

⑫

EUROPEAN PATENT SPECIFICATION

④⑤ Date of publication of patent specification: 17.11.88

⑤① Int. Cl.⁴: **B 31 B 19/84**

②① Application number: **86200615.2**

②② Date of filing: **11.04.86**

⑤④ **Equipment for producing conical products.**

③⑩ Priority: **11.04.85 NL 8501068**

④③ Date of publication of application:
22.10.86 Bulletin 86/43

④⑤ Publication of the grant of the patent:
17.11.88 Bulletin 88/46

⑧④ Designated Contracting States:
BE CH DE FR LI NL

⑤⑥ References cited:
CA-A-934 199
DE-B-1 215 901
FR-A-1 367 557
US-A-2 172 564

⑦③ Proprietor: **Bates Cepro B.V.**
Fort Willemweg 1
NL-6219 PA Maastricht (NL)

⑦② Inventor: **Eurlings, Robert Maria Jozef Hubert**
St. Annadal 15P
NL-6214 PA Maastricht (NL)

⑦④ Representative: **Kooy, Leendert Willem et al**
OCTROOIBUREAU VRIESENDORP & GADE
P.O. Box 266
NL-2501 AW The Hague (NL)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European patent convention).

Courier Press, Leamington Spa, England.

Description

The invention relates to an apparatus for manufacturing conical objects, such as valves for package bags, from two webs of flexible material supplied from respective rolls.

A valve is a tubular device made of flexible material, through which a bag of flexible material can be filled and which can close the opening in the bag after that. For filling, the valve is slid about a filling pipe and in such a manner that the opening of the filling pipe extends through the inner end of the valve into the bag.

Usually the shape of the valve is cylindrical, if slid about the filling pipe. During production and transport of the empty bag the valve is folded flat and thus has a rectangular shape.

A conical valve is not cylindrical, but has the shape of the surface of a flattened cone. During production and transport of the empty bag the valve is folded flat and has the shape of a trapezium.

The valve has two functions:

—to enclose the filling pipe as thoroughly as possible during filling and

—to transform it in such a manner after filling that the filling goods are prevented from passing through to outside.

The conical valve is far more satisfactory in both functions than the cylindrical valve known up to now. There are valves in which the cylindrical shape has been purposely abandoned, but of those only embodiments are known which have been manufactured by sealing the contact surfaces and thus they have to be made of sealable material. Such an embodiment has been described in GB—A—1,000,335.

The invention aims to provide an apparatus for manufacturing conical objects, such as valves for bags, which do not have to be made of sealable material.

According to the invention, the apparatus comprises for each web a first pair of folding rods arranged at a vertical distance from each other and in planes at right angles to each other around which each web is led to fold the web in half longitudinally, a guiding device comprising web path deviating means to position the two folded webs at an acute angle to each other with the open edges facing each other, means for driving the thus positioned webs along the deviated path such that one folded web is inserted between the open edges of the other, means for severing the webs and means for glueing the overlapping portions of the webs.

If the apparatus is used for manufacturing conical valves for bags, it is very practical to mount a grabbing device which is able to transfer the cut valve to a valve mounting device.

The folding device may consist of two pairs of optionally freely rotating, perpendicularly intercrossing rods.

The guiding device may consist of two web path deviating bars positioned in the same planes as the ones in which the webs come out of the folding device.

The driving means may be positioned between the guiding device and the cutting device, and may consist of rotatably driven driving rolls for each of the webs, in which the centre lines of the driving rolls are at an angle with respect to each other which is equal to the supplement of the angle at which the folded webs with the open sides facing each other can be shifted into each other. This angle is preferably about 10°.

The glueing device may comprise two nozzle pipes which can cover the overlap of the shifted, folded webs with glue.

The cutting device and the grabbing device are preferably mechanically coupled.

The invention will be elucidated hereafter on the basis of the drawing, in which by means of an example an installation according to the invention is shown.

In the drawing,

Figure 1 shows an outline of the apparatus in question in perspective,

Figure 2 shows at a larger scale the upper portion of the folding device in perspective, and

Figure 3 shows at a larger scale the guiding device and the other devices positioned nearby in perspective.

