# United States Patent

[11] 3,595,139


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[54] **APPARATUS FOR NESTING BAGS**
**14 Claims, 15 Drawing Figs.**


[52] **U.S. Cl.** ..... **93/33,** 53/384, 93/8, 93/36.01, 93/93
[51] **Int. Cl.** ..... **B31b 29/14,** B31b 45/00, B65b 43/26
[50] **Field of Search** ..... 93/8 WA, 33, 35 DS, 35 PC, 36.01, 58 P, 84 TW, 93 HT; 53/384



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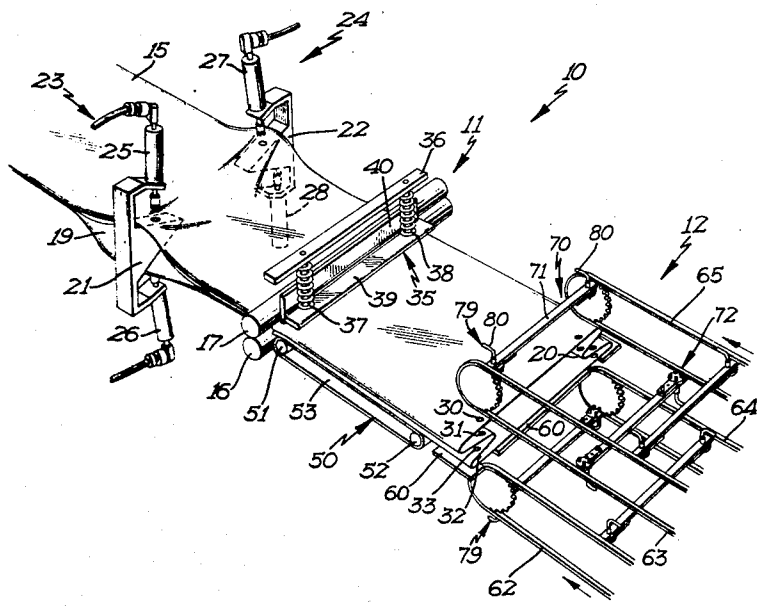
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**ABSTRACT:** Apparatus for loading a series of bags onto a mandrel in nested relationship with each bag in the series being disposed inside of its next succeeding neighbor in the series, the apparatus handling the bags accomplishing the operation with both positive loading and positive release, with the release being accomplished at substantially the same point in each cycle. The apparatus includes a delivery means such as a first conveyor which delivers the individual bags to be loaded in series relationship onto a second conveyor. The second conveyor has a plurality of pickup means for releasably engaging the surface of each bag, and thereafter transporting these engaged bags in stable disposition to a predetermined discharge point. The second conveyor means is provided with means to open the bag relatively widely so as to permit the bottom of the next preceding bag to be received within the walls of the widely opened top.

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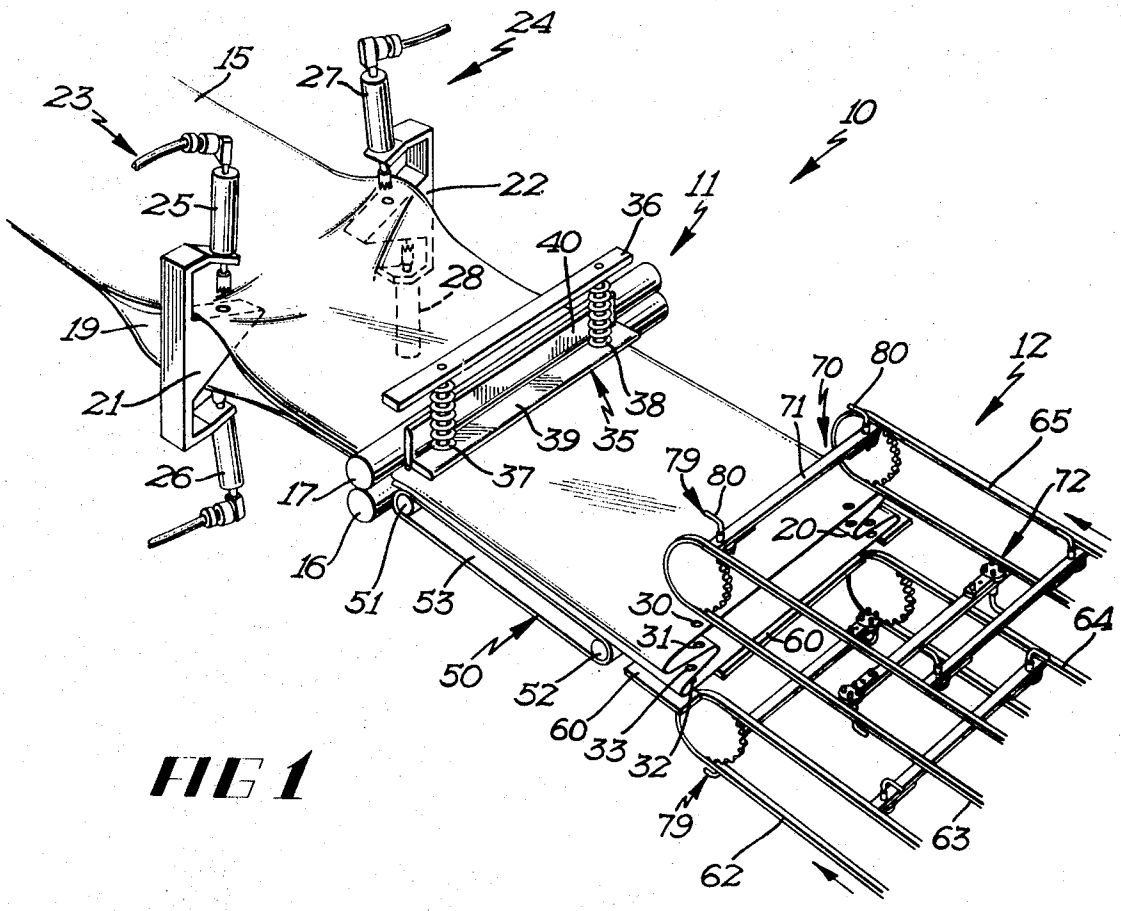



