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(54) **Apparatus and folding means for wrapping a lollipop**

(57) The present invention is related to an apparatus for wrapping a lollipop with a stick in a wrapping material by twisting, said apparatus being provided with:

- a lollipop-holder, which is rotatable around an axis and which is preferably axially movable to and fro,
- a pair of folding means being continuously rotatable, synchronously with the lollipop holder around the axis, the folding means defining both a folding opening and are movable relative to each other to increase and reduce the folding opening
- means for feeding wrapping material between the folding means and the lollipop holder and for cutting the wrapping material and twisting means, continuously rotatable

around axis, synchronously with the lollipop holder, for twisting one end of the wrapping material round the lollipop stick.

The present invention is further related to an apparatus for wrapping a lollipop with a stick in a wrapping material by twisting said apparatus being provided with a lollipop-holder, which is rotatable around an axis and which is preferably axially movable to and fro, a pair of folding means being continuously rotatable, synchronously with the lollipop holder around the axis, the folding means defining both a folding opening and are movable relative to each other to increase and reduce the folding opening.

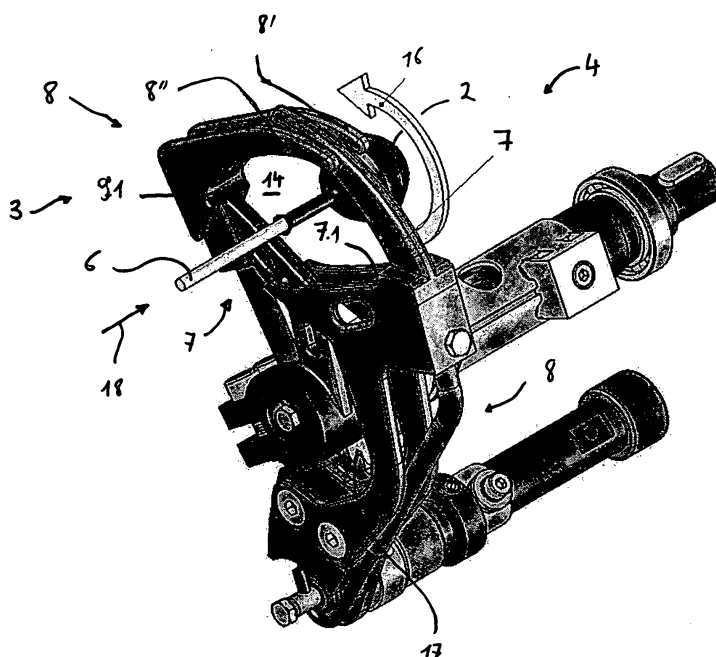


Fig. 5

Description

[0001] The present invention is related to an apparatus for wrapping a lollipop with a stick in a wrapping material by twisting, said apparatus being provided with:

- a lollipop-holder, which is rotatable around an axis and which is preferably axially movable to and fro,
- a pair of folding means being continuously rotatable, synchronously with the lollipop holder around the axis, the folding means defining both a folding opening and are movable relative to each other to increase and reduce the folding opening
- means for feeding wrapping material between the folding means and the lollipop holder and for cutting the wrapping material and twisting means, continuously rotatable around axis, synchronously with the lollipop holder, for twisting one end of the wrapping material round the lollipop stick.

[0002] The present invention is further related to an apparatus for wrapping a lollipop with a stick in a wrapping material by twisting said apparatus being provided with a lollipop-holder, which is rotatable around an axis and which is preferably axially movable to and fro, a pair of folding means being continuously rotatable, synchronously with the lollipop holder around the axis, the folding means defining both a folding opening and are movable relative to each other to increase and reduce the folding opening.

[0003] The above mentioned apparatus and the above mentioned folding means are for the example known from EP 0 718 192. However, this apparatus and this folding mean have the disadvantage that the twisting and sealing of the wrapping material around the sticks is often insufficient.

[0004] It was therefore the objective of the present invention to provide an apparatus and folding means which do not have the deficiencies of the state of the art.

[0005] The problem is solved with an apparatus for wrapping a lollipop with a stick in a wrapping material by twisting, said apparatus being provided with

- a lollipop-holder, which is rotatable around an axis and which is preferably axially movable to and fro
- a pair of folding means being continuously rotatable, synchronously with the lollipop holder around the axis the folding means defining both a folding opening and are movable relative to each other to increase and reduce the folding opening
- means for feeding wrapping material between the folding means and the lollipop holder and for cutting the wrapping material, and
- twisting means continuously rotatable around axis, synchronously with the lollipop holder, for twisting one end of the wrapping material round the lollipop stick,

whereas each folding means comprises two sections one being single-legged and one being double-legged.

