

Oct. 5, 1965

R. H. COCHRANE

3,209,513

COMBINED BAGGING AND PACKAGING MACHINE

Filed Sept. 7, 1961

10 Sheets-Sheet 1

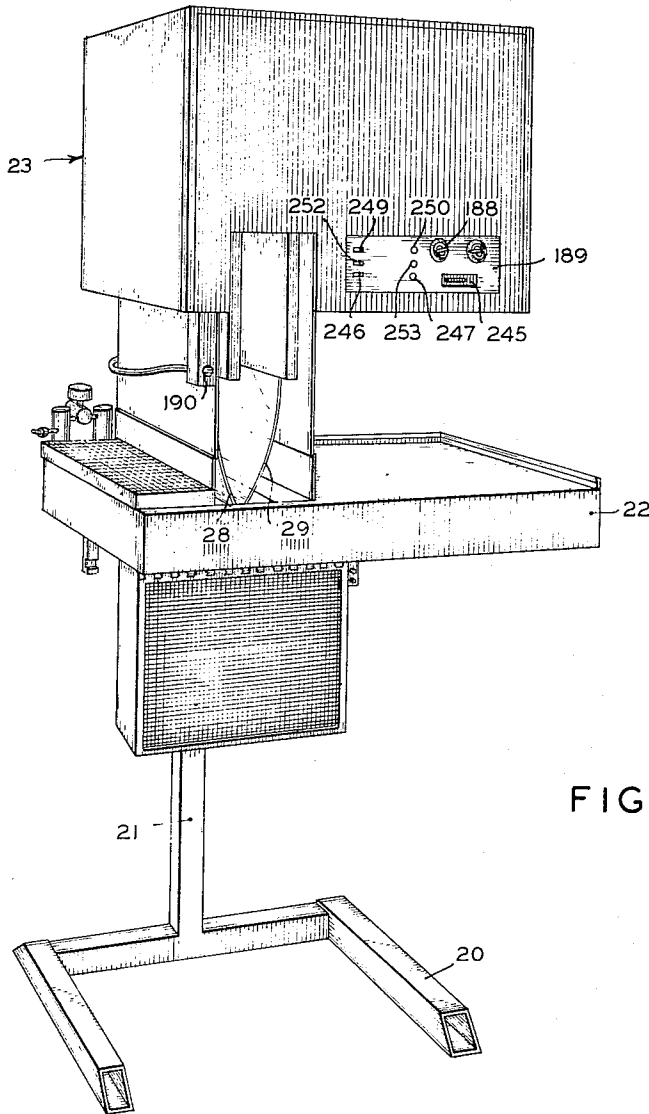


FIG. 1

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10 Sheets-Sheet 2

FIG. 2

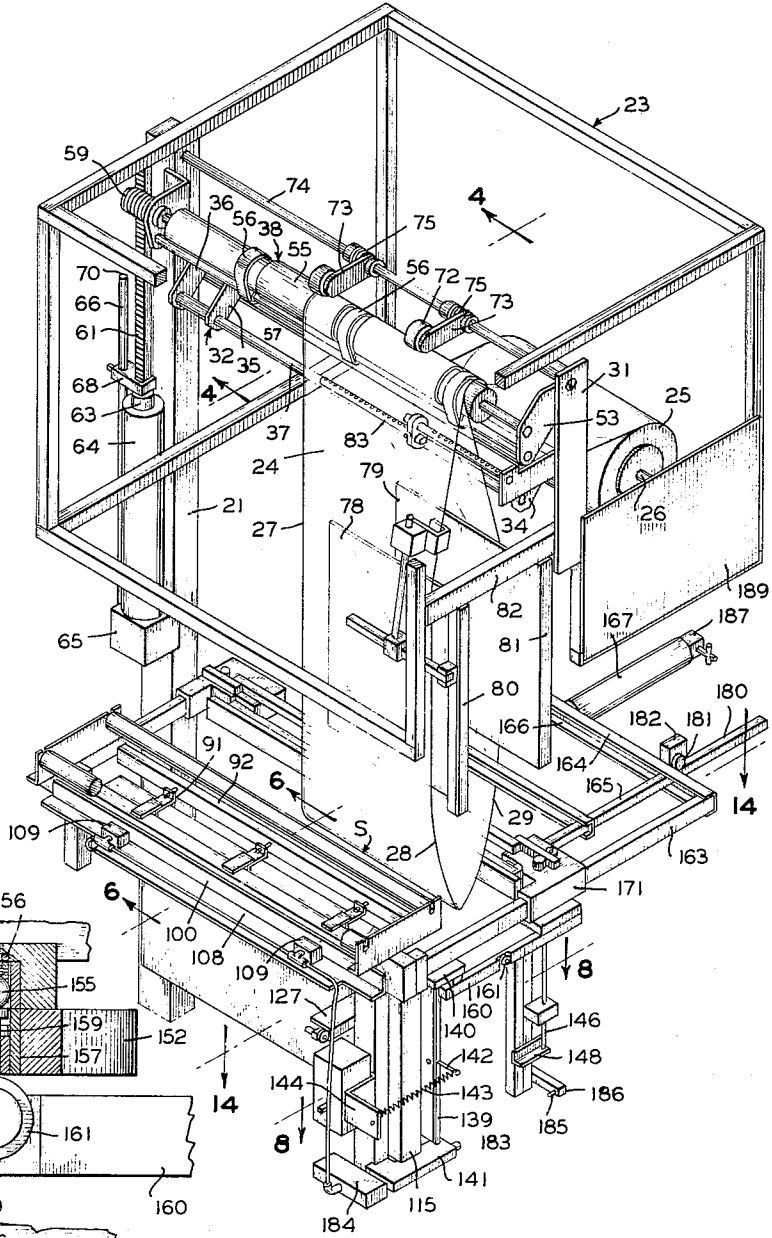


FIG. 12

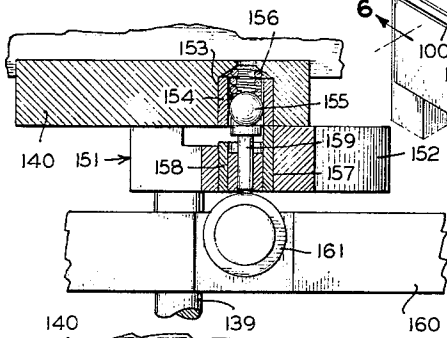
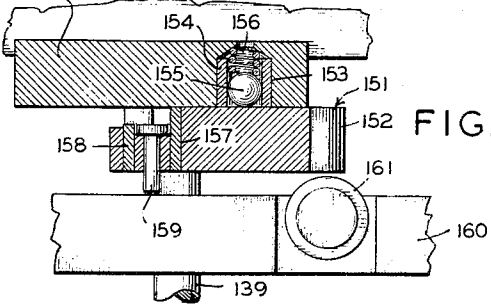


