



(12)

EUROPEAN PATENT APPLICATION

- (43)

Date of publication:
22.09.2021 Bulletin 2021/38

(51)

Int Cl.:
B65B 11/32 (2006.01)
B65B 49/08 (2006.01)
B65B 25/00 (2006.01)
- (21)

Application number: 20163265.0
- (22)

Date of filing: 16.03.2020

- (84)

Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
 Designated Extension States:
BA ME
 Designated Validation States:
KH MA MD TN

(71)

Applicant: **Sacmi Packaging & Chocolate S.p.A.**
40026 Imola BO (IT)
- (72)

Inventors:
 • **FRANGELLA, Gianni**
 40026 IMOLA BO (IT)
 • **PESOLA, Luca**
 40122 BOLOGNA (IT)
 • **MARTINO, Pasquale**
 44042 CENTO FE (IT)

(74)

Representative: **Modiano, Micaela Nadia et al**
Modiano & Partners
Via Meravigli, 16
20123 Milano (IT)

(54)

PACKAGING ASSEMBLY

(57) A packaging assembly (1) comprising a carousel (2) provided with a plurality of processing stations arranged in succession, including a gripping station (3) in which respective gripping elements (4) receive at least one single product (P) with the interposition of a covering sheet (A) arranged in a U-shaped configuration in partial juxtaposition with the product (P) with two protruding free flaps (B), at least one covering and folding station (5), and a delivery station (5a) for delivering the product (P) to an outflow line. The gripping station (3) comprises at least two mutually opposite pushers (6), which are substantially aligned with a surface of the product (P), which is delimited by the two free flaps (B) of the sheet (A), when the product (P) is held by the gripping elements (4), the pushers (6) being movable between a first configuration of maximum mutual distance and a second configuration of substantial mutual abutment of the respective terminal fronts (7) with the interposition of the mutually juxtaposed flaps (B). At least one folding unit (8) is aligned with the lower surface of the terminal front (7) of at least one of the pushers (6), for folding the mutually juxtaposed flaps (B) onto themselves so as to define a folded seam (C).

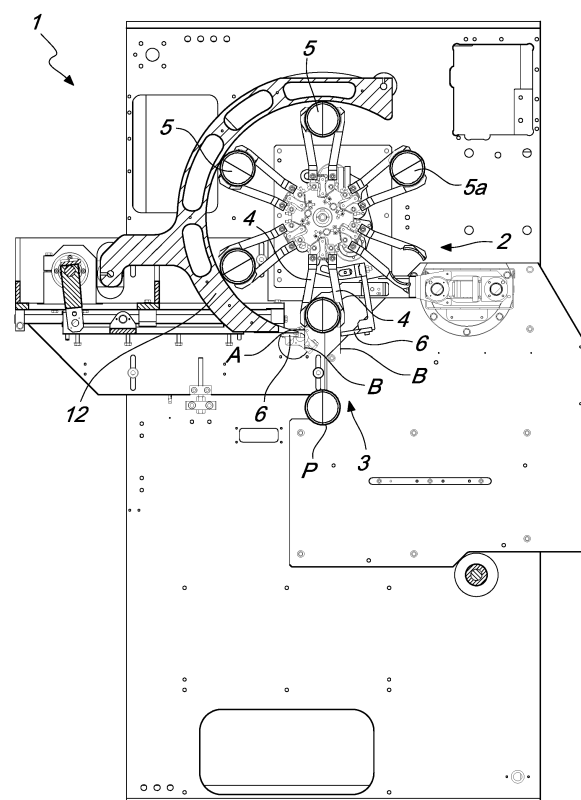


Fig. 4

Description

[0001] The present invention relates to a packaging assembly, particularly indicated for packaging food products such as chocolates of various shapes, chocolate eggs and the like.

[0002] The packaging of chocolates and, in particular, the packaging of chocolate eggs (of any size) is generally carried out using sheets of aluminum (or multilayer sheets that comprise a layer of aluminum).

[0003] For chocolate eggs of small dimensions and for chocolates of similar shape, a single sheet of aluminum is normally folded around the external surface, in order to cover it in a substantially continuous manner.

[0004] This type of packaging, however, does not enable the sheet to be closed in a completely stable manner, and it does not ensure the perfect isolation of the product with respect to the outside environment.

[0005] The aim of the present invention is to solve the above mentioned drawbacks, by providing a packaging assembly that ensures a high stability of the packaging sheet applied on the product.

[0006] Within this aim, an object of the invention is to provide a packaging assembly that makes it possible to optimally package the product, thus protecting it from the outside environment.

[0007] Another object of the invention is to provide a packaging assembly that makes it possible to provide a packaging that is better and more efficient, with respect to conventional types of packaging, for chocolate eggs and the like.

[0008] Another object of the present invention is to provide a packaging assembly that is of low cost, easily and practically implemented, and safe in use.

[0009] This aim and these and other objects which will become better apparent hereinafter, are achieved by a packaging assembly of the type comprising a carousel provided with a plurality of processing stations arranged in succession, including a gripping station in which respective gripping elements receive at least one single product with the interposition of a covering sheet arranged in a U-shaped configuration in partial juxtaposition with the product with two protruding free flaps, at least one covering and folding station, and a delivery station for delivering said product to an outflow line, characterized in that said gripping station comprises:

- at least two mutually opposite pushers, which are substantially aligned with a surface of said product, which is delimited by the two free flaps of said sheet, when said product is held by said gripping elements, said pushers being movable between a first configuration of maximum mutual distance and a second configuration of substantial mutual abutment of the respective terminal fronts with the interposition of said mutually juxtaposed flaps,
- at least one folding unit which is aligned with the lower surface of the terminal front of at least one of

said pushers, for folding said mutually juxtaposed flaps onto themselves so as to define a folded seam.

[0010] Further characteristics and advantages of the invention will become better apparent from the description of a preferred, but not exclusive, embodiment of the packaging assembly according to the invention, which is illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a schematic perspective view of a packaging assembly according to the invention;

Figure 2 is a schematic perspective view from a different viewpoint of the assembly of Figure 1;

Figure 3 is a side view of the assembly of Figure 1;

Figure 4 is a cross-sectional view taken along the line IV-IV shown in Figure 3;

Figure 5 is an enlarged view of the gripping station in a first operation step;

Figure 6 is an enlarged view of the gripping station in a second operation step;

Figure 7 is an enlarged view of the gripping station in a third operation step;

Figure 8 is an enlarged view of the gripping station in a fourth operation step;

Figure 9 is an enlarged view of the gripping station in a fifth operation step.

[0011] With reference to the figures, the reference numeral 1 generally designates a packaging assembly according to the invention.

[0012] The packaging assembly 1 comprises a carousel 2 which is provided with a plurality of processing stations arranged in succession.

[0013] In particular the assembly 1 comprises a first gripping station 3 in which respective gripping elements 4 receive at least one single product (P) with the interposition of a covering sheet A arranged in a U-shaped configuration in partial juxtaposition with the product P with two protruding free flaps B.

