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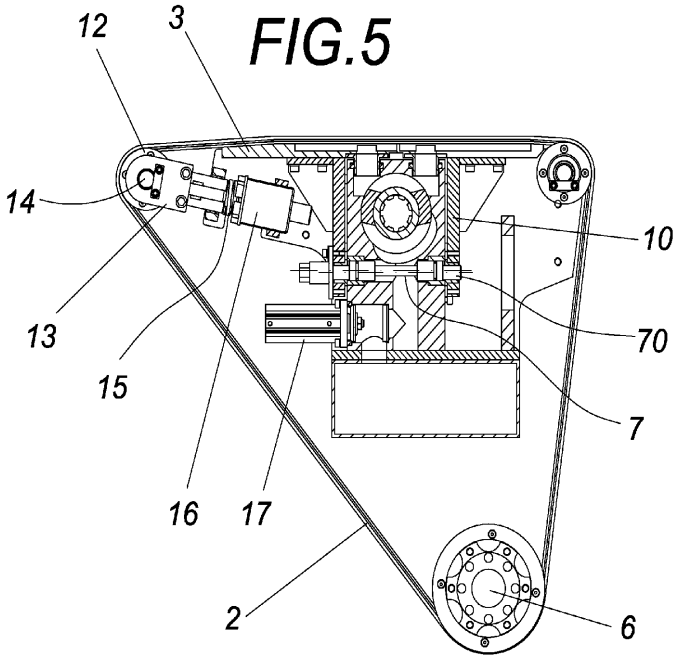
(54) SLIDING LOAD SKID ASSEMBLY OF A FEED ASSEMBLY FOR CONTINUOUSLY SUPPLYING SHEET ELEMENTS AND FEED ASSEMBLY

(57) The present invention relates to a sliding load skid assembly (1) of a feed assembly for continuously supplying sheet elements, comprising a belt (2) that defines a closed loop wherein a belt area intended to come into contact with the sheet elements is provided, the belt being actuated by means of a drive pulley (6) on which the belt runs, a housing (5) wherein suction means linked to the belt which act on the contact area (21) with the sheet elements are provided, a support plate on which an area of the belt rests and two support skids (4) separated from each other at such a distance that the belt is arranged between the two support skids, which includes height-adjustment means which act on the support plate such that it is able to move upwards or downwards with respect to the position of the two support skids.

FIG.5



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Description

OBJECT OF THE INVENTION

[0001] The object of the present invention is to provide a sliding load skid assembly of a feed assembly for continuously supplying sheet elements and feed assembly.

[0002] More specifically, the invention proposes the development of a sliding load skid assembly of a feed assembly for continuously supplying sheet elements, such as cardboard sheets, as well as a feed assembly provided with a plurality of sliding load skid assemblies as described in claim 1, which allows the belt change periods to increase and the effectiveness of the feed assembly to not be reduced due to the wear of the belts.

BACKGROUND OF THE INVENTION

[0003] Within the sector of the manufacture of machines for producing cardboard sheets, for example, those used for the production of boxes, a feed assembly is known on the market for continuously supplying sheet elements based on the use of belts with suction system. However, it has been observed in practice that they present the drawback of decreasing the efficiency thereof as the wear in said belts increases, which quite often requires the replacement thereof with new ones.

[0004] A feed assembly is known for supplying sheet elements continuously and automatically to a graphic printing station, the sheet elements being in a storage area of sheet elements arranged in at least one column, comprising a feeder with a rotary belt system on which the sheet elements are horizontally movable and with suction means, the feeder being linked to the storage area.

[0005] The feed assembly presents a plurality of sliding load skid assemblies for continuously supplying sheet elements, each one of them comprising a belt that defines a closed loop wherein a belt area intended to come into contact with the sheet elements is provided, the belt being actuated by means of a drive pulley on which the belt runs, a housing wherein suction means linked to the belt which act on the contact area with the sheet elements are provided, a support plate on which an area of the belt rests and two support skids separated from each other at such a distance that the belt is arranged between the two support skids.

[0006] However, in practice it has been observed that the wear of the belt can hinder the continuous circulation of the cardboard sheets through the feed assembly, as a lesser thickness of the belt due to wear after multiple operating cycles can lead to the contact surface of the belt being below the upper surface of the two support skids, and therefore, cause the belt not to come into contact with the cardboard sheet.

[0007] Furthermore, the applicant is currently unaware of an invention that has all the features described in this specification.

DESCRIPTION OF THE INVENTION

[0008] The present invention has been developed with the aim of providing a sliding load skid assembly which is configured as a novelty within the field of application and solves the aforementioned drawbacks, further contributing other additional advantages that will be obvious from the description below.

