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FOREIGN PATENTS

650,267 10/1962 Canada 93/34

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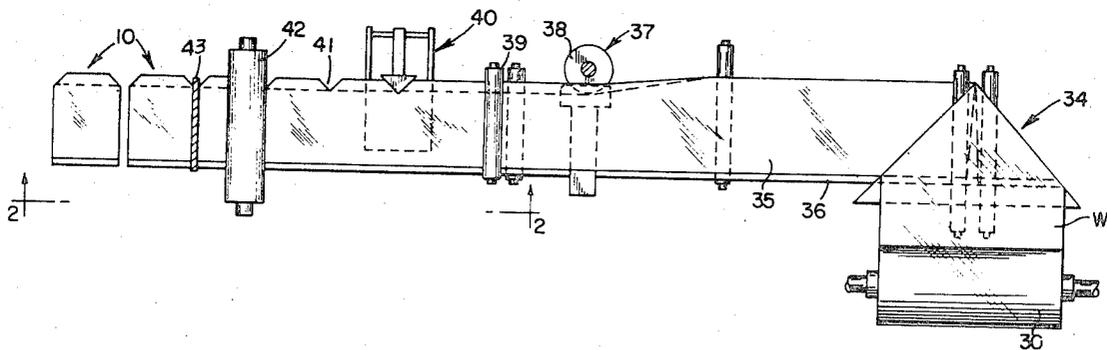
[54] **THREE DIMENSIONAL BAG FORMING METHOD AND APPARATUS**
 9 Claims, 12 Drawing Figs.

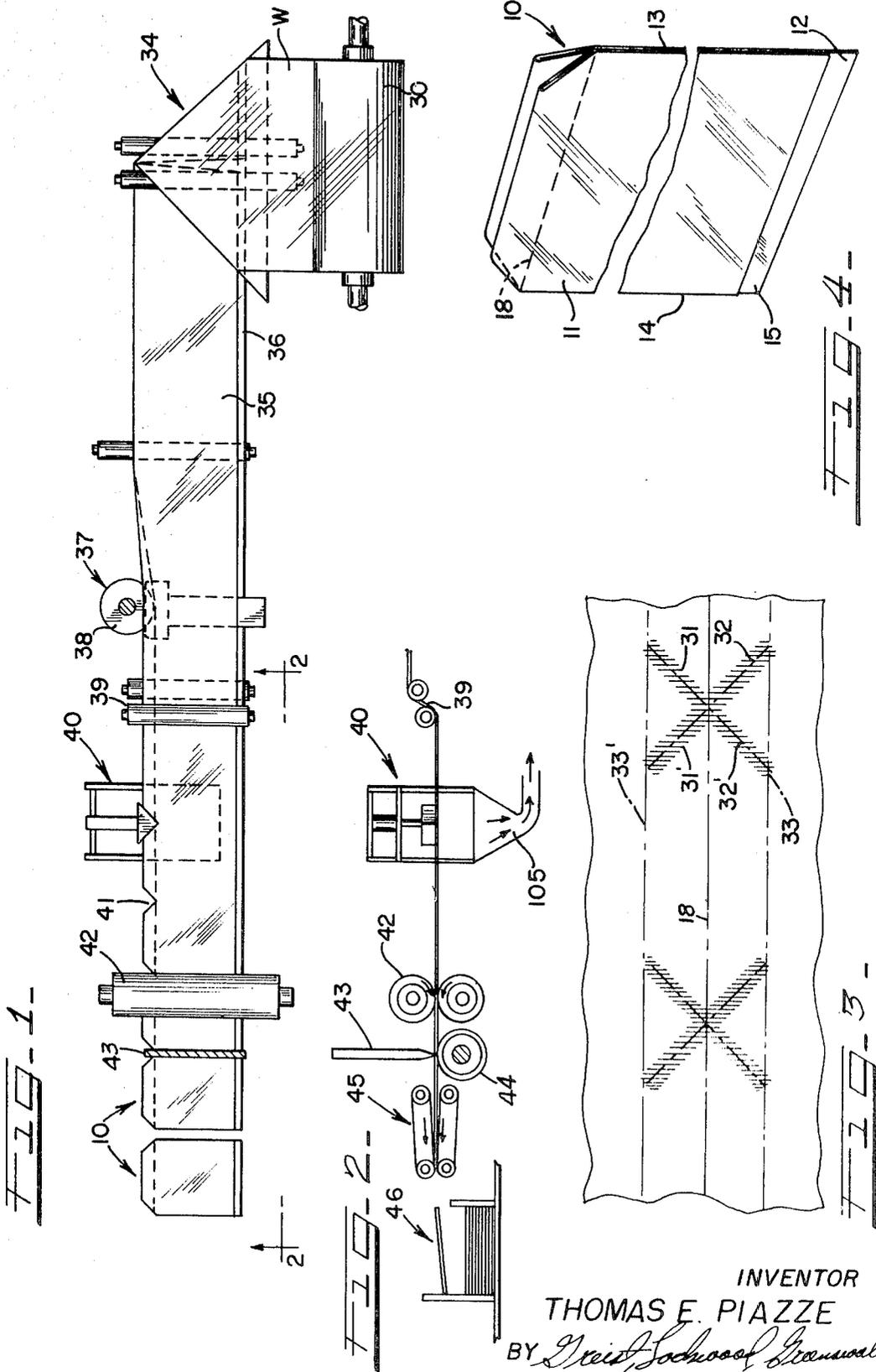
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 [51] Int. Cl. **B31b 1/22,**
 B31b 49/04, B31b 45/00
 [50] Field of Search 93/1 G, 33,
 34, 35 RB, 36 A, 36 MM, 58.4