FIG. 13



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10 Sheets-Sheet 3

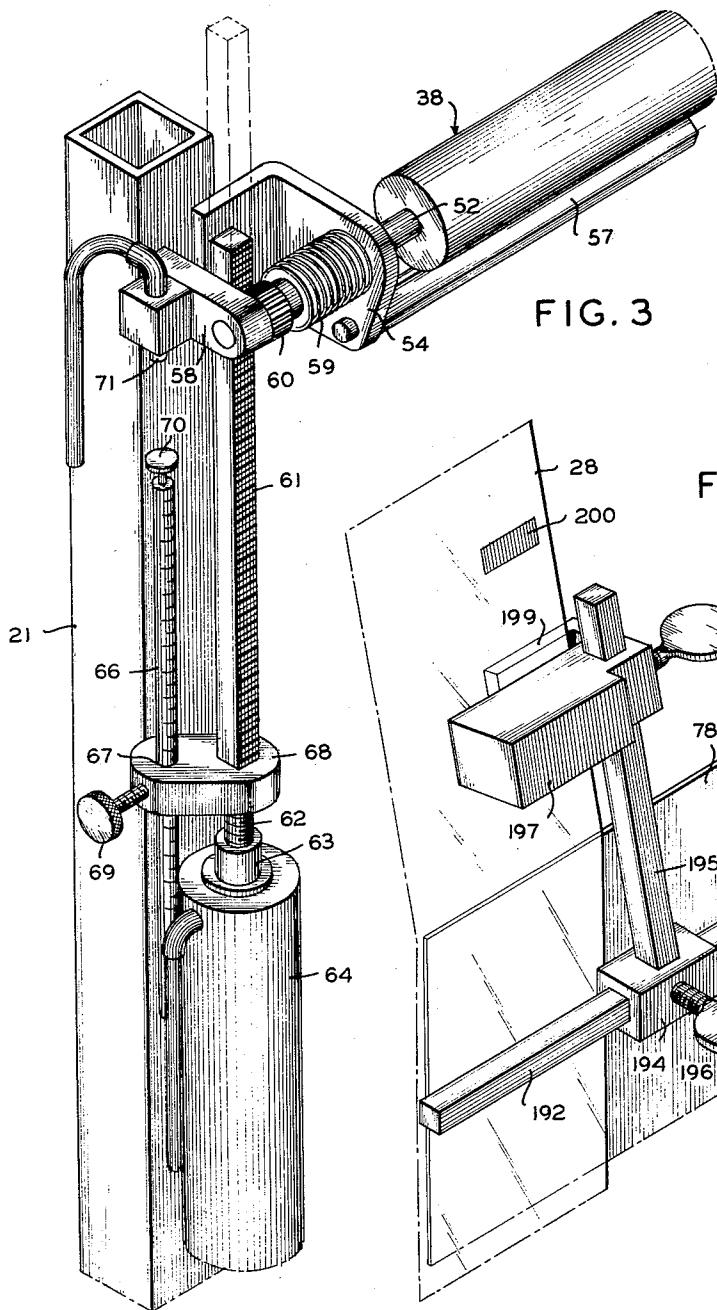


FIG. 3

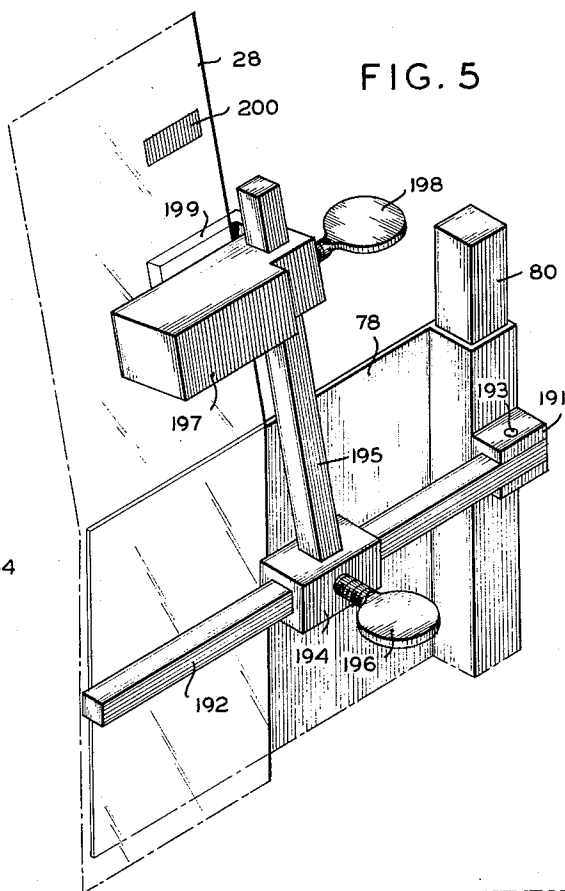


FIG. 5

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10 Sheets-Sheet 4

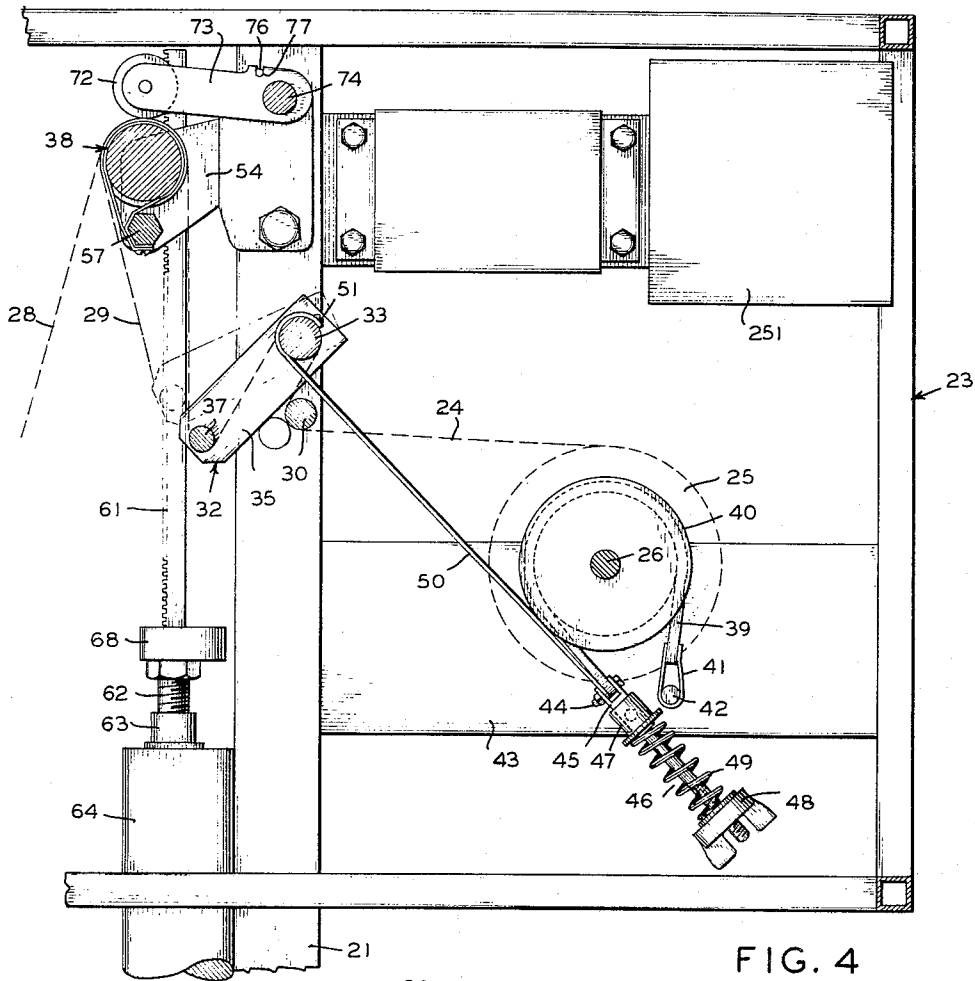


FIG. 4

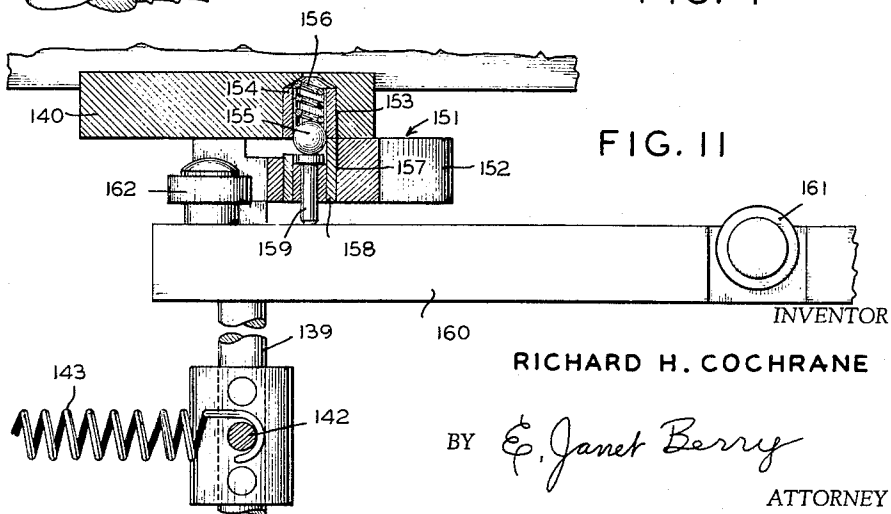


FIG. II

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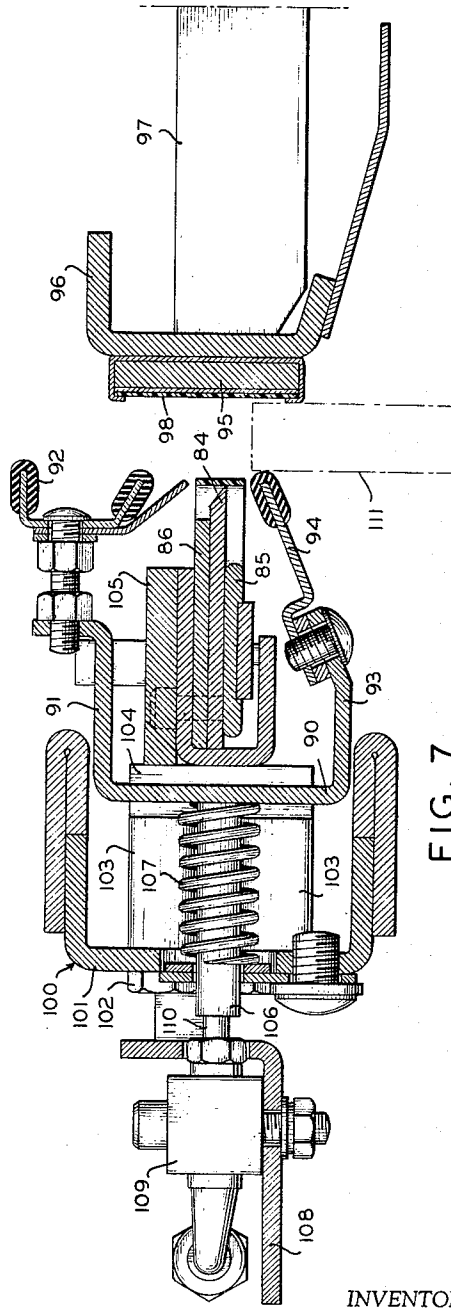
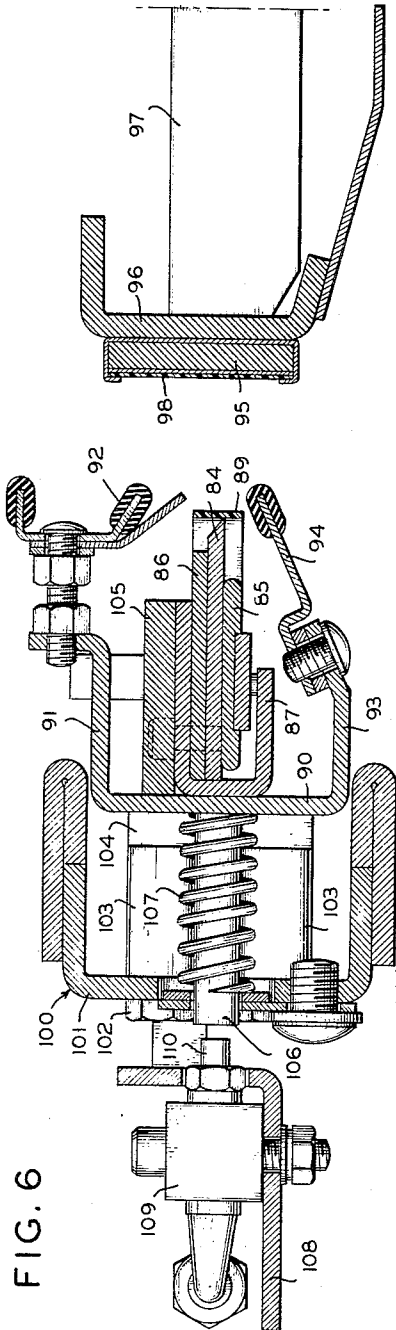
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10 Sheets-Sheet 5