[0014] The arrangement of the sheet A on the product is obtained by virtue of the presence of a hopper through which the product P passes (conveyed by a respective elevator).

[0015] The sheet A is arranged immediately downstream of the hopper, so that the product P, passing through it, also entrains the sheet A, in so doing juxtaposing it partially against the surface of the product P with which the sheet A comes into contact, according to a technique that is known in the sector.

[0016] In particular the sheet A is kept in contact with a part of the surface of the product P by a "bracing elevator" which, in fact, blocks the sheet A by pressing it against the product P (this component, since it is conventional, is not specifically illustrated in the accompanying figures).

[0017] The carousel 2 further comprises at least one covering and folding station 5 and a delivery station 5a

for delivering the product P to an outflow line, not shown in the accompanying figures.

[0018] The gripping station 3 comprises at least two mutually opposite pushers 6, which are substantially aligned with a surface of the product P. In the accompanying figures the surface of the product P with which the pushers 6 are substantially aligned is the corresponding lower surface.

[0019] Such surface (i.e., the lower surface in the graphic examples provided merely by way of non-limiting example) is delimited by the two free flaps B of the sheet A, while the product P is held by the gripping elements 4.

[0020] The pushers 6 are conveniently movable between a first configuration of maximum mutual distance (visible merely by way of non-limiting example in Figure 5) and a second configuration of substantial mutual abutment of the respective terminal fronts 7 with the interposition of the mutually juxtaposed flaps B (visible merely by way of non-limiting example in Figure 6).

[0021] The movement of the pushers 6 is preferably synchronous, although different modes of movement are not ruled out.

[0022] In the embodiment shown in the accompanying figures, a first pusher 6 (the one shown merely by way of non-limiting example on the left in the figures) moves by performing a translation and therefore always remaining parallel to its axis of extension; a second pusher 6 (the one shown merely by way of non-limiting example on the right in the figures) moves according to a substantially circular trajectory. Such examples are provided merely for illustrative purposes, in that different laws of motion and trajectories for the pushers 6 can also be envisaged while remaining within the inventive concept identified by the present discussion.

[0023] The gripping station 3 further comprises at least one folding unit 8 aligned with the lower surface of the terminal front 7 of at least one of the pushers 6, for folding the mutually juxtaposed flaps B onto themselves so as to define a folded seam C (the type of folded seam C that it is intended to provide with the flaps B of the sheet A is shown merely by way of non-limiting example in Figure 9).

[0024] With particular reference to an embodiment of undoubted practical and applicative interest, at least one of the pushers 6 can conveniently comprise, on its terminal front 7, an element which is provided with a tab designed to surmount the front 7 of the other pusher 6 (with an arrangement visible merely by way of non-limiting example in Figure 6) when the two fronts 7 are in configuration of mutual abutment: such element will therefore define the folding unit 8 and can generate a fold through 90° of the flaps B, with respect to the portion thereof that is clamped between the two terminal fronts 7 (as visible merely by way of non-limiting example in Figure 6).

[0025] It should be noted that the element previously described could conveniently comprise a folding flap 9 which can rotate between a first configuration, in which

it is contiguous with and perpendicular to the terminal front 7 of the respective pusher 6 (the configuration shown merely by way of non-limiting example in the accompanying Figures 5, 6, 8 and 9), and a second configuration, in which the flap 9 is rotated through substantially 90° with respect to the first configuration, being arranged so that it faces and is proximate to the terminal front 7 of the respective pusher 6 (the configuration shown merely by way of non-limiting example in the accompanying Figure 7).

[0026] It should be noted that, in detail, the element previously described could advantageously comprise a substantially cylindrical seat 10 which is integral with the terminal front 7 of the respective pusher 7.

[0027] A semicylindrical insert 11 can then be rotatable about its own axis within such seat 10 and be coaxial with such seat 10.

[0028] The folding flap 9 will therefore be coinciding with a portion of the flat face of the insert 11.

[0029] The rotation of the insert 11 in the seat 10 will make it possible to fold onto itself the portion of the flaps B that was previously folded through 90° with respect to the part clamped between the terminal fronts 7 of the pushers 6 (the sequence of folding the flaps B is shown in Figures 6 to 9 by way of non-limiting example).

[0030] It is important to further specify that a contoured guide 12 is arranged between the gripping station 3 and the subsequent folding station 6 and is provided with a band 13 for folding the folded seam C.

[0031] The folding band 13 substantially coincides with the trajectory of the external surface, with respect to a radial direction referred to the carousel 2, of the product P partially covered by the sheet A, for the juxtaposition of the folded seam C on the external surface of the sheet A when having a substantially tubular shape (by way of non-limiting example the product P is shown partially covered by the sheet A in a configuration of proximity to the band 13 in the accompanying Figure 9, using a dotted line).

[0032] The assembly 1 further comprises, at the gripping station 3, at least one shape retention element 14 for the sheet A.

[0033] The shape retention element 14 performs its function at the time of the operations to fold the sheet A, up to when the sheet A is partially wrapped on the product P and assumes a substantially tubular shape (the shape retention element 14 is no longer needed after the folded seam C has been fully completed).

[0034] The shape retention element 14 will advantageously comprise at least one substantially prismatic body 15 which has a cross-section that is complementary to the cross-section of the sheet A, when wrapped to form a tube, for its insertion into the wrapped sheet A during the operations to juxtapose the flaps B and form the corresponding folded seam.

[0035] In particular the substantially prismatic body 15 can be cylindrical, conical, frustum-shaped, pyramidal, truncated-pyramidal, polyhedral and a combination

thereof.

[0036] The assembly 1, according to a particularly advantageous embodiment, can positively comprise a support shelf 16 for supporting the substantially prismatic body 15 of the at least one shape retention element 14.

[0037] The shelf 16 will be arranged parallel to the axis of the sheet A when wrapped to form substantially a tube.

[0038] The shelf 16 will comprise at least one slider 17 which can translate longitudinally, to which an upright 18 will be coupled which is designed to support the substantially prismatic body 15.

[0039] In this manner it will be possible, according to the stroke of the slider 17 along the shelf 16, to move the substantially prismatic body toward and away from the product P held between the gripping elements 4.

[0040] It should furthermore be noted that at least one covering and folding station 6 (arranged downstream of the gripping station 3) will comprise movable apparatuses (which may be of a substantially conventional type) for arranging the free end portions of the sheet A, which was previously folded in a tubular shape, against corresponding surfaces of the product P.

[0041] In this manner the sheet A will be juxtaposed against the surface of the product P, in so doing passing from the substantially tubular shape to having a shape and dimensions that match those of the product P (of which it will constitute a surface covering).

[0042] Advantageously the present invention solves the above mentioned problems, by providing a packaging assembly 1 that ensures a high stability of the packaging sheet A applied on the product P, by virtue of the possibility of providing a folded seam C between the flaps of the sheet A that is wrapped around the product P.