[0009] Therefore, an object of the present invention is to provide a sliding load skid assembly of a feed assembly for continuously supplying sheet elements, comprising a belt that defines a closed loop wherein a belt area intended to come into contact with the sheet elements is provided, the belt being actuated by means of a drive pulley on which the belt runs, a housing wherein suction means linked to the belt which act on the contact area with the sheet elements are provided, a support plate on which an area of the belt rests and two support skids separated from each other at such a distance that the belt is arranged between the two support skids, and is characterised in that it includes height-adjustment means which act on the support plate such that it is able to move upwards and downwards with respect to the position of the two support skids.

[0010] Due to these features, it is possible to raise the belt as it wears out, which prevents problems during the supply of sheet elements through the belt during the operation of a feed assembly or device and, on the other hand, it further allows the useful life of the belt to be extended as it is not necessary to replace it with greater frequency, which is currently the case.

[0011] According to another aspect of the invention, the height-adjustment means comprise a movable cam mechanism located in the housing, which has a rotary shaft including a cam area intended to be in contact with a lower portion of the support plate and guide means to linearly guide the movement of the support plate.

[0012] Preferably, the rotary shaft includes a head with an area configured to couple an external work tool in a removable way, which facilitates the manual handling thereof.

[0013] According to another feature of the present invention, the guide means comprise a pair of elongated guides vertically located in at least one side of the outer surface of the housing along which a recess, present in at least one leg extending in a downward direction perpendicular to the upper portion of the support plate, is able to slide.

[0014] Additionally, tensioning means coupled to the housing are provided for tensing the belt in the sliding load skid assembly.

[0015] Preferably, such tensioning means may comprise a roller on which the belt runs, the roller being mounted on a frame which is coupled to the housing, including elastic means.

[0016] Advantageously, the rotary shaft is offset a gap with respect to an axis parallel to the rotary shaft which corresponds to a longitudinal axis of the belt, which

makes it easier to insert a work tool for rotating the rotary shaft in order to adjust the height of the belt.

[0017] Another object of the invention is to provide a feed assembly for continuously supplying sheet elements, characterised in that it comprises a frame which includes a plurality of sliding load skid assemblies, at least one of the sliding load skid assemblies being as previously described.

[0018] Thus, the sliding load skid assembly represents an innovative structure with structural and constituent features heretofore unknown for its intended purpose, reasons which, taken together with its usefulness, provide it with sufficient grounds for obtaining the requested exclusivity privilege.

[0019] Other features and advantages of the sliding load skid assembly object of the present invention will be evident in light of the description of a preferred, but not exclusive, embodiment which is illustrated by way of a non-limiting example in the drawings which are attached, wherein:

BRIEF DESCRIPTION OF THE DRAWINGS

[0020]

Figure 1 is a perspective view of a sliding load skid assembly of a feed assembly according to the present invention;

Figure 2 is an exploded perspective view of a portion of the sliding load skid assembly of the invention wherein some parts have been removed for reasons of clarity;

Figure 3 is an exploded perspective view of a portion of the sliding load skid assembly of the invention wherein some parts have been removed for reasons of clarity;

Figure 4 is a plan view of the assembly depicted in Figure 1;

Figure 5 is a cross-sectional view along the A-A line depicted in Figure 4; and

Figure 6 is a side elevation view showing two different positions in height of the support plate wherein some parts have been removed to facilitate the understanding thereof.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0021] In light of the aforementioned figures, and in accordance with the adopted numbering, one may observe therein an example of a preferred embodiment of the invention, which comprises the parts and elements indicated and described in detail below.

[0022] As observed in the attached figures, an embodiment of the sliding load skid assembly of a feed assembly for continuously supplying sheet elements (not depicted), generally indicated with the reference (1), comprises a belt made of rubber or similar (2), which defines a closed-loop trajectory wherein a belt area is provided to come into contact with the sheet elements.

[0023] The belt (2) is actuated by means of a drive pulley (6) located in the lower portion of the sliding load skid assembly (1) on which the belt (2) runs. This drive pulley (6) is actuated by an actuator shaft (not depicted) which is part of a feed assembly intended for handling sheet elements (for example, cardboard sheets for the manufacture of boxes). Furthermore, it includes a plurality of substantially rectangular through openings (20) which are distributed along the entire length of the belt (2). These through openings (20) are linked to an air suction system (described below) which allows the sheet elements passing through the upper portion of the belt (2) to be suctioned.

[0024] Moreover, the sliding load skid assembly (1) has a housing wherein the suction means linked to the belt (2) which act on a contact area (21) which comes into contact with the sheet elements are provided, a support plate (3) arranged in a horizontal plane, made of metal material, on which the contact area (21) of the belt (2) rests and two support skids (4) separated from each other at a distance, each one of them made up of an upper metal plate, such that the belt (2) is arranged between the two support skids (4).

