activated by the conveyance of the article for stopping the movement of the conveyors when the article is placed in wrapping position, a wrapper fastener means actuated by said control means when the article is placed in wrapping position, said wrapper fastener means com-

prising a platen and a pressure bar each having a cross bar, said pressure bar being movable vertically into and out of pressure applying contact with the platen, said cross bars being bifurcated, a knife blade retained between the bifurcated portions of the pressure bar cross bar, said control means being actuated by the conveyance of the article to bring the pressure bar and platen together at intermittent periods for fusing the thermoplastic webs from the plurality of rolls together at spaced regions, said knife being adapted to extend outwardly from the surface of the pressure bar and between the bifurcated portions of the platen to cut the web between said spaced regions.

2. The packaging machine of claim 1 wherein the thermoplastic film is wider than the article to be wrapped and the pressure bar and platen are adapted to bring the loose edges of the material along the sides of the article into contact under the application of pressure and heat to fuse the material along the sides of the article.

3. A packaging machine for automatically wrapping articles in a film of thermoplastic material comprising: at least a first conveyor for transporting said articles along a predetermined path, said conveyor having an entrance end and an exit end in that order along said path, a second conveyor having an entrance end adjacent to but spaced from said exit end of said first conveyor to transport said articles along an extension of said path, means driving said conveyors, a wrapping unit comprising two spaced and opposed rolls of thermoplastic sheet material on opposite sides of said conveyors, said films being fused together between said rolls and conveyors to form a sheet extending transverse to said path through the space between said first exit end of said first conveyor and said entrance end of said second conveyor whereby each article to be wrapped strikes said sheet at said exit end of said first conveyor and pulls off the necessary length of material to wrap it, control means activated by the conveyance of the article for stopping the movement of the conveyors when each article reaches said wrapping station, a wrapper fastening means actuated by said control means when each article reaches said wrapping station, said wrapper fastening means comprising a platen and an aligned pressure bar each having a cross bar, said pressure bar being reciprocable into and out of pressure applying contact with said platen and abutting webs of wrapping material interposed therebetween, said cross bars being bifurcated, web severing means retained between the furcations of said cross bar of said pressure bar, said control means being actuated by the conveyance of each article to bring said pressure bar and platen together at intermittent periods, means on said cross bar for fusing together said abutting webs of said film of material at spaced regions during said intermittent periods, and means for moving said severing means outwardly of said pressure bar and between the furcations of said cross bar of said platen to sever said webs between said spaced regions.

4. A packaging machine for automatically wrapping articles in a film of thermoplastic material comprising: at least a first conveyor for transporting said articles along a predetermined path, said conveyor having an entrance end and an exit end in that order along said path, a second conveyor having an entrance end adjacent to but spaced from said exit end of said first conveyor to transport said articles along an extension of said path, means driving said conveyors at substantially equal speeds, a wrapping unit comprising two spaced and opposed rolls of thermoplastic sheet material on opposite sides of said conveyors, said films being fused together between said rolls and conveyors to form a sheet extending transverse to said path through the space between said first exit end of said first conveyor and said entrance end of said second conveyor whereby each article to be wrapped strikes said sheet at said exit end of said first conveyor and pulls off the necessary length of material to wrap it, control means activated by the conveyance of the article for stopping the

movement of the conveyors when each article reaches said wrapping station, a wrapper fastening means actuated by said control means when each article reaches said wrapping station, said wrapper fastening means comprising a platen and an aligned pressure bar each having a cross bar, said pressure bar being reciprocable into and out of pressure applying contact with said platen and abutting webs of wrapping material interposed therebetween, said cross bars having opposed surfaces having front and rear edges, severing means rearwardly of said rear edge of said cross bar of said pressure bar, said control means being actuated by the conveyance of each article to bring said pressure bar and platen together at intermittent periods, means on said cross bars for fusing together said abutting webs of said film of material between said front and rear edges thereof during said intermittent periods, and means for moving said severing means outwardly of said pressure bar and rearwardly of said rear edge of said cross bar of said platen to sever said webs rearwardly of said rear edges of said cross bars of said pressure bar and platen.

5. A packaging machine for automatically wrapping articles in a film of material of the type which is fusible under pressure in the presence of heat, comprising

- (a) a first conveyor for conveying said articles along a predetermined path, said conveyor having an entrance end and an exit end in that order along said path, a second conveyor having an entrance end adjacent to but spaced from said exit end of said first conveyor to transport said articles along an extension of said path;
- (b) said conveyors adapted to be driven;
- (c) a wrapping unit including a plurality of rolls of thermoplastic film;
- (d) said rolls being arranged on opposite sides of the conveyors;
- (e) said films being fused together to form a sheet extending transverse to said path through the space between said exit end of said first conveyor and said entrance end of said second conveyor whereby the article to be wrapped strikes said sheet at said exit end of said first conveyor and pulls off the necessary length of material required to wrap it;
- (f) a control means activated by the conveyance of the article for stopping the movement of the conveyors when the article is placed in wrapping position;
- (g) a wrapper fastener means actuated by said control means when the article is placed in wrapping position;
- (h) said wrapper fastener means comprising a platen member and a pressure bar member,
- (i) said platen member and said pressure bar member being movable relative one to the other into and out of pressure applying contact with said films therebetween,
- (j) one of said members including
- (k) a cutting means,
- (l) said control means being actuated by the conveyance of the article to bring the pressure bar and platen together at intermittent periods for fusing the thermoplastic webs from the plurality of rolls together at spaced regions;
- (m) said cutting means, extending outwardly from the surface of said one member to cut the web.

6. A packaging machine for automatically wrapping articles in a film of material of the type which is fusible under pressure in the presence of heat, comprising

- (a) a first conveyor for conveying said articles along a predetermined path, said conveyor having an entrance end and an exit end in that order along said path, a second conveyor having an entrance end adjacent to but spaced from said exit end of said first conveyor to transport said articles along an extension of said path;

- (b) said conveyors adapted to be driven at substantially equal speeds;
- (c) a wrapping unit including a plurality of rolls of thermoplastic film;
- (d) said rolls being arranged on opposite sides of the conveyors; 5
- (e) said film being fused together to form a sheet extending transverse to said path through the space between said exit end of said first conveyor and said entrance end of said second conveyor whereby the article to be wrapped strikes said sheet at said exit end of said first conveyor and pulls off the necessary length of material required to wrap it; 10
- (f) a control means activated by the conveyance of the article for stopping the movement of the conveyors when the article is placed in wrapping position; 15
- (g) a wrapper fastener means actuated by said control means when the article is placed in wrapping position;
- (h) said wrapper fastener means comprising a platen 20 and a pressure bar, each having a crossbar;

- (i) said platen and said pressure bar being movable relative one to the other into and out of pressure applying contact with said films therebetween,
- (j) one of said crossbars being bifronted by
- (k) a cutting means located between the bifronted portions of said one crossbar;
- (l) said control means being actuated by the conveyance of the article to bring the pressure bar and platen together at intermittent periods for fusing the thermoplastic webs from the plurality of rolls together at spaced regions;
- (m) said cutting means, extending outwardly from the surface of said one crossbar and between the bifronted portions thereof to cut the web.

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