The apparatus shown in Figure 1 for manufacturing conical objects substantially comprises two parallel, horizontal shafts 1 and 2 for rotatably supporting two rolls 3 and 4 of flexible material, in which roll 3 provides an upper web 5 and roll 4 a lower web 6.

Both webs 5 and 6 pass through a folding device 7, shown in more detail in Figure 2, and in which the webs are not only folded in two but also changed in direction over 90°.

After that the webs 5 and 6 enter a guiding device 8 in which the folded webs are shifted into each other with the open sides facing each other. At that point there is also a driving means 9, a cutting device 10, a glue supply 11, being elucidated in more detail in Figure 3, and a grabbing device 12 which transfers the finished conical valve, after it has been cut perpendicular to the bisectrice of the angle between the webs, to a valve mounting device (not shown). This latter action particularly implies, that the new valve is directly used in the usual manner for finishing a bag. The action of the two webs being shifted into each other will continue undisturbed in order to form the next conical valve.

In Figure 2 the upper half of the folding device 7 is shown, in which it is understood that the lower half is the symmetrically reflected image of Figure 2. The upper half of the folding device consists of two pairs of optionally freely rotating, perpendicularly intersecting rods 13 and 14. The rod 14 supporting

the web folded in two, naturally has a length being about half the length of rod 13 which supports the still unfolded web.

The guiding device 8 comprises two web path deviating bars 15 and 16, positioned in the same planes as the ones in which the webs 5 and 6 come out of the folding device 7. Preferably the webs 5 and 6 are deviated in such a manner, that they move towards each other at an angle of $2 \times 5^\circ$ while remaining in the same plane.

After this, the open sides of the webs 5 and 6 are positioned on the inside of the said angle.

The driving means 9 consists of two rotatably driven driving rolls 17 and 18 with centre lines being at a mutual angle which is equal to the supplement of the angle at which the open side of the folded web 6 is shifted through the driving roll 18 into the open side of the folded web 5. This angle is optional, but preferably it is about $2 \times 5^\circ$, so that the mutual angle of the centre lines will be 170° . In the shown embodiment the driving rolls 17 and 18 pull the webs 5 and 6 both about the web path deviating bars 15 and 16 of the guiding device 8 and over the optionally freely rotating rods 13 and 14 of the folding device 7. This guarantees that correct folds are applied and that the webs are shifted into each other correctly.

In Figure 3 the position of the cutting device 10, the glue supply 11, and the grabbing device 12 with respect to each other are shown. The glue supply consists of two nozzle pipes 19 and 20 that can cover the overlaps 21 with glue. As soon as that has been done, the cutting device 10 and the grabbing device 12 start acting in the known manner to transfer the finished valve to a valve mounting device (not shown).

It is remarked, that although the invention is described on the basis of an apparatus for manufacturing conical valves, the merit of the invention can of course also be applied in the manufacture of other conical objects.

Claims

1. Apparatus for manufacturing conical objects from two webs (5, 6) of flexible material supplied from respective rolls (3, 4), comprising for each web a first pair of folding rods (13, 14) arranged at a vertical distance from each other and in planes at right angles to each other around which each web is led to fold the web in half longitudinally, a guiding device (8) comprising web path deviating means (15, 16) to position the two folded webs at an acute angle to each other with the open edges facing each other, means (9) for driving the thus positioned webs along the deviated path such that one folded web is inserted between the open edges of the other, means (10) for severing the webs and means (11) for glueing the overlapping portions of the webs.

2. Apparatus according to claim 1 for manufacturing conical valves for bags, characterized in that a grabbing device (12) is mounted which is able to transfer the cut valve to a valve mounting device.

3. Apparatus according to claim 1 or 2, characterized in that the folding device (7) consists of two pairs of optionally freely rotating, perpendicularly intercrossing rods (13, 14).

4. Apparatus according to any of the preceding claims 1—3, characterized in that the guiding device (8) consists of two web path deviating bars (15, 16) positioned in the same planes as the ones in which the webs (5 and 6) come out of the folding device (7).

5. Apparatus according to any of the preceding claims 1—4, characterized in that the driving means (9) is positioned between the guiding device (8) and the cutting device (10), and consists of rotatably driven driving rolls (17 and 18) for each of the webs, in which the centre lines of the driving rolls are at an angle with respect to each other which is equal to the supplement of the angle at which the folded webs with the open sides facing each other can be shifted into each other.