[0006] The problem is further solved with folding means to fold a wrapping material around a lollipop and seal it to its stick with a pair of folding means, being continuously rotatable, synchronously with the lollipop holder around the axis, the folding means defining both a folding opening and are movable relative to each other to increase and reduce the folding opening, whereas folding means comprises two sections, one being single-legged and one being double-legged.

[0007] The following disclosure relates to the apparatus and to the folding means likewise.

[0008] Preferably the single legged section of one holding means is inserted into the double legged section of the other holding means, when the folding means are moved relative to each other.

[0009] According to a preferred embodiment of the present invention, the double legged section is made of two parts; i.e. two separate legs, which are, more preferably, connected by connecting means. The legs are connected to each other or the connecting means by form fit, force closure and/or an adhesive bond. The connecting means and/or the legs may comprise means to position the legs correctly relative to the connecting means and/or relative to each other.

[0010] Preferably each means comprises a forming-and/or a sealing area. More preferably, the forming-and/or sealing area of the two folding means cooperate in forming and/or sealing the wrapping material around the stick of the lollipop. Even more preferably, the forming and/or sealing area is a corrugation, which extends over the entire width of the folding means.

[0011] Preferably, the folding means are heated, especially in the vicinity of the corrugation. Therefore, the folding means either comprises heating means or is heated by induction or radiation.

[0012] According to another preferred embodiment, the folding means are made from metal.

[0013] The invention is now explained according to Figures 1-7. These explanations do not limit the scope of protection of the present invention. The explanation apply to both inventions likewise.

Figures 1 and 2 show the inventive apparatus.

Figure 3 shows the first folding means.

Figure 4 shows the second folding means.

Figures 5-7 shows details of the inventive apparatus and detail of the inventive folding means.

[0014] **Figure 1** shows a schematic view, and **figure 2** shows a schematic section, of an apparatus for wrapping a lollipop in a single-twist wrapping. The apparatus is provided with a known holder, not shown, for a lollipop 2. The holder of lollipop 2, 6, which holds the stick 6, is

continuously rotatable around a first axis 5 and axially; e.g. parallel to axis 5, moveable to and fro, as depicted by arrow 20. The apparatus further comprises a number of pairs of folding plates 3, 4 being rotatable synchronously with the lollipop holder around the axis 5. The folding plates 3, 4 are only depicted schematically and can be seen in more detail in figures 3 - 7. One first folding plate 4 of each pair is, in the present case, connected via a lever 12 to a curve roll 11, which curve roll contacts a curve path 10 and runs over it. The second folding plate 3 is, according to the present example, connected via a rack to the first folding plate 4. Each pair of folding plates 3, 4 form a folding opening 14. Due to the shape of the curve path 10, when the curve roll 11 runs over the curve path 10, the folding plates 3, 4 will move towards and away from each other, by which the folding opening 14 can be increased or reduced as desired. The person skilled in the art understands, that the folding plates 3, 4 can also be driven by any other means. They are, however, preferably synchronized. The apparatus also comprises a known feeding apparatus, not shown, for feeding the wrapping material 1 between a pair of folding plates 3, 4 and the lollipop 2, 6 in the lollipop holder. This feeding apparatus is also provided with a cutting apparatus for cutting a piece wrapping material at the desired size. Wrapping a lollipop head 2 in a single-twist wrapping, in which the lollipop holder and the pair of folding plates 3, 4 are driven continuously around axis 5, is done as follows:

The wrapping material 1 is placed, as depicted by arrow 19, by the feeding apparatus (not depicted) between the lollipop 2, 6 in the lollipop holder (not depicted) and the pair of folding plates 3, 4. Due to the cooperation between the curve path 10 and the curve roll 11, the mutual position of the folding plates 3, 4 is herein such, that the folding opening 14 is maximum. The lollipop 2 is subsequently moved axially by the lollipop holder against the wrapping material 1. At which same time a piece of wrapping material is cut off and the lollipop 2, 6 is moved further through the folding opening 14 between the folding plates 3, 4. Hereby the wrapping material is taken along by the head 2 of the lollipop and, when the head of the lollipop is located beyond the folding plates 3, 4, the piece of wrapping material will be folded partially around the head of the lollipop 2. At the moment at which the head of the lollipop 2 is located beyond the folding plates 3, 4, rotation of the lollipop holder and the pair of folding plates 3, 4, around axis 5, has brought the curve roll 11 in such a position of the curve path 10 in which the folding plates 3, 4 move towards each other, thereby reducing the folding opening 14, as a consequence of which the piece of wrapping material is folded further around the head of the lollipop. The reduction of the folding opening 14 continues until the lollipop stick 18 is clamped by the folding plates 3, 4.