[56] **References Cited**
UNITED STATES PATENTS

Re.26,075	9/1966	Canno	156/202
148,653	3/1874	Beecher	225/96
3,031,905	5/1962	Phillips	83/86
3,082,583	3/1963	Larson	53/29
3,331,728	7/1967	Lane	161/112
3,395,622	8/1968	Kugler	93/35
3,411,390	11/1968	Maynard	83/100
3,534,666	10/1970	Maccherone	93/35 (SB)
3,460,441	8/1969	Davis	93/36 (A)

ABSTRACT: A method of fabricating side sealed square bottom bags from a web of heat sealable plastic film material wherein the web is folded upon itself with a bellows fold formed at the edge which has a width one-half the width of the bottom desired for the bag and the outside surfaces which overlie each other are treated so as to prevent sealing in the areas thereof in which the bottom forming seals are to be made, the folded web is advanced intermittently across a platen at a bottom seal forming station where a V-shaped hot knife device is operated to cut through the bellows fold margin at spaced intervals so as to form a bottom seal on each of two adjoining bag formations, the resultant triangular-shaped waste portion is discharged laterally of the path of advance of the web and the web is advanced for separation into successive bags by operation of a transverse hot knife sealing device which forms the side seals and separates the bags on a transverse line extending from the apex of the triangular waste portion. The bottom seal-forming device is in the form of an attachment comprising a platen, a V-shaped hot sealing knife mounted for cooperation with the platen and a means for disposing of the triangular waste chip resulting from the operation of the hot knife which comprises a driven roller and cooperating clamping rollers operating to close on the chip and remove the same in a direction laterally of the sealing station.





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FIG. 5.

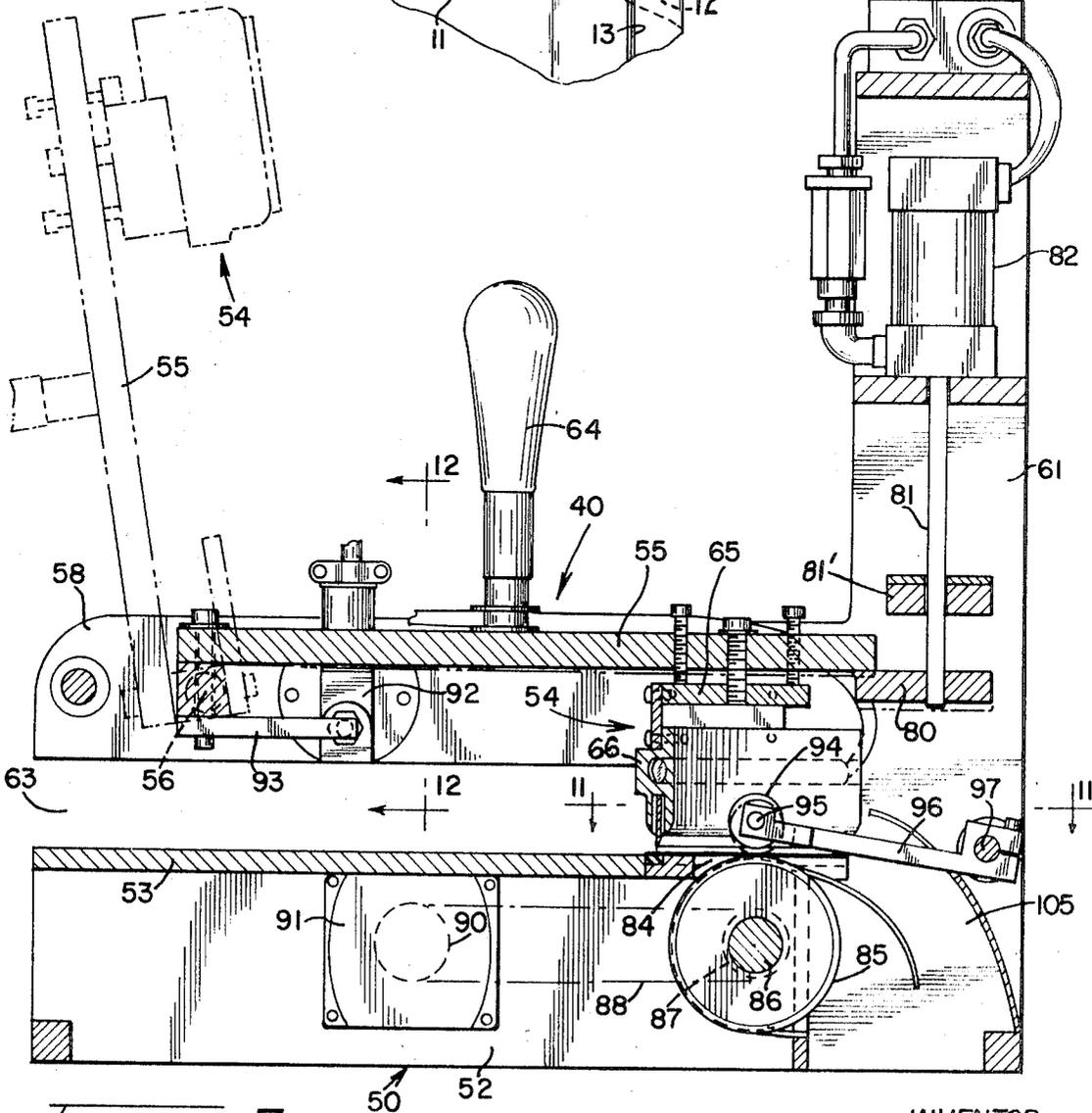
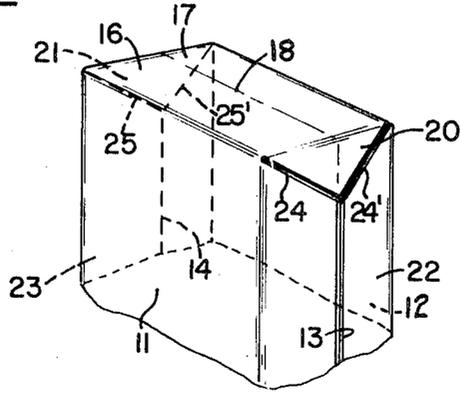


FIG. 7.

