

Nov. 17, 1970

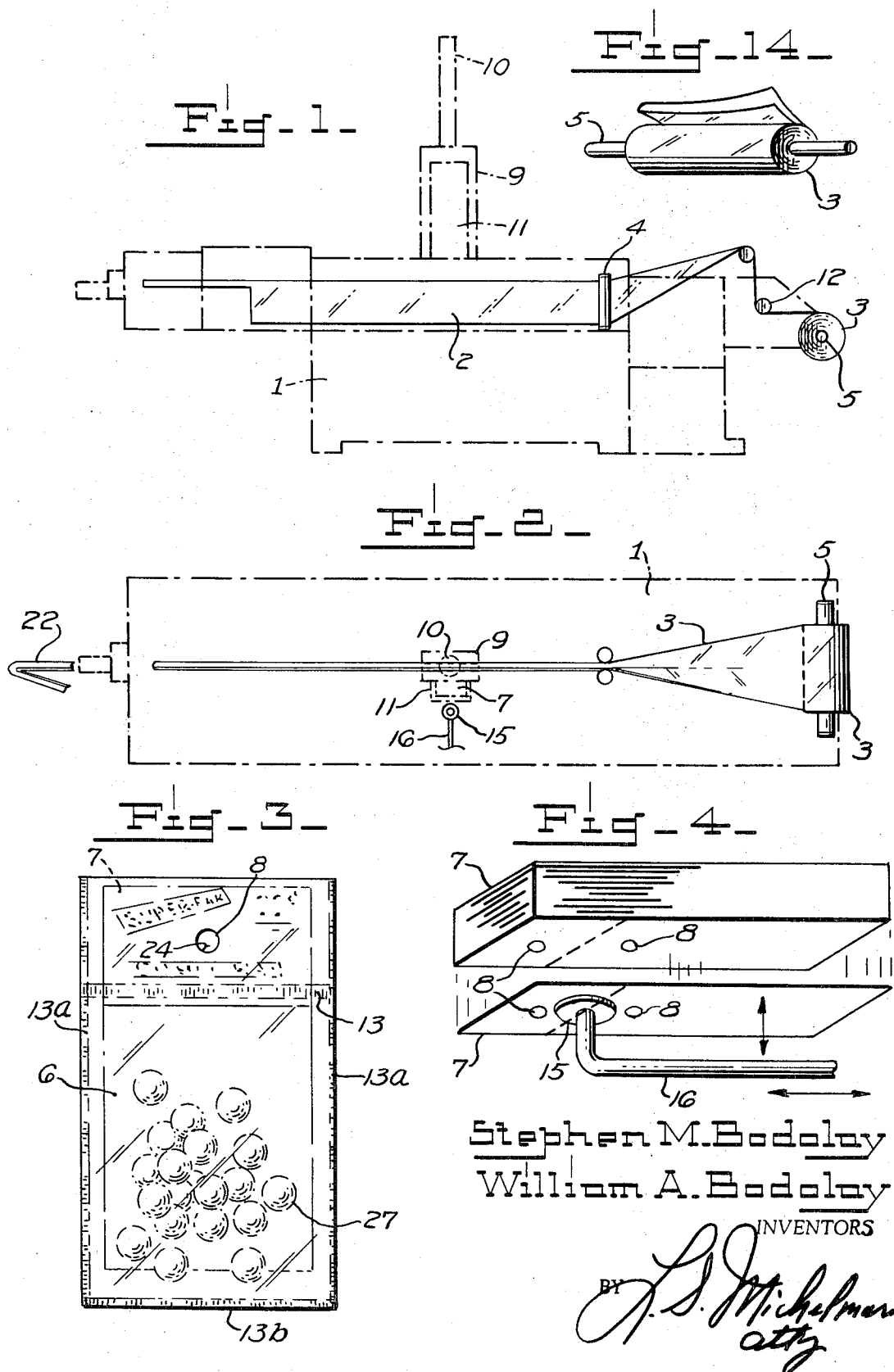
W. A. BODOLAY ET AL

3,540,183

MACHINE FOR MAKING TWO COMPARTMENT UNITARY BAG

Filed July 8, 1968