In this moment, the head of the lollipop 2 is located in a twisting apparatus 17 which is rotatable synchronously with the lollipop holder around a third axis 5 being in line

with the first axis and which finishes the single-twist wrapping by twisting the ends of the piece of wrapping material with a twisting movement around the lollipop stick 6.

After this, cooperation of the curve roll 11 and the curve path 10 increases the folding opening 14 so that the lollipop holder can retract the wrapped lollipop through the folding plates 3, 4 and can deliver it for further processing and the wrapping of another lollipop can be started.

[0015] Figure 3 shows one of the folding means 3.

This folding means comprises a first single-legged section 7 and a second double-legged section 8. One end of section 7 is connected to means 13, here a clamp, which fixes the folding means 3 to the inventive apparatus. The other end of the first section 7 is connected to the two legs 8', 8" of the second section 8 via connecting means 9. Here, the double legged section is further away from the means 13 than the single legged section. The connecting means 9 as well as the two legs 8', 8" each comprises a groove 8.1', 8.1", 9.1, which forms a sealing- and forming area for twisting, shaping and/or sealing the wrapping material around the stick 6 of the lollipop. This area can be preferably heated to facilitate the forming and/or sealing of the wrapping material.

[0016] Figure 4 shows the other folding means 4. This folding means 4 comprises a first single-legged section 7 and a second double-legged section 8. In this embodiment, the double-legged section 8 is closer to the means 13 than the single-legged section 7. The double-legged section 8 comprises two parts which are at one end connected preferably via connecting means with the single leg 7, and the other end is connected to the inventive apparatus. In the present case, the connecting means can be made in one piece with the leg 7. The single leg 7, the double legs 8 and/or the connecting means 9 may comprise a groove 7.1, 8.1', 8.1", 9.1 to improve the twisting, forming and/or sealing of the wrapping material around the stick 6. Furthermore, as already explained above, this folding means 4 can also be heated in order to improve the forming and sealing of the wrapping material. However it can also be sufficient, that only one of the folding means 3, 4 is heated.

[0017] Figures 5 to 7 show the cooperation of the two folding means 3, 4 during the wrapping of the lollipop. Both folding means are connected to the apparatus (not depicted) and can be moved, here rotated, relative to each other back and forth. The folding means 3 and 4 are positioned at the apparatus such that the single-legged section 7 of folding means 4 can be inserted between the two legs 8', 8" of section 8 of folding means 3 and vice versa.

[0018] Figure 5 shows the initial position of the folding means 3 and 4, in which they are spaced far apart in order to provide a folding opening 14 through which the head 2 of the lollipop can be moved, as depicted by the arrow 18. Both folding means 3 and 4 can be moved, here rotated, relative to each other whereas, in the present example, they both have only a single drive and are synchronized via synchronization means 17. The per-

son skilled in the art understands that it is also possible to maintain one folding means in a stationary position and rotate only the other folding means. As soon as the lollipop has been pushed through the folding opening, the area 14 is reduced, by moving the means 3, 4 towards each other, so that the wrapping material is wrapped around the head 2. At this instance or later, the twisting of the lollipop 2, 6 is initiated. The twisting direction is depicted by arrow 16.

[0019] As can be also seen from figure 5, the single leg 7, the two legs 8', 8" and/or the connecting means 9 form a groove at each folding means 3, 4, respectively, which have, in the present case, reference signs 7.1, 9.1, which facilitate the twisting, forming and/or sealing of the wrapping material. At least one, preferably both, of the folding means 3, 4, preferably in the region around the grooves 7.1, 9.1 is heated in order to facilitate the forming, twisting and/or sealing of the wrapping material.

[0020] In the depiction according to figure 6, the two folding means 3, 4 have already been moved together. Due to this movement, the opening 14 is reduced and the wrapping material is thus formed and/or twisted around the head 2 and/or the stick 6 of the lollipop.

[0021] In figure 7, the twisting and sealing of the wrapping material is in its final stage. The two folding means 3, 4 are now in the closest position, so that the sealing-, forming grooves 7, 1, 9.1 are in direct contact with the wrapping material around the stick. This close contact insures that the twisting of the material around the stick 6 and the sealing of this area is ideal so that it will not open unintentionally.