[0043] Conveniently the assembly 1 according to the invention makes it possible to optimally package the product, in so doing protecting it from the outside environment: the presence of the folded seam C, in fact, ensures that the two flaps B do not come away from each other.

[0044] Usefully the packaging assembly 1 according to the invention makes it possible to provide a package that is better and more efficient, with respect to conventional types of packaging, for chocolate eggs and the like, although having the same appearance and being provided with the same materials (generally sheets A of aluminum).

[0045] Positively the present invention makes it possible to provide a packaging assembly that is easily and practically implemented and which is of low cost: such characteristics make the assembly 1 according to the invention an innovation that is certain to be safe in use.

[0046] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0047] In the embodiments illustrated, individual characteristics shown in relation to specific examples may in

reality be interchanged with other, different characteristics, existing in other embodiments.

[0048] In practice, the materials employed, as well as the dimensions, may be any according to requirements and to the state of the art.

[0049] Where the technical features mentioned in any claim are followed by reference numerals and/or signs, those reference numerals and/or signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference numerals and/or signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference numerals and/or signs.

Claims

1. A packaging assembly of the type comprising a carousel (2) provided with a plurality of processing stations arranged in succession, including a gripping station (3) in which respective gripping elements (4) receive at least one single product (P) with the interposition of a covering sheet (A) arranged in a U-shaped configuration in partial juxtaposition with the product (P) with two protruding free flaps (B), at least one covering and folding station (5), and a delivery station (5a) for delivering said product (P) to an out-flow line, **characterized in that** said gripping station (3) comprises:

- at least two mutually opposite pushers (6), which are substantially aligned with a surface of said product (P), which is delimited by the two free flaps (B) of said sheet (A), when said product (P) is held by said gripping elements (4), said pushers (6) being movable between a first configuration of maximum mutual distance and a second configuration of substantial mutual abutment of the respective terminal fronts (7) with the interposition of said mutually juxtaposed flaps (B),
- at least one folding unit (8) which is aligned with the lower surface of the terminal front (7) of at least one of said pushers (6), for folding said mutually juxtaposed flaps (B) onto themselves so as to define a folded seam (C).

2. The assembly according to claim 1, **characterized in that** at least one of said pushers (6) comprises, on its terminal front (7), an element which is provided with a tab designed to surmount the front of the other pusher (6) in the configuration of mutual abutment of the two terminal fronts (7) of said pushers (6), said element defining said folding unit (8).

3. The assembly according to claim 2, **characterized in that** said element comprises a folding flap (9) which can rotate between a first configuration, in

which the flap (9) is contiguous with and perpendicular to the terminal front (7) of the respective pusher (6), and a second configuration, in which the flap (9) is rotated through substantially 90° with respect to the first configuration, being arranged so that it faces and is proximate to the terminal front (7) of the respective pusher (6).

tubular shape, against corresponding surfaces of said product (P).

4. The assembly according to claim 3, **characterized in that** said element comprises a substantially cylindrical seat (10) which is integral with the terminal front (7) of the respective pusher (6), a semicylindrical insert (11) being rotatable about its own axis within said seat (10) and being coaxial with said seat (10), said folding flap (9) coinciding with a portion of the flat face of said insert (11).
5. The assembly according to claim 1, **characterized in that** a contoured guide (12) is provided between said gripping station (3) and the subsequent said folding station (6) and is provided with a band (13) for folding said folded seam (C) with a surface that substantially coincides with the trajectory of the external surface, with respect to a radial direction referred to the carousel (2), of the product (P) partially covered by the sheet (A), for the juxtaposition of said folded seam (C) on the external surface of the sheet (A) when presenting a substantially tubular shape.
6. The assembly according to claim 1, **characterized in that** it comprises, at said gripping station (3), at least one shape retention element (14) for said sheet (A), when said sheet (A) is partially wrapped around said product (P) and assumes a substantially tubular shape, said shape retention element (14) comprising at least one substantially prismatic body (15) which has a cross-section that is complementary to the cross-section of the sheet (A), when wrapped to form a tube, for its insertion into said wrapped sheet (A) during the operations to juxtapose the flaps (B) and form the corresponding folded seam.
7. The assembly according to claim 6, **characterized in that** it comprises a support shelf (16) for supporting said substantially prismatic body (15) of the at least one shape retention element (14), which is arranged parallel to the axis of said sheet (A) when wrapped to form substantially a tube, said shelf (16) comprising at least one slider (17) which can translate longitudinally and to which an upright (18) is coupled which is designed to support said substantially prismatic body (15).
8. The assembly according to one or more of the preceding claims, **characterized in that** said at least one covering and folding station (6) comprises movable apparatuses for arranging the free end portions of said sheet (A), which was previously folded in a