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10 Sheets-Sheet 6

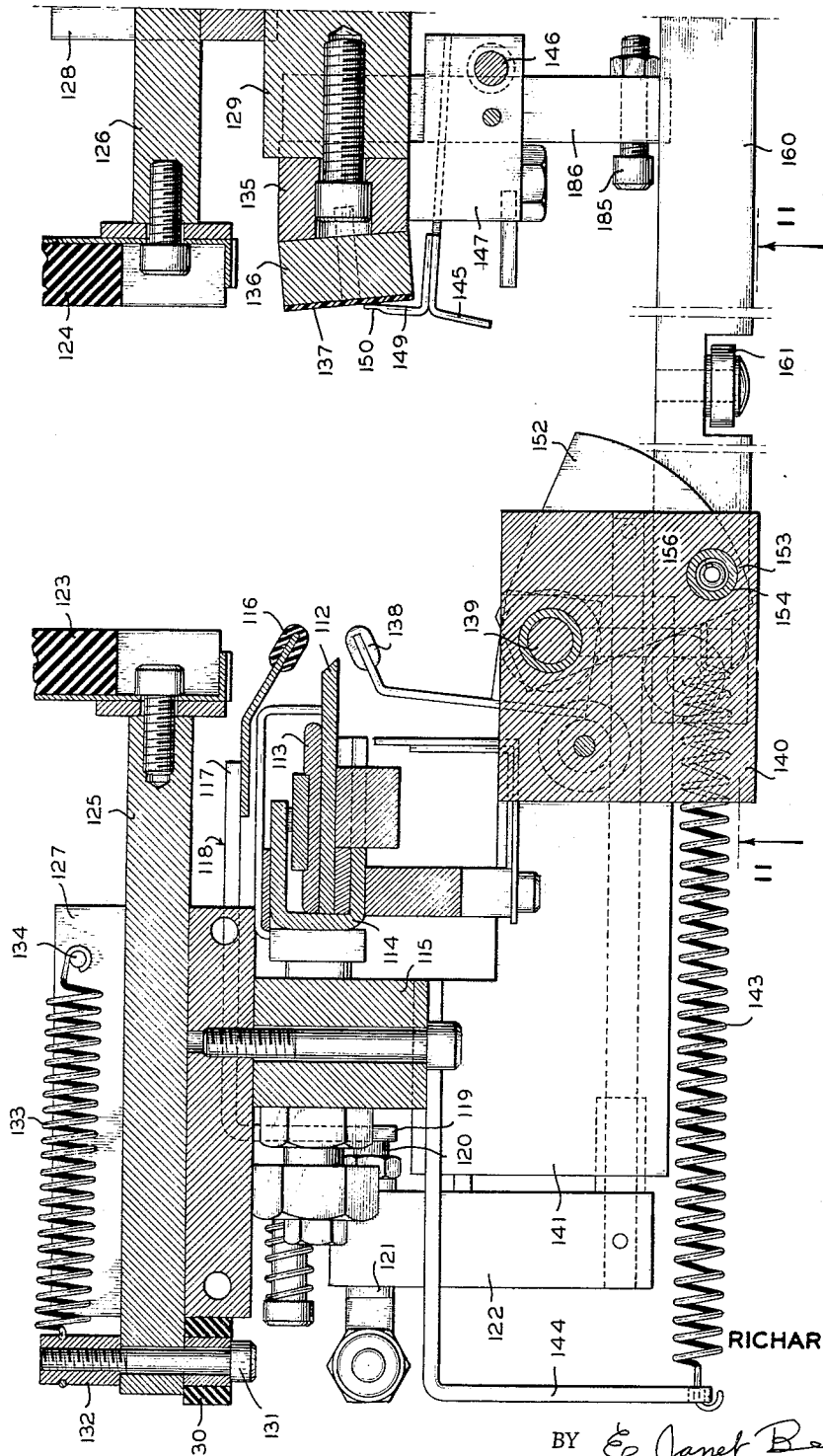


FIG. 8

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10 Sheets-Sheet 7

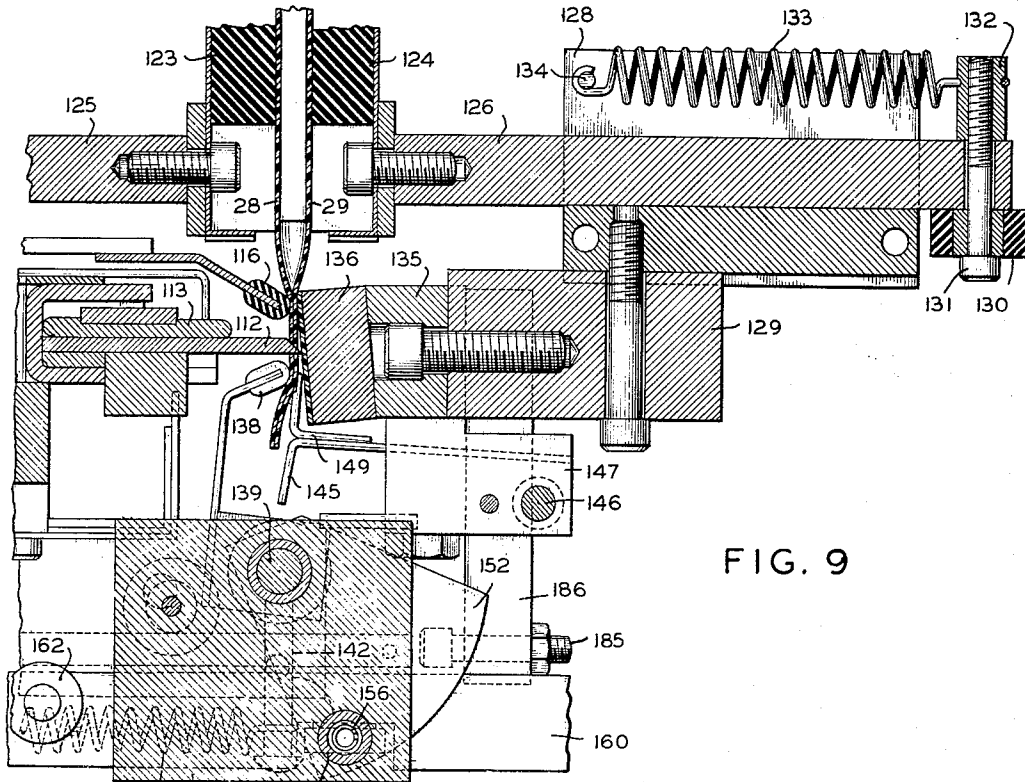


FIG. 9

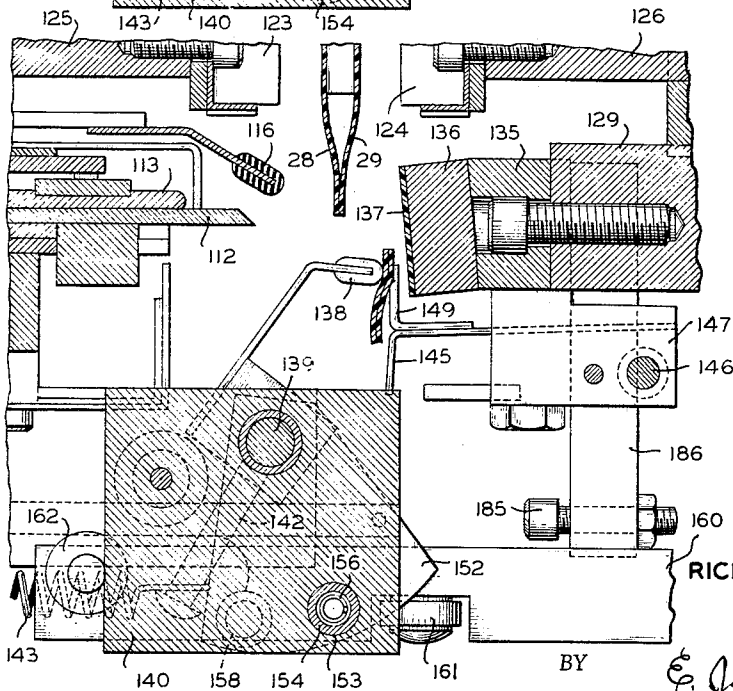


FIG. 10

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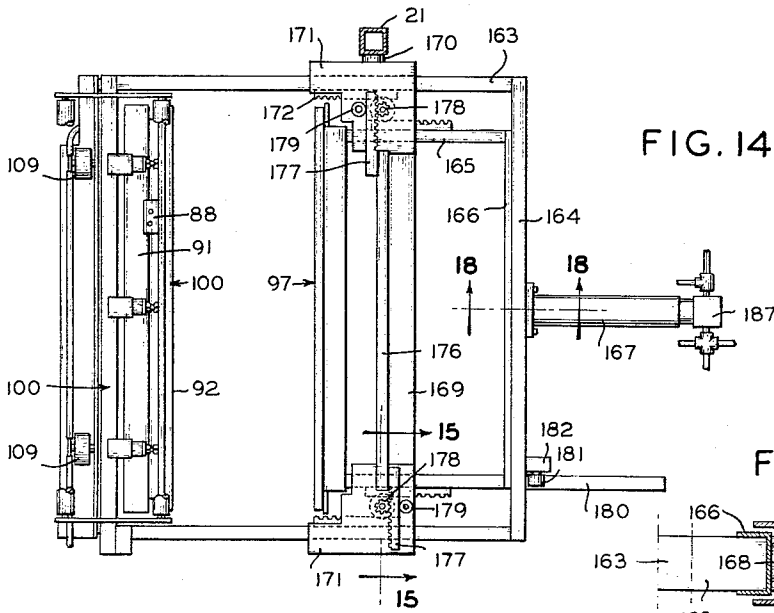


