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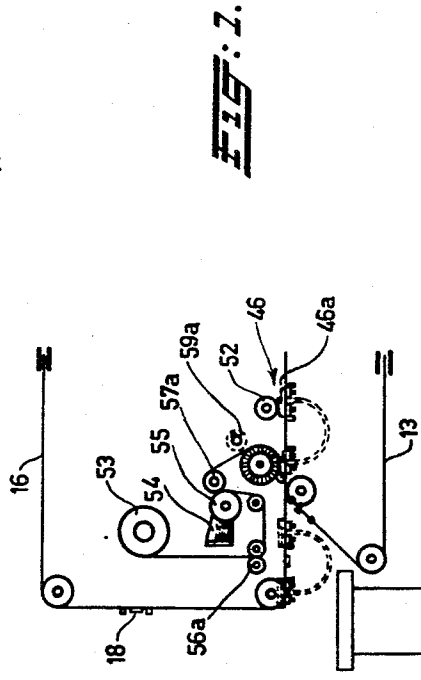
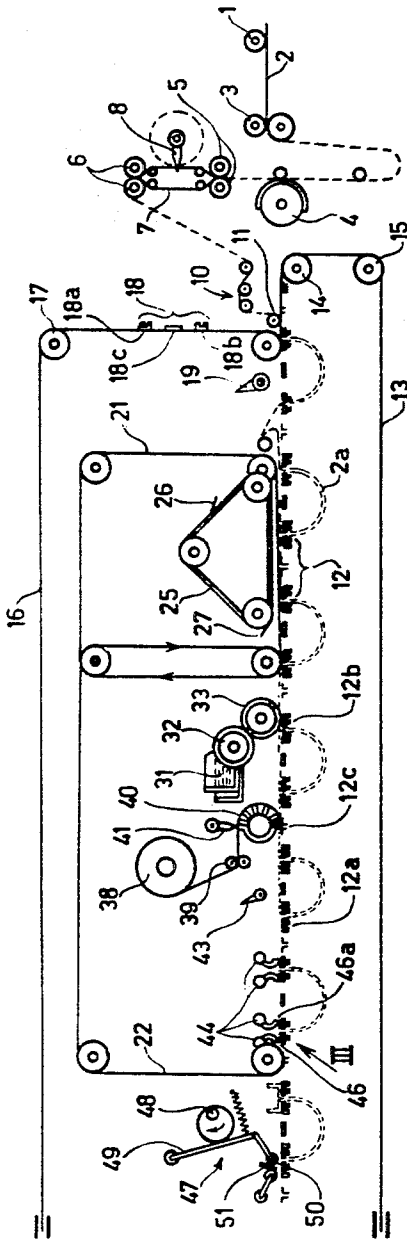
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INSTALLATION FOR MANUFACTURING BLOCK BAGS

Filed May 13, 1968

2 Sheets-Sheet 1



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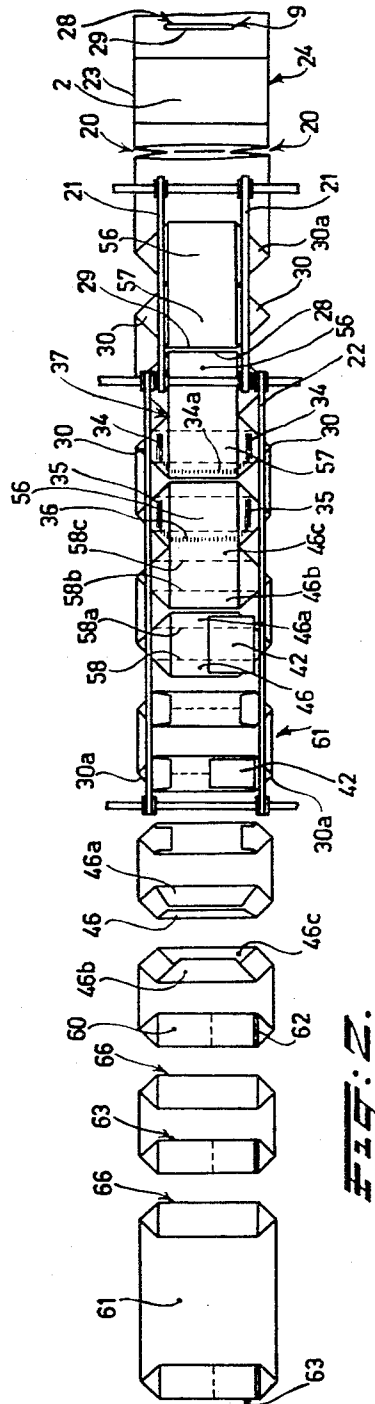


FIG. 2.