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FIG. 6.

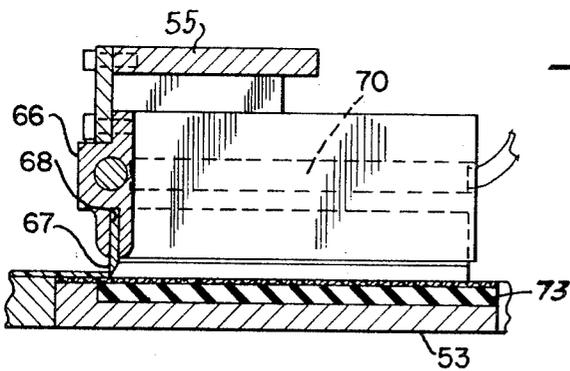
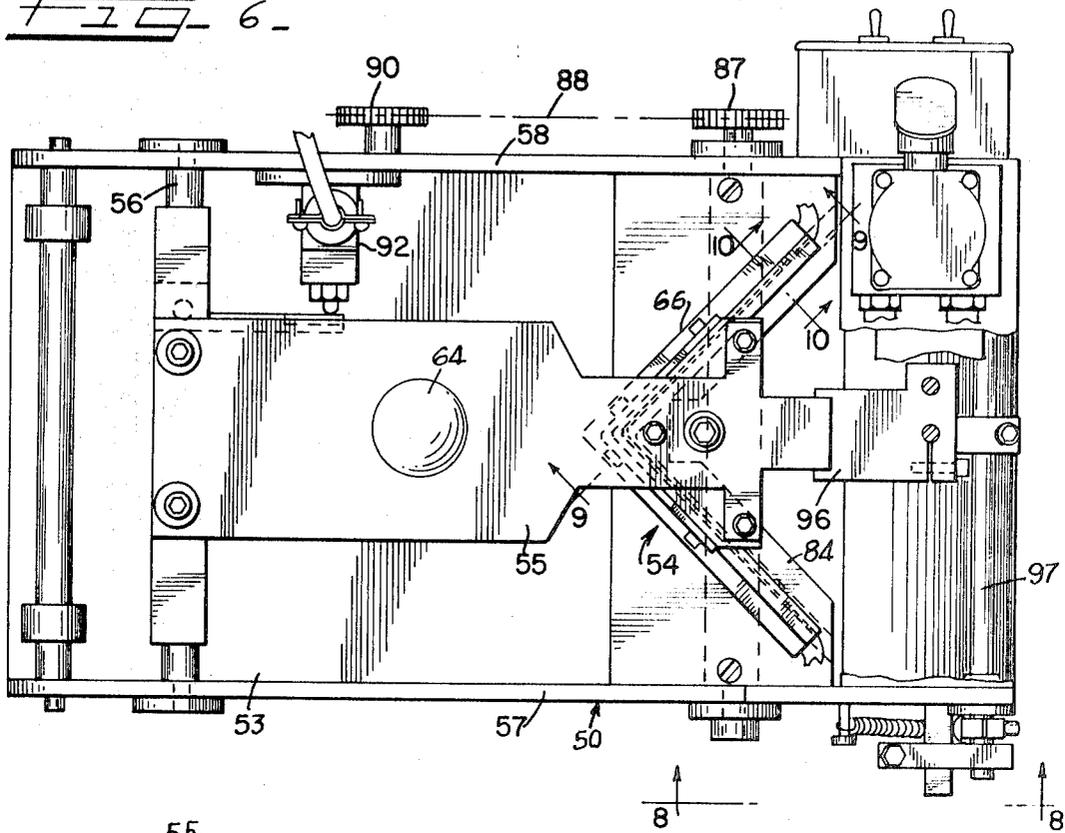
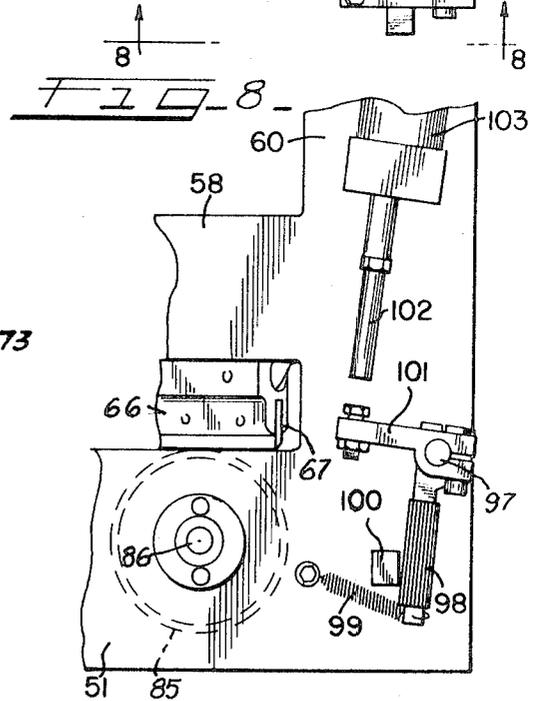


FIG. 9.