FIG. 14

FIG. 18

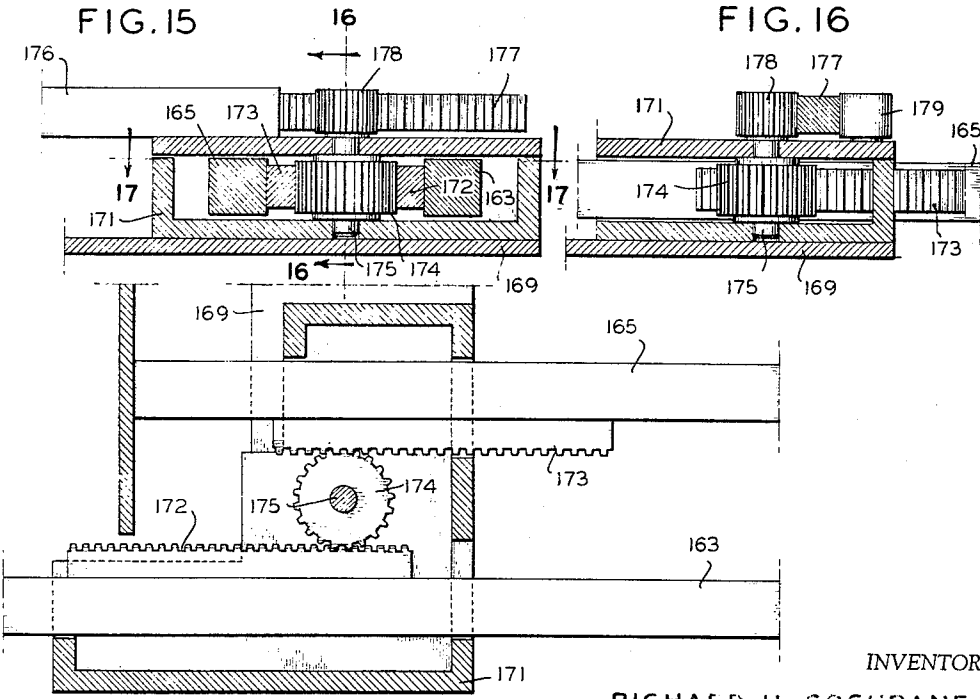


FIG. 15

FIG. 16

FIG. 17

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10 Sheets-Sheet 9

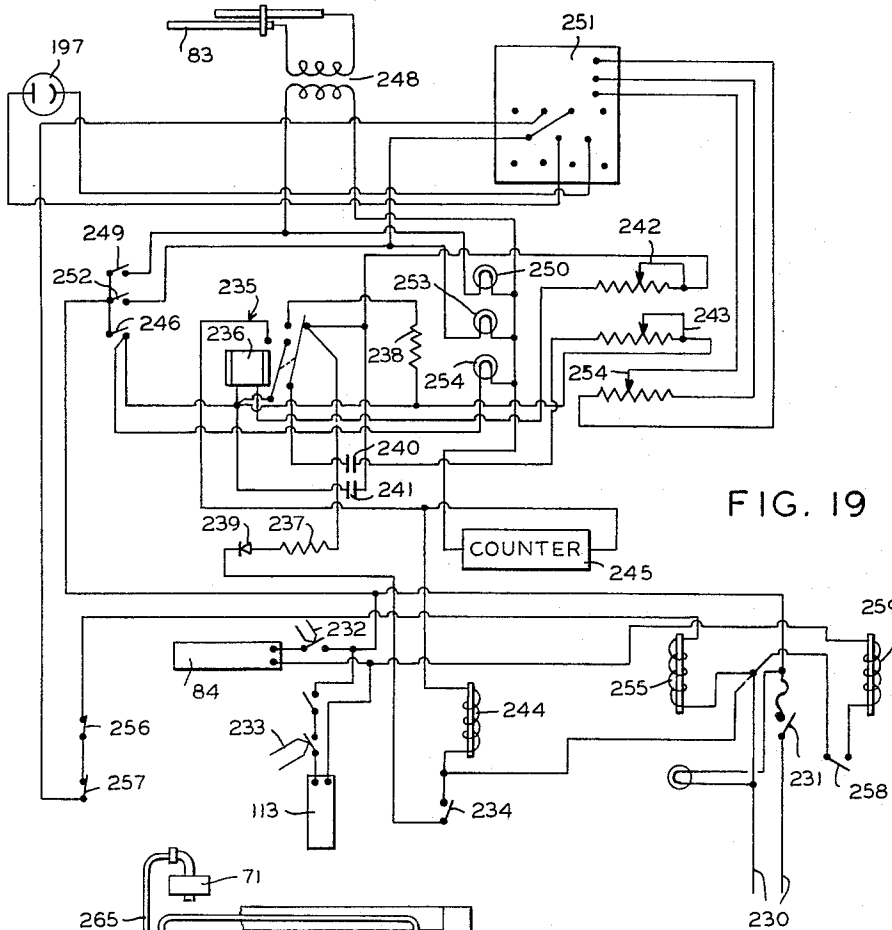


FIG. 19

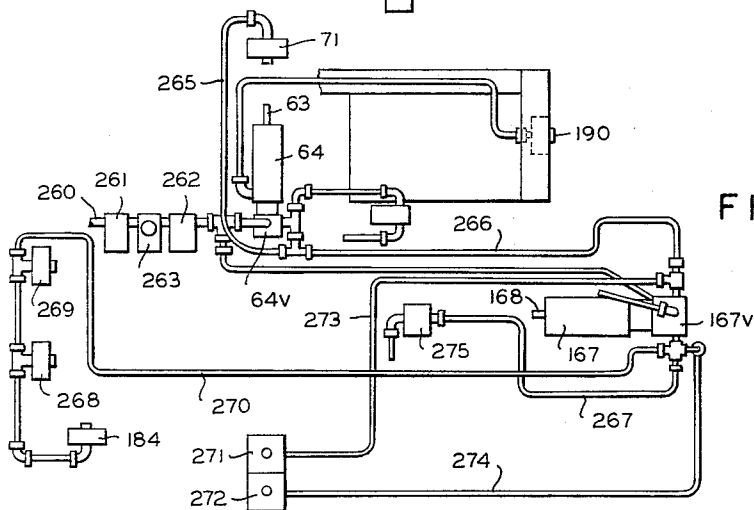


FIG. 20

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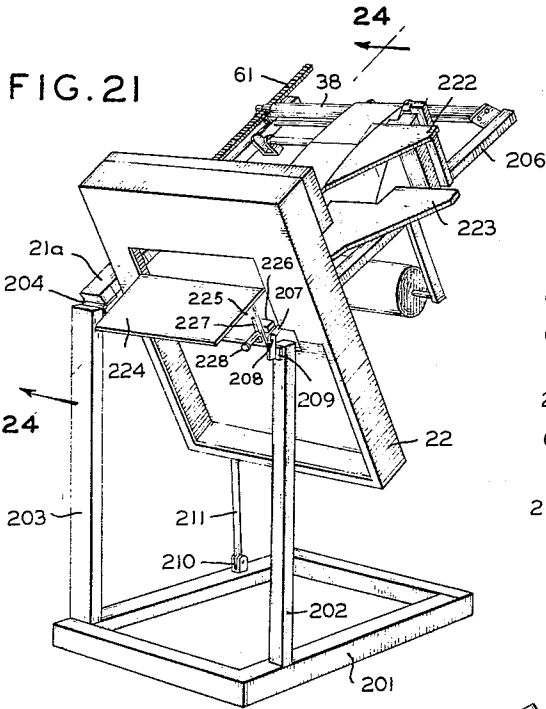


FIG. 21

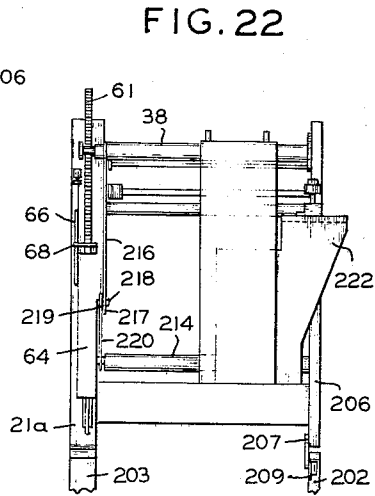


FIG. 22

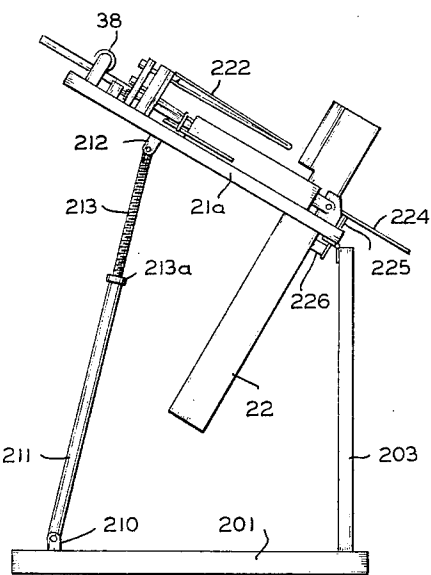


FIG. 23

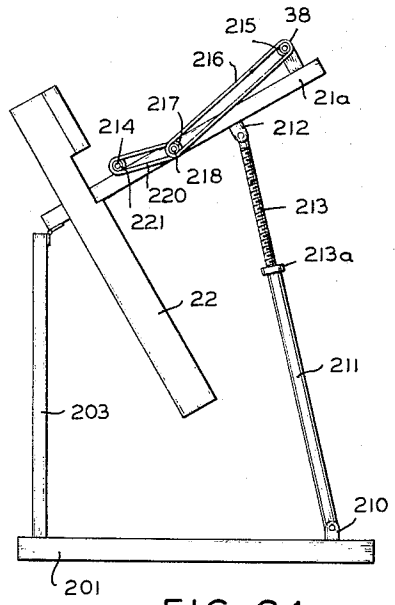


FIG. 24

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3,209,513  
**COMBINED BAGGING AND PACKAGING  
 MACHINE**

Richard H. Cochrane, Cincinnati, Ohio, assignor, by  
 mesne assignments, to Phillips Petroleum Company, a  
 corporation of Delaware  
 Filed Sept. 7, 1961, Ser. No. 136,671  
 22 Claims. (Cl. 53-182)

The present application is a continuation-in-part of  
 applicant's co-pending application, Serial No. 708,664,  
 filed January 13, 1958, now Patent No. 3,083,513, granted  
 April 2, 1963.

This invention relates to a combined bagging and pack-  
 aging machine and method, and more particularly to a  
 bagging and packaging machine wherein the bag or fin-  
 ished package is produced or fabricated from a contin-  
 uous length of suitable sheet material, the method with  
 which we presently are concerned contemplating the for-  
 mation of the bag or container in surrounding relation-  
 ship with respect to the article to be packaged. Thus,  
 fabrication of the bag or wrapper and the packaging of  
 the goods therein is accomplished in a single operation.

Desirably the machine or apparatus is automatic in op-  
 eration and is readily adjustable for severing bags into  
 desired uniform lengths from a source of suitable sheet  
 material, safety devices being incorporated for automa-  
 tically stopping the severing operation should there be  
 any obstruction in the path of the severing mechanism.

The bags, or packages, are produced or fabricated  
 from a continuous length of sheet material which is ad-  
 vanced progressively through the machine from a source  
 of supply, the material being severed transversely to pro-  
 duce bags of predetermined lengths which have the cut  
 or side edges thereof sealed. Desirably, the sheet ma-  
 terial is folded upon itself along a longitudinal medial line  
 with the free longitudinal edges disposed in the same di-  
 rection. The wrapping material thus is provided in the  
 form of a folded sheet and the folded longitudinal edge  
 provides the closed ends of fabricated bag-like containers  
 which are produced from lengths severed transversely  
 from the folded sheet. The folded sheet is advanced or  
 fed from a source of supply, or reel, and travels down-  
 wardly in a substantially vertical direction from a point  
 adjacent the top of the machine so as to present the open  
 longitudinal edge toward an operator who may be posi-  
 tioned in front of the machine.

Vertically disposed spreading means is mounted upon  
 the machine in the downward vertical path of the folded  
 sheet material for spreading apart the open end thereof  
 a sufficient distance to permit the convenient insertion of  
 an article to be bagged or packaged. It will be under-  
 stood that after the sheet material has been advanced, or  
 threaded, through the machine to a point beneath the  
 spreading means, the sheet material is sealed trans-  
 versely adjacent to and beneath the lower extremity of  
 the spreading means to provide a closed side edge for  
 the initial bag or container, severance also being accom-  
 plished at the point of seal to remove any surplus wrap-  
 ping material.

An object to be bagged, or packaged, may be inserted  
 between the opposed layers of sheet material and will  
 come to rest upon the inner surface of the closed side  
 edge or seal referred to hereabove, advancing of the  
 sheet material to a point beneath the spreading means  
 where the article being bagged will have passed the trans-  
 verse sealing and severance means, and actuating said  
 sealing and severance means at that point, will result in  
 the detachment of a filled and fabricated bag from the end  
 of the folded sheet material. The side edges of the bag  
 will be sealed, one end will be closed by reason of the

folded longitudinal edge of the sheet material and the  
 other end will be open. It is intended that additional  
 sealing and severance means may be provided, desirably  
 operating concomitantly with the transverse sealing and  
 severance means, for sealing the open end of the bag. In  
 this manner a completely enclosed packaged article may  
 be produced.

The sheet material from which the bags are fabricated  
 may be a heat-sealable plastic olefin film, such as the  
 polyethylene, polypropylene, and the like, having trans-  
 parent characteristics, and the sealing and severing means  
 may be an electrically heated blade whereby the side edge  
 of a bag length is heat-sealed simultaneously with the  
 severance thereof from the folded supply sheet. When  
 a bag length is fed to the sealing and severance means,  
 the feeding or advancing of the folded sheet material is  
 halted by a timed control to permit accomplishment of  
 sealing and severance, the machine being operated inter-  
 mittently for feeding or advancing a new bag length into  
 position for filling and for severance of a filled bag length  
 during each cycle of operation.

It is a major object of the present invention to provide  
 a combined bagging or packaging machine which is simple  
 in construction and highly efficient in operation.

It is a further object of the invention to provide a  
 combined bagging and packaging machine wherein the  
 supply sheet of packaging material is fed or advanced  
 downwardly in a vertical direction.

It is a still further object of the invention to provide  
 a combined bagging and packaging machine in which the  
 formed package is suspended for severance from the  
 supply sheet and drops from the machine following sever-  
 ance.

It is a further object of the present invention to provide  
 a combined bagging and packaging machine which will  
 fabricate bags having open mouths for the ready re-  
 moval of the packaged article.

It is a still further object of the present invention to  
 provide a combined bagging and packaging machine  
 which will produce completely sealed packages from  
 which the contents cannot be removed without rupture of  
 the packaging material.