6. Apparatus according to claim 5, characterized in that the angle at which the folded webs are shifted into each other, is about 10° .

7. Apparatus according to any of the claims 1—6, characterized in that the glueing device (11) comprises two nozzle pipes (19 and 20) which can cover the overlap of the shifted, folded webs with glue.

8. Apparatus according to any of the claims 1—7, characterized in that the cutting device (10) and the grabbing device (12) are mechanically coupled.

Patentansprüche

1. Vorrichtung zum Fertigen von konischen Gegenständen aus zwei Bahnen (5, 6) aus flexiblem Material, die von zugeordneten Rollen (3, 4) zugeführt werden, die für jede Bahn ein erstes Paar von Faltstäben (13, 14) aufweist, die in einem vertikalen Abstand voneinander und in Ebenen rechtwinklig zueinander angeordnet sind, und um die jede Bahn so gelenkt wird, daß die Bahn auf der halben Länge gefaltet wird, welche eine Führungseinrichtung (8) aufweist, die eine Bahnwegableiteneinrichtung (15, 16) aufweist, um die beiden gefalteten Bahnen unter einem spitzen Winkel zueinander zu positionieren, wobei die offenen Ränder einander zugewandt sind, die eine Einrichtung (9) zum Antreiben der so positionierten Bahn längs des abgelenkten Weges derart aufweist, daß eine gefaltete Bahn zwischen die offenen Ränder der anderen eingeführt wird, und die Einrichtungen (10) zum Durchtrennen der Bahnen sowie Einrichtungen (11) zum Verkleben der überlappenden Abschnitte der Bahnen aufweist.

2. Vorrichtung nach Anspruch 1 zur Fertigung von konischen Ventilen für Beutel, dadurch gekennzeichnet, daß eine Greifeinrichtung (12) angebracht ist, die das abgetrennte Ventil zu einer Ventilmontageeinrichtung überführen kann.

3. Vorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Falteneinrichtung (7) aus

zwei Paaren von gegebenenfalls frei drehbaren, senkrecht einander kreuzenden Stäben (13, 14) besteht.

4. Vorrichtung nach einem der vorangehenden Ansprüche 1 bis 3, dadurch gekennzeichnet, daß die Führungseinrichtung (8) zwei Bahnwegablenkglieder (15, 16) aufweist, die in den gleichen Ebenen wie jene angeordnet sind, in denen die Bahnen (5 und 6) aus der Falteinrichtung (7) austreten.

5. Vorrichtung nach einem der vorangehenden Ansprüche 1 bis 4, dadurch gekennzeichnet, daß die Antriebseinrichtung (9) zwischen der Führungseinrichtung (8) und der Schneideinrichtung (10) angeordnet ist und drehbar angetriebene Antriebsrollen (17 und 18) für jede der Bahnen aufweist, wobei die Mittellinien der Antriebsrollen unter einem Winkel zueinander angeordnet sind, der gleich dem Ergänzungswinkel ist, unter dem die gefalteten Bahnen ineinander geschoben werden können, wenn die offenen Seiten einander zugewandt sind.

6. Vorrichtung nach Anspruch 5, dadurch gekennzeichnet, daß der Winkel, mit dem die gefalteten Bahnen ineinandergeschoben werden können, etwa 10° ist.

7. Vorrichtung nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß die Klebeeinrichtung (11) zwei Düsenrohre (19 und 20) aufweist, die die Überlappung der geschobenen, gefalteten Bahnen mit Klebstoff benetzen können.

8. Vorrichtung nach einem der Ansprüche 1 bis 7, dadurch gekennzeichnet, daß die Schneideinrichtung (10) und die Greifeinrichtung (12) mechanisch gekoppelt sind.