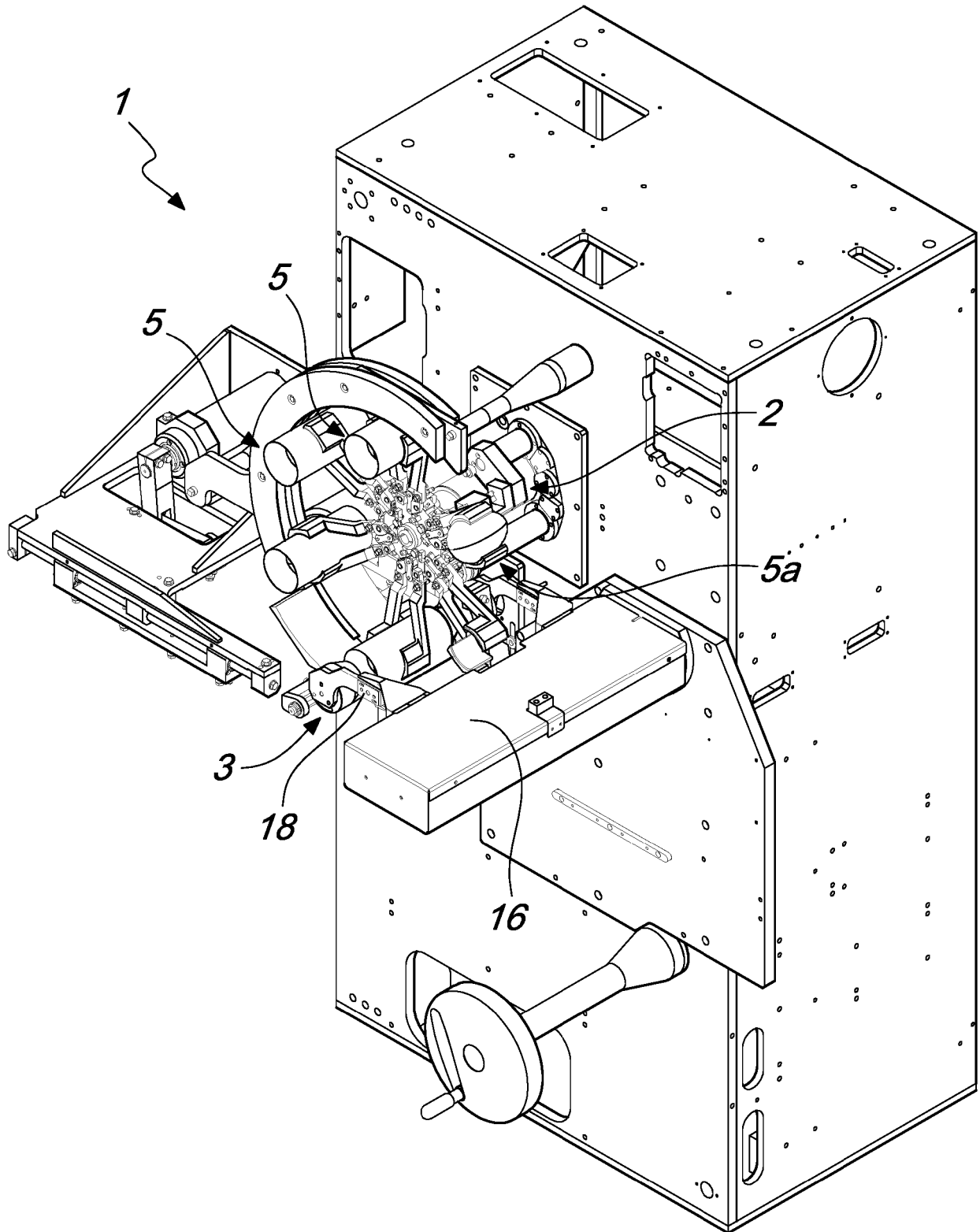


Fig. 1

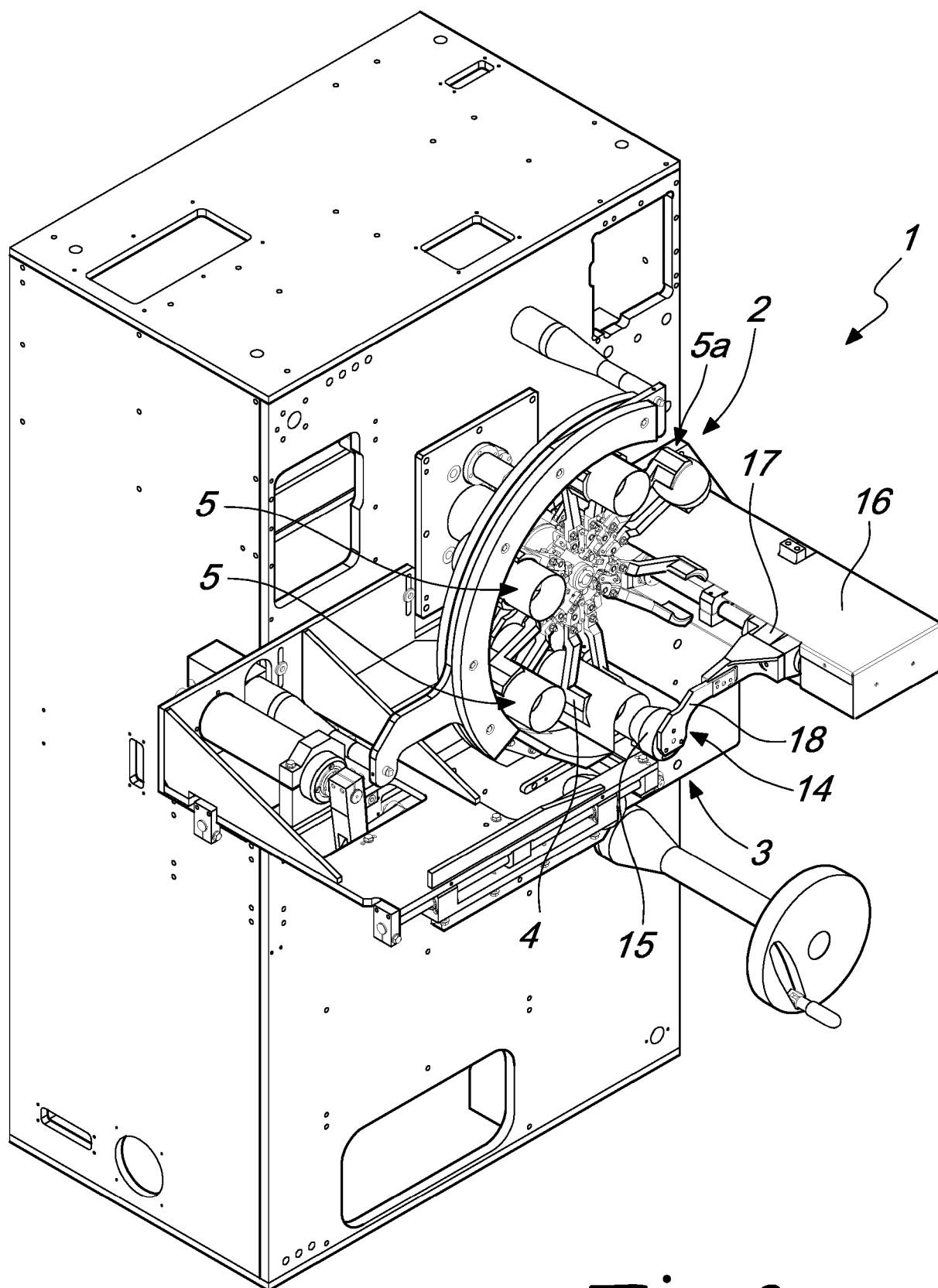