FIG 1

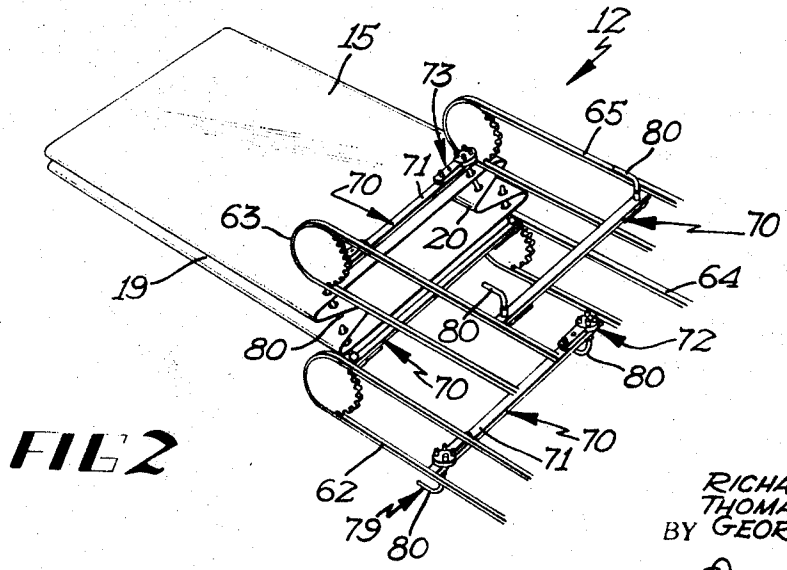



FIG 2

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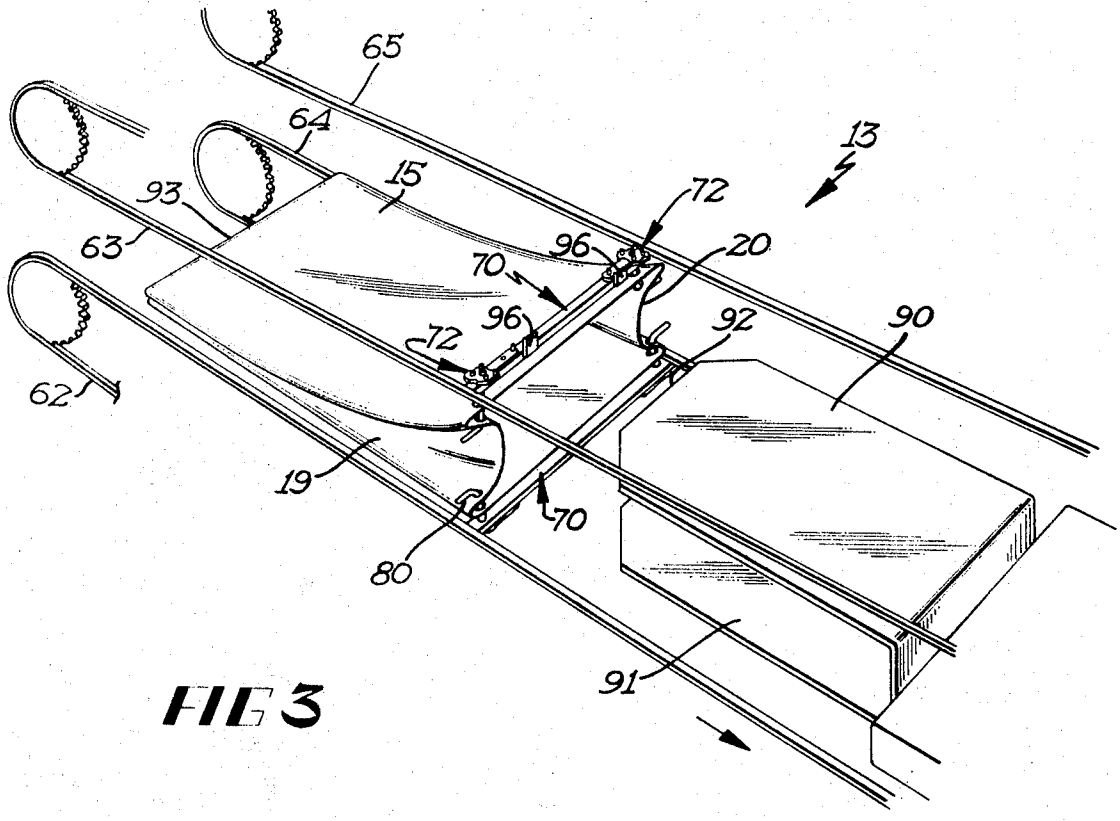