It is a still further object of the invention to provide a  
 combined bagging and packaging machine, and a novel  
 method for the operation thereof, having particular  
 utility in connection with the packaging so-called "soft"  
 items such as articles of wearing apparel including shirts,  
 sweaters, and the like, as well as linens, laundry, and  
 similar items.

Further objects and advantages of the invention will  
 be readily apparent from the following description taken  
 in connection with the accompanying drawings wherein:

FIGURE 1 is a perspective view of a combined bag-  
 ging and packaging machine illustrating one embodi-  
 ment of the present invention;

FIGURE 2 is a perspective view, on an enlarged scale,  
 of the head portion of the machine of FIGURE 1, with  
 the cover removed therefrom;

FIGURE 3 is a perspective view, on a further enlarged  
 scale, of the mechanism for advancing packaging mate-  
 rial in sheet form through the machine and controlling  
 the length advanced in each cycle of operation;

FIGURE 4 is a fragmentary sectional view, on an en-  
 larged scale, taken on the line 4-4 of FIGURE 2;

FIGURE 5 is a fragmentary perspective view illus-  
 trating electric eye mechanism which may be utilized,  
 instead of the adjustable control structure illustrated in  
 FIGURE 3, for determining the length of sheet material  
 advanced for each cycle of operation;

FIGURE 6 is an enlarged detail sectional view, taken  
 on the line 6-6 of FIGURE 2, of the horizontal sealing

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and severance mechanism for accomplishing the side seal between adjacent bags;

FIGURE 7 is a detail sectional view similar to FIGURE 6 illustrating the sealing mechanism in slightly advanced position, forward movement having been interrupted by reason of the safety guard having encountered an obstruction;

FIGURE 8 is a detail sectional view taken on the line 8—8 of FIGURE 2 illustrating the vertical sealing mechanism, in inoperative position, which seals the bottom of each bag and severs surplus material therefrom;

FIGURE 9 is a detail sectional view similar to FIGURE 8 and illustrating the vertical sealing mechanism in sealing and severance position;

FIGURE 10 is a detail sectional view similar to FIGURE 9 illustrating the bottom sealing mechanism in retracted position, sealing and severance having been accomplished, and with scrap picker mechanism retaining severed surplus material in removed relationship;

FIGURE 11 is a detail sectional view, taken on the line 11—11 of FIGURE 8, illustrating the scrap picker assembly in locked position;

FIGURE 12 is a fragmentary sectional view illustrating unlocking mechanism for the scrap picker assembly;

FIGURE 13 is a fragmentary sectional view similar to FIGURE 12 illustrating the scrap picker assembly in unlocked position;

FIGURE 14 is a detail sectional view taken on the line 14—14 of FIGURE 2 illustrating the mounting and operative mechanism controlling the sealing jaws;

FIGURE 15 is a detail sectional view taken on the line 15—15 of FIGURE 4;

FIGURE 16 is a detail sectional view taken on the line 16—16 of FIGURE 15;

FIGURE 17 is a detail sectional view taken on the line 17—17 of FIGURE 15;

FIGURE 18 is a detail sectional view taken on the line 18—18 of FIGURE 14;

FIGURE 19 is a schematic diagram of the electrical circuit embodied in the machine of FIGURE 1;

FIGURE 20 is a schematic diagram of the hydraulic system of the apparatus;

FIGURE 21 is a perspective view of a modified form of bagging and packaging machine employing the present invention and wherein selective angular adjustment of the apparatus may be accomplished;

FIGURE 22 is a top plan view of the modified machine illustrated in FIGURE 16;

FIGURE 23 is a side elevational view of the modified form of bagging and packaging machine; and

FIGURE 24 is a vertical sectional view taken on the line 24—24 of FIGURE 20.

With continued reference to the drawings, as illustrated more particularly in FIGURES 1 and 2 thereof, the novel bagging and packaging machine of the present invention comprises a supporting base 20 having a vertically disposed standard or post 21 mounted thereupon. A work surface or table 22 is secured to the standard 21, at a desirable intermediate level, for receiving a supply of articles to be packaged. This work surface may be provided with rear and end retaining walls and, for convenience, may be disposed at the right of the machine for right-handed operators or to the left of the device for left-handed operators, and articles to be packaged may be stacked or otherwise positioned upon the table so as to be accessible readily to the operator. It will be understood that while this work surface has been described as fixed to the device, this is not essential as articles to be packaged may be supported otherwise or presented to the operator as may be desired.

A suitable housing indicated generally at 23 is mounted upon the standard 21 adjacent the upper extremity thereof for supporting a supply of sheet wrapping material and mechanism whereby such material may be advanced or fed through the machine in the performance of bagging and packaging functions.

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This sheet wrapping material 24 is provided in the form of a roll 25 thereof carried upon a shaft or reel 26, suitably journaled within the housing 23, and may be of any suitable plastic material, such as polyethylene, polypropylene, or the like, and is folded along a longitudinal medial line 27 to dispose the two juxtaposed halves 28 and 29 thereof in the same general direction for providing one longitudinal closed end along the medial line 27 and an open end between the free longitudinal edges of the half portions 28 and 29, thereby forming a continuous pocket which extends throughout the length of the sheet.

From the supply roll 25 the sheet or film 24 passes beneath a guide rod 30, one end of which is mounted in the standard 21 and the other end of which is supported in a bracket 31 carried by the housing 23, and thence through a suitable festooning device 32 which includes a rod or shaft 33 having its opposed extremities journaled, respectively, in the bracket 31 and standard 21. A spacer plate 34 is fixed upon the rod 33 adjacent one extremity thereof and a spaced pair of similar plates 35 and 36 are fixed upon said rod adjacent the opposite extremity thereof and a second rod or shaft 37 extends through the spacer plates in fixed parallel relationship with respect to the shaft 33.

Sheet wrapping material is threaded or fed through the machine by being passed from the supply roll 25 beneath the guide roller 30, up and over the shaft 33, down and beneath the shaft 37, and thence up and over a feed or drive roller 38 which will be described more fully hereafter.

Suitable braking means is provided for the shaft or reel 26 which carries the supply roll 25 and such means (see FIGURE 4) may include a brake band 39 disposed about a brake drum 40 mounted upon the shaft 26. One extremity of the brake band 39 terminates in a loop 41 which is disposed in surrounding relationship with respect to a pin 42 which is fixedly secured to a supporting plate 43 carried by the housing 23. The opposite extremity of the brake band is secured to a pin or bolt 44 disposed within the bifurcated extremity 45 of a tension applying rod 46. A block or the like 47 is mounted upon the supporting plate 43 for pivotal movement and is provided with a suitable aperture through which the brake rod 46 extends. The lower or free extremity of the brake rod is threaded for engagement with a wing nut or the like 48 and a coil spring 49 is interposed between the block 47 and the adjusting nut 48 for providing yielding engagement between brake band 48 and drum 40.

A cable or the like 50 has one extremity thereof connected to the pin or bolt 44, within the bifurcated extremity of the brake rod, and the other extremity of this cable is fixedly engaged as indicated at 51 with the rod 33 of the festooning device which is freely pivotal within its opposed journals. Thus, as the sheet wrapping material is advanced over the feed roll 38, the festoon means is rotated slightly in a clock-wise direction carrying the cable therewith and relieving pressure of the brake band upon the drum 40 while a length of supply stock is being fed. Thereafter, when the feed of the supply sheet is halted, the festoon means will be returned to its normal position, being urged thereto by action of the tension spring 49, and the supply reel will be braked simultaneously therewith. In this manner the supply sheet may be advanced intermittently during operation of the machine, the festoon means functioning automatically to obviate any possibility of slack during such intermittent operation.

The drive or feed roller 38 terminates in extremities 52 which may be of reduced diameter and one of which is journaled in a plate 53 secured to the bracket 31 and the other of which is mounted in an angle bracket 54 secured to the standard 21. Desirably the feed roller may include a plurality of raised surfaces 55 upon which the supply sheet is supported and friction bands 56, or the like, embrace the roller 38 intermediate the raised portions thereof and prevent any rotative movement of said roller when the sheet supply advancing mechanism is not in operation.

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The extremities of the friction bands 56 may be secured to an adjusting bar 57 which is mounted within the opposed plate 53 and bracket 54 in spaced parallel relationship with respect to the feed roller 38. It will be understood that application of rotative force to the adjusting bar 57 will vary the degree of restraint imposed upon the feed roller 38 by reason of the friction bands 56.

As illustrated more particularly in FIGURE 3 of the drawings, the extremity 52 of the feed roller 38 extends through the bracket 54 and is journaled in a bearing plate or bracket 58 and a one-way clutch 59 is mounted upon the projecting extremity 52 immediately adjacent the bracket 54. One portion of this clutch mechanism is secured to the bracket 54 and another portion to the extremity 52 and in this manner movement of the feed roller is controlled whereby there can be rotation in a single direction only as is well known in this art.

A drive pinion 60 is mounted upon the shaft or extremity 52, between the clutch 59 and bearing plate 58, and this pinion meshes with a rack 61 having a threaded lower extremity 62 for secure attachment to the piston 63 of an hydraulic cylinder 64 secured to the standard 21 as indicated at 65. As the rack bar 61 is elevated by upward movement of the piston, the feed roll 38 is rotated in a counter-clockwise direction to advance the supply sheet 24 from the roll thereof supported upon the reel 26.

Adjustable means is provided for intermittently advancing or feeding uniform and predetermined lengths of sheet material. Such means may comprise a vertically disposed and adjustable gauge or rod 66 mounted for reciprocatory movement within an aperture 67 provided in a guide plate 68 secured to the threaded portion 62 of the rack bar 61, a clamping screw or the like 69 being provided for retaining the rod 66 in adjusted position. As the rack bar 61 moves upward, it rotates the pinion 60 to feed or advance the supply sheet until the upper extremity 70 of the rod 66, this rod being movable in unison with the rack bar, contacts a control vent or bleeder control 71 mounted upon the standard 21. This reverses the flow of fluid through this portion of the hydraulic system, reversing movement of the piston 63 thereby retracting the rack bar 61 and control rod 66. It will be understood that, by reason of the one-way clutch 59, no rotative movement is imparted to the feed roller 38 when the pinion 60 is rotated during the return of the rack bar to initial position.

Desirably the sheet material is maintained in frictional contact with the feed roller at all times and this may be accomplished through a plurality of auxiliary rollers 72 (a pair thereof being illustrated) each of which is mounted for rotative movement on one extremity of an arm 73 carried by a rod 74, the extremities of this rod being mounted, respectively, in the standard 21 and bracket 31. The rollers 72 are biased into contact with the sheet material by suitable coil springs 75 each of which surrounds the rod 74 and has one extremity secured thereto, the opposite free extremity 76 of each spring being receivable within a notch or the like 77 provided in the associated arm 73.

As the sheet material is fed downwardly, beyond the feed roller 38, the juxtaposed halves thereof 28 and 29 are separated by suitable spreader mechanism disposed within the path of movement. This spreader mechanism (see FIGURES 2 and 5) may be in the form of vertically disposed and spaced plates 78 and 79 secured to posts 80 and 81 depending from a cross bar 82.