3 Sheets-Sheet 1



Nov. 17, 1970

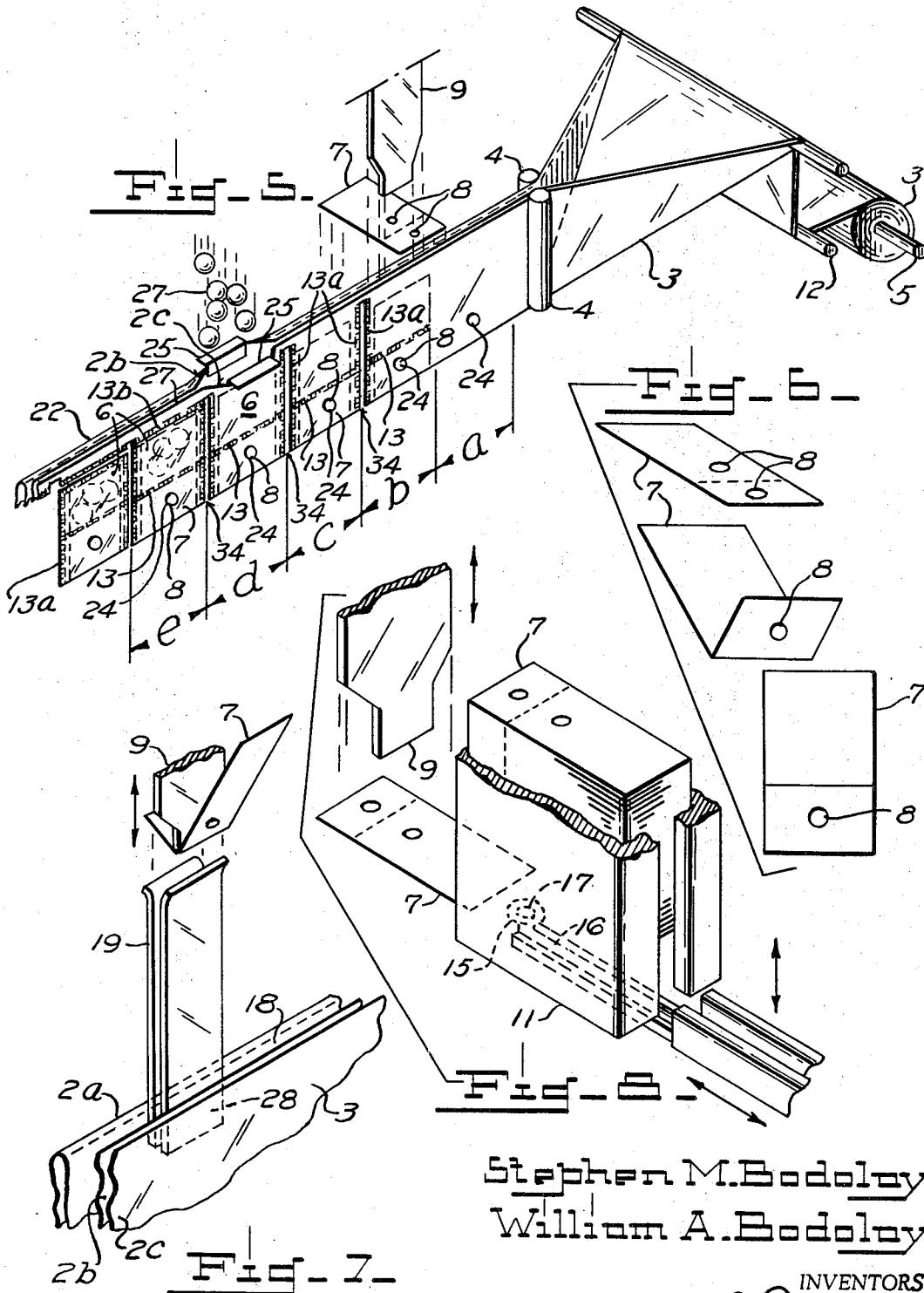
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3 Sheets-Sheet 2