Fig. 2

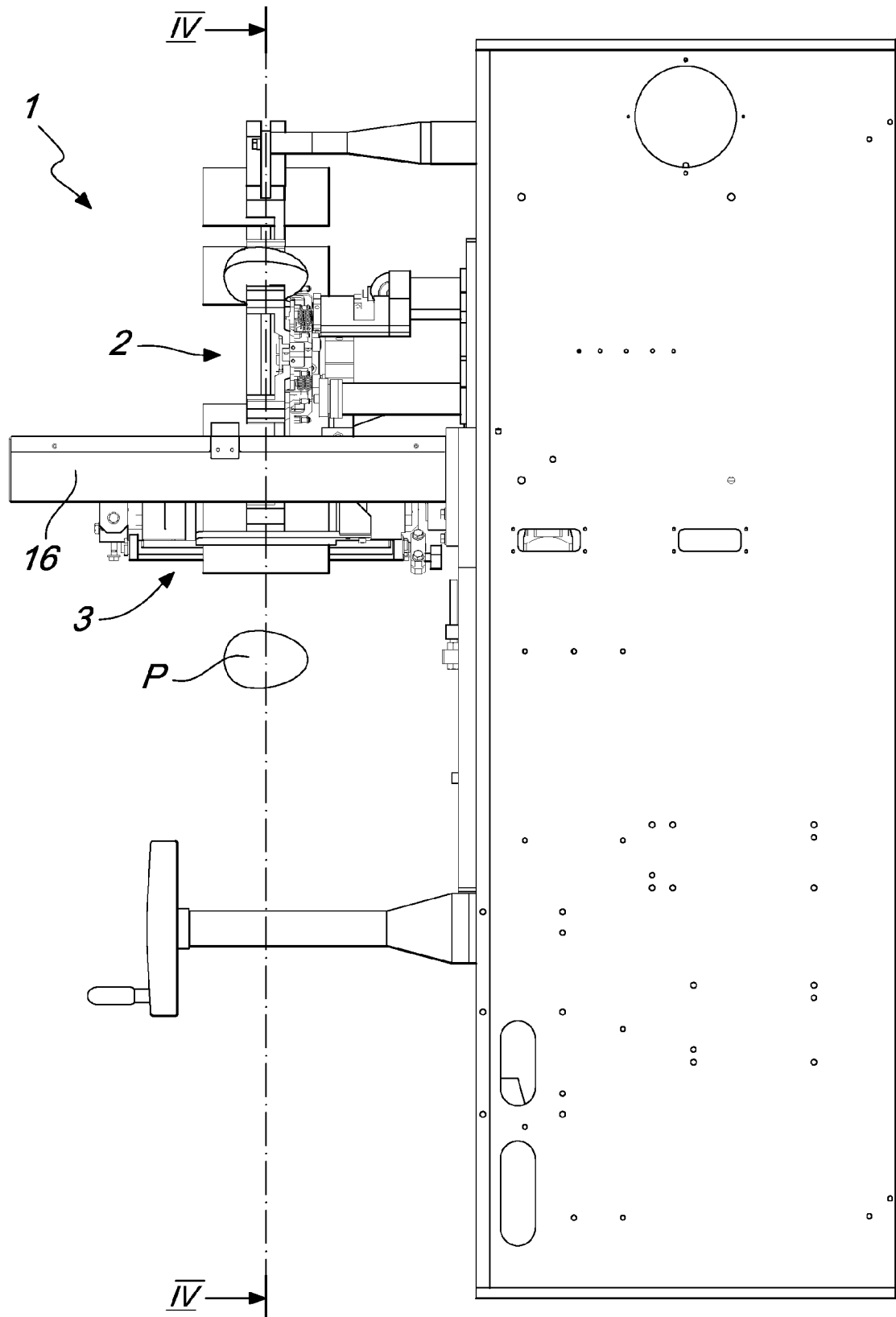


Fig. 3