It has been found that the juxtaposed halves 28 and 29 of the sheet material may have a tendency to cling together by reason of static electricity, or otherwise, to overcome this difficulty, a static eliminator 83 may be provided, supported upon a suitable bracket, and comprising one or more tubular members each of which is grounded to the machine and is provided with a plurality of spaced perforations in the upper surface thereof. An electrical current conducting bar (not shown), having a

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plurality of projections or needles extending toward the spaced perforations, extends through each tubular member; when electrical current is applied to the conducting bar and the needles thereof, such current jumps to the tubular member and ionization of surrounding air is accomplished, as is known in this art, resulting in the elimination of any static electricity in the sheet material.

A horizontally disposed sealing and severing unit is positioned within the machine below the level of the spreader mechanism and, as an initial step in connection with the operation of the novel machine of the present invention, a transverse seal S is provided adjacent the extremity of the sheet material after it has been advanced or threaded beyond the spreader plates 78 and 79. This transverse seal, which is accomplished by subjecting the end of the supply sheet to the action of the transverse sealing and severing unit (to be described hereafter), becomes one side edge of the first bag or packaging unit to be detached successively from the supply sheet and each subsequent sealing and severance operation provides simultaneously the other side edge thereof as well as the first side edge of the next packaging unit.

As illustrated more particularly in FIGURES 6 and 7 of the drawings, the horizontally disposed sealing and severing unit includes a blade 84 having a strip heater 85 disposed therebeneath and a heat resistant strip or element 86 mounted thereabove. This assembly is secured within a channel member 87, thermostatic means 88 being provided for maintaining the strip heater and sealing blade at a constant predetermined temperature. To prevent the sealing blade from physical contact with the sheet material, a protective shield 89 may be provided of suitable material such as Teflon or the like.

A second channel member 90 is provided, in embracing relationship with respect to the sealing blade assembly, the upper flange 91 of the channel 88 having an adjustable safety guard 92 secured thereto and disposed above the path of the sealing blade 84 while the lower flange 93 has a companion safety guard 94 secured thereto. The safety guards 92 and 94 normally extend beyond the protected sealing edge of the blade 84 and are intended to hold the juxtaposed layers 28 and 29 of the sheet material against a platen or pad 95 mounted upon a bracket 96 carried by a sealing jaw 97 while sealing and severance is being accomplished. If desired, the platen 95 may be provided with a covering 98 of suitable material, such as Teflon or the like, to avoid possibility of adherence of sheet material to the platen per se.

The channel member 90 is disposed within a sealing jaw of C-shape configuration indicated generally at 100 and including a vertically disposed rear wall 101 upon which is mounted, by means of bolts or the like 102, spaced pairs of spacing elements 103 positioned at opposite extremities of the channel member 93. These spacing elements carry vertically disposed plates 104 to which is secured as by welding, brazing, or in any other desired manner, a horizontal supporting bar 105 to which the channel member 87, carrying the sealing blade assembly, is fastened.

A pair of rearwardly projecting rods or pins 106 are mounted upon the channel member 90, one adjacent each extremity thereof, and the free extremities of these pins project through appropriate apertures provided in the rear wall 101 of the sealing jaw 100. Coil springs 107 are positioned upon the mounting pins 106 and function normally to urge the channel 90 into abutting engagement with the opposed edge of the supporting bar 105.

In normal operation the jaws 97 and 100 are moved toward each other to the point where the knife-like edge of the sealing blade 84, through the protective shield 89, contacts the juxtaposed layers 28 and 29 of the sheet material which at this moment are retained against the covering 98 of the platen 95 by the guards or fingers 92 and 94. The heated blade 84 melts through both layers of sheet material and severance is accomplished, a sealed

edge being provided above and below the point of severance. Desirably, safety means is provided to guard against closing of the jaws, in the event of any obstruction therebetween, and avoid possibility of damage or injury resulting therefrom.

Such safety means may comprise an L-shaped bracket **108** mounted within the machine, in close proximity to the sealing jaw **100**, and a pair of safety switches **109** are supported upon this bracket, one such switch being associated with each mounting pin **106**. Each switch is provided with a forwardly projecting trigger **110** and, as illustrated more particularly in FIGURE 7 of the drawings, when either of the safety guards **92** or **94** encounters an obstruction **111** continued forward movement of the channel member **93** is halted and, as the jaw **100** continues to move to sealing position, compression of the coil springs **107** occurs and the mounting pins **106** contact the triggers **110** reversing the flow of fluid to the hydraulic operating mechanism and thus causing the sealing jaws to reverse and remain inoperative until the obstruction is removed.

Suitable mechanism, to be described hereafter and which may be hydraulic in nature, is provided for automatically closing the sealing jaws **97** and **100** following each intermittent advancement of sheet material through the machine. Thus, an operator inserts an item to be packaged between the opposed layers of thermoplastic material and, by means of an electrical control, also to be described, initiates advancement of the sheet wrapping material. When a predetermined length thereof, with a package between the folded layers thereof, passes beyond the spreader mechanism, and the upper extremity of the rod **66** engages the control vent **71** to halt the downward movement of sheet wrapping material, the sealing jaws are brought together to effect a side seal and sever a bag length containing an item being packaged. Each such package, it will be understood, will include one open end, the side edges only being sealed and severed through intermittent operation of the horizontal sealing mechanism as described hereabove.

Desirably, vertically disposed sealing and severance mechanism also is provided, operating concomitantly with the horizontal sealing mechanism, whereby the open end of each bag length is sealed and severed, with surplus wrapping material being removed to provide a package sealed on three edges thereof, the remaining edge being provided by the folded medial line **27** of the sheet wrapping material.

As illustrated more particularly in FIGURES 8, 9 and 10 of the drawings, the vertical or end seal assembly comprises a sealing blade **112** having a strip heater **113** associated therewith and mounted within the channel member **114**. A bracket or post **115**, to which the channel member **114** is secured, is carried by the sealing jaw **100**, the arrangement being such that the edges of the sealing blades **84** and **112** are in direct alignment, the former lying in a horizontal plane while the latter is vertically disposed.

A safety guard **116**, intended to perform a function identical to that of the guard **92**, is provided, this guard being secured to the extending arm **117** of an L-shaped bracket **118**, the short leg **119** of this bracket extending beyond the bracket **115** and being positioned for engagement with the trigger **120** of a fluid safety switch **121** mounted upon a plate or bracket **122**. In the event of the safety guard **116** striking an obstruction, pressure immediately is imparted to the trigger **120**, thereby rendering the machine inoperative and preventing damage or injury to package, apparatus, or operator.

With a view to removing excess air from the package being produced, a pair of opposed pressure pads **123** and **124**, desirably manufactured from relatively soft material such as sponge rubber or the like, are provided. These pressure pads are secured to the opposed extremities of slidably mounted arms **125** and **126**, respectively, which

are supported for yielding and reciprocal movement within guides **127** and **128**. The guide **127** is secured to the bracket **115**; in like manner, as illustrated in FIGURE 9 of the drawings, the guide **128** is mounted upon a post or bracket **129** carried by the horizontal sealing jaw **97**.

The pressure pad arms **125** and **126** extend through the associated and opposed guides **127** and **128** and each of these arms is provided, adjacent the free extremity thereof, with a suitable stop member **130** intended to limit the inward movement of said arms. As shown, these stop members may be in the form of resilient rollers supported upon threaded pins **131** which project through the arms **125** and **126** and are secured in position by nuts **132**. Coil springs or the like **133** are provided for urging the pressure pads inwardly, one extremity of each spring being secured to a guide block as at **134** while the opposite extremity engages with a nut **132**. In this manner the pressure pad arms, and pads, will be urged toward each other and, during the end sealing operation immediately prior to the seal being effected, the pressure pads will engage the article being packaged, through the half portions **28** and **29** of wrapping material, and excess air will be removed.

The channel member **114** constitutes one jaw of the end seal assembly and the opposed jaw **135** thereof includes a platen **136** mounted upon the post **129**, sealing and severance being accomplished by the sealing blade **112** as the juxtaposed layers of thermoplastic wrapping material are retained against the platen by the safety guard **116**. Desirably the platen **136** includes a forwardly inclined face and may be provided with a covering **137** of suitable material, such as Teflon or the like, to avoid possibility of adherence thereto of the wrapping material.

It will be understood that there is no issue present as to any surplus wrapping material in connection with the effecting of a side seal between adjacent bags; however, in connection with the end sealing operation an identical situation does not exist. Thus it is preferable that the vertical or end seal assembly include surplus or scrap material removal mechanism.

The embodiment thereof which has been illustrated includes a scrap picker blade **138** mounted in any desired manner, as by a block or the like, upon a shaft **139** having its upper extremity journally in a plate **140** secured to the post **115**, the lower extremity of said shaft being journalled in a bearing plate **141** also carried by the post **115** adjacent the lower extremity thereof.

A pin or the like **142** projects forwardly from the scrap picker blade supporting shaft **139** and one extremity of a coil spring **143** is engaged with said pin, the other extremity of the coil spring being connected to a bracket **144** mounted upon the supporting post **116** on the side thereof remote from the scrap picker blade. By this structural arrangement the scrap picker blade is biased in a direction toward the end sealing jaw **135** which has a scrap picker arm **145** associated therewith.

The scrap picker arm **145**, which is mounted upon a shaft **146** journalled at its upper end in a plate **147** and at its lower end in a bracket **148** both carried by the supporting post **129**, includes a rearwardly extending portion **149** which may be notched as indicated at **150** for snug engagement with the extremity of the scrap picker blade **138** when scrap removal is being accomplished and resilient or other means may be provided for normally urging the portion **149** or the scrap picker arm into abutting engagement with the platen **136** at a point adjacent the path of movement of the sealing blade **112**.

The scrap picker blade **138** normally remains in the same transverse plane as the safety guard **116** until such time as the jaws **114** and **135** of the end sealing assembly will have closed during the sealing operation at which time surplus or scrap wrapping material will be engaged on opposite sides by the scrap picker blade **138** and arm

149. This position of part is illustrated clearly in FIGURE 9 of the drawings.

To provide for the secure retention of scrap material between the scrap picker blade and arm, after end sealing and severance has been completed and as the jaws of the end sealing assembly are being returned to normal open position, a scrap picker lock assembly 151 is provided. This includes a segmental plate 152 secured to the shaft 139 in relatively close relationship to the upper supporting plate 140 (see FIGURE 8 through 11 of the drawings) which is provided with a transverse bore 153 for the reception of a sleeve 154 within which is received a detent or ball 155 normally urged outwardly by a coil spring 156.

The segmental plate 152 is provided with a bore 157 complementary to the bore 153 of the upper supporting plate. A sleeve 158 is retained within the bore 157 and the lower portion thereof is of reduced internal diameter for the reception of a pin 159 which in normal retracted position projects through the segmental plate and overlies the surface of a fixed bar 160 which is recessed for the reception of a cam or roller 161.

Normally the ball or detent 155 is urged into locking position within the sleeves 154 and 157 when these are in alignment and prevents rotative movement of the shaft 139 which carries the scrap picker blade 138 and segmental plate 152. However, as the end sealing jaw 114 reaches closed position the pin 159 engages the camming roller 161 and is moved upwardly carrying the ball detent into the sleeve 154 releasing or unlocking the segmental plate at which time the shaft 139 will be rotated slightly by the stress exerted thereupon through the coil spring 143 and scrap material will be retained between the scrap picker blade 138 and the arm 149, and affirmatively detached from the sealed package.