FIG 3

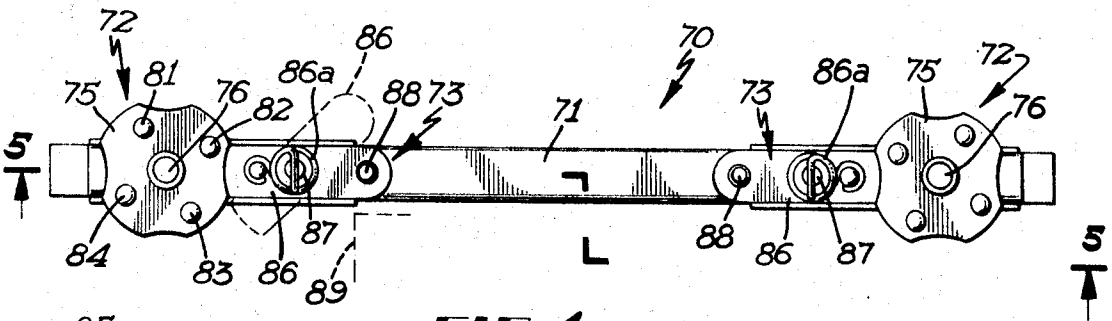



FIG 4

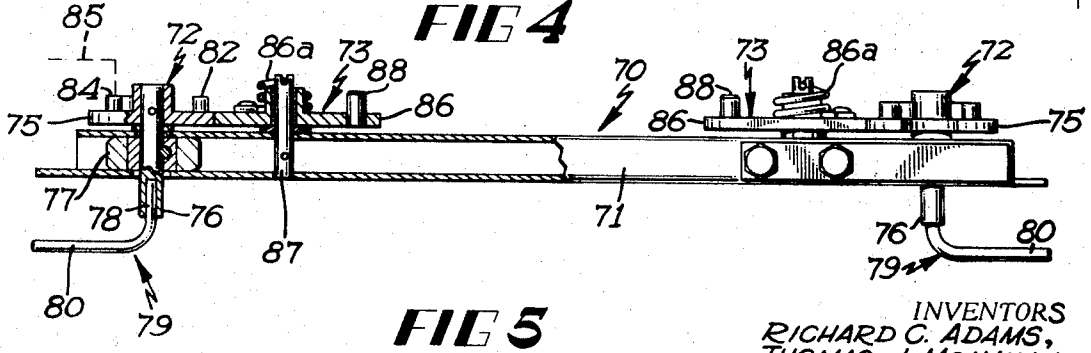



FIG 5

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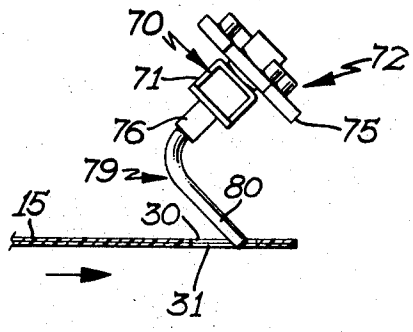



FIG 6

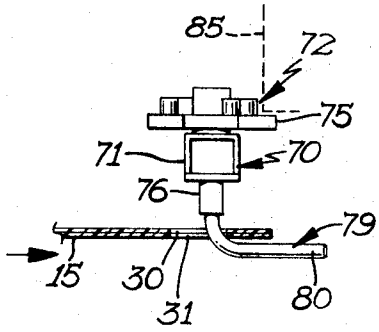



FIG 7

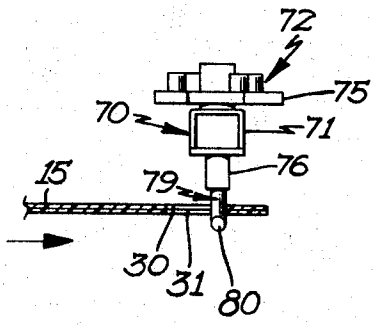



FIG 8

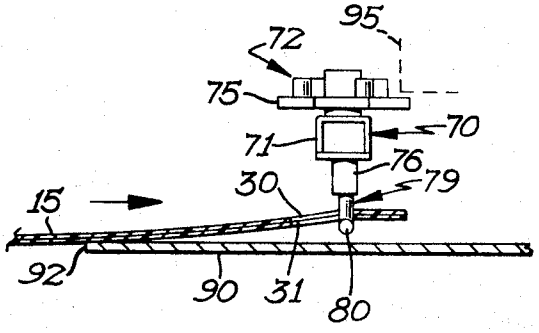



FIG 9

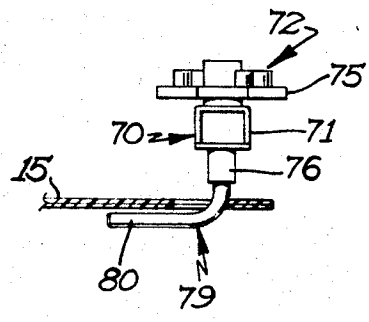



FIG 10

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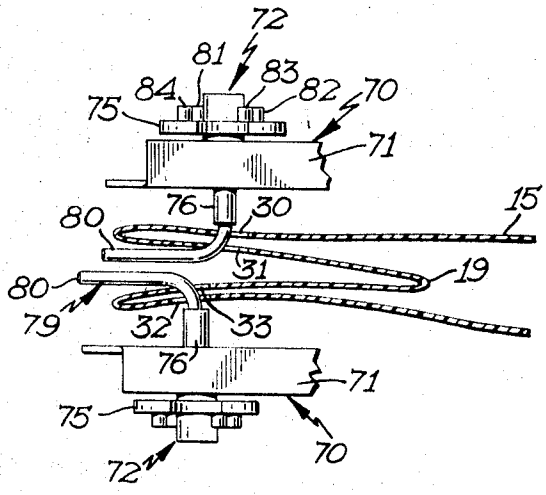