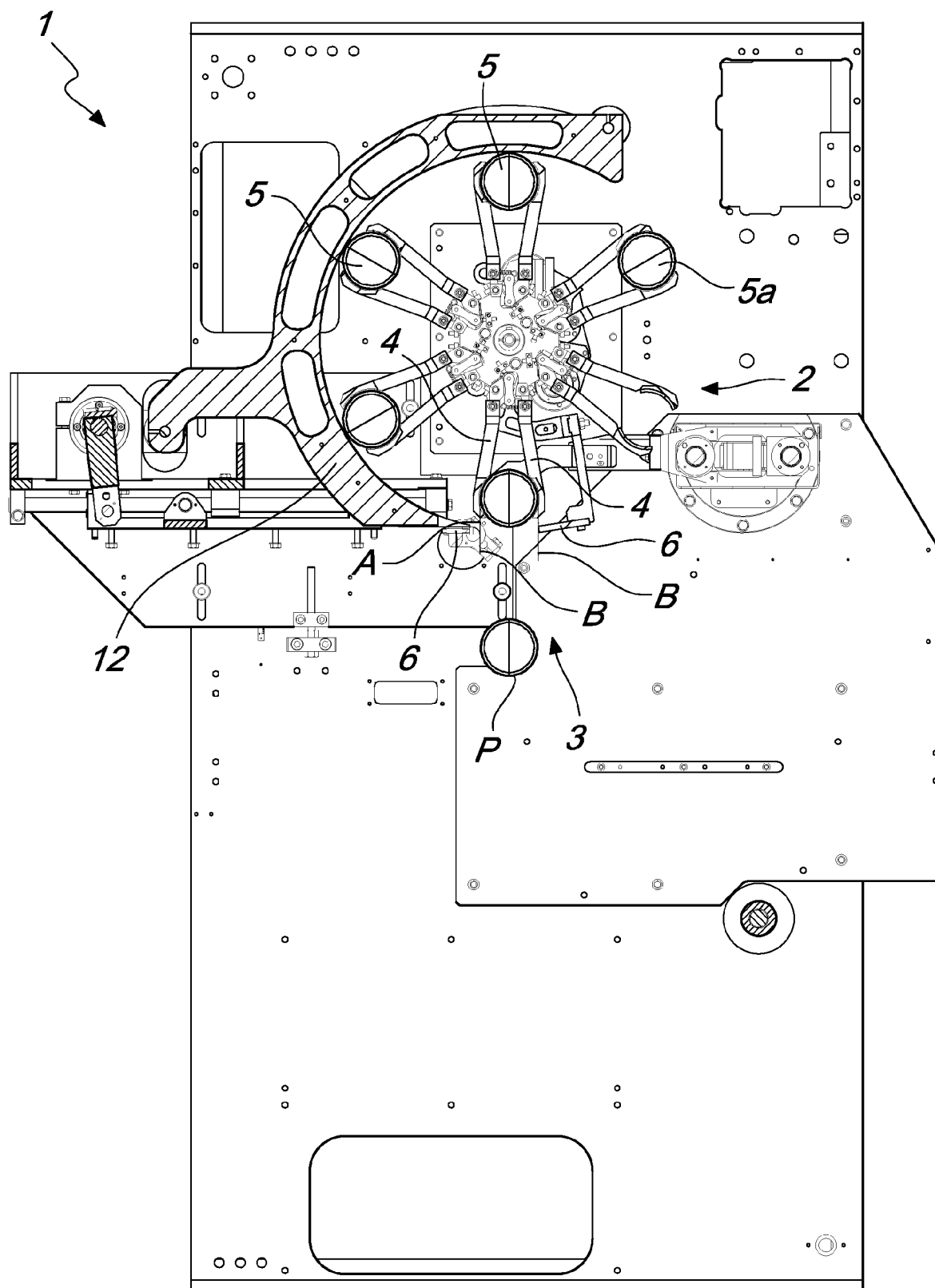
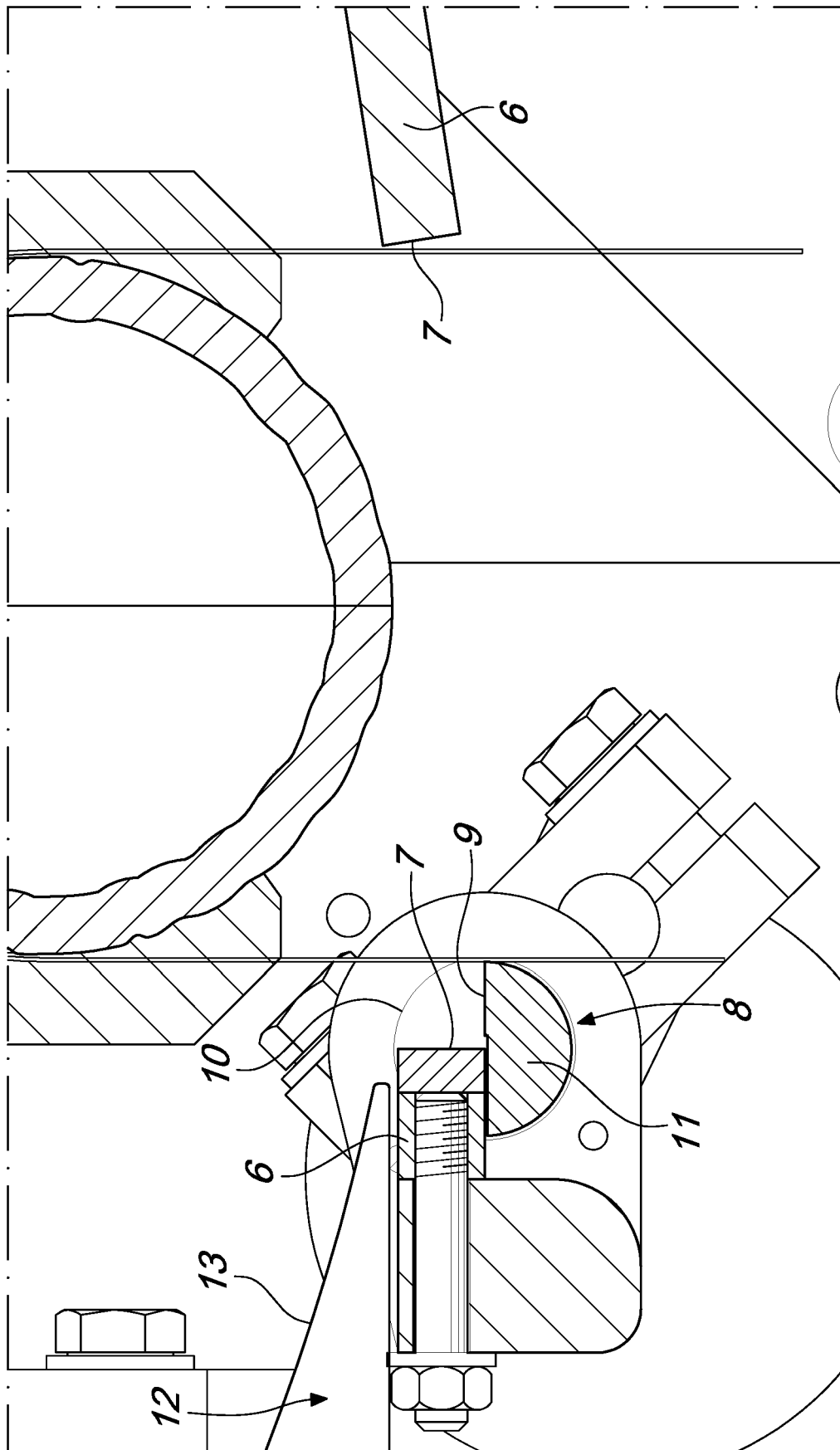