List of reference signs:

[0022]

1	wrapping material	
2	lollipop	
3	folding means, folding arms, sealing means, second folding means	
4	folding means, folding arms, sealing means, first folding means	
5	first axis, second axis	
6	stick of the lollipop	
7	first section, single leg	
7.1	sealing-, forming- area	
8	second section, double leg	
8'	first leg	
8"	second leg	
8.1	sealing-, forming- area	
8.1'	sealing-, forming- area	
8.1"	sealing-, forming- area	
9	connecting means	
9.1	sealing-, forming area	
10	curve roll	
11	roll	
12	lever	
13	fixing means, clamp	

14	folding opening
15	twisting means
16	rotation direction of the lollipop
17	drive, synchronization
5 18	arrow
19	arrow
20	arrow

10 Claims

1. Apparatus for wrapping a lollipop (2) with a stick (6) in a wrapping material (1) by twisting, said apparatus being provided with

- a lollipop-holder, which is rotatable around an axis (5) and which is preferably axially movable to and fro

- a pair of folding means (3, 4), being continuously rotatable, synchronously with the lollipop holder around the axis (5), the folding means (3, 4) defining both a folding opening (14) and are movable relative to each other to increase and reduce the folding opening (14),

- means for feeding wrapping material between the folding means (3, 4) and the lollipop holder and for cutting the wrapping material,

- and twisting means (17), continuously rotatable around axis (5), synchronously with the lollipop holder, for twisting one end of the wrapping material round the lollipop stick (6),

characterized in, that each folding means (3, 4) comprises two sections (7, 8), one being single-legged (7) and one being double-legged (8).

2. Folding means to fold a wrapping material (1) around a lollipop (2) and seal it to its stick (6) with a pair of folding means (3, 4), being continuously rotatable, synchronously with the lollipop holder around the axis (5), the folding means (3, 4) defining both a folding opening (14) and are movable relative to each other to increase and reduce the folding opening (14), **characterized in, that**, that each folding means (3, 4) comprises two sections (7, 8), one being single-legged (7) and one being double-legged (8).

3. Apparatus and folding means according to claim 1 or 2, **characterized in, that** the single legged section (7) of one holding means (3) is inserted into the double-legged section (8) of the other holding means (4)

4. Apparatus and folding means according to one of the preceding claims, **characterized in, that** the double legged section (8) is made of two parts (8', 8'').

5. Apparatus and folding means according to one of

the preceding claims, that each means (3, 4) comprises a forming and/or sealing-area (7.1, 8.1, 8.1', 8.1'' 9.1)

6. Apparatus and folding means according to one of the preceding claims, **characterized in, that** the means (3, 4) are heated. 5
7. Apparatus and folding means according to one of the preceding claims, **characterized in, that** the means (3, 4) are made from metal. 10

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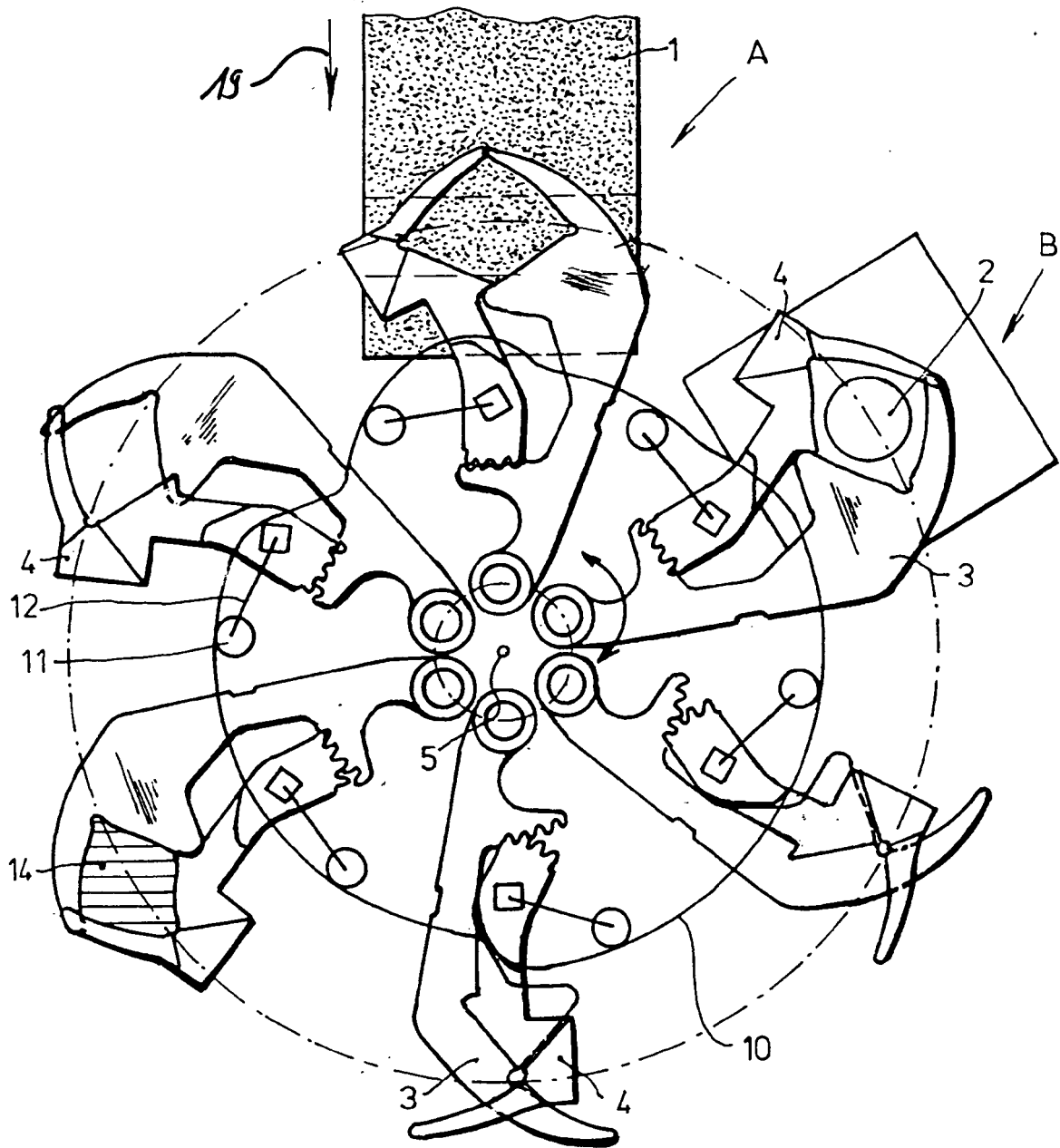