As the end sealing jaws are retracted, following completion of the sealing operation, the segmental plate 152 will engage a second cam or roller 162 mounted upon the bar 160 at a point remote from the roller 161, forcing reverse rotation of said plate, against the action of the spring 143, until the sleeves 154 and 158 again are in alignment at which time the ball detent 155 will return to locking position.

The mechanism for effecting reciprocal movement of the sealing jaws, whereby intermittent sealing operations are accomplished, has been illustrated more particularly in FIGURES 14 through 17 of the drawings. As shown, the horizontal sealing jaw 100 is supported upon a rectangular frame 163 having a transverse end portion 164 and the sealing jaw 97 is supported upon a generally complementarily conformed frame 165 having a transverse end portion 166 disposed in parallel relationship with respect to the end portion 164. These frames lie in the same horizontal plane and the arrangement is such that the inner frame 165 reciprocates within the frame 163.

A fluid cylinder 167 is secured to the transverse end portion 164 of the outer frame 163 and the piston 168 of said fluid cylinder projects through a suitable aperture in said transverse end portion and is fixedly connected to the transverse end portion 166 of the inner frame 165 which carries the sealing jaw 97. Thus, upon advancement of the piston 168 the sealing jaw 97 will be moved toward closed or sealing position and means may be provided for simultaneously imparting reverse motion to the sealing jaw 100 whereby these jaws will move in unison toward and away from each other.

The frame structures 163 and 165 are supported by a transverse beam 169 secured to the standard 21 as indicated at 170 and this beam includes an opposed pair of sleeve-like gear boxes 171 within which the side portions of said frames are mounted for reciprocal movement. As shown more particularly in FIGURES 14 and 17, a rack 172 is secured to the inner surface of each side portion of the frame 163 and a complementary rack 173 is secured to the opposed outer surface of each side portion of the frame 165. A pinion 174 mounted upon a stub

shaft 175, suitably journaled within each gear box or sleeve 171, is interposed between each pair of racks 172 and 173 and meshes therewith. With this arrangement of parts, as the frame 165 carrying the sealing jaw 97 is moved under the influence of the piston 168 in a direction toward sealing position, the frame 163 carrying the companion sealing jaw 100 is moved in the opposite direction so that the opposed sealing jaws move in unison at all times whether toward or away from each other.

To further insure uniformity of sealing jaw reciprocation, and obviate possibility of disturbance arising out of misalignment or the like, a transverse bar 176 is provided, this bar having an oppositely facing rack 177 secured to each extremity thereof, the bar per se being supported upon the gear boxes or sleeves 171.

Each stub shaft 175 projects above the gear box 171 and carries a pinion 178 which engages or meshes with the associated rack 177, rollers or the like 179 being mounted on the upper surface of each gear box to retain racks and pinions in engagement and thus insure transverse alignment of the bar 176 which is reciprocated between a position adjacent the front of the machine when the sealing jaws are open to a position adjacent the rear of the machine as the jaws close and sealing is accomplished.

If desired, as illustrated in FIGURE 14, additional supporting means may be provided for the inner frame 165. Such means may comprise an extension 180 which projects through the transverse end portion 164 of the outer frame 163. A roller or the like 181, mounted upon a bracket 182, bears upon the upper surface of the extension 180 and obviates any deviation of the frame 165 from a true horizontal plane during reciprocation thereof.

Since the vertically disposed end sealing jaws 114 and 135 depend from the horizontally disposed sealing jaws 100 and 97, and move concomitantly therewith, side and end seals will be accomplished in a single operation with each completed stroke of the piston 168, reversal of fluid pressure resulting in retraction of the piston and return of sealing jaws to open position in readiness for a repetition of the operative cycle.

As illustrated more particularly in FIGURE 2 of the drawings, the bearing plate 141 which is secured to the depending post or bracket 115 which also carries this end sealing jaw 114, is provided with trigger mechanism 183 connected to a fluid control valve 184. An adjustable stop or control 185 is mounted upon an arm 186, secured to the post 129 which carries the sealing jaw 139, in direct alignment with the trigger 183. When the sealing jaws move to closed position, the side and end sealing blades 84 and 112, respectively, having been preheated to sealing temperature, sealing and severance is accomplished with extreme rapidity and it is during this brief interval that the trigger mechanism is operated to reverse the flow of fluid to the cylinder 167 whereby a cycle of operation will be completed and the sealing jaws returned to open position.

The precise length of time during which the sealing jaws will remain closed is not critical and will depend upon the rapidity with which fluid initially fed to the pressure cylinder is exhausted, following which fluid fed to the reserve side of the piston may become operative to reverse the operation and return the sealing jaws to normal open position. This fluid exhaust may be controlled by a pilot valve 187 associated with the piston 167 and under the influence of a variable control switch 188 mounted upon the control panel 189. Such time delay units and control switches are well known in this and related arts and it is believed that no detailed discussion thereof is required.

Desirably operation of the sheet material feed roller and the sealing jaws is controlled by double action type air or fluid cylinders that have built-in flow control valves which reciprocate and channel fluid pressure through suitable ports to the piston and rod causing said rod to travel

in or out. The flow valve will be caused to move when the side thereof located at the rear of the cylinder is weakened by the bleeding of air or fluid from that side and such fluid is bled, preferably, by electrical solenoid exhaust valves or, alternatively, manually controlled push bleeder valves may be employed. Such valves and controls are well known and no detailed discussion thereof is believed to be necessary.

In the preferred embodiment of the invention illustrated, a starter button 190 is provided, located upon the control panel 189 or otherwise, and pressure of said button energizes an electrical solenoid exhaust valve which bleeds the fluid cylinder 64, the piston 63 thereof on its outward stroke controlling the advancing of a predetermined length of sheet wrapping material.

In actual operation, the operator inserts an article to be packaged between the spreader mechanism or plates 78 and 79 which, it will be understood, may be adjustable as to angular relationship, spacing, or the like. The article is permitted to come to rest upon a transverse side seal S which previously has been formed in the sheet material. The operator then pushes the starter button 190 whereupon, through the piston 63, rack 61 and pinion 60, the feed roller 38 is rotated until a predetermined length of sheet material, carrying the article to be packaged in the pocket between the folds thereof, is moved downwardly through the machine. Flow of fluid through the cylinder 64 then is reversed, through action of the bleeder control 71, and simultaneously therewith, through the energizing of an electrical solenoid exhaust valve associated with the fluid cylinder 167, the horizontally disposed sealing jaws are closed to effect a side seal S, with severance at that point and detachment of a packaged item, the end seal and severance also being accomplished, where such mechanism is included, as described fully hereabove.

The present inventive concept includes other means for controlling the intermittent advancing of sheet material through the machine, a specific embodiment thereof being illustrated in FIGURE 5 of the drawing. As there shown, a bracket in the form of spaced lugs 191 may be mounted in any convenient place in close association with the spreader mechanism as upon the post 80 which carries the spreader plate 78. A rearwardly projecting arm 192 is secured to the bracket 191 for pivotal movement as indicated at 193. A slide 194 carrying an upwardly and angularly extending arm 195 is mounted upon the arm 192, suitable means as a thumb-screw or the like 196 being provided for locking the slide in adjusted position.

An electric eye (selenium cell) unit 197 is mounted for sliding movement upon the arm 195, locking means such as a thumb-screw 198 being provided for securing the electric eye unit in vertically adjusted position. The electric eye unit includes a substantially L-shaped extension 199, one arm thereof being disposed in spaced and substantially parallel relationship with respect to the unit per se. One half portion 28 of the folded sheet wrapping material which is of transparent characteristics is received in the space between the electric eye unit and the arm or extension 199 and said portion is performed with relatively limited spaced areas of opaqueness 200.

With such electric eye mechanism in use, machine operation is initiated just as set forth hereabove by pressing the starter button 190 to provide fluid pressure to the cylinder 64 whereupon sheet material will be fed downwardly through the machine until such time as an opaque area 200 will pass through the electric eye unit, interrupting the beam thereof and actuating an electrical solenoid exhaust valve associated with the fluid cylinder for reversing flow of fluid therein.

A modified form of bagging and packaging machine has been illustrated in FIGURES 21 through 24 of the drawings wherein the angular relationship of the ma-

chine may be varied from the vertical if desired. As shown, the base 201 includes a pair of vertically disposed supporting posts 202 and 203. A standard 21a is secured to the upper extremity of the post 203 by hinge structure 204 and it will be understood that the standard 21a is comparable to the standard 21 of the embodiment of the invention described hereabove, functions in substantially identical manner and supports similar structural mechanism.

A standard 206, companion to the standard 21a and disposed in spaced parallel relationship with respect thereto, is provided and the operating head of the machine is attached to and supported upon these opposed standards. An extension plate 207 is secured to the lower extremity of the standard 206 for pivotal engagement with a bracket 209 mounted upon the upper extremity of the post 202, a pivot pin 208 providing connection between the plate 207 and bracket 209.

A pair of upstanding lugs 210 are secured to the base 201 at a point in alignment with the post 203 and a tubular supporting member 211 has the lower extremity thereof mounted for pivotal engagement with said lugs. A companion pair of lugs 212 is secured to the standard 21a at a point remote from the hinge structure 204 and a threaded rod or the like 213 is attached to the lugs 212 for pivotal movement, the exterior diameter of the rod being such as to be readily receivable within the tubular supporting member 211 in telescopic relationship. An internally threaded collar or nut 213a is engaged with the threaded rod 213 and selective adjustment of said collar as may be desired will control the extent to which the threaded rod penetrates the tubular support and thus variance of angular relationship between the operating head and the vertical posts 202 and 203 is accomplished with particular ease.

With inclination of the operating head and resulting deviation from the vertical of the path of movement of sheet wrapping material and items being packaged, it has been found advantageous to provide an auxiliary sheet material feed roller 214 which will carry the wrapping material forwardly of the machine to a position in substantial alignment with the sealing mechanism. A chain drive or the like may be utilized to impart uniform rotative force to the auxiliary feed roller 214. As shown more clearly in FIGURES 21 and 23, the feed roller 38 may be provided with a sprocket 215 and a sprocket chain 216 engages the sprocket 215 and a companion sprocket 217 on an intermediate stub shaft 218 which is supported upon the standard 21a. This stub shaft has a second sprocket 219 which drives the chain 220 which engages a companion sprocket 221 on the auxiliary feed roller 214 which is journaled at its extremities in suitable opposed bearings carried by the standards 21a and 206.

Adjustable spreader plates 222 and 223 are provided comparable to the spreader plates 78 and 79, over which the folded portions 28a and 29a of the sheet wrapping material passes and the table portion 22a, sealing jaws, related mechanism and operation are identical to that described hereabove in connection with the previously described embodiment of the invention, use of end sealing mechanism (not shown) being optional.