Fig. 4



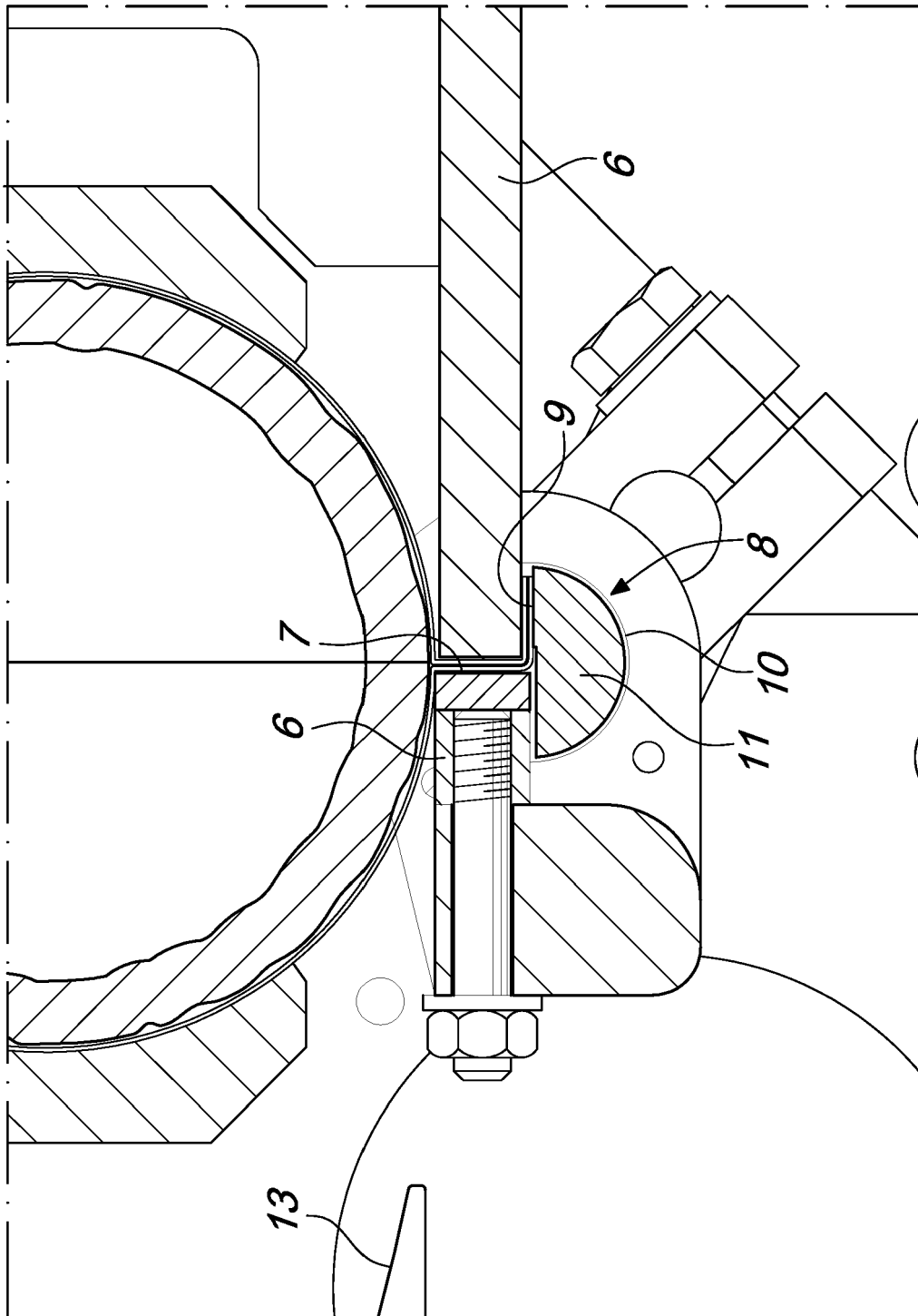
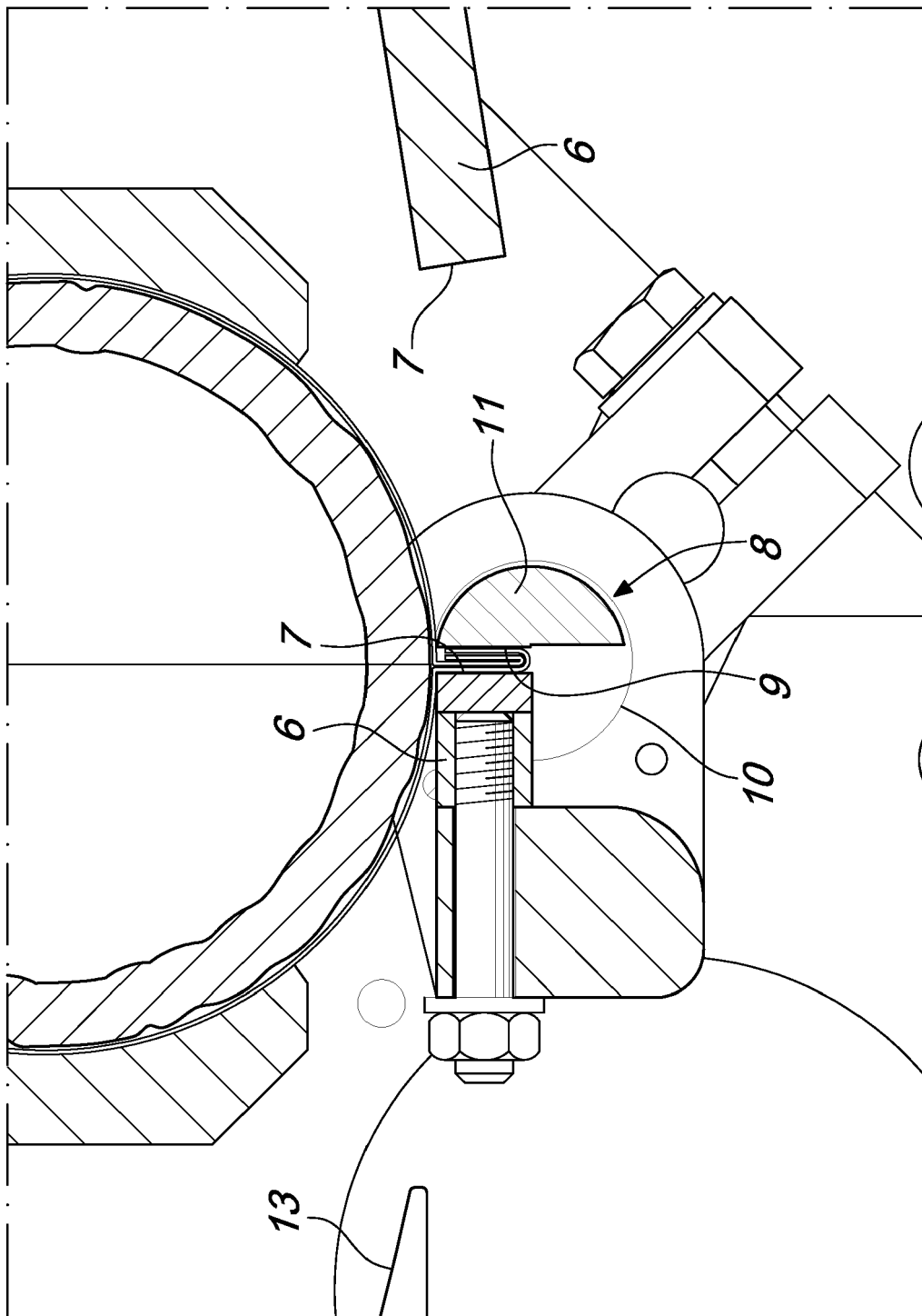