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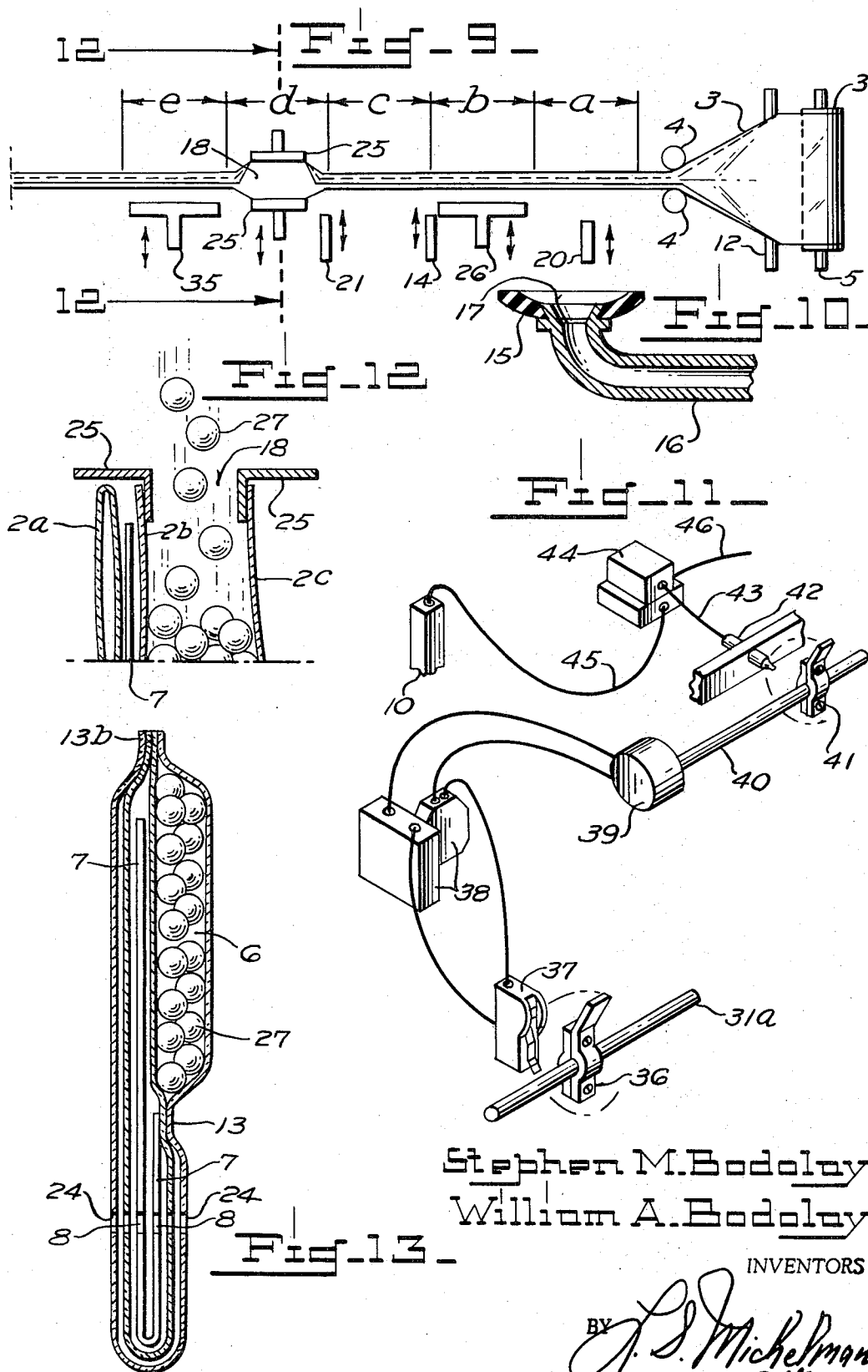
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MACHINE FOR MAKING TWO COMPARTMENT UNITARY BAG

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Filed July 8, 1968, Ser. No. 743,140

Int. Cl. B65b 61/20

U.S. Cl. 53—14

1 Claim

ABSTRACT OF THE DISCLOSURE

This invention provides a device that may be attached to a machine for making bags from a continuous web as described in the United States Letter Patent No. 2,877,609, patented on Mar. 17, 1959. This invention is an improvement and modification for making bags in that the bag made by the device herein is a two compartment bag instead of the unitary type. The United States Letter Patent No. 3,319,538 provides a method of making a one compartment bag from a continuous web. In this invention the web material has been stored on the roll in a double fold. When it comes off the supply roll, it is folded by the within machine so that there are four layers of material. There are effectively two open pouches at the top of the web as it vertically passes down the machine from the supply roll. The bottom of the web has a complete fold. The novelty arises from the arrangement of the header label and the placing of it into one of the pouches formed by the double layer. This header label is sealed in that pouch preferably with a fold. This pouch is then closed and the pouch that has been formed by the fold adjoining this pouch is opened and the material to be packaged is inserted therein. Subsequent to this operation, the upper portion of the pouch is sealed. The bag is formed similar to the operation of Pat. No. 3,319,538 and the filled bag with the header label and the filled material is cut from the web as a completed package. The header label is in a distinctive compartment away from the material that is packaged, and is locked therein because of the middle layers of material between it and the subject matter that has been filled in the adjoining pouch.