FIG 11

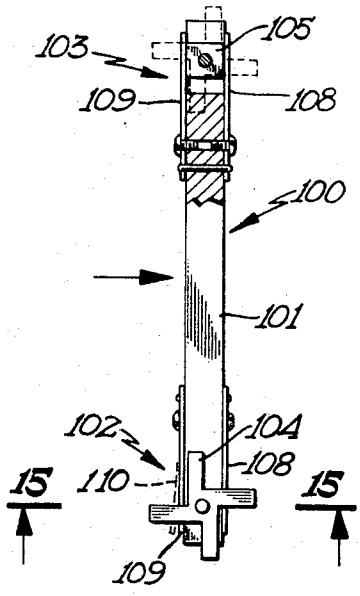



FIG 14

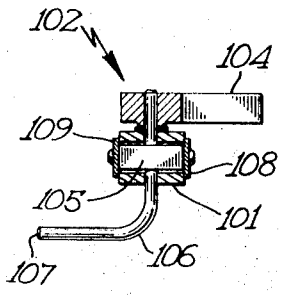



FIG 15

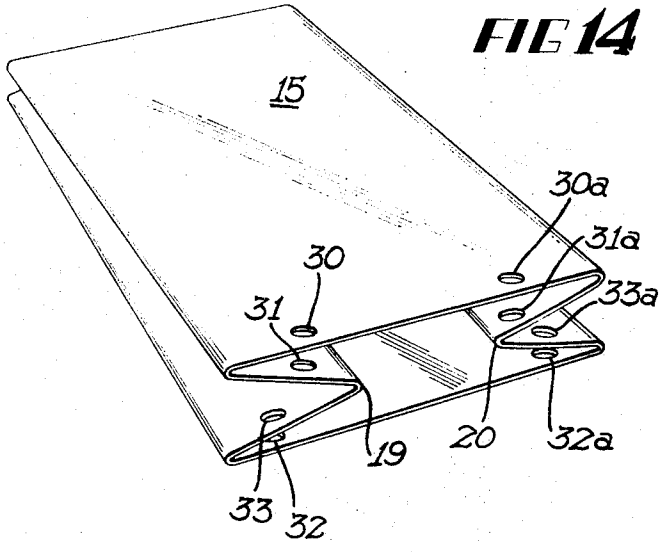



FIG 12

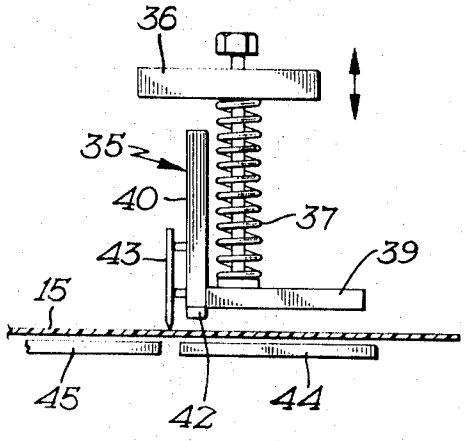



FIG 13

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# APPARATUS FOR NESTING BAGS

The present invention relates generally to an apparatus for loading a series of individual bags onto a mandrel with the bags being loaded thereon in nested relationship. In the application of bags or groups of bags to a specific end use, it is frequently desirable to provide these bags to the customer in prenested relationship. Nested bags or groups of nested bags are particularly desirable for use in retail supermarkets and the like wherein space requirements are limited, and wherein convenient access to bags during a sequence of transactions is required.

In the past, various means and techniques have been provided for loading bags onto a mandrel in nested relationship. These techniques have frequently been cumbersome and time-consuming, and may also require, in many instances, separate and distinct operations for the formation of the bags, per se, and for the loading of the bags onto a mandrel the bags being arranged in series nested relationship. In the present invention, means are provided for a continuous operation of bag formation, and loading of the bags as formed onto a mandrel in nested relationship.

The apparatus of the present invention is particularly adapted for use in the treatment of film materials, particularly heat weldable film materials such as polyethylene, polypropylene and the like. The nesting of bags formed from thin flexible films in difficult due to the extreme flexibility of these products. In other words, the individual bags, being thin, flimsy, and flexible, are difficult to handle, manipulate, and otherwise transfer into any sort of ordered relationship. This problem is compounded when it is proposed to load a series of individual film bags onto a mandrel in nested relationship, particularly because of the inability of these flexible films to follow a distinct predictable and reproducible pattern of motion.

In accordance with the present invention, means are provided for rigidly securing, handling, and retaining the individual bags as they are moved from a delivery point at the terminal end of a first conveyor, the first conveyor preferably including means for forming the bag, and from this delivery point, the bags are carried onto a mandrel and arranged thereon in nested relationship. The apparatus of the present invention is particularly useful in connection with bags formed with the bottom seals thereof forming or comprising folded gussets. The folded gusset permits expansion of the opening existing between the opposed front and rear sidewalls so as to provide a widely opened top for nesting loading. If desired, means may be provided to cuff the individual bags, or individual groups of bags.

Therefore, it is a principal object of the present invention to provide an improved means for the handling of film bags and for the loading of these bags serially onto a mandrel in nested relationship.