Fig. 6



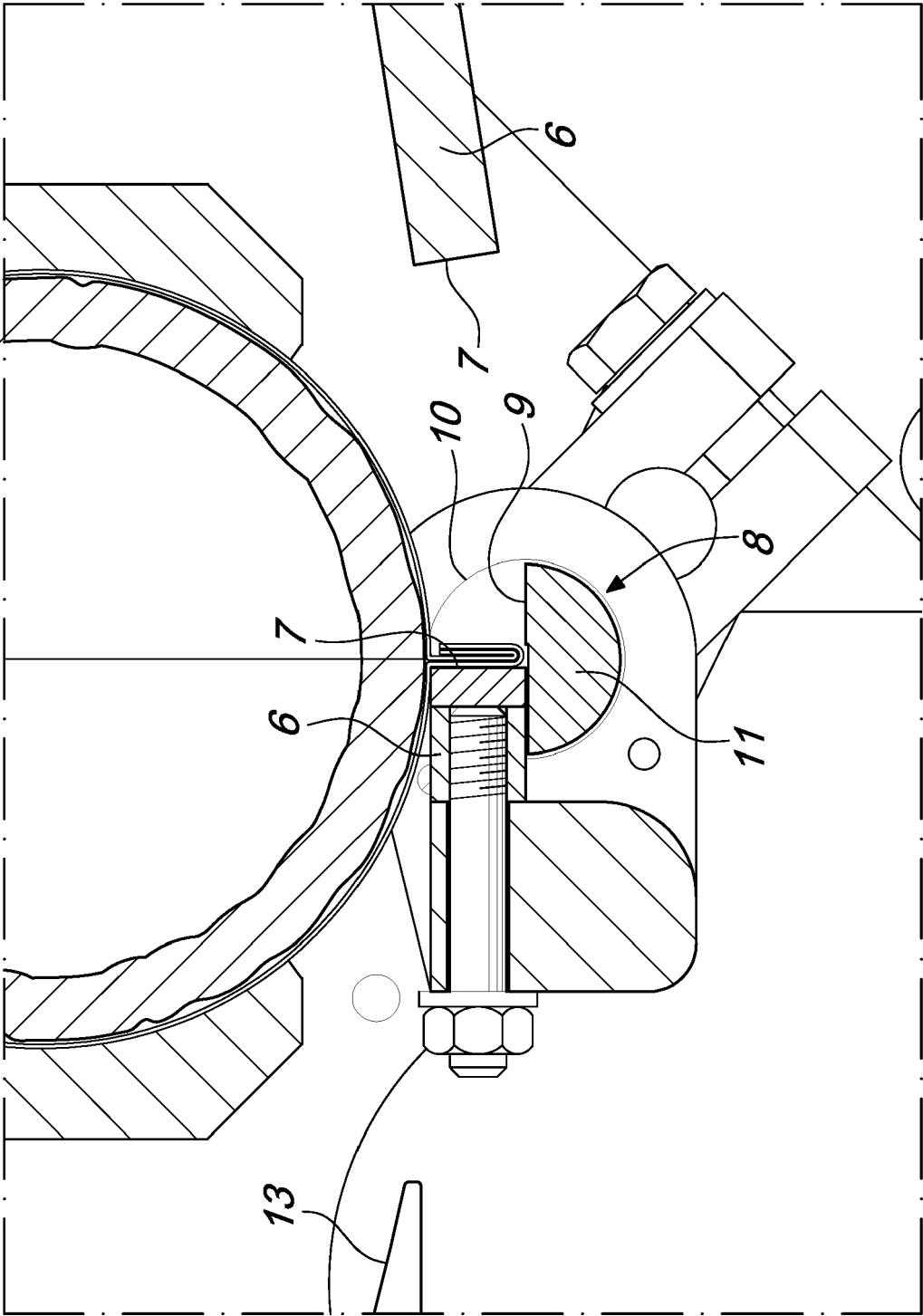
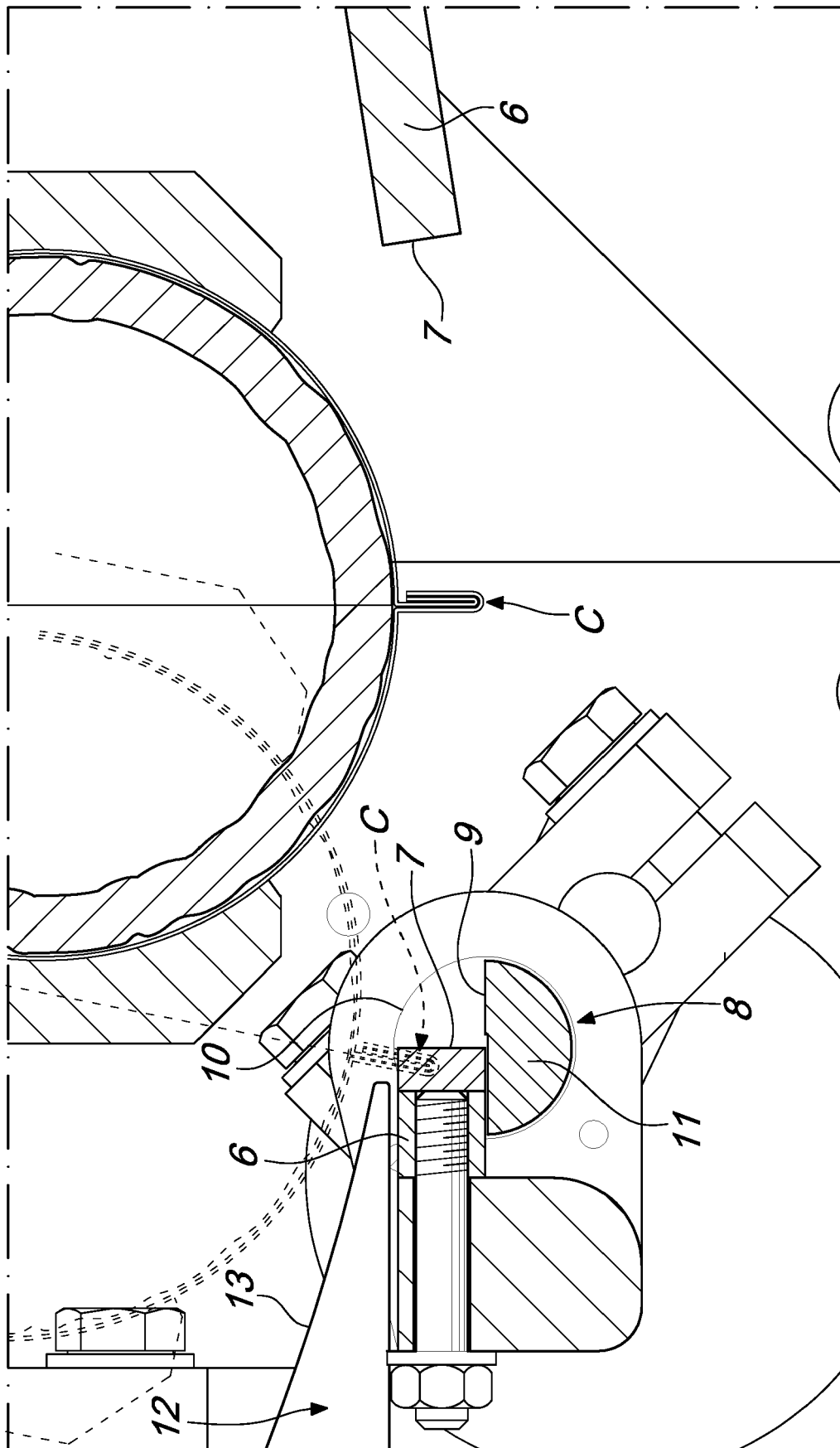


Fig. 8





EUROPEAN SEARCH REPORT

 Application Number
 EP 20 16 3265

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2 276 584 A (MALHIOT CLARENCE J) 17 March 1942 (1942-03-17) * page 1, column 2, line 6 - page 3, column 2, line 36 *	1-5,8	INV. B65B11/32 B65B25/00 B65B49/08
X	CH 426 609 A (SAPAL PLIEUSES AUTOMATIQUES [CH]) 15 December 1966 (1966-12-15) * page 1, line 42 - page 2, line 38 *	1-5,8	
Y	WO 2007/132330 A1 (AZIONARIA COSTRUZIONI ACMA SPA [IT]; STIVANI EROS [IT] ET AL.) 22 November 2007 (2007-11-22) * page 4, line 24 - page 17, line 25 *	6	
Y	WO 2007/113752 A2 (M C AUTOMATIONS S R L [IT]; CASELLI MARIO [IT]) 11 October 2007 (2007-10-11) * the whole document *	6	
A		7	
A		1	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 November 2020	Examiner Yazici, Baris
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			

EPO FORM 1503 03.82 (P04C01)



Application Number

EP 20 16 3265

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 20 16 3265

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-5, 8

an element which comprises a folding flap which can rotate between a first and a second configuration and a contoured guide.

2. claims: 6, 7

a shape retention element.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 20 16 3265

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-11-2020

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2276584 A	17-03-1942	NONE	
CH 426609 A	15-12-1966	NONE	
WO 2007132330 A1	22-11-2007	AT 529337 T EP 2024232 A1 WO 2007132330 A1	15-11-2011 18-02-2009 22-11-2007
WO 2007113752 A2	11-10-2007	AT 442299 T EP 2007628 A2 WO 2007113752 A2	15-09-2009 31-12-2008 11-10-2007

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82