

12 **EUROPEAN PATENT APPLICATION**

21 Application number: **89202318.5**

51 Int. Cl.⁵: **B65B 61/24**

22 Date of filing: **14.09.89**

30 Priority: **15.09.88 NL 8802272**

43 Date of publication of application:
21.03.90 Bulletin 90/12

64 Designated Contracting States:
AT BE CH DE ES FR GB IT LI NL

71 Applicant: **Aquarius, Pieter Theodorus Joseph**
Prinses Beatrixstraat 45
NL-6039 CH Stramproy(NL)

72 Inventor: **Aquarius, Pieter Theodorus Joseph**
Prinses Beatrixstraat 45
NL-6039 CH Stramproy(NL)

74 Representative: **de Wit, Gerard Frederik, Ir. et al**
Octrooi- en Merkenbureau De Wit B.V.
Breithnerlaan 146
NL-2596 HG Den Haag(NL)

54 **Apparatus for shaping and delivering objects.**

57 The invention provides an apparatus for shaping an object and discharging it into boxes, in which the shaping is carried out by at least locally converging guide belts (8,9), which take the objects along on a pair of pivotable flaps (13,14), which pivot downwardly to vertically drop the object when it still engages the guide belts.

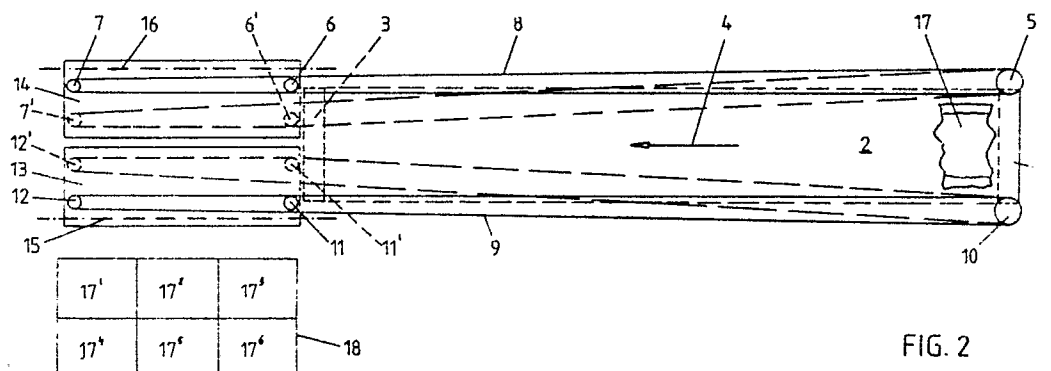


FIG. 2

Apparatus for shaping and delivering objects.

The invention relates to an apparatus having a conveying means and supporting means for supporting an object to be shaped, for instance a filled bag, and two shaping means consisting of two driven guide belts, one at each side of the conveying and the supporting means, which belts have a converging portion adapted to shape an object supported by the conveying and supporting means and a means for discharging the object in a direction transverse to the direction of movement of the guide belts.

Such an apparatus is known from GB-A-1 054 738. With this known apparatus the object does not engage the guide belts when it is discharged by pushing it away with a pushing member. This way of handling may in many instances deteriorate in a greater or lesser degree the shape of the object shaped by the guiding belts. Further this known device does not provide a means for filling the object into a box or container without risk to lose its shape.

The invention aims to provide a simple apparatus which eliminates the above disadvantages, at least to a major extent.

Accordingly the invention is characterized in that the means for discharging the shaped object consists of a removable portion of the support means, which removable portion of the supporting means is located between the guide belts, which at that location are adapted to engage the object to take it along on said removable portion of the supporting means.

It is remarked that NL-A-7004838 shows a device for shaping objects by means of guide belts having a converging part. The shaping of the object is here, however, secondary and the main purpose is to flatten, label or close the filling aperture of the bags, forming the objects. Further the objects are left alone on a conveyor and no means has been shown to remove the object without endangering its shape.

With the invention the object is conveyed by the guide belts when it is supported by the removable portion of the support means. Practice has shown, that it can easily be obtained that the object is taken along by the guide belts but immediately falls down when its support is removed. This behaviour is rather common for food materials and probably for very many others too and possibly due to the following: The object, for instance a bag containing food material is compressed in the direction perpendicular to the direction of movement of the belts. During this compressing, but certainly after ending it, the resiliency of the filled bag is rather small and in practice enough to take it along,

but certainly insufficient to clamp the bag between the belts, forming a bridge instead of falling down.

Accordingly a preferred embodiment of the invention has been defined in claim 2.

According to a further elaboration of the invention it is provided that the removable portion of the support means consists of two opposing flaps pivotable about horizontal shafts from a first or supporting position in which the flaps are mainly horizontal to a second downwardly pending position. In this respect it is remarked that US-A-4 026 421 shows a device for dispensing objects by shifting them on opposing retractable flaps, whereas US-A-2 510 343 shows a corresponding device in which the objects come from a conveyor and push each other onto pivotable flaps.