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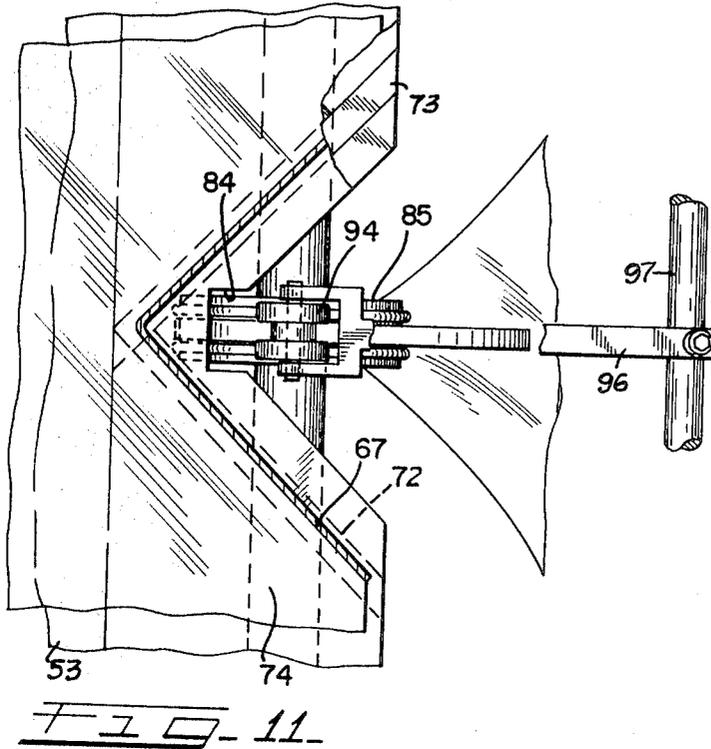


FIG. 11

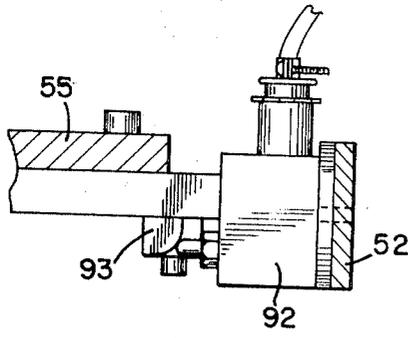


FIG. 12

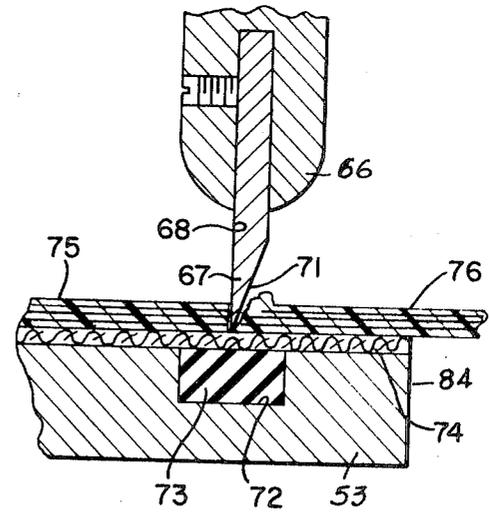


FIG. 10

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THREE DIMENSIONAL BAG FORMING METHOD AND APPARATUS

This invention relates to receptacle manufacturing and is more particularly concerned with improvements in a method and apparatus for fabricating flexible bags from plastic sheet materials.

Three dimension square bottom bags formed of heat sealable flexible plastic film materials have become popular for packaging various products, such as bread, buns and similar bulky products, and methods and apparatus have been developed for fabricating bags of this type from polyethylene and other plastic film materials. In one type of operation which has been employed a continuous tube is formed, by either folding and longitudinally sealing a web or by extrusion, the tube is divided into bag forming lengths and one end of each length is folded and sealed so that when opened up a rectangular or square bottom formation results. Another method and apparatus which may be employed in fabricating a bag of this type is disclosed in my U.S. Pat. No. 3,023,679 in which a continuous tube of plastic film material, derived by extrusion or by folding a web, is flattened with a gusset or bellows fold formation provided along an edge in which V-shaped cuts are made at intervals by a hot seal knife which also cuts the folded material on a transverse line and simultaneously forms the side and bottom seals on the trailing edge of one bag section and the leading edge of the next succeeding bag section, with each operation of the knife completing the fabrication of one bag and beginning the fabrication of the next succeeding bag. Experience with this type of bag fabrication operation, when employed with conventional bagging machines which are in general use, has indicated the desirability of improving this method of fabrication and developing improved apparatus for carrying out the same. It is a general object thereof, of this invention to provide an improved method and apparatus for fabricating three dimensional side sealed square bottom bags which will operate with a higher degree of efficiency in producing a large volume of bags at no more than a very small increase over the cost of the bags produced by the methods and apparatus heretofore employed.

A more particular object of the invention is to provide a method and apparatus for fabricating three dimension side sealed square bottom bags from heat sealable plastic film materials wherein it is possible to obtain sufficiently high-volume production to satisfy the requirements of conventional bag machines while operating with maximum efficiency so that there is a minimum discard loss due to defective seals and wherein maintenance requirements are minimal and the cost of producing the bags can be held within the range achieved in the production of conventional bottom-gusset bags with which this type bag must compete commercially.

It is a further object of the invention to provide a method and apparatus for forming plastic bags from heat sealable web or tubular stock by infolding a portion in which the bag bottoms are to be formed, flattening the material and employing a hot knife to notch out, at spaced intervals along the infolded edge, triangular portions, so as to form bottom seals on adjoining bag sections which are subsequently separated by a transverse hot knife, with the latter forming edge seals on the trailing edge of the leading bag section and on the leading edge of the next succeeding bag section, so as to divide the material upon successive sealing and severing operations into a series of flattened bags having the bottom forming portion infolded and adapted to be readily opened to form a square bottom.

Another object of the invention is to provide a method and apparatus for fabricating three-dimensional square bottom bags having side and bottom seals which are produced by hot knife sealing and severing devices operating on heat sealable plastic film material wherein a flattened longitudinally extending bellows fold is provided in stock material with the outside surfaces of the fold, where the bottom seal is to be formed, having a nonheat sealing material thereon, and the folded

material is advanced to a bottom seal forming station where a hot knife device is operated to notch out a V-shaped section at the bellows folded edge of the material and thereby form a pair of bottom end seals which converge inwardly from spaced points along the folded edge with their intersecting point in a transverse line on which the material is subsequently separated by a hot knife device which forms side seals on the trailing edge of a leading bag section and on the leading edge of the next succeeding bag section.