This invention is concerned with a novel attachment to the machine for making bags from a continuous web as described in the United States Letter Patent No. 2,877,609, patented on Mar. 17, 1959. In that particular machine the ultimate bag that is produced has a bag with a single compartment. No facilities were provided in the bag for a header having the printed indicia or instructions as to the contents of the bag.

Attempts have been made for printing on the web material itself. While the results obtained in printing on the material have been satisfactory, certain types of bags such as those containing prepackaged hardware items, prepackaged candy, prepackaged foods, such as fruits and items of a bulky nature, are too heavy when hung on pegs. The film is not strong enough to support the weight by itself without a stiffener label.

Another procedure has been to attach to the external portion of the bag, a stiffener header, usually by staples.

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Other attempts have been made at heat sealing the header to the bag. On the header has been printed the indicia, or advertising media.

A new concept has been developed with the machine as aforementioned and by the attachment which is described in our Pat. No. 3,319,538 wherein the header is inserted in a separate compartment within the bag, independent from and not in contact with the contents of the bag. One of the problems that our attachment in Pat. No. 3,319,538 has failed to overcome is the fact that when certain types of material to be inserted in the bag is bulky the bag becomes bottom heavy. The bag loses its shape and rigidity.

The principal object of this invention is to provide an apparatus that will, on one machine, form the bag as described in Pat. No. 2,877,609, form a second compartment in the bag, behind the first compartment, instead of on top of it, insert within the rear compartment the header having the printed indicia thereupon, seal the bag so that the machine itself completes the entire operation without the necessity of human hands other than the person who operates the machine.

It is another object of the within invention to provide a bag having separate compartments for the instruction or advertising indicia wherein the indicia cannot be torn from the bag.

It is still an additional object of the within invention to provide a machine that can insert a header or a label made of many different types of material resilient or stiff, without changing the basic structure or operation of the machine described in Pat. No. 2,877,609, except that the web is folded on the roll source, and becomes a double fold on the machine.

It is still a further object of the within invention to provide a machine that can manufacture a bag having separate compartments, wherein in one compartment is located the label stiffener or header and in the other compartment in front of it is located the contents material such as hardware, etc., thus preventing pilferage from the bag by tearing the header or label from the bag.

It is still a further object of the within invention to provide an apparatus that can insert in the bag, in perfect alignment, a header or display label.

It is yet an additional object of the within invention to provide a bag that is completely covered to the extent that the header or advertising indicia is located within the bag; and there is no chance for anyone to become injured from being cut on the corners of the cardboard or the staples, thus providing a much safer bag.

There is still a further object of the within invention to provide a means on the machine as described in Pat. No. 2,877,609 for inserting an identification display instruction card, label or premium coupon within the rear compartment of the bag prior to packaging (insertion of the items to be carried in the bag.)

In order to comprehend the within invention, it is necessary that a complete understanding be had of Pat. No. 2,877,609. In the said patent a continuous web is folded and sealed so that a pouch is formed. Special cuts are made near the top of the pouch. The ingredients, or items that are to be inserted in the bag are then placed therein, and the bag is sealed along a horizontal surface, and the cuts are completed along the vertical edges. The machine in Pat. No. 2,877,609 folds a single sheet of web.

In the within invention, the web is a folded double sheet as hereinafter explained.

For a more detailed description of the within invention, reference is made to the accompanying drawings in which:

FIG. 1 is a side elevational view of a schematic diagram of the machine showing the folding and forming of the web passing through the machine.

FIG. 2 is a view looking down on the view of FIG. 1. FIG. 3 is a front elevational view of a typical package that has been produced by the said machine.

FIG. 4 is a perspective view with emphasis upon the bottom of the card (header) magazine showing the stack of the unfolded cards including the suction cup removing the lowermost card.

FIG. 5 is a perspective view of the double folded web, showing the various operations to the web by the machine at the various stations until the finished two compartment bag is produced from the web by the machine.