According to another elaboration of the invention it is provided that each of the guide belts engages at least three rollers which are adjustable in a direction transverse to the direction of movement of the guide belts. This feature allows for adjustment of the width between the guide belts and adjustment of the location in the direction transverse to the direction of movement of the guide belt. A further advantage of this elaboration of the invention is, that it is possible to have a fixed supply conveyor and an adjustable dropping location of the object with an apparatus which is very little more complicated than an apparatus without this feature.

It is pointed to NL-A-7100584, which shows an apparatus for dropping objects at an adjusted location by laying them on a pair of pivotable flaps and moving these flaps to the desired dropping location. This known apparatus is provided with a secondary driving system to displace the flaps in a transverse direction, which is far more complicated.

The invention and some of its preferred characteristics will be better understood on hand of the following description of the drawings, in which:

Figure 1 shows schematically a side view of an apparatus according to the invention; and Figure 2 shows schematically a plan view of the apparatus of fig. 1.

In the drawing reference 1 indicates a horizontal cylinder over which a conveyor belt 2 runs. This belt returns via a reverse cylinder 3 towards the cylinder 1 and moves with its upper web in the direction of arrow 4 (vide fig. 2). A vertical guide belt 8 runs over three rollers 5, 6 and 7. At the other side of the conveyor belt 2 a corresponding guide belt 9 has been mounted which runs over rollers 10, 11 and 12.

The location of the rollers 7, 12 and 6, 11 can be shifted transversely to the direction indicated with

the arrow 4. Such a displaced position has been indicated with the same references, but provided with an accent, wherewith the belt portions between rollers 6',7' and 11',12' respectively are parallel to the direction of the movement of the conveyor belt 2.

To the left of cylinder 3 two flaps 13 and 14 are located, which can pivot about horizontal shafts 15 and 16 respectively. A bag 17 on belt 2 is shaped between the guide belts 8 and 9 to a predetermined width, which is reduced to the distance between the rollers 6 and 11 after adjustment of these rollers for handling the concerned bag. At the end of the conveyor belt 2 the guide belts 8 and 9 take over the transport of the bag, which at the end of belts 8 and 9 is more or less pinched between these belts. Then the bag is moved further on the plates 13 and 14 until the desired position is attained, which possibly may be determined by a stop member (not shown), the flaps 13 and 14 respectively pivot downwardly about the horizontal shafts 15 and 16 respectively and the bag falls perpendicular down. Therewith the bags come with the correct orientation and in the correct position in boxes, one of which has schematically been indicated with 18.

In fig. 2 for clarity's sake a box has been shown filled with bags 17¹, 17², 17³ and after a side shift with bags 17⁴, 17⁵ and 17⁶.

When adjusting in the transverse direction the rollers 6,7 and 11,12 respectively the guide belts 8 and 9 may slacken or tighten too strongly which can be countered with tensioning devices known per se.

The shown embodiment has the advantage, that it is not necessary to place the bags accurately centered on the conveyor belt 2 and that they are always taken along by the conveyor belt and shaped by the guide belts 8 and 9, without any transfer, which could give rise to failures. The bags are sufficiently gripped by the belts 8 and 9 to be taken along with them. On the other hand practice has shown, that the bags straight-forwardly fall down and are not retained by the forces exerted by the belts 8 and 9 on the bags.

Further the location of the rollers 6,11 and 7,12 not only determines the mutual distance between the belts, but also the location in transverse direction where the bags are discharged. It is, however, also possible to let the box 18 move towards the position necessary to receive the next bag. It is also possible to displace the shafts 15 and 16 in the transverse direction in order to locate the slit formed between the flaps 13 and 14 in the center-line of the shaped bags.

1. Apparatus having a conveying means (2) and supporting means (13,14) for supporting an object (17) to be shaped, for instance a filled bag, and two shaping means consisting of two driven guide belts (8,9), one at each side of the conveying and the supporting means, which belts have a converging portion adapted to shape an object supported by the conveying and supporting means and a means (15,16,13,14) for discharging the object in a direction transverse to the direction of movement of the guide belts, characterized in that the means for discharging the shaped object consists of a removable portion (13,14) of the support means, which removable portion (13,14) of the supporting means is located between the guide belts, which at that location are adapted to engage the object to take it along on said removable portion of the supporting means.

2. Apparatus according to claim 1, characterized in that the guide belts are parallel (between rollers 6',7' and 11',12') at the location of the said removable portion (13,14) of the support means.

3. Apparatus according to claim 1 or 2, characterized in that the removable portion of the support means consists of two opposing flaps (13,14) pivotable about horizontal shafts (15,16) from a first or supporting position in which the flaps are mainly horizontal to a second downwardly pending position.

4. Apparatus according to any of the preceding claims, characterized in that each of the guide belts (8,9) engages at least three rollers (5,6,7; 10,11,12), which are adjustable in a direction transverse to the direction of movement of the guide belts enabling adjustment of the convergences in different parts of the belts and of the location in the said transverse direction at the location of the removable portion of the supporting means.