It is a still further object of the invention to provide a bag sealing and severing apparatus in the form of an attachment for incorporation in a bag fabricating line in which a stock material in the form of a flattened tube or folded web, having an infolded edge section, is advanced intermittently to a sealing station where the apparatus is operated to notch out a triangular portion of the infolded edge of the flattened material so as to form bottom end seals along outwardly diverging lines with their intersecting point in a transverse line on which the material is subsequently separated and sealed and with provision for grasping the triangular waste section or chip between gripping rollers which move it laterally in the plane of the material for disposal through a vacuum discharge conduit.

These and other objects and advantages of the invention will be apparent from a consideration of the method and apparatus for forming bags which is shown by way of illustration in the accompanying drawings wherein:

FIG. 1 is a schematic plan view illustrating a method and apparatus for fabricating three-dimensional square bottom side-sealed bags which embody the principal features of the invention;

FIG. 2 is a side elevation, largely schematic, showing a portion of the apparatus illustrated in FIG. 1;

FIG. 3 is a fragmentary plan view showing a portion of stock film material prepared for the fabrication of bags in accordance with the present invention;

FIG. 4 is a perspective view with portions broken away, of a three dimension side-sealed square bottom bag, in substantially collapsed condition, which is produced by the method and apparatus of the present invention;

FIG. 5 is a perspective view showing the bottom portion of the bag of FIG. 4 in opened up condition;

FIG. 6 is a plan view of an apparatus employed in carrying out the bottom seal forming operations of this invention;

FIG. 7 is a sectional view taken on the line 7-7 of FIG. 6;

FIG. 8 is a fragmentary side elevation taken on the line 8-8 of FIG. 6;

FIG. 9 is a fragmentary sectional view taken on the line 9-9 of FIG. 6, to an enlarged scale;

FIG. 10 is a fragmentary sectional view, taken on the line 10-10 of FIG. 6 to a greatly enlarged scale;

FIG. 11 is a fragmentary sectional view taken on the line 11-11 of FIG. 7, to an enlarged scale, with portions broken away or omitted; and

FIG. 12 is a fragmentary sectional view taken on the line 12-13 of FIG. 7.

The method and apparatus of the present invention will be best understood by reference first to the details of the bag structure which it is desired to fabricate. Referring then to FIGS. 4 and 5, the bag 10, which is illustrated, comprises two generally rectangular wall forming panels 11 and 12 which, in the collapsed condition of FIG. 4, are flattened upon each other and connected along the side edges by beadlike heat seals 13 and 14. Generally, the panels 11 and 12 are made different lengths so as to provide a lip 15 at the filling end of the bag. The bag bottom is formed, when the bag is fabricated, in a folded edge connecting the two wall panels 11 and 12, the fold being of a bellows type or being an infolded gusset so as to provide a bottom structure consisting of two panels 16 and 17 on opposite sides of a center fold line 18, which panels 16 and 17 are adapted, when the bag is set up, to open into coplanar, bottom forming relation with triangular sections or extensions 20 and 21 at opposite ends. The extensions 20 and 21 which unfold into the plane of the vertical end or sidewalls 22 and 23

terminate at converging heat seals 24, 24' and 25, 25', the latter extending at each end from the corners of the bottom wall formed by the panels 16 and 17 to a meeting point with the bottom ends of the side seals 13 and 14. The bag is fabricated in flattened condition and it is desirable that it be capable of being opened up readily with a minimum of cling between the outside surfaces at the seals 24, 24' and 25, 25', so that it may be used, for example, in an automatic bagging machine where opening of the bag is accomplished most often by a blast or puff of air fed into the mouth of the bag. To this end, prior to the forming of the accordion pleats, there is applied to the outside surfaces of the gusset area heat sealing preventing means, such as, the coating materials of the type described in U.S. Pat. No. 3,023,679 which results in the least amount of cling, due to natural heat block, when the heat and pressure of the knife effects the cutting and sealing of the uncoated inner surfaces of the thermoplastic material. The bag bottom formation with the converging end seals 24, 24' and 25, 25' when opened up results in a rectangular or square bottom and rectangular side or end walls, the sidewall forming panels 11 and 12 tending to shape into a tube of rectangular cross section, with the side seals 13, 14 and the gusset fold line 18 being in common central plane.

Referring to FIGS. 1-3, a method of fabricating the bag is illustrated in which a web of stock material W is fed from a supply roll 30. The stock material is preferably a low density, light gauge, polyethylene film having good heat sealing characteristics, the particular weight or gauge of the film depending upon the use to which the bag is to be put. Prior to the formation of accordion pleats in the web, a means for preventing heat sealing, as disclosed in U.S. Pat. No. 3,023,679, is applied to the pleat outer surfaces which are not to be joined by the hot knife sealer. Preferably, the web W is printed with a pattern, as illustrated in FIG. 3, of nonsealing material on the face of the gusset forming area which subsequently becomes the outside of the bag. The spot printing design, shown as longitudinally spaced X formations or crossed strips of the nonsealing material, is applied so as to register subsequently for cutting by the hot seal knife apparatus which is employed to form the seal lines connecting the bottom forming plies of the gusset fold to the end wall forming portions of the stock material which constitute parts of the panels 11 and 12 in FIG. 4. The crossed strips of seal preventing material are indicated at 31, 31' while the hot knife severing and sealing lines are indicated at 32, 32'. The pattern extends between the gusset outer fold lines which are indicated at 33, 33'. The web W is fed to a conventional folder mechanism indicated at 34 where the web sections are folded into overlapping relation with the top and bottom folds 35 and 36 being offset at the free edge to form a lip on the bag sections which are subsequently made by dividing the folded material on transverse lines spaced at intervals along the length thereof. The folded web is advanced to a gussetting station 37 where a conventional gussetting wheel 38 and associated mechanism infolds the material at the folded edge so as to form a gusset therein of a width which corresponds to twice the width of the bottom panel of the bags which are subsequently formed from the material. The folded and gusseted web advances through a pair of gusset back rollers 39 to a bottom seal forming and severing apparatus indicated at 40. This apparatus, which will be subsequently described in detail, notches out sections or portions of the gusseted edge of the folded web, indicated at 41, at spaced intervals along the length of the web, the spacing being controlled by intermittent advancement of the web and the distance between the triangular spaces 41 being the width dimension of the bags in flattened condition. The forming of the notch 41 by the hot knife device 40 results in the formation of the bottom seals 24, 24' and 25, 25' on adjoining bag forming sections of the material while the chip of waste material notched out is discarded. From the hot knife sealing device 40, the folded web advances through a pair of draw rollers 42 to a transverse hot knife 43 which has a cooperating anvil roller 44 and which simultaneously severs and seals the material on a