It is a further object of the present invention to provide an improved technique for the handling of a series of individual film bags in an in-line process wherein the bags are formed serially in one station, and thereafter serially transferred to a loading station wherein they are loaded onto a mandrel in series nested relationship, one to another.

It is still a further object of the present invention to provide an improved apparatus for the loading of a plurality of bags serially onto a mandrel in nested relationship, one to another, particularly wherein the bags are initially grasped or gripped, and while moving, the open top of the bag is expanded or extended so as to provide a wide opening between the opposed front and near sidewalls of the bag, thus permitting the nesting of a substantial number of bags serially on a single mandrel.

It is yet a further object of the present invention to provide an improved technique for the continuous pickup, transporting, and ultimate loading of a film bag onto a loading mandrel, the bag being picked up at the discharge end of a separate conveyor, and transferred without risk of ripping or tearing of the bag surface as it is finally loaded on the loading mandrel.



Other and further objects of the present invention will become apparent to those skilled in the art of bag making and handling upon a study of the following specification, appended claims, and accompanying drawing wherein:

FIG. 1 is a perspective view of the loading apparatus of the present invention, and illustrating, in particular, the disposition of the bags as they are being picked up by the loading apparatus;

FIG. 2 is a view similar to FIG. 1, and showing the disposition of the bag immediately upon being picked up by the loading apparatus of the present invention;

FIG. 3 is a view, also similar to FIG. 1, and showing the disposition of the bag as it appears upon being loaded onto the loading mandrel;

FIG. 4 is a top plan view of a component utilized in the loading conveyor, this being a rack means which is supported by a pair of endless belts, and which retains the pickup pin members which releasably engage the film bag from an initial pickup disposition to a bag supporting disposition, and finally to a release disposition;

FIG. 5 is a vertical sectional view taken along the line and in the direction of the arrows 5 5–5 of FIG. 4;

FIG. 6 is a detail view of the individual pickup pins as they appear during the engaging of a film bag;

FIG. 7 is a view similar to FIG. 6, and showing the pickup pins during the sequence of operation, immediately after the pickup pin has entered the hole formed in the bag;

FIG. 8 is a view similar to FIGS. 6 and 7, and showing the disposition of the pickup pins as the bag is being held in a bag supporting disposition;

FIG. 9 is a view similar to FIGS. 6 and 7, and illustrating the disposition of the upper portion of the bag as they bag structure is being received on the loading mandrel;

FIG. 10 is a view similar to FIGS. 6 and 7, and illustrating the disposition of the bag as it is being released from the pickup pins, FIG. 10 showing the disposition of the bag immediately subsequent in time to the disposition shown in FIG. 9;

FIG. 11 is a detail elevational view showing the disposition of the individual pickup pins relative to one another, and illustrating the staggered axes;

FIG. 12 is a perspective view of a bag formed in a style particularly adaptable for use in the apparatus of the present invention;

FIG. 13 is a detail view of a cutting bar and welding bar utilized in the bag forming portion of that apparatus shown in FIG. 1;

FIG. 14 is a top plan view of a rack means similar to the rack means illustrated in FIG. 4, and illustrating a modified form of cam follower means; and

FIG. 15 is a vertical sectional view taken along the line and in the direction of the arrows 15–15 of FIG. 14. In accordance with the preferred modification of the present invention, and with particular reference being made to Figures 1, 2 and 3, it will be seen that the apparatus generally designated 10 includes a first conveyor means 11, a second conveyor means 12 arranged in continuation with the first conveyor means 11, along with n a nesting or loading station generally designated 13. As has been previously indicated, the individual bags to be stacked or nested are formed in the first conveyor means 11, and discharged therefrom into the second conveyor means 12, and ultimately loaded in nested relationship in the nesting station 13.

Referring now to the details of the first conveyor means, it will be seen that this first conveyor means has a bed or other defined axis of travel for the film 15 which is moved therethrough. As will be seen from the drawings, film 15 is heat-weldable film in tubular form or configuration. In moving the film 15 through the apparatus, a pair of draw rolls 16 and 17 are positioned to form a nip zone for delivering drive energy for intermittent motion of the film web 15. Power is provided for the draw rolls from a suitable power source, not shown, it being understood that the draw rolls are conven-

tional in the art and as such are well known and commercially available.

As the film web **15** moves through the first conveyor means, an inwardly folded gusset is formed as at **19** and **20**, this gusset being formed by conventional plows of the type used in the film handling art, and may be, for example, of the style shown at **21** and **22** in FIG. **1**. Preformed gussetted tubing, which is available commercially may be used if desired. At this station, a pair of punch assemblies generally designated **23** and **24** are provided for forming holes in the walls of the bag. Specifically, the assemblies contain four punches, designated **25**, **26**, **27** and **28**. These punches are also conventional in the art, and may be, for example, of the type disclosed and claimed in the copending application of Maurice E. Blais, Ser. No. 617,377, filed Feb. 20, 1967, now U.S. Pat. No. 3,465,634. As can be seen from a study of the punches **23** and **24**, the punching axis of the punching heads is disposed orthogonally to the machine direction of the film web, and this permits a greater ease of handling of the film during the punching operation. The holes formed in the bag at this station are shown in some detail in FIG. **12**, a first pair of holes formed by the punch **25** being shown at **30—31**, and a second pair of holes formed by the punch **26** is shown at **32—33**.