Desirably, a package receiving tray 224 is secured to a plate 225 which is adjustably supported upon a bar or the like 226 carried by the table 22. Spaced slots 227 may be provided in the plate 225, adjusting screws 228 passing through said slots and engaging the bar 226. Convenient adjustment may be had as to the location of the tray 224 in accordance with the thickness of the finished packages being produced. From the receiving tray, packaged articles may be conveyed to a point of discharge in any desired manner as by a horizontal conveyor (not shown) or other suitable mechanism.

A schematic diagram of the electrical circuit has been illustrated in FIGURE 19 of the drawings. As shown, there is provided a connection 230 to a source of elec-



trical current and to the horizontally disposed strip heater 85 and vertically disposed strip heater 113, a main switch 231 closing this circuit and the strip heaters 85 and 113 having thermoelements 232 and 233, respectively, associated therewith for regulating the on-off cycle of these heaters to maintain the temperature thereof within predetermined limits. The closing of the sealing jaws also closes the normally open switch 234 energizing the timer system 235 which includes a relay 236, resistors 237 and 238, rectifier 239, and condensers 240 and 241. The dwell or length of time that the timing system will remain energized is controlled through potentiometers 242 and 243 and, when a sufficient interval has elapsed, relay 226 is closed thereby energizing the solenoid 244 which reverses the stroke of piston 168 of hydraulic cylinder 167 and registers one digital computation on a numerical counter 245 desirably located upon the instrument panel 189. This electrical circuit is manually controlled by a suitable switch 246 which also may be located upon the instrument panel and, if desired, an indicator light 247 may be interposed in such circuit.

Current is supplied to the static eliminating bars 83 through a transformer 248 connected into the circuit containing the relay 207 and controlled by a switch 249 located upon the instrument panel and with an indicator light 250 associated therewith.

Current is supplied to the photoelectric unit 251 through the switch 252, mounted upon the instrument panel in association with the switches 246 and 249 controlling the strip heater and static eliminator operation, and an indicating light 253 may be associated therewith. The intensity of light rays emanating from the light source within the photoelectric eye 197, which is connected directly to the photoelectric unit 251, is controlled by the potentiometer 254. When the light beam from the photoelectric eye is interrupted, a relay in the photoelectric unit 251 is closed energizing the solenoid 255 through safety switches 256 and 257 and initiating forward movement of the piston 168 of the hydraulic cylinder 167 to bring the sealing jaws to closed position. If either of the safety switches 256 or 257 are opened by reason of an obstruction in the path of the sealing jaws, or an article not passing entirely through the machine, the photoelectric unit will not function until conditions are corrected and the safety switches again are closed.

Where an auxiliary foot starter switch 258 is desired, for initiating the advancing of sheet wrapping material through the machine, as an alternate method of operation in lieu of the button control discussed previously for advancing the rack 61 to impart rotative motion to the feed roll 38, this switch is connected to the main switch 231 and closing thereof energizes a solenoid 259 which initiates the hydraulic mechanism resulting in the advancing of the piston 63 of the cylinder 64, this piston carrying the rack 61 therewith as described in detail hereabove.

A schematic diagram of the hydraulic system has been illustrated in FIGURE 20 of the drawings. Piston 63 of cylinder 64 controls intermittent feeding of sheet wrapping material and reversal of direction of motion of this piston is controlled by bleeder valve 71. Similarly, piston 168 of cylinder 167 controls operation of the sealing mechanism and reversal of direction of movement thereof is controlled by fluid control valve 184. The cylinders 64 and 167 have built-in pilot air flow control valves indicated at 64V and 167V, respectively, located at the rear of said cylinders and these pilot valves move back and forth, across the cylinder, channeling fluid or air under pressure to the piston causing the piston rod to move in or out.

Desirably, the machine is operated by pneumatic pressure with an optimum operating pressure of 95 pounds. Air under pressure is supplied from a suitable source (not shown) through an inlet pipe or conduit 260 and flow is controlled by valves 261 and 262, a pressure gauge 263 being interposed therebetween, upon the pushing of

the starter button 190 (or the closing of the switch 258 where electrical foot control is employed) to initiate the feeding cycle for the sheet wrapping material, air is bled through one side of the cylinder 64 and the piston rod 63 moves outwardly, tripping the bleeder valve 71 at the adjusted limit of its stroke. Bleeder valve 71 bleeds air through the line 265 from the opposite side of the cylinder 64, returning the piston 63 to retracted position and simultaneously bleeding air through the line 266 from one side of the cylinder 167, which controls the sealing mechanism, causing the piston rod 168 to move outwardly thereby closing the sealing jaws and also tripping the microswitch 234 thereby energizing the electrical timing system 235 and solenoid 244 whereby, following the sealing time dwell, fluid control valve 184 will be actuated bleeding air from the opposite side of the cylinder 167 through line 267 to retract the piston rod 168 and return the sealing jaws to normal open position.

The sealing mechanism control valve 184 and safety valves 268 and 269 (these valves being tripped when there is interference with free movement of the sealing jaws, as by encountering an obstacle, or the like) are connected to the return side of the cylinder 167 by the line 270. When either of these safety valves is actuated, air will be bled from the cylinder 167 stopping the forward movement of the piston rod 168 (and sealing jaws) and returning the piston rod to retracted position.

A pair of manually operable bleeder valves 271 and 272 may be provided for the testing of the machine in connection with material advancing and proper sealing prior to the undertaking of automatic operation. Thus, valve 271 is connected to the material feeding circuit by line 273 and valve 272 is connected to the sealing circuit by line 274.

Where electric eye equipment is employed for controlling the intermittent advancing of sheet wrapping material, a solenoid exhaust valve 275 is provided to stop feeding action and initiate sealing when the light beam is interrupted by an opaque spot or the light on normally transparent wrapping material.

From the foregoing description it is believed that the operative procedure is entirely clear. The operator, after sheet wrapping material has been threaded through the machine, effects an initial side seal, inserts an item to be packaged within the spreader and permits it to come to rest upon said seal. Pressure upon the starter button (or upon the foot switch if such is provided), advances sheet material and enclosed article to sealing position where side and end seals are accomplished simultaneously and without requiring further effort on the part of the operator. Subsequent cycles of operation are carried on in identical manner.

Adjustment as to bag size may be accomplished with particular facility and, where open end packages are required, the vertical end seal mechanism and associated scrap removal structure may be rendered inoperative or removed as desired. As to scrap removal, this surplus material is detached in continuous strip form and is readily available for reclaiming or other purposes.

It will be understood that the invention is not considered limited by that which is shown in the drawings and described in the specification and reference therefore is had to the claims for summaries of the essentials of the invention, novel features of construction and novel combination of parts for all of which protection is desired.

What is claimed is:

1. A bagging or packaging machine comprising adjustable feeding means for intermittently advancing a predetermined length of folded thermoplastic sheet wrapping material downwardly, a spreader for spreading the open side of said sheet material, reciprocable heated sealing and severance means mounted beneath the spreader for detaching a bag length from said sheet material, said sealing and severance means comprising a pair of horizon-

tally disposed jaws which effect a side seal transversely of the folded sheet material and a pair of vertically disposed jaws which effect an end seal longitudinally of the folded sheet material and extending from one side seal to the next adjacent side seal, guard means carried by said sealing and severance means and movable therewith, auxiliary safety sealing and severance control means adapted to be operated by said guard means, scrap picker mechanism carried by the end sealing and severance jaw for removing surplus wrapping material when the end seal has been effected, and control means actuated by said adjustable feeding means when a length of sheet material will have been advanced to initiate movement of said sealing and severance means to operative position.

2. A machine as set forth in claim 1 in which the adjustable feeding means includes a vertically movable rack and the control means for initiating movement of the sealing and severance means includes valve means engaged by said rack when the adjusted limit of movement is reached.

3. A machine as set forth in claim 1 where said guard means are yieldably mounted and said auxiliary safety sealing and severance control means includes a valve adapted to be operated by said guard means.

4. A machine as set forth in claim 1 where the sealing and severance means is mounted upon a pair of relatively movable frames and means is provided connecting said frames for causing them to move freely and uniformly toward and away from each other without binding.

5. A machine as set forth in claim 4 where said connecting means includes complementary rack and pinion mechanism.

6. A machine as set forth in claim 1 where the sheet material feeding means includes a brake for a supply roll, a freely swinging festoon means over which the folded sheet material is threaded, and means connecting the festoon means and brake for permitting the festoon means to operate said brake.

7. A machine as set forth in claim 1 where the sealing and severance means comprises a pair of horizontally disposed jaws which effect a side seal transversely of the folded sheet material.

8. A machine as set forth in claim 1 where said vertically disposed end sealing jaws are mounted beneath said horizontally disposed side sealing jaws and reciprocate therewith.

9. A machine as set forth in claim 1 where each pair of sealing jaws is provided with separate yieldably mounted guard means movable therewith.

10. A bagging or packaging machine including a feed roll mounted adjacent the top of the machine and over which a continuous length of folded thermoplastic sheet material is drawn from a supply roll thereof, vertically movable means for operating said feed roll, a bleed valve connecting with the operating means for the feed means, means carried upon and moving with the vertically movable means for tripping the operating means, heated sealing and severance means for detaching a bag length when the vertically movable means will have actuated said bleed valve, said sealing and severance means comprising a pair of horizontally disposed jaws which effect a side seal transversely of the folded sheet material and a pair of vertically disposed jaws which effect an end seal longitudinally of the folded sheet material and extending from one side seal to the next adjacent side seal, and scrap picker mechanism carried by the end sealing and severance

jaw for removing surplus wrapping material when the end seal has been effected.

11. A machine as set forth in claim 10 in which the tripping means is adjustable to vary the length of sheet material fed through said machine.

12. A machine as set forth in claim 10 in which the vertically movable means is a rack bar meshing with a pinion on the feed roll and the tripping means is a slidable rod adjustable as to length for determining the length of sheet material fed through said machine.

13. A machine as set forth in claim 10 in which spreader means is provided for opening the folded sheet material to permit insertion therein of an article to be packaged.

14. A machine as set forth in claim 10 having a manually operated valve for the sheet material feeding means whereby feeding may be selectively operated manually or automatically.

15. A machine as set forth in claim 10 where electric eye mechanism is provided for intermittently advancing sheet material through the machine.

16. A machine as set forth in claim 10 including festoon means over which the supply sheet is fed.

17. A machine as set forth in claim 10 in which brake means for the supply roll is provided and said brake means are operated by the festoon means.

18. A machine as set forth in claim 17 in which the festoon means is swingably mounted and is adapted to be swung by the feed of the supply sheet for releasing said brake and to release the brake when the feed of the supply sheet is stopped.

19. A machine as set forth in claim 10 where the sealing and severance means is mounted upon a pair of relatively movable frames and means is provided connecting said frames for causing them to move freely and uniformly toward and away from each other without binding.

20. A machine as set forth in claim 10 in which said vertically disposed end sealing jaws are mounted beneath said horizontally disposed side sealing jaw and reciprocate therewith.

21. A bagging and packaging machine as set forth in claim 10 including a vertically disposed standard and means is provided for mounting the feeding and sealing and severance mechanism upon said standard.

22. A bagging and packaging machine as set forth in claim 21 where said standard includes a hinged portion intermediate the extremities thereof and located beneath the mounting means whereby the angular relationship of the operative mechanism as a unit may selectively be varied from the vertical.

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