transverse line in which the apex of the triangular space 41 lies, suitable controls (not shown) for advancing the web being provided to insure proper registration of the severing and sealing knife 43 and the notches 41. The leading end portion of the web which, on operation of the severing and sealing knife 43, becomes a completed bag is advanced between a pair of discharge conveyor belts 45 which feed the completed bags 10 into a stack indicated at 46.

The method is designed for continuous operation and high-volume production. The speed with which the bags can be produced depends to a large extent upon the speed and efficiency of the bottom seal forming unit 40. Therefore, this unit is especially designed to achieve a satisfactory seal with a minimum of cling between the outside faces of the gusseted material at the seal lines and with the sealing and severing operation being performed rapidly so that the material can be advanced quickly.

Referring to FIGS. 6-12, the mechanism 40 is in the form of a self-contained unit comprising a frame structure 50 having upstanding sideplates 51 and 52 between the major portion of which there extends a horizontally disposed platen forming plate member 53 with the forward end constructed for cooperation with a hot knife severing and sealing assembly 54 which is mounted on the forward end of a swingable support arm 55. The arm 55 is mounted on a pivot forming cross shaft 56 extending between sideplate portions 57 and 58 which extend rearwardly from upstanding front sideplate portions 60 and 61 and which are separated from lower portions of the sideplates 51 and 52 so as to form a passageway 63 for the folded web which is supported on the platen forming plate 53. The unit 40 is positioned relative to the path of the folded web so as to bring the folded or gusseted edge at the proper position relative to the knife assembly 54 for cutting and sealing the gusseted portion of the web. The knife carrying arm 55 has a handle 64 to facilitate swinging the assembly to a nonoperative position, indicated in phantom line in FIG. 7, when the apparatus is not in operation so as to take the knife assembly 54 out of web engaging relation.

The knife assembly 54 comprises a bracket 65 bolted or otherwise secured to the forward end of the supporting arm 55 and a depending knife holder 66 in the form of two arms at right angles to each other so as to provide a V-shaped opening outwardly of the end of the platen 53. A V-shaped blade 67 is seated in a downwardly opening slot or recess 68 in the holder 66 so as to extend from the bottom edge. An electric heating cartridge 70 is incorporated in the holder 66. The blade 67 has a cutting edge formed by a beveled front face 71 on the inside of the V which terminates in the plane of the outside or back face of the knife so as to cut the material as shown in FIG. 10. The platen 53 in the cutting areas is slotted or recessed at 72 in a corresponding V-shaped pattern and strips of resilient material 73, preferably silicon rubber, are set in the recesses with the area covered by a relatively thin, heat-resistant, Teflon coated glass cloth 74. The form of the blade 67 results in a clean cut and a fusing of the cut edges to form a seal on the bag portions of the material, as indicated at 75 in FIG. 10, with a pile-up of fused material along the cut edge of the chip portion, indicated at 76, which is discarded at the sealing station.

The forward end of the carrying arm 55 rests on a cross piece 80 carried on the lower end of a piston rod 81 depending from an air cylinder 82 and extending through a suitable guide aperture in a frame crossbar 81'. The air cylinder 82 is mounted on the forward frame portion 60, 61 and controlled by an air valve 83 so as to raise and lower the arm 55 in timed relation to the movement of the web across the platen 53. The weight of the arm 55 and the assembly 54 is sufficient to effect the cutting and sealing operation.

An arrangement is provided for disposing of the waste chip 76 which is cut by the knife assembly 54 at each operation of the latter. The platen 53 is slotted at its forward end at 84 to accommodate a small roller 85, preferably rubber-covered, which is mounted on a cross shaft 86 journaled in the

sideplates 51 and 52 and having a sprocket 87 connected by a chain 88 with a drive sprocket 90 on a drive motor 91 mounted beneath the platen 53. The operation of the motor 91 is controlled by a switch 92 which is actuated by a small arm 93 carried near the pivot mounting of the knife supporting arm 55 so that when the arm 55 is swung to an inoperative, out-of-the-way position, the switch 92 is operated to stop the motor 91. A pair of small rollers 94 are mounted on a small shaft 95 at the end of a support arm 96 which is carried on a rock shaft 97 extending between the frame sideplates 51 and 52. An arm 98 mounted on the one end of the shaft 97 is urged by spring 99 toward a stop 100 to hold the rollers 94 out of engagement with the driven roller 85. The rock shaft 97 carries a horizontally disposed arm 101, the end of which extends beneath a plunger 102 depending from an air cylinder 103, which is operated to lower the rollers 94 into engagement with the driven roller 85 so as to engage a chip which has been cut by the knife assembly 54 and kick the chip into a discharge chute 105 to which a vacuum is connected. The plunger rod 102 is controlled through an air valve (not shown) which is operated in timed relation to the operation of the air cylinder 82 so as to lower the roller 94 onto a waste chip as it is cut loose by the knife assembly 54.