FIG. 6 is a diagrammatic view showing the forming of the header label as it is fed, folded and inserted into its finished position at the rear of the folded web.

FIG. 7 is a perspective view showing how a card or header is folded and prepared for entry into the web guides (prior to insertion within the rear compartment of the double folded web).

FIG. 8 is an exploded view in perspective of the header stack, suction cup and folder.

FIG. 9 is a view looking down on the view of FIG. 5 showing the various stations of operations taking place along the double folded web and its path through the machine.

FIG. 10 is a cross-sectional view of the suction cup assembly as shown in FIG. 4.

FIG. 11 is an exploded perspective view of the tripping and actuating mechanism for controlling the motion of the header.

FIG. 12 is an exploded cross section view of the bag pouch, upper portion, during the filling operation of the material or contents in the bag.

FIG. 13 is an exploded view in cross-section of the completed package showing the header and the seals with the material inserted therein.

FIG. 14 is a perspective view of the folded roll of web material on the supply shaft.

The concept of Pat. No. 2,877,609 to take a web that is on a roll and fold the web in half as it goes through the machine, then seal up sections of the web vertically and horizontally and then cut the web remains the basic idea of this invention.

However, the web is a double web in that it is folded at the time it comes off of the supply roll 3.

Reference is made to FIG. 5 wherein the roll of the continuous web is indicated as the film supply roll 3. The web 3 is mounted on the support shaft 5. The web dancing bar 12 controls the unwinding of the supply reel for web 3. The vertical guide rolls 4 are mounted just forward of the web supply roll 3. They control and assist in the folding of the web 3. Just forward of the vertical guide rolls 4 is the station in which the card folding frame 9 is located. Between the folder 9 and the rolls 4 is the station which permits the cutting of the hole or punch 24 in the web 3. A mechanical punch (not shown) is employed to make the hole 24 at position *a* in FIG. 5.

The folder 9 is a flat piece of metal having a diagonal truncated bottom portion as shown in FIG. 5. It is also shown clearly in the exploded view of FIG. 8. Adjacent to the folder 9 is the supply of headers or labels 7. The headers or labels 7 will have printing or cut outs as the situation requires, namely the advertising media or instruction information for the items that are to be ultimately packaged. There is also located midway between the holes 8 of the header a perforated means so that the folder 9 folds the header easily as will be hereinafter explained. The headers or labels 7 are located within a magazine which has the sides 11 as shown in the view of FIG. 8.

The magazine is square shaped in cross-section and rectangular along its outer surfaces, thus permitting a stack of header cards 7 to be located therein and to be controlled through the opening as can be seen just forward of the suction cup 15.

The suction cup 15 has a suction cup mouth 17. There is a vacuum supply line 16 which enables the suction or drawing of the air causing a vacuum effect to take place through the mouth 17 in the suction cup 15. The vacuum or drawing of the air effect controls the positioning of the header or label 7. The header guide 19 consists of two flat members having separated concave surfaces at its upper end portion proximate to the position of the folder 9. This arrangement can be seen in the view of FIG. 7. As can be seen in the view of FIG. 7, part of the header guide 19 is located within the web at 28. The folded film web 2 is surrounding the lower portion of the header guide 19. A mouth 18 of the folded web 2 can be clearly seen in the view of FIG. 7.

As stated there is, in the header 7, a hole or slot punch 8. This can take various shapes depending upon the requirements. Along the web 2 are the horizontal or header seals 13 of the web 2 as can be seen in the view of FIG. 5. There is a slot or cut between the seals in the vertical position.

The bag is pulled along the stations in the machine and the bag is formed with the top at the bottom. Reference is made to the view of FIG. 5; it can be seen along the further stations at *b* that the header 7 has been inserted in the rear compartment of the bag between sheets 2*a* and 2*b* as the bag is formed after sealing and cutting.

As stated this insertion is different from Pat. No. 2,877,609 in that the web 2 comprises of a folded sheet 2*a*, a middle sheet 2*b* and a front sheet 2*c*, all of which are formed by folding a folded web.