FIG.1

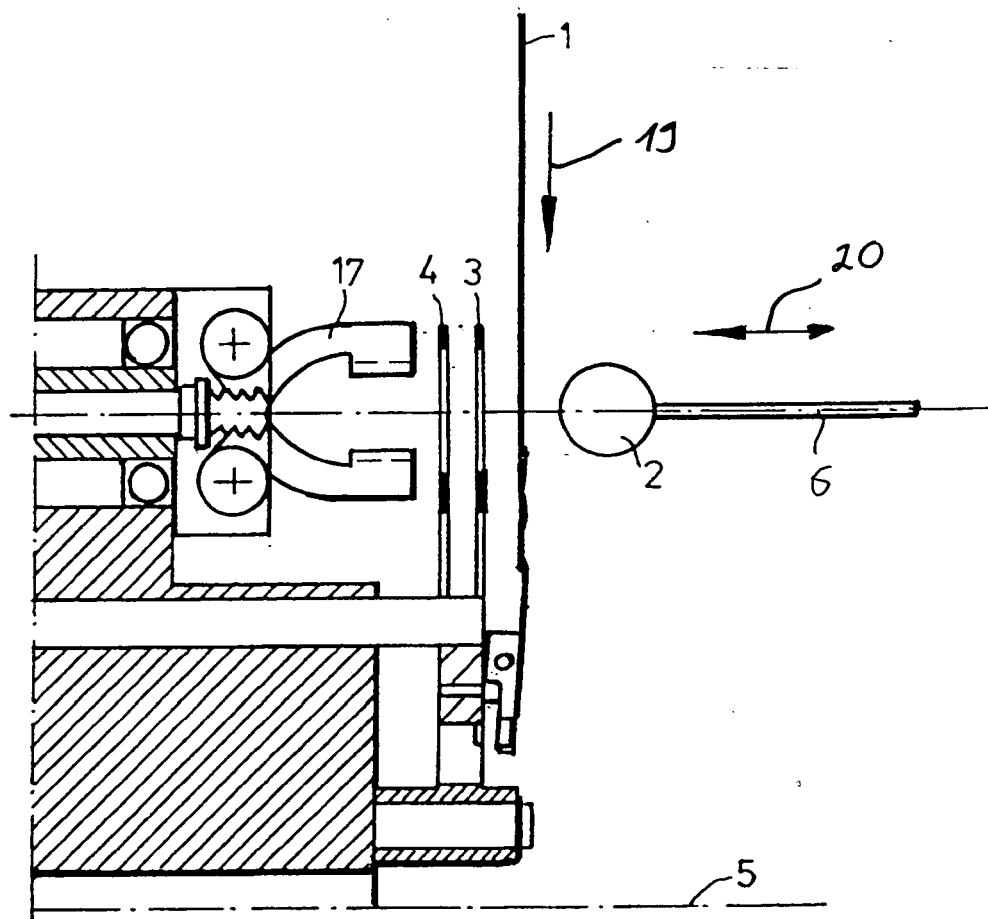


FIG. 2

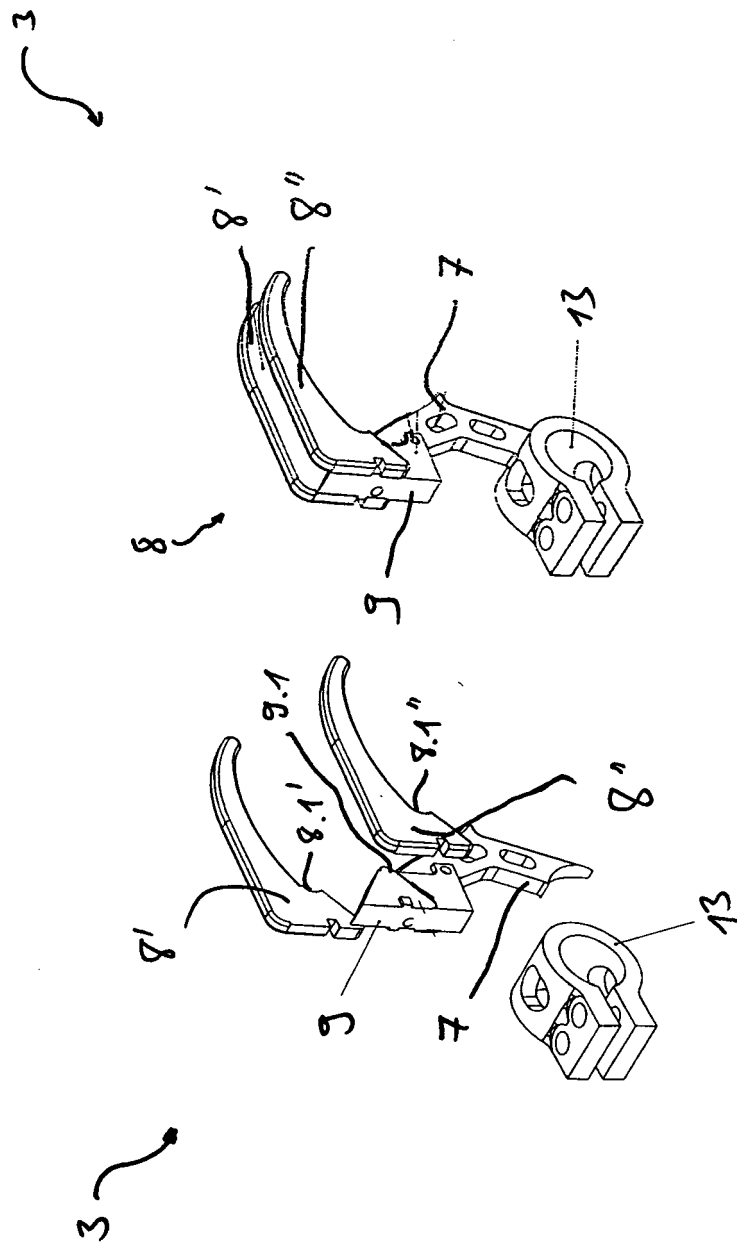


Fig. 3

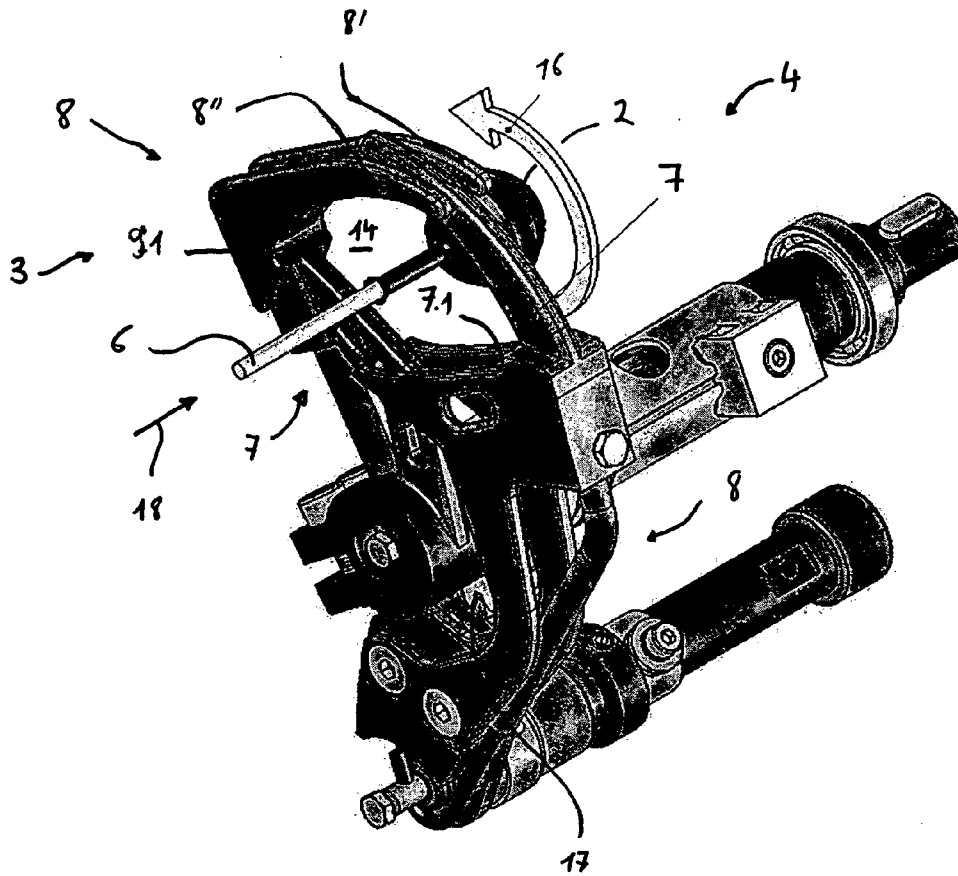


Fig. 5