With attention continuing to be directed to FIG. **1**, and with attention also being directed to FIG. **13**, it will be seen that the welding and cutter bar assembly generally designated **35** comprises a reciprocable moving arm or bracket **36** which is resiliently coupled by means of springs **37** and **38** to a bar plate assembly including a shoe member **39** and a welding bar member **40**. The welding bar member **40** carries a heated tip **42**, and also carries, in spaced relationship thereto, a blade or shear member **43** which is adapted to cut the film at a point adjacent the weld. Suitable pads are provided for the heated tip **42** and the shear **43**, as shown at **44** and **45** respectively. As an alternative, a transversely moving flying knife may be employed to perform the cutting operation.

As indicated in FIG. **1**, as the film moves through the conveyor means **11**, and while at dwell, it is punched at the punching stations **23** and **24**, and is welded to form a sealed bottom wall, and is also severed adjacent the bottom wall by means of the welding and cutter bar assembly **35**. Upon being severed, so as to form the bag structure shown in FIG. **12**, the bat is supported by the short conveyor assembly generally designated **50**, which has an idler roll as at **51**, and a drive roll as at **52**, these rolls being spanned by one or more endless belts or webs **53**. Preferably, and as is conventional in the art, a plurality of spaced belts are utilized to form the web **53**. It will be appreciated, for purposes of operation, that the speed of the conveyor **50** is adjusted so as to match the speed provided by the draw rolls **16** and **17**, the drive of conveyor **50** preferably being intermittent so as to carry the individual bags, as formed, to a predetermined axial or machine direction disposition.

Upon discharge from the first conveyor means **11**, the individual bags are picked up and moved along the second conveyor means **12**. As will be shown herein, the second conveyor means has a pickup means for releasably engaging and spreading the gripping surfaces of the bag, and when transported a suitable distance, the individual bags are released and deposited at the nesting station **13**.

With particular attention being directed to FIGS. **1** and **2** of the drawings, it will be seen that the leading edge of the individual bags, as they leave the first conveyor means, are supported, if required, by a suitable resting table or surface **60–60**. The leading edges of the bags are engaged by the individual pickup pins while the bags are in substantially the disposition shown in FIG. **1**.

Turning now to the details of the second conveyor means, this portion of the apparatus includes two superimposed pairs of endless belts or chains, the first pair including endless belts **62** and **63**, the second pair including the belts **64** and **65**. As is indicated, each of the endless belts has an inner span which lies adjacent the axis of the conveyor system, and an outer span which is removed from that axis. The individual endless belts are capable of supporting racks of the type shown in FIGS. **4** and **5**, these racks, in turn, being provided with axially rotatable pickup pins which are adapted to engage the appropriate surfaces of the individual bag members, the engaging surfaces being, for purposes of this application, referred to as "gripping surfaces." If desired, guide supports may be utilized to control the disposition of the individual endless belts or chains as they move along their individual spans. Also, if desired, a center support rod or the like may be employed for assisting the support of the center portion of the individual bags, thus preventing or eliminating a droop situation from occurring and the possible interference with the returning racks on the lower span.

If desired, for purposes of uniformity, a pressure member, such as a cantilevered or hanging sheet may be employed to compress the leading edge of the individual bags as they approach the pickup area, thus presenting a more uniform surface for ultimate pickup by the individual pins.

For a better understanding of the structure of the racks and pickup pins, particular attention is directed to FIGS. **4** and **5** of the drawings, wherein this structure is shown in detail. The individual racks are shown generally at **70**, each rack including a lateral support bar or channel **71**, along with a pickup pin assembly generally designated **72** at each end thereof. The system further includes a locking bar assembly shown generally at **73**, the combination of the pickup pin assembly and locking bar being designed for Geneva drive rotational motion.

Referring now to the pickup pin assembly **72**, this assembly includes an upper flanged drive plate **75** which has a bore formed centrally therein, for accommodating the pickup pin retaining shaft **76**. Shaft **76** is suitably journaled in bearing **77** in order to accommodate free motion thereof. At the base of rod **76**, a bore is formed which accommodates the shank portion **78** of the pickup pin generally designated **79**, the pickup pin **79** being further provided with a bag supporting portion **80**. It will be appreciated that the angular disposition of the bag supporting portion of the pin **79** assists in holding the upper edge of the bag taut, particularly as is shown in FIG. **3**. Any suitable means may be employed to couple the pin **79** to the shaft **76**. The upper surface of the flanged drive plate **75** is provided with four individual studs or pins designated **81**, **82**, **83**, and **84**, each of these pins being disposed so as to make contact with the surface of cam plate **85**, and thus provide 90° of arcuate motion for the shaft **76** upon each cam-striking event. It is this arrangement which provides for the intermittent Geneva drive.

Referring now to the locking bar assembly **73**, this assembly includes an upper resiliently biased locking lug or plate **86**, biased plate **86** being carried and journaled for rotation with supporting shaft **87**. Plate **86** is further **15** provided with a stud **88** which is effectively cammed into the disposition shown in phantom is FIG. **4** by cam **89**, thus permitting intermittent arcuate rotation of the drive plate **75**, the rotation being followed in time by an intermittent locking of the drive plate **75**, the return rotation being accomplished by spring member **86***a*. It is this intermittent rotation and locking which permits the bag supporting portion **80** of the pickup pin **79** to perform its function in the entire operation.