In FIG. 5 the areas *a*, *b*, *c*, *d* and *e* indicate the various positions of the web as the bag is formed. Area *a* is the first station where the double film web 3 is folded. At station *a*, a hole punch is made as indicated by the numeral 24. At the next station *b* which is the second position of the double folded web 3, the insertion of the header card 7 is made between the films 2*a* and 2*b* and as soon as the folder 9 withdraws, the seal 13 is made just above the fold of the inserted header or label 7. This horizontal seal 13 is similar to the seals that are shown in Pat. No. 3,319,538. The seal herein prevents the material located in the front compartment from moving above the printing or indicia which is on the header label. See FIG. 3. When this operation is completed, the web 3 moves to the next station *c*.

At station *c*, the header card or label 7 is already located within the rear compartment of the double folded web between film 2*a* and 2*b*. The vertical sealers then come into action. These are the same type of sealers that are in Pats. No. 2,877,609 and No. 3,319,538. Vertical seals 13*a* are then made and the slots 34 are simultaneously cut. While the sealing and cutting is necessary, it is not claimed to be the new and novel features of this invention of sealers and the cutters are not described in detail. Reference may be had to Pat. No. 2,877,609 for a further explanation. The controlling mechanism for bringing the sealers into position at station *c* is similar to that of the patent aforementioned. At station *d* the web is opened by the bag mouth openers 25, details of which are described in the aforementioned patent. Contents 27, which in this instance are ball bearings, are then dropped into the pouch opening 18 between film sheets 2*b* and 2*c* forward of the header label 7 for delivery of the web 3 to the last station *e*.

While still at station *d* (as is described in the aforementioned patent) the seals are shown by numeral 13, 13*a* and 13*b*. The horizontal seal 13*b* which is shown at station *e* is started at station *d*. There are two functions at station *d*, the filling of the contents and the sealing of the top of the bag a 13*b*. The web 3 then moves to the next station at *e*, the sealers then make 13*b* release at

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this station and the final cut at the top of the bag takes place.

The finished bag is shown in the view of FIG. 3. The area in which the contents 27 are filled is indicated by the numeral 6. The contents 27, which are ball bearings, are shown within the bag between film sheets 2*b* and 2*c*. The punch hole or opening 8 is located within the upper portion of the bag wherein the hole punch 24 in the film web 3 is also located, and wherein the slot or punch in the header 7 is located and substantially aligned with the hole punch 24 in the film 3. The header 7 is located between film sheets 2*a* and 2*b*.

In the view of FIG. 1 is shown the general arrangement of the machine. The numeral 1 is the outline of the machine frame which is substantially the same as that described in the Pat. No. 2,877,609. A folded endless web is indicated by the numeral 2. It has already been stated that the single folded web 3 is on a roll which is mounted on the film roll support shaft 5. Film web dancing bar roller 12 can be seen more clearly in the view of FIG. 1. There are two separate bar rollers 12; one dances in a vertical plane approximately even with the height of the roll; the other is mounted stationary above the first one so that the single folded web 3 is then passed downwardly toward the vertical guide roll 4. It has already been stated that the insertion of the header 7 takes place at station *b*. At station *b* is located the folder actuating air cylinder 10, the folder itself 9, and the header magazine 11.

Reference is made to the view of FIG. 9. The hole punch mechanism 20 is shown by the schematic diagram in FIG. 9. This is a conventional punching mechanism that is timed to move and cut out the web in a predetermined shape while the web is at position *a*. The details of describing how the punching mechanism is timed are not explained since the timing is done in a conventional manner.

The header lock-in sealer bar 26 is located at station *b*. This is the mechanism that causes the seal 13 to be made as shown in the view of FIG. 5 at station *b*. This is the same seal that is described in the Pat. No. 3,319,538. This is the seal that prevents the contents in the bag from moving over the indicia on the header 7, and is the seal that maintains the contents 27 within the area 6 in the bag. While the header 7 is located with the rear compartment in the bag, the sealer 26 does not seal the header to the bag, and the header has some movement within its own compartment. The header 7 is only positioned by the seals and the fold.

Vertical seals are made by the side sealer in positions 14 and 21. There are indicated schematically in the view of FIG. 9. They are the same side sealers that are employed in the concept of the original machine described in Pat. No. 2,877,609.

In order to make the bag as small as possible, the horizontal seal which starts sealing at station *d* and completes the operation at station *e* (as shown in FIG. 9 and indicated by the schematic diagram 35) is located slightly beneath the upper edges of the double folded web 2. This is similar to the sealing operation in the Pat. No. 3,319,538. As a result of this sealing taking place below the edges of the web, a salvage material or waste material 22 is produced after the last bag has been removed or cut from station *e* as shown in FIG. 5.