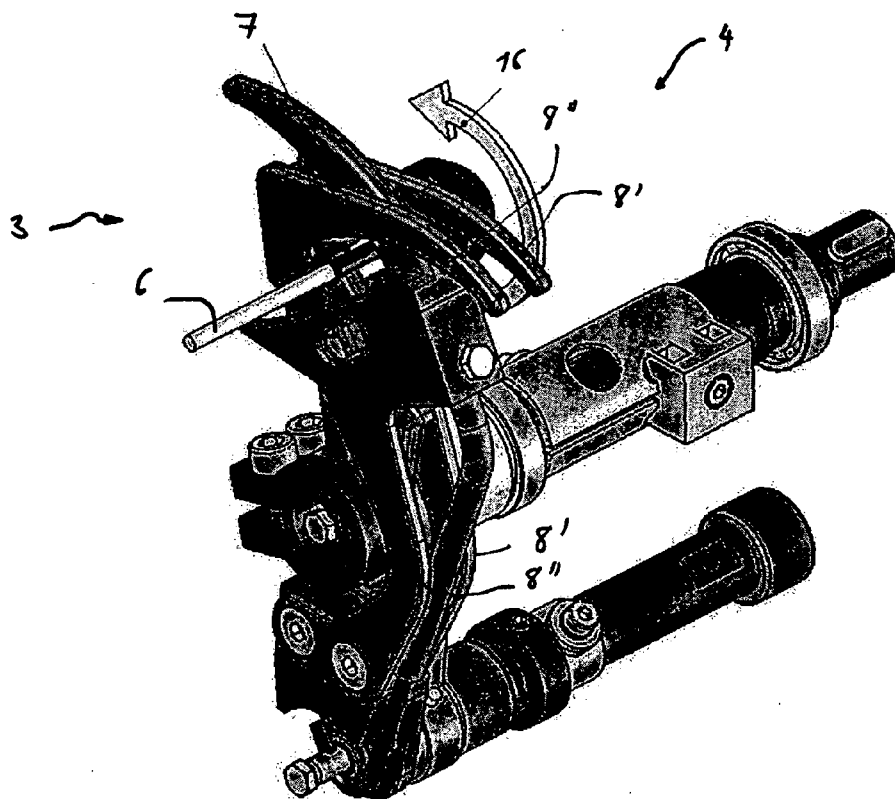


Fig. 6

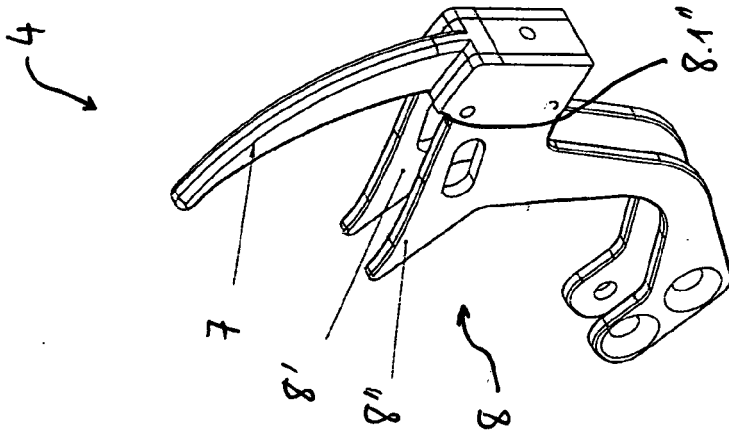
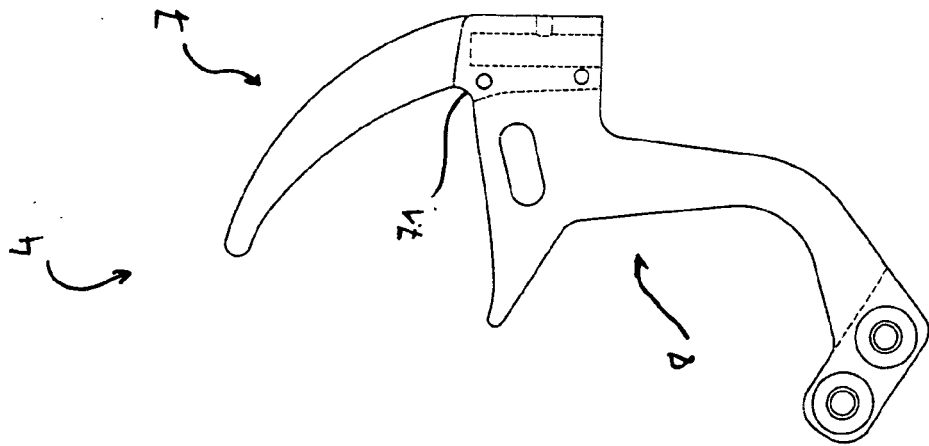
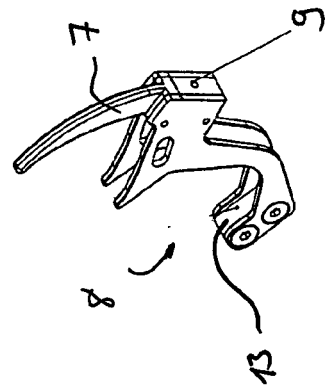