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INSTALLATION FOR MANUFACTURING BLOCK BAGS

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4 Claims

ABSTRACT OF THE DISCLOSURE

An installation for manufacturing glued block bags from tubular foil material. The inner side of the tubular foil is guided over a tube the opening member where it is provided with a cross cut. Carrier members spaced apart and moving in a closed circuit of a bag etc. During this transport auxiliary carrier members moving in a second circuit are placed besides the carrier members so that at both sides of a tubular foil supporting faces for performing treatment on the foil are present. Belts retain the longitudinal marginal portions of the tubular foil during glueing and folding operations.

My invention relates to an installation for manufacturing block bags and/or block bags provided with at least one valve.

Such devices are known for manufacturing paper bags. However, the device requires a flat foil web which about a folder is shaped into a tubular foil which thereupon is moved past a number of folding means whereby the bottom quadrat is formed and the bottom label, if any, is applied for obtaining a plastic block bottom bag provided with a valve.

In this known device it is not possible to make apertures in a tubular foil material, but this can exclusively be effected in flat foil material. In the process of manufacturing plastic bags the starting point should, however, be tubular foil in which the required incisions for the formation of the bottom quadrat can be made.

Moreover, in these known devices it is not possible to provide a tube shaped foil part with two flat bottoms in a consecutive order of succession, since this can only be done by inverting the part already provided with a bottom.

It is now an object of my invention to provide an installation whereby on the one hand the foil material is incised without starting from a flat foil web but contrary thereto from a tubular foil, and a compact installation allowing for the manufacture of block bottom bags in very compact machines without inverting the foil parts and with which bags of any desired size can be manufactured.

This object is attained according to my invention in the way that an installation for manufacturing block bags and/or block bags provided with at least one valve comprises at least feeding means, movable carrier means for conveying foil material to stations where it receives treatment, clamping means capable of cooperation with the carrier means, cutting means for incising the foil material, folding means forming a bottom quadrat, folding means for folding the lateral marginal parts of the bottom quadrat, means for severing the tubular foil, glueing and/or sealing means, and, if desired, bottom label applying means, a tube opening member retained with clearance between foil guiding members for internally opening the tubular foil and a foil incising member acting at the location of the member, auxiliary carrying members which auxiliary members can be disposed beside carrier members. Preferably the clamping means are op-

2

erative on the side areas of the carrier means and auxiliary members over at least a part of the trajectory of cooperation between the clamping means and the carrier means.

Due to these features an incision can be easily made in the foil material, while on the other hand due to the placement of an auxiliary member and a carrier member on either side of the foil material there are always free supporting faces allowing to perform the various glueing and/or sealing treatments while forming the flat bottom and/or the flat bottom provided with a valve. Due to the fact that the clamping means are exclusively operative along the edges of the foil material it becomes possible to apply glue on the bottom parts without disturbing the conveyance of the material. My invention provides essentially a device with which it becomes possible for the first time to manufacture continuously flat bottom bags.

According to a preferred embodiment the devices comprises also means incising the tubular foil from the sides in a transverse direction.

The carrier members on a first circuit are conveniently composed of at least two carrier member parts and an intermediate carrier member part. This supporting carrier member can serve to apply the valve label.

Provided on a second circuit are likewise the auxiliary carrying members which are composed of at least two separated auxiliary member parts and a third auxiliary member part, the means for severing the tubular foil being active at the location of the location of the third auxiliary member part.

The device is conveniently provided with suction members which are operative in the area between successive carrier means.

Important advantages of the device according to my invention are:

- (1) the surfaces of the foil material on which treatment should be performed are all situated in one plane;
- (2) the surfaces on which treatment should be performed are situated at a definite location in the device;
- (3) operators are not required on either side of the device as in the case of the conventional devices;
- (4) it is not necessary to observe definite time schemes as to the supply of the tubular pieces to be treated;
- (5) in spite of the many treatments a compact machine suffices;
- (6) bags can be manufactured at a fast rate, to wit at a rate of 50 bags per minute which can be increased up to 100 bags.