Revendications

1. Appareil de fabrication d'objets coniques à partir de deux bandes (5, 6) de matériau flexible délivrées à partir de rouleaux respectifs (3, 4) comportant pour chaque bande une première paire de tiges de pliage (13, 14) espacées verticalement l'une de l'autre et dans des plans orthogonaux entre eux autour desquelles chaque bande est amenée pour la plier en deux longitudinalement, un dispositif de guidage (8) comportant des moyens (15, 16) de déviation de trajet de bande en vue de positionner les deux bandes pliées

selon un angle aigu entre elles avec les bords ouverts se faisant face, des moyens (9) en vue d'entraîner les bandes ainsi positionnées le long du trajet dévié de telle sorte qu'une bande pliée est introduite entre les bords ouverts de l'autre, des moyens (10) en vue de couper les bandes et des moyens (11) en vue de coller les parties des bandes se recouvrant.

2. Appareil selon la revendication 1 de fabrication de valves coniques pour sacs, caractérisé en ce qu'un dispositif de préhension (12) est monté capable de transférer la valve coupée sur un dispositif de montage de valve.

3. Appareil selon la revendication 1 ou 2, caractérisé en ce que le dispositif de pliage (7) consiste en deux paires de barreaux (13, 14) se croisant perpendiculairement, pouvant tourner librement facultativement.

4. Appareil selon l'une quelconque des revendications précédentes 1 à 3, caractérisé en ce que le dispositif de guidage (8) consiste en deux barreaux (15, 16) de déviation de trajet de bande positionnés dans les mêmes plans que ceux dans lesquels les bandes (5 et 6) sortent du dispositif de pliage (7).

5. Appareil selon l'une quelconque des revendications précédentes 1 à 4, caractérisé en ce que les moyens d'entraînement (9) sont positionnés entre le dispositif de guidage (8) et le dispositif de coupe (10), et consiste en rouleaux d'entraînement (17 et 18) entraînés en rotation pour chacune des bandes, dans lequel les axes des rouleaux d'entraînement font un angle entre eux qui est égal au complément de l'angle selon lequel les bandes pliées avec les côtés ouverts se faisant face peuvent être déplacées l'une dans l'autre.

6. Appareil selon la revendication 5, caractérisé en ce que l'angle selon lequel les bandes pliées sont déplacées l'une dans l'autre, est d'environ 10°.

7. Appareil selon l'une quelconque des revendications 1 à 6, caractérisé en ce que le dispositif de collage (11) comporte deux tuyaux distributeurs (19 et 20) qui peuvent enduire de colle le recouvrement des bandes pliées déplacées.

8. Appareil selon l'une quelconque des revendications 1 à 7, caractérisé en ce que le dispositif de coupe (10) et le dispositif de préhension (12) sont couplés mécaniquement.