Fig. 4



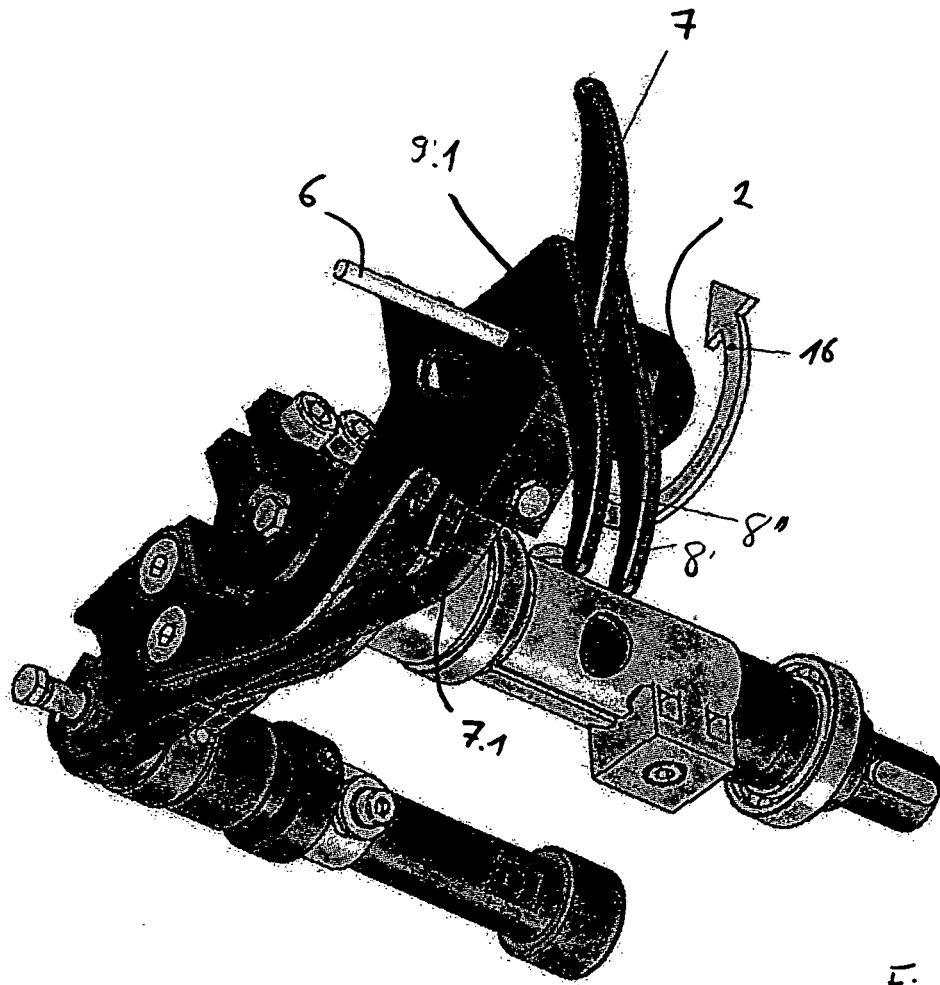


Fig. 7



EUROPEAN SEARCH REPORT

Application Number
EP 09 01 2019

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 February 2010	Examiner Philippon, Daniel
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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