My invention will be clarified with reference to an embodiment of a device for the manufacture of glued block bags provided with a valve. It is obvious, however, that the invention is not limited to the manufacture of glued bags but covers also the application of definite heatsealed joints in the process.

In order that my said invention may be clearly understood and readily carried into effect, the same will now be described more fully with reference to the accompanying drawing, in which:

FIGURE 1 shows diagrammatically a device for manufacturing glued block bags comprising a valve;

FIGURE 2 represents the various stages of treatment of a block bag to be manufactured from a tubular foil part;

An installation for manufacturing glued block bags from plastic foil material comprises foil feeding means consisting of a feed roller 1 on which is disposed the thermoplastic tubular foil material 2 which by means of feed rollers 3 and guide rollers 4 is guided through two roller pairs 5 and 6 situated one above the other. Between the roller pairs 5 and 6 is a tube opening member in the shape of a frame or block 7 on which the plastic foil tube is guided so that the walls of the plastic tube

2 no longer contact one another. Provided at the location of the frame 7 is a knife 8 which may be heated by which a cross cut 9 can be made in the wall of the tubular plastic foil, whereby when the material is being incised, two edges are formed simultaneously which in FIGURE 2 are denoted by 28 and 29. This cross cut 9 is only made on a part of the width of the folded plastic tubular foil. Guide rollers 10 and 11 are provided for the further transport of the material.

The device further comprises a number of movably mounted carrier means 12 which are secured on two movable chains 13, guided on rollers 14 and driven by a motor (not shown) by means of a driving roller 15. These means constitute a first circuit.

A number of auxiliary carrying members 18 are mounted on two likewise movable chains 16 which can be driven via a driving roller 17 by a motor (not shown) these auxiliary carrying members 18 constitute together with the carrier means 12 supporting faces for performing treatment on the tubular plastic foil 2. In order to obtain a definite length of the bag a quantity of plastic foil material 2 is introduced in the shape of a curve 2a between two consecutive carriers 12, which e.g. is effected by suction.

The device comprises furthermore means for incising the tubular foil from the sides in a transverse direction, in the shape of a cutter 19 which can cut through the material, disposed on a supporting face in the shape of a tubular plastic foil 2, on either side of the incision 9. Thus, the incision 20 indicated in FIGURE 2 is formed. Beyond the cutter 19 are arranged movable clamping means in the form of belts 21 and 22 retaining the material during the subsequent treatments in the longitudinal marginal portions directly situated beside the lateral edges 23 and 24 of the plastic tube. Provided in this area is also a bottom quadrat forming device in the shape of a tube unfolding member consisting of wedges 26 and 27 mounted on a belt 25 by which means the edges 28 and 29, produced on the formation of the cross cut, are folded back while forming triangular small pockets 30 and 30a and the bottom quadrats 56 and 57.

Beyond these unfolding members are provided the glue applying means consisting of a glue container 31 from which via a roller 32 glue is taken which via a roller 33 is applied to the bottom quadrat 57 in two glue strips 34, 35 on the pockets 30 and a glue strip 36 in the vicinity of and parallel to the connecting marginal portion 37 of the tubular foil existing between the bottom quadrats 56 and 57 after the bottom quadrat has been folded.

Provided beyond the glue applying roller 33 is a valve foil applying device consisting of a valve foil supply package 38 from which the valve foil material is passed via guide rollers 39 to a vacuum drum 40 divided into sectors. In this way block bags comprising a valve can be manufactured, but bags without a valve may also be produced.

A cutter 41 is provided for cutting the valve label to the desired size. After severance the valve label 42 is taken along in the previously determined shape to the supporting face where it is brought into contact with the forwardly fed bottom quadrat 56 moving at the same speed as the drum 40. When the drum comes into contact with one of the pockets 30a and the other foil material the vacuum is terminated and the valve label foil 42 is laid at a slight over-pressure on the bottom quadrat 56 of the tubular foil material whereby one of the glue strips 35 and a part of the glue strip 36 ensure the connection of label foil and bottom quadrat 56.