Claims

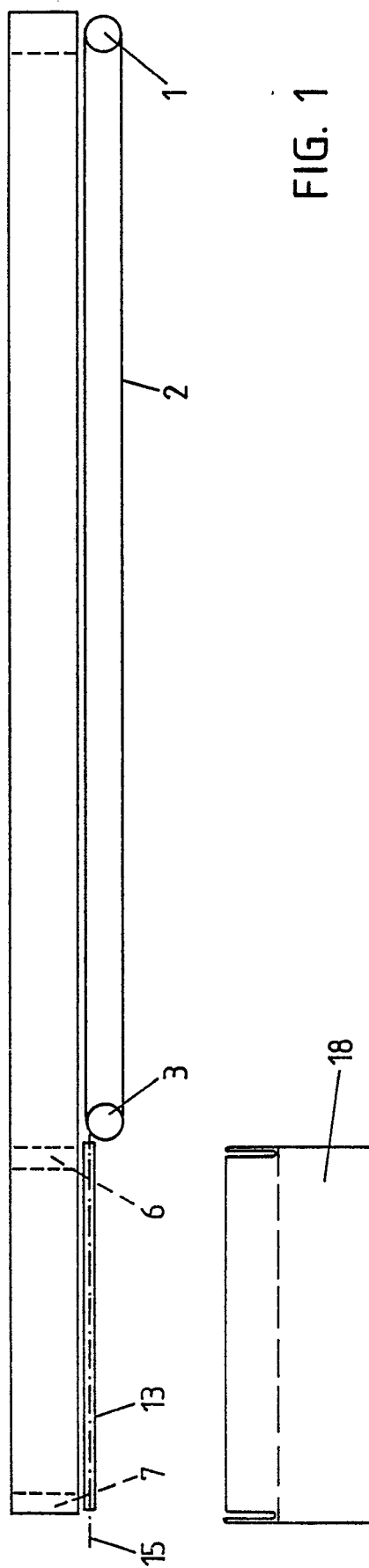


FIG. 1

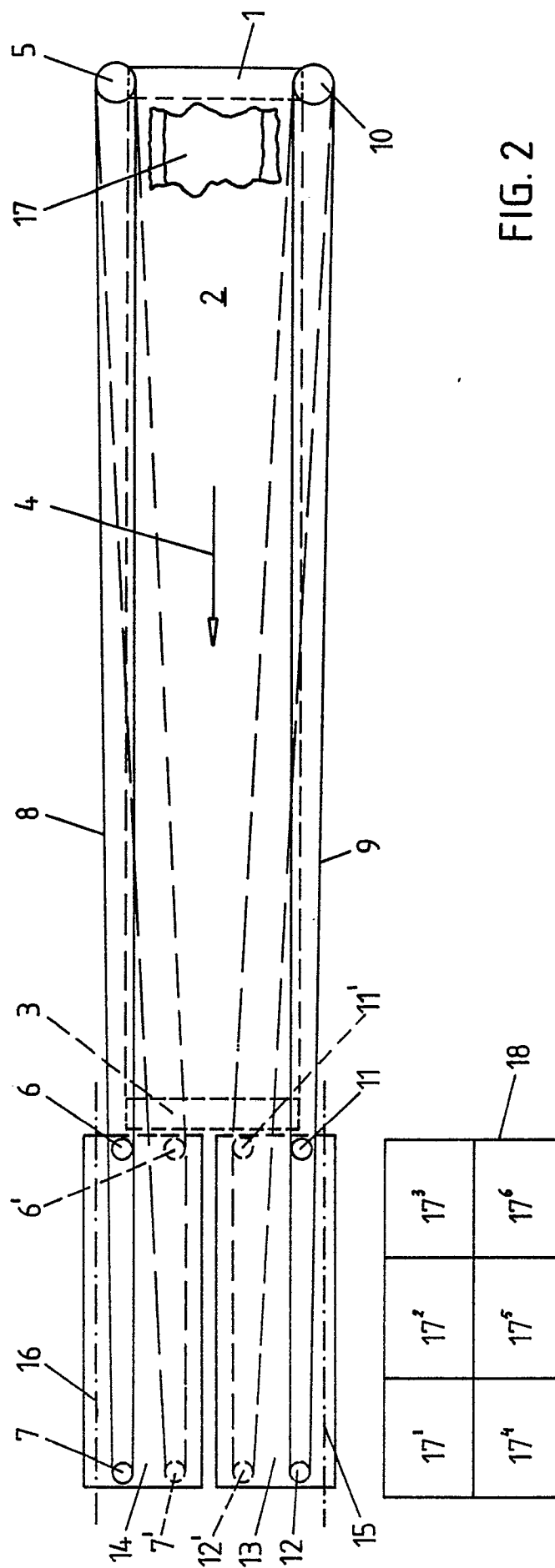


FIG. 2



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
D,Y	NL-A-7 004 838 (BASF) * Page 3, line 14 - page 4, line 30; figures 1-3 * ---	1-3	B 65 B 61/24
Y	US-A-3 331 184 (KRAUS) * Column 5, line 15 - column 6, line 17; figures 1-3,8,9 * ---	1-3	
Y	US-A-2 909 016 (SHERRILL) * Figures 3,4 * -----	3	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 65 B B 65 G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24-11-1989	Examiner CLAEYS H.C.M.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			