Attention is now directed to FIG. **6** of the drawings, with continued attention being directed to FIGS. **2**, **4** and **5**. Thus, as the individual bag unit is being discharged from conveyor means **11**, and being held in approximately the disposition shown in FIG. **2**, the racks **70** are approaching the surface of the individual bags, both from the upper surface and the lower surface, so as to effectively engage both the opposed front and rear sidewalls of the bag. As is indicated in FIG. **6**, the pickup pin is arranged in the "pickup" disposition with the bag supporting axis being disposed generally parallel to the axis of the second conveyor means, and with the tip portion thereof extending in the direction of travel of the system. It If is while it is in this position, that it effectively "rocks" into engagement

with the holes formed in the bag as shown in FIG. 12 at 30 and 31. With the pin 79 effectively engaging the bag, and with the simultaneous release of the welding and cutting bar assembly 35, the bag is permitted to advance along the extent of the second conveyor means. Immediately upon leaving the initial pickup disposition, a situation such as is illustrated in FIG. 7 occurs, with the bag supporting portion 80 of the pin 79 underlying the gusseted portion of the bag member as shown in FIG. 12, the pin extending through the holes 30 and 31. It will be apparent at this point, that similar pickup pins are provided for the mated bores 32, 33, as well as for bores 30A, 31A, 32A and 33A respectively. In other words, the bag is supported at four corners, or at four corner areas of the open top portion.

Immediately upon leaving the pickup station, and upon achieving a slight advance along the machine direction, the individual bag supporting portions 80 of pickup pin 79 are advanced, or rotated 90° from the pickup disposition, to achieve the position shown in FIG. 8. This disposition is retained until the system reaches or encounters the unloading or discharge station further downstream.

Particular attention is now directed to FIG. 9 of the drawings, again, with attention continued on FIGS. 2, 4 and 5; FIG. 9 illustrating the arrangement of the bag as it is approaching the nesting station, for ultimate unloading onto the parallelly disposed tongues 90 and 91. The base of the individual tongues 90 and 91 are each provided with an abutment surface 92.

Attention is now directed to FIG. 3 of the drawings, with continued attention being directed to FIG. 9. It will be seen that as the bottom wall 93 of the bag approaches abutment surface 92, cams 95 and 96 which are similar to cams 85 and 89 in structure, are contacted so as to open the locking bar assembly, and permit 90° of arcuate motion of the pickup pin 79, whereupon the disposition shown in FIG. 10 is achieved. The disposition shown in FIG. 10 is held by the bag, and with the pickup pins in the release disposition, the bag is readily removed from the second conveyor means and thus deposited securely onto the nesting station such as is defined by the tongues 90 and 91.

Attention is now directed to FIG. 11 of the drawings wherein the staggered axes for the individual pickup pin assemblies is illustrated. The purpose of staggering these axes is to permit the individual pins to initially "pickup" the forward or leading edge of the bags, and thereafter extend or diverge these surfaces for depositing on the nesting station. If the axes were not staggered, interference between the tips of the pins could be expected, and furthermore, interference with the holes and pins could occur, with the individual pins passing through more holes than would otherwise occur with the staggered axes.

Although the present assembly has been shown with a gripping means formed from a pair of coaxial bores, it will be appreciated that a bag could be picked up by other means, such as, for example, a bore formed through only one surface of the bag, this being, of course, necessarily the outer surface. In addition, the structure has been shown with inwardly folded gussets 19 and 20 formed in the bag structure. As will be appreciated, the bag structure may conveniently utilize outwardly folded gussets for equal purposes.

Attention is now directed to FIGS. 14 and 15 of the drawings wherein a modified form of rack means is illustrated. The rack means generally designated 100 comprises a frame member 101 which has a generally square cross section, and which is provided with suitable means for coupling to the endless belt devices. The rack 100 is provided with laterally positioned or mounted pickup pin drive means generally designated 102 and 103, these drive means including a cam member or index star 104 and a retaining or locking member 105. Member 105 is preferably square in its configuration in order to suitably hold or retain the members in predetermined stable disposition. The assemblies are further provided with pickup pins having a shank portion 106 along with a bag supporting tip portion 107. Preferably, the pins are orthogonal to the vertical axis in order to assist, aid, or otherwise retain the bag surfaces in taut form. Thus, when a bag is being held on the pin, the angular disposition appears to assist in maintaining the bag in predetermined taut form.

Arranged on opposite front and rear surfaces of the frame 101 are resilient flexible blades 108 and 109, these blades being secured at one end to the frame 101, and being free to flex in cantilever fashion at the other end. The ends flex in response to rotation of the cam follower or index star 104, and may assume the disposition shown generally in phantom at 110. The oppositely disposed flat surface of member 105 maintain or retain the bag supporting pins in proper predetermined disposition.

In order to provide a reasonable basis for cammed intermittent rotation, the cam followers or index stars as shown at 104 are preferably formed of molded nylon, molded tetrafluoroethylene, or other similar materials which do not require lubrication. A convenient cam for driving the index star assembly may include a central pin or the like which constitutes the support shaft for the cam, the cam element being a simple bearing or bushing element which is mounted on the central pin. Of course, other cam or index star driving devices could be utilized, s such as, for example, stationary posts, rods, or the like.

It will be appreciated that the structure shown herein is for purposes of illustration only, and mechanical equivalents of the specific examples shown may be utilized by those skilled in the art.