Next in the sequence is a second foil cutting knife 43 cutting through the still existing connecting marginal portion 37 between the bottom quadrats 56 and 57 so that a separate tubular bag part 61 is produced with ends formed by the flat bottom quadrats 56 and 57. Depressing members 44 may be provided past the cutter 43 in order to press the bottom quadrats 56 and 57 situated on the

supporting face into a cavity of the carrier members 12a and 12b, whereby the transverse marginal portions 46 and 46a, 46b, 46c, situated beside the folding lines 58, 58a, 58b, 58c, are produced. Next in the sequence is a folding mechanism 47 folding the marginal portions 46, 46a, 46b, and 46c and comprising a roller 50 operable by an eccentric 48 and secured to an arm 49, the roller 50 being movable in the direction of conveyance to act upon a marginal portion 46a, an inclined counter plate 51 folding the transverse marginal portion 46 over the marginal portion 46a and the marginal portions 46 and 46a being connected by glue. In order to reinforce this glued joint, a presser roller 52 is provided. Disposed beyond presser roller 52 is a bottom label applying device consisting of a foil supply package 53, a glue container 54 with a glue doctor roller 55. A heated roller 57 cooperates with this glue doctor roller 55 and the material of the supply package 53 is passed from between the two rollers. Due to the roller 57a or heated air a large part of the solvents in the glue evaporate, so that the foil material of the supply package 53 on moving from between the rollers 55 and 57a is provided with a fast adhering glue. Via guide rollers 56a and the heated roller 57a the foil material arrives at a second vacuum drum 59 in front of which is a cutter 59a. This cutter 59a serves the foil material to the length desired for the bottom label 60 after the material has been placed on the second vacuum drum 59, whereupon this label 60 via the drum 59 is disposed on the marginal portions 46 and 46a which are already folded over one the other. Due to the glue the bottom label 60 will adhere well and constitute the final bottom.

The same treatment is performed on the bottom quadrat 57, the marginal portions 46b and 46c of which are likewise folded over one the other. A tubular bag part 61 is then obtained with a flat bottom 63, provided with a valve 62, formed from a bottom quadrat 56 and a normal flat bottom 66 formed from a bottom quadrat 57. It is obvious that, if desired, when a valve strip 42 is omitted a bag can be formed with two closed flat bottoms whereby by severing the tubular bag part 61 two block bags open at one end can be obtained.

After the bottom has been placed, the carrier parts on the first circuit 13 move off, whereupon the auxiliary carrying members on the second circuit 16 are removed.

The carrier members 12 are on the first circuit on endless chains 13 while the auxiliary carrying members 18 are on the second circuit on endless chains 16. The carrier members consist preferably of carrier member parts 12a, 12b and an intermediate carrier member part 12c in order to prevent difficulties during movement around guiding elements.

The auxiliary carrying members provided on the second circuit 16 consist likewise of three parts, viz the auxiliary carrying member parts 18a, 18b and a third carrying member part 18c. The foil severing means 43 are situated in such a way that they are operative in the area of the third auxiliary carrying member part 18c.

The third carrier member part 12c is provided in such a way that it may serve to dispose the valve label foil. Obviously operations can also be carried out in inverted order.

The bags are discharged via a mechanism which is not further discussed.

As mentioned hereinbefore the bags may be provided with welded joints instead of glued joints at definite locations.

My invention relates also to plastic bags obtained by means of the installation.

While preferred embodiments of the invention have been shown and described, it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claims.

What I claim is:

1. Apparatus for manufacturing block bags having two block bottoms at least one of which can be provided with a valve, said apparatus comprising feeding means for advancing tubular foil in flattened condition, means for expanding the foil into opened form, first foil incising means for producing a cut in the expanded foil extending transversely with respect to the direction of movement of the foil, first spaced movable carrier means for conveying the thus cut tubular foil, movable auxiliary carrier means placed between two successive first movable carrier means after delivery of the tubular foil between two successive first movable carrier means, said auxiliary carrier means being removed from between the first carrier means after formation of the bags, first foil cutting means for forming transverse slits in the tubular foil at both sides thereof in the plane of the cuts made by said first foil incising means to leave a connecting flat part in the foil material, first and second clamping means cooperating with the first carrier means and the auxiliary means lying between same, first folding means for forming bottom quadrats at both sides of the cuts and slits respectively formed by the first foil incising means and first foil cutting means, foil severing means in the region of the moving auxiliary carrier means for severing the foil between successive bottom quadrats, means for folding flaps of a bottom quadrat inwardly, means for connecting said folded flaps and means for applying a bottom label to at least one of said flaps.

2. Apparatus according to claim 1, wherein said means for connecting said folded flaps comprises glueing means.

3. Apparatus according to claim 1, wherein said first folding means comprises an endless belt and wedges on said belt.

4. Apparatus according to claim 1, wherein said label applying means is disposed downstream of said severing means.

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