5

10

15

20

25

30

35

40

45

50

55

60

65

4

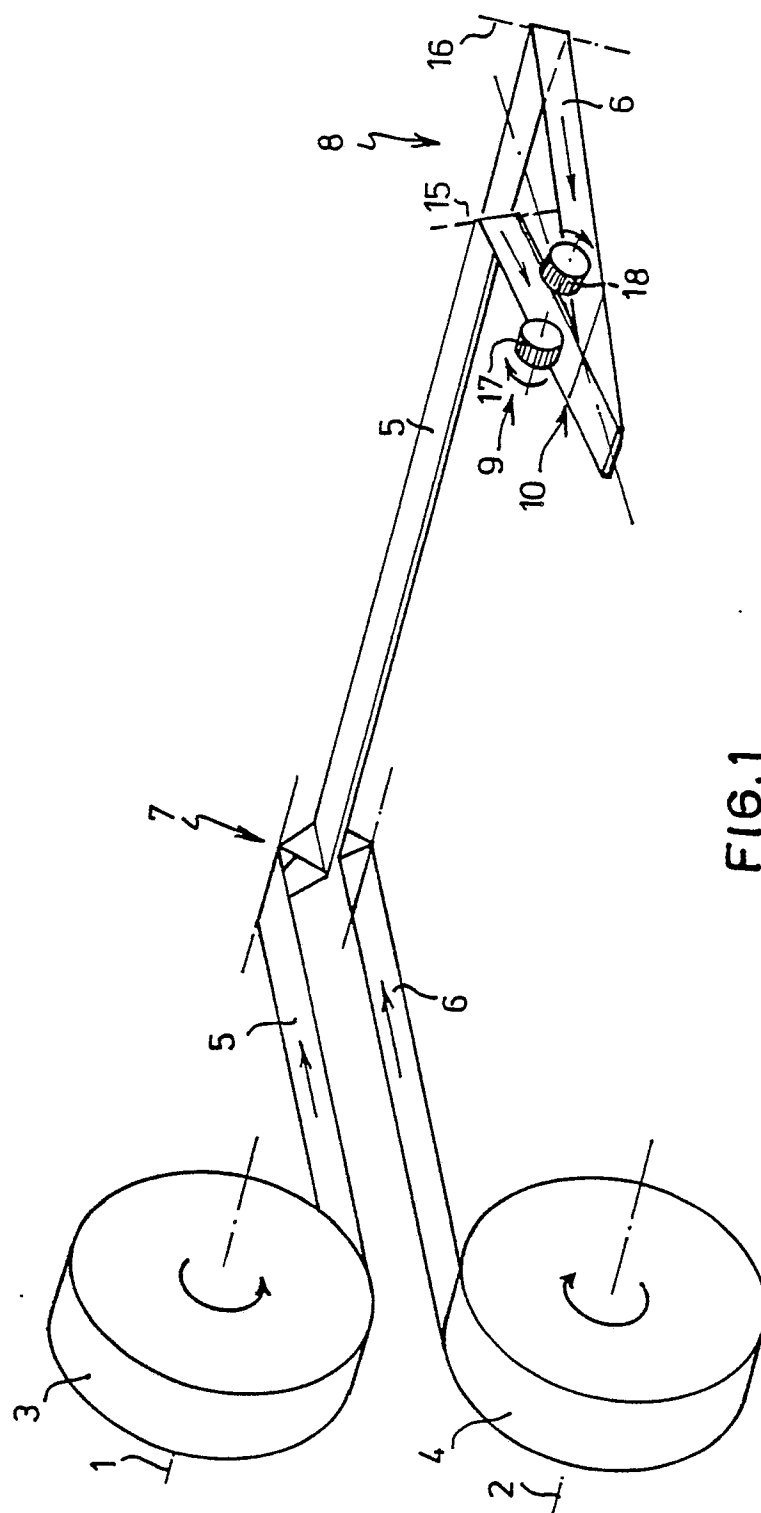


FIG. 1

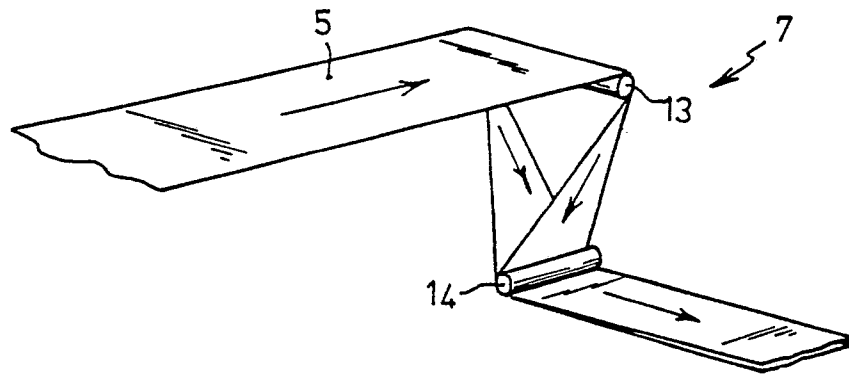


FIG. 2

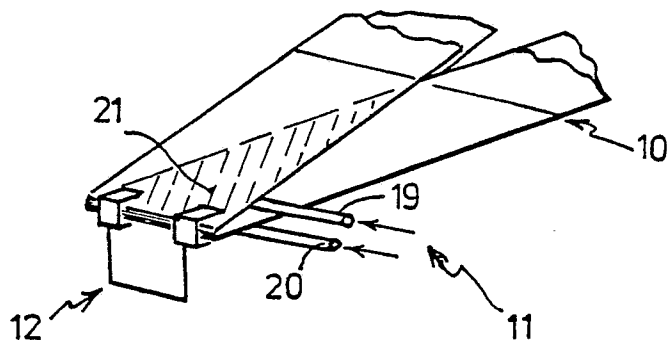


FIG. 3