What we claim is:

1. Apparatus for nesting bags having an open top, opposed end walls, opposed front and rear sidewalls, and a bottom wall, said apparatus comprising:

a. first conveyor means having bag treatment means for forming a plurality of gripping surfaces on opposed surfaces of said sidewalls and at points adjacent the edge surfaces of said sidewalls and adjacent the open top, and being arranged to deliver said bags with gripping surfaces to a discharge station;

b. second conveyor means with a central axis and with pickup means for releasably engaging and spreading said gripping surfaces, said second conveyor means being disposed generally intermediate said discharge station and a nesting station, and being arranged to transfer bags engaged by said pickup means to said nesting station;

c. a nesting station comprising a tongue means with an axis generally coincidental with the central axis of said second conveyor means, and with a forward abutment surface disposed generally transversely of said central axis; and

d. release actuation means responsive to the axial position of said pickup means arranged to release said pickup means from said gripping surfaces as the forward motion of the bag retained by said pickup means is restrained by contact with said abutment surface.

2. The apparatus for nesting bags as defined in claim 1 being particularly characterized in that means are provided along said first conveyor to form folded gussets on opposed end walls of said bags, and punch means are disposed laterally of said first conveyor for forming holes through at least the opposed lateral edge surfaces of said bags, and wherein said pickup means comprises hook means for engagement with the holes formed in said opposed lateral edge surfaces.

3. The apparatus for nesting bags as defined in claim 1 being particularly characterized in that means are provided along said first conveyor to form inwardly folded gussets of said opposed end walls, and punch means are disposed laterally of said first conveyor for forming holes through at least the opposed lateral edge surfaces of said sidewalls adjacent each lateral edge thereof and adjacent the open top of said bag, and wherein said pickup means comprises hook means for engagement with the holes formed in said opposed lateral edge surfaces.

4. The apparatus for nesting bags as defined in claim 3 being particularly characterized in that a pair of punch means are

disposed along each lateral edge of said first conveyor means for forming superimposed holes through both the sidewall and its adjacent gusset portion only.

5. The apparatus as defined in claim 4 being particularly characterized in that each pair of punch means disposed along one lateral edge of said first conveyor is arranged to form laterally spaced holes through opposed sidewall-gusset portion pairs of said bags.

6. The apparatus as defined in claim 1 being particularly characterized in that said pickup means comprises a pickup pin having a shank portion and a bag supporting portion, the bag supporting portion having an axis disposed generally parallel to but spaced outwardly from the axis of said second conveyor.

7. The apparatus as defined in claim 6 being particularly characterized in that said pickup pins are supported by a pair of racks arranged in oppositely disposed relationship to a bag within said second conveyor means, the racks being spaced from and having an axis generally transverse to the axis of said second conveyor.

8. The apparatus as defined in claim 6 being particularly characterized in that:

a. the axis of the shank portion of each pickup pin is disposed generally normal to both the axis of said bag supporting portion and the axis of said second conveyor; and

b. means are provided to dispose the bag supporting portion of said pickup pin in a plurality of arcuately spaced stable dispositions, including; 1. a pickup disposition with the bag supporting axis being disposed generally parallel to the second conveyor axis and with the tip thereof extending in the direction of travel;

2. a bag supporting disposition with the bag supporting axis being disposed generally transversely to the second conveyor axis; and

3. a release disposition with the bag supporting axis being disposed generally parallel to the second conveyor axis, and with the tip thereof extending oppositely to the direction of travel.

9. The apparatus as defined in claim 7 being particularly characterized in that each of said racks is supported by pairs of endless belts disposed generally adjacent the lateral edge of the bags, and with each of said pairs of belts having a span adjacent the axis of said second conveyor and a span remote from the axis of said second conveyor and with belt-carrying wheels at the end of each span.

10. The apparatus as defined in claim 9 being particularly characterized in that said pickup pins engage the hole formed in the bag surface as the endless belt approaches the span adjacent the axis of said second conveyor and while the bag support portion of the pickup pin is rotating arcuately toward a disposition generally parallel to the axis of said second conveyor.

11. The apparatus as defined in claim 10 being particularly characterized in that means are provided for disposing the bag support portion of said pickup pin in a plurality of arcuately spaced stable dispositions, including;

1. a pickup disposition with the bag supporting axis being disposed generally parallel to the second conveyor axis and with the tip thereof extending in the direction of travel;

2. a bag supporting disposition with the bag supporting axis being disposed generally transversely to the second conveyor axis; and

3. A release disposition with the bag supporting axis being disposed generally parallel to the second conveyor axis, and with the tip thereof extending oppositely to the direction of travel.

12. The apparatus as defined in claim 8 being particularly characterized in that Geneva drive means are provided for rotating said shank portions, the drive means including a plurality of cams disposed along the path of travel of said shank portion and a plurality of cam followers coupled to said shank portion and arranged for axial rotation therewith.

13. The apparatus as defined in claim 12 being particularly characterized in that:

a. first cam means are provided for disposing said bag supporting portion in a bag pickup disposition as the pin enters the holes formed in the bag;

b. second cam means are provided for rotating said bag supporting portion to a bag supporting disposition immediately after picking up the bag; and

c. third cam means are provided for rotating said bag supporting portion to a release disposition as the bottom wall of the engaged bag approaches the abutment surface of said nesting station.

14. The apparatus as defined in claim 9 being particularly characterized in that the span adjacent the axis of the second conveyor diverges angularly from the plane of the tongue as the span position approaches the abutment member to spread the opposed front and rear sidewalls to permit a plurality of bags to engage said tongue.