In using the apparatus 40 it will be positioned along the gusset folded edge of the web path as indicated in FIGS. 1 and 2 so that the apex of the V-shaped hot knife 67 will register as nearly as possible with the gusset inner fold line. The knife assembly will then be raised and lowered by operation of the air cylinder 82 in timed relation to the advancing movement of the gusseted web material. The spacing of the V-shaped cutouts or notches 41 will be determined by the width of the collapsed bag which is to be made. The operation of the waste disposal rollers 94 will be synchronized by operation of the control valve, with the operation of the knife 67 so as to grip the waste chip or piece promptly upon its release, and kick the same into the discharge chute 105.

While use of a spot printed pattern employing a nonseal forming material on the web is shown and described, an alternative arrangement as disclosed in U.S. Pat. No. 3,023,679 may be employed or the invention may be practiced by the use of a printing ink of a type having seal resisting characteristics, which may be used to decorate the bag and the printing areas extended to the areas in which the seals are to be formed. A coating may be applied having high-heat resistance characteristics such as standard polyethylene inks, cellulose acetate lacquers or any other suitable material so that when the seals are made by the hot knife the inner surfaces will fuse together at the edges while the outer surfaces of the material which are in contact will resist sealing so that there is at most very little clinging between these surfaces when the bottom of the bag is opened up. As an additional precaution against any clinging which may occur between the outside surfaces adjacent the sealed edges, the apparatus may include a fold opening device for insuring that the outside surfaces of the gusset will separate readily for opening up the bag.

I claim:

1. Apparatus for fabricating side sealed square bottom bags from a longitudinally folded sheet of heat sealable plastic film material which material had infolded edge portions with predetermined areas of the outside surfaces treated to prevent sealing to each other, said bag being characterized by side seals and a bottom which is collapsed on an inward fold when initially fabricated and which is adapted to be opened up into a single plane with oppositely disposed side edges having triangular extensions which open into the plane of the adjacent sidewalls and which are connected thereto along seal lines extending upwardly in converging relation from the bottom corners to the bottom end of a side seal line, said apparatus comprising a supporting platen across one face of which a folded sheet is advanced in the direction longitudinally of the fold, a hot knife severing and sealing device mounted for reciprocal movement and in closely spaced opposed relation to said platen face which device includes a V-shaped cutting and seal-

ing blade formation disposed in outwardly opening relation to the folded edge and positioned to be engaged in simultaneous severing and sealing relation with the inwardly folded portion of the sheet in the areas which have the confronting outside surfaces treated to prevent sealing, means for reciprocating said blade into engagement with said platen face so as to form in the folded edge portions of the sheet bottom end seals on adjoining bag sections and to notch out simultaneously triangular-shaped waste portions in the margin at the folded edge of the sheet, means comprising a pair of gripping rollers, one of which is driven, said rollers being disposed adjacent said platen on opposite sides of the path of said infolded edge portions of said folded sheet, and being movable relative to each other in timed relation to the movement of said cutting and sealing blade so as to close on a waste portion as it is notched out by operation of said cutting and sealing blade, gripping the resulting triangular waste portions and rapidly moving said waste portions laterally of the path of the folded sheet and out of the plane thereof when said waste portions are cut through by said blade, and means for severing and simultaneously sealing the sheet on successive transverse lines each extending from the apex of a notched out triangular area which results from the removal of said waste portions, so as to separate successive bag sections and form the side seals thereon.

2. Apparatus as set forth in claim 1 and said hot knife severing and sealing device comprising a support bracket mounted on a swingable support arm, a V-shaped knife holder and a V-shaped blade in said holder having a beveled surface on the inside of the V which terminates at a cutting line in a planar outside face of the blade so as to sever the bag forming material on a plane normal to the surface of the material.

3. Apparatus for fabricating side sealed square bottom bags from a longitudinally folded sheet of heat sealable plastic film material which material has infolded edge portions with predetermined areas of the outside surfaces treated to prevent sealing to each other, said bag being characterized by side seals and a bottom which is collapsed on an inward fold when initially fabricated and which is adapted to be opened up into a single plane with oppositely disposed side edges having triangular extensions which open into the plane of the adjacent sidewalls and which are connected thereto along seal lines extending upwardly in converging relation from the bottom corners to the bottom end of a side seal line, said apparatus comprising a supporting platen across which a folded sheet is advanced in the direction longitudinally of the fold, a hot knife severing and sealing device mounted for reciprocal movement toward and from the platen which device includes a V-shaped cutting and sealing blade formation disposed in outwardly opening relation to the folded edge and positioned to be engaged in severing and sealing relation with the folded portion of the sheet, said blade being operative to form a bottom end seal on adjoining bag sections and to notch out simultaneously a triangular-shaped waste portion at the folded edge of the sheet, means for moving the resulting triangular waste portion laterally of the path of the folded sheet as said waste portion is cut through by said blade which comprises a driven roller disposed at the side edge of said platen and a cooperating, reciprocally mounted gripping roller mounted for movement toward and from said driven roller and means to reciprocate said gripping roller in timed relation to the movement of said cutting and sealing blade so as to close on a waste portion as it is notched out by operation of said cutting and sealing blade and move the same out of the path of advance of said folded sheet, and means for severing and sealing the sheet on successive transverse lines each extending from the apex of the triangular area which results from the removal of a waste portion, so as to separate successive bag sections and form the side seals thereon.

4. Apparatus as set forth in claim 3 and a vacuum chute associated with said severing and sealing device and having an entrance end disposed for receiving successive waste portions from said gripping rollers.