The salvage strip 22 is removed from the machine in various ways; but since this invention is not concerned with it, it may be stated that it is waste material.

After the machine has been set up and the web has been placed in position, as shown in FIG. 5, an opening 24 is punched at station *a* in the double folded web 2. While that punching is taking place, a suction cup 15 is located beneath the bottom stack of header cards or labels 7. A vacuum is created in the line 16 through the mouth 17 sufficiently strong to draw one header 7 from beneath the bottom magazine 11. The motion is in the direction of the arrows. The cardboard or header 7 is pulled down

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from beneath the stack of headers 7 located in the magazine 11 and pulled in the direction of the horizontal arrows as shown on FIG. 8 to a position just below and beneath the folder 9. By this time, the web 2 with the punched opening 24 is now located at station *b*. Actuating device 10 then forces the folder 9 into contact with the header 7. Since the header 7 has a perforated portion as shown by the dotted lines, in the view of FIG. 5, the folder 9 causes a fold to take place in the header 7 along the dotted line so that each side thereof is "wrapped around" the folder 9 as shown in the view of FIG. 7. As the folder 9 continues downwardly under the actuation of 10, the header 7 is caused to be inserted within the mouth 19 and to the bottom of the folded web 2 between 2*a* and 2*b*.

The folder 9 is returned to its original position awaiting the next cycle. Guides 19 remain as shown in FIG. 7 extending somewhat into the opening of the mouth 18 of the folded web 2 between 2*a* and 2*b*. Once the folder 9 has returned sufficiently to clear the seal area, the sealing operating along the horizontal seal 13 at station *b* takes place. The sealer 26 comes into contact with the web, seals both sides of the folded web 2 so that the folder header 7 is now located within the newly formed rear compartment of the folded web 2. The double folded web 2 is then ready to move to the next station *c*. At station *c*, sealer position 14 and 21 make the seals and the cuts as indicated by the vertical seals 13*a* and the cuts 34 (as shown in the view of FIG. 5). The double folded web 2 then goes to the next position at station *d*. At station *d*, the bag mouth openers 25 come into operation and the folded web 2 which has been sealed on all sides except the top as shown in the view of FIG. 5 is spread apart; the contents, in this instance, ball bearings 27, are placed therein. The sealer 34 comes into operation and seals near the top of the bag at 13*b* as the folded web rides from station *d* to station *e*. At station *e*, the final sealing and cutting (performed by the sealer 35) takes place and the bag is finished, completed, packed, and appears as shown in FIG. 3.

The sealing and cutting are done simultaneously by 35 as the web rides from station *d* to station *e*. While each operation of the web at stations *a*, *b*, *c*, *d* and *e* have been described, the operation at *a* is going on while the operation as described is also going on at *b*, *c*, *d* and *e* at the same time. It can readily be understood that with all of these operations taking place on the web as it rides from position to position intermittently, that time is saved, and that a great deal of packaging can be done in very little time without the use of human hands.

So far the attachment itself has been described. FIG. 11 shows how the attachment itself that operates the header mechanism is connected to the machine described in the Pat. No. 2,877,609. This is explained in Pat. No. 3,319,538.

A complete cycle of cam shaft 31*a* obviously controls the timing to the various stations as already described. All of the timing to the various stations are interrelated because of the cam shaft 31*a*. The cam shaft 40 has a direct timing relation to the shaft 31*a*, as stated in Pat. No. 3,319,538.

We claim:

1. The method of forming a two compartment bag having a separate front compartment and a separate rear compartment and inserting a header stiffener label in one compartment of said bag, comprising the steps of providing a source of a folded web having a pair of open edges on one side and a fold at the other side, folding said web again so that a new fold is at the bottom and the original folded side is at the top in the same plane as the original open edges, vertically sealing the folded web at a predetermined position, placing a header label of proper size between the folded edge and the unfolded edges of the double folded web, inserting the header label between

the top folded side and the inner edge aforesaid, sealing horizontally the front and rear compartments at a predetermined distance below the original folded side and edges, filling the front compartment between the inner edge and the outer edge of said web with subject matter to be packaged and above the aforesaid horizontal seal, horizontally sealing the four layers of film together a short distance below the top of the original fold and open edges above the stiffener label and the packaged subject matter.

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U.S. Cl. X.R.

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