5. Apparatus for fabricating side-sealed square bottom bags from a longitudinally folded sheet of heat sealable plastic film material which material has infolded edge portions with predetermined areas of the outside surfaces treated to prevent sealing each other, said bag being characterized by side seals and a bottom which is collapsed on an inward fold when initially fabricated and which is adapted to be opened up into a single plane with oppositely disposed side edges having triangular extensions which open into the plane of the adjacent sidewalls and which are connected thereto along seal lines extending upwardly in converging relation from the bottom corners to the bottom end of a side seal line, said apparatus comprising a supporting platen across which a folded sheet is advanced in the direction longitudinally of the fold, a hot knife severing and sealing device mounted for reciprocal movement toward and from the platen which device includes a V-shaped cutting and sealing blade formation disposed in outwardly opening relation to the folded edge and positioned to be engaged in severing and sealing relation with the folded portion of the sheet, said blade being operative to form a bottom end seal on adjoining bag sections and to notch out simultaneously a triangular-shaped waste portion at the folded edge of the sheet, means for moving the resulting triangular waste portion laterally of the path of the folded sheet as said waste portion is cut through by said blade which comprises a driven roller mounted beneath said platen, said platen having a slot within the V-shaped area defined by said cutting and sealing blade, said driven roller being positioned in said slot, a rock shaft mounted parallel with the axis of rotation of said driven roller, an arm extending radially of the axis of said rock shaft and having a roller journaled on its free end for cooperation with said driven roller, means to oscillate said rock shaft to grip successive waste portions between said rollers as they are notched out by said cutting and sealing blade and to discharge the same into a waste chute, and means for severing and sealing the sheet on successive transverse lines each extending from the apex of the triangular area which results from the removal of a waste portion, so as to separate successive bag sections and form the side seals thereon.

6. Apparatus for fabricating side-sealed square bottom bags from a longitudinally folded sheet of heat sealable plastic film material which material has infolded edge portions with predetermined areas of the outside surfaces treated to prevent sealing to each other, said bag being characterized by side seals and a bottom which is collapsed on an inward fold when initially fabricated and which is adapted to be opened up into a single plane with oppositely disposed side edges having triangular extensions which open into the plane of the adjacent sidewalls and which are connected thereto along seal lines extending upwardly in converging relation from the bottom corners to the bottom end of a side seal line, said apparatus comprising a supporting platen across which a folded sheet is advanced in the direction longitudinally of the fold, a hot knife severing and sealing device, a pivotally mounted support for said hot knife severing and sealing device which is swingable toward and from said platen so as to reciprocate between an operative and an inoperative position, said device including a V-shaped cutting and sealing blade formation disposed in outwardly opening relation to the folded edge of the sheet and positioned to be engaged in severing and sealing relation with the folded portion of the sheet, said blade being operative to form a bottom end seal on adjoining bag sections and to notch out simultaneously a triangular-shaped waste portion at the folded edge of the sheet, means for moving the resulting triangular waste portion laterally of the path of the folded sheet as said waste portion is cut through by said blade, comprising a pair of relatively movable rollers positioned relative to the severing and sealing device so as to close upon a waste portion when it is notched out, means for moving one of said rollers toward and from the other roller in timed relation to the operation of said severing and sealing device so as to grip successive waste portions between said rollers, means to drive one of said rollers so as to project successive waste portions

laterally of the path of advance of the folded sheet, and control means for said roller drive means which is responsive to the movement of said support for said hot knife severing and sealing device, and means for severing and sealing the sheet on successive transverse lines each extending from the apex of the triangular area which results from the removal of a waste portion, so as to separate successive bag sections and form the side seals thereon.

7. Apparatus for fabricating side sealed square bottom bags from a web of heat sealable plastic film material which web has bag wall forming plies connected by a gusset fold forming an edge thereof with predetermined areas of contiguous surfaces of the gusset plies treated to prevent sealing to each other, said bag being characterized, when initially fabricated, by collapsed sidewalls connected by side seals and a gusseted bottom which is adapted to be opened up into a single plane with oppositely disposed side edges having triangular extensions which open into the plane of the adjacent sidewalls and which are connected thereto along seal lines extending upwardly in converging relation from the bottom corners to the bottom end of a side seal line, said apparatus comprising a supporting platen across which the folded edge is advanced in the direction longitudinally of the web, a hot knife sealing and severing device mounted for movement toward and from the platen which device includes a V-shaped blade disposed in outwardly opening relation and having a cutting and seal forming edge for engaging the marginal portion of the folded edge of the web, said blade being operative to cut through the gusseted material and simultaneously seal the gusset folds to the contiguous plies of the web material so as to form bottom end seals on adjoining bag sections and to cut out a triangular-shaped waste portion, which comprises a pair of cooperating gripping rollers positioned to grip the waste portion as it is cut out and means for driving one of the rollers in a direction to withdraw the waste portion laterally of the path of advance of the web, and means for cutting and simultaneously sealing the wall forming web plies on successive transverse lines extending across the web folds from the intersection of the bottom end seals for separating successive bags and forming the side seals thereon.

8. Apparatus as set forth in claim 7 and said platen having an inwardly extending slot at the edge thereof over which the folded edge of the web travels and disposed between the legs of said V-shaped blade, and said gripping rollers disposed in said slot.

9. A method of fabricating side sealed, square bottom bags from heat sealable plastic film material, comprising advancing a flattened web of the material to a bottom seal forming station, said web having bag wall forming portions folded on each other and infolded portions forming a gusset connecting said wall forming portions with contiguous faces of the infolded portions subsequently forming the bag bottoms, severing the gusseted portion of the web and simultaneously sealing the severed edges of the gusseted portion of the web at intervals spaced along said edge on lines which converge inwardly and extend to the center fold line of the gusseted portion while preventing sealing between the contiguous faces of the infolded gusset portions and removing the triangular waste chips resulting therefrom out of the plane of said gusseted portion and in a path normal to the path of advance of the web, severing the bag wall forming portions of the web on lines extending transversely from the intersection of said inwardly converging seal forming lines while simultaneously sealing the severed edges of said wall forming portions on the leading and trailing side of each said transverse severing line so as to form side seals on successive bags, and prior to the infolding of said gusset portions, printing a pattern on said web with a nonheat sealing ink which extends over the areas of the contiguous outside faces of said gusset folds where the severing and sealing thereof occurs so as to prevent sealing of said faces while the material is severed and the inside faces of the gusset folds are sealed to the contiguous wall forming portions of the flattened and folded web.