[0025] The sliding load skid assembly (1) advantageously includes height-adjustment means which act on the support plate (3) such that is able to move upwards or downwards with respect to the position of the two support skids (4).

[0026] Now making particular reference to the aforementioned height-adjustment means, they essentially comprise a movable cam mechanism located inside an opening (8) which passes through the interior of the housing (5), which has a rotary shaft (7) including a cam area (70) intended to be in contact with a lower portion of the support plate (3) and guide means, which will be explained below, intended to linearly guide the movement of said support plate (3).

[0027] As can be observed in the figures, the rotary shaft (7) has a head (71) on one of the ends thereof with an area (72) configured to couple an external work tool in a removable way (not depicted), as can be observed with greater clarity in Figure 3.

[0028] With respect to the guide means, they comprise a pair of elongated guides (9) extending vertically in at least one side of the outer surface of the housing (5), more specifically in a throttle body (18), along which elongated recesses (100), present in the inner face of legs or also called adjustment brackets (10), are able to slide, each one of them extending in a downward direction perpendicular to the upper portion of the support plate (3). Upper and lower stops of the vertical displacement are determined by the eccentricity of the cam areas (70) of the rotary shaft (7).

[0029] As can be seen, each one of the legs (10) includes a slotted through hole (101) through which the rotary shaft (7) passes.

[0030] In order to ensure a correct tension of the belt

(2), regardless of the height thereof, tensioning means coupled to the housing are provided, generally indicated with the reference (11) for tensing the belt (2), said tensioning means (11) comprising a tensioning roller (12) with a toothed surface on which the belt (2) moves. As can be observed in Figures 2 and 5, this tensioning roller (12) is coupled to a frame (13) by means of a shaft (14), the frame (13) being coupled to the housing (5), with an inclination with respect to the horizontal plane, and including elastic means consisting of an elastic spring (15) which abuts in the lower end thereof with a stop element (16) located inside the housing (5).

[0031] In order to facilitate the manual handling of the adjustment means by means of a specific tool, the rotary shaft (7) is moved a distance with respect to an axis parallel to the rotary shaft which corresponds to a longitudinal axis of the belt (2).

[0032] Referring again to the aforementioned suction system, it comprises a valve assembly (17), located below the rotary shaft (7), which is coupled to the throttle body (18). Air is suctioned by means of through openings (19) located in the upper portion of the throttle body (18).

[0033] Figure 6 shows the arrangement of the support plate (3) on which the belt (2) runs at two different heights, there being a maximum difference (h) of 6.5 cm.

[0034] The details, shapes, dimensions and other secondary elements, used to manufacture the sliding load skid assembly of the invention, may be suitably replaced with others that do not depart from the scope defined by the claims included below.

Claims

1. A sliding load skid assembly of a feed assembly for continuously supplying sheet elements, comprising a belt (2) that defines a closed loop wherein a belt area intended to come into contact with the sheet elements is provided, the belt being actuated by means of a drive pulley (6) on which the belt (2) runs, a housing wherein suction means linked to the belt which act on the contact area (21) with the sheet elements are provided, a support plate (3) on which an area of the belt rests and two support skids (4) separated from each other at such a distance that the belt (2) is arranged between the two support skids (4), **characterised in that** it includes height-adjustment means which act on the support plate (3) such that it is able to move upwards and downwards with respect to the position of the two support skids (4).

2. The sliding load skid assembly according to claim 1, **characterised in that** the height-adjustment means comprise a movable cam mechanism located in the housing (5), which has a rotary shaft (7) which includes a cam area intended to be in contact with a lower portion of the support plate (3) and guide means to linearly guide the movement of the support plate (3).

3. The sliding load skid assembly according to claim 2, **characterised in that** the rotary shaft includes a head with an area configured to couple an external work tool in a removable way.

4. The sliding load skid assembly according to claim 2, **characterised in that** the guide means comprise a pair of elongated guides vertically located in at least one side of the outer surface of the housing along which a recess provided in at least one leg extending in a downward direction perpendicular to the upper portion of the support plate (3), is able to slide.

5. The sliding load skid assembly according to any of the preceding claims, **characterised in that** tensioning means (11) coupled to the housing are provided for tensing the belt (2).

6. The sliding load skid assembly according to claim 5, **characterised in that** the tensioning means (11) comprise a tensioning roller (12) on which the belt (2) runs, the tensioning roller being mounted on a frame which is coupled to the housing, including elastic means (15).

7. The sliding load skid assembly according to any of the preceding claims, **characterised in that** the rotary shaft (7) is offset a gap with respect to an axis parallel to the rotary shaft (7) which corresponds to a longitudinal axis of the belt.

8. A feed assembly for continuously supplying sheet elements, **characterised in that** it comprises a frame which includes a plurality of sliding load skid assemblies, at least one of the sliding load skid assemblies being according to any of claims 1 to 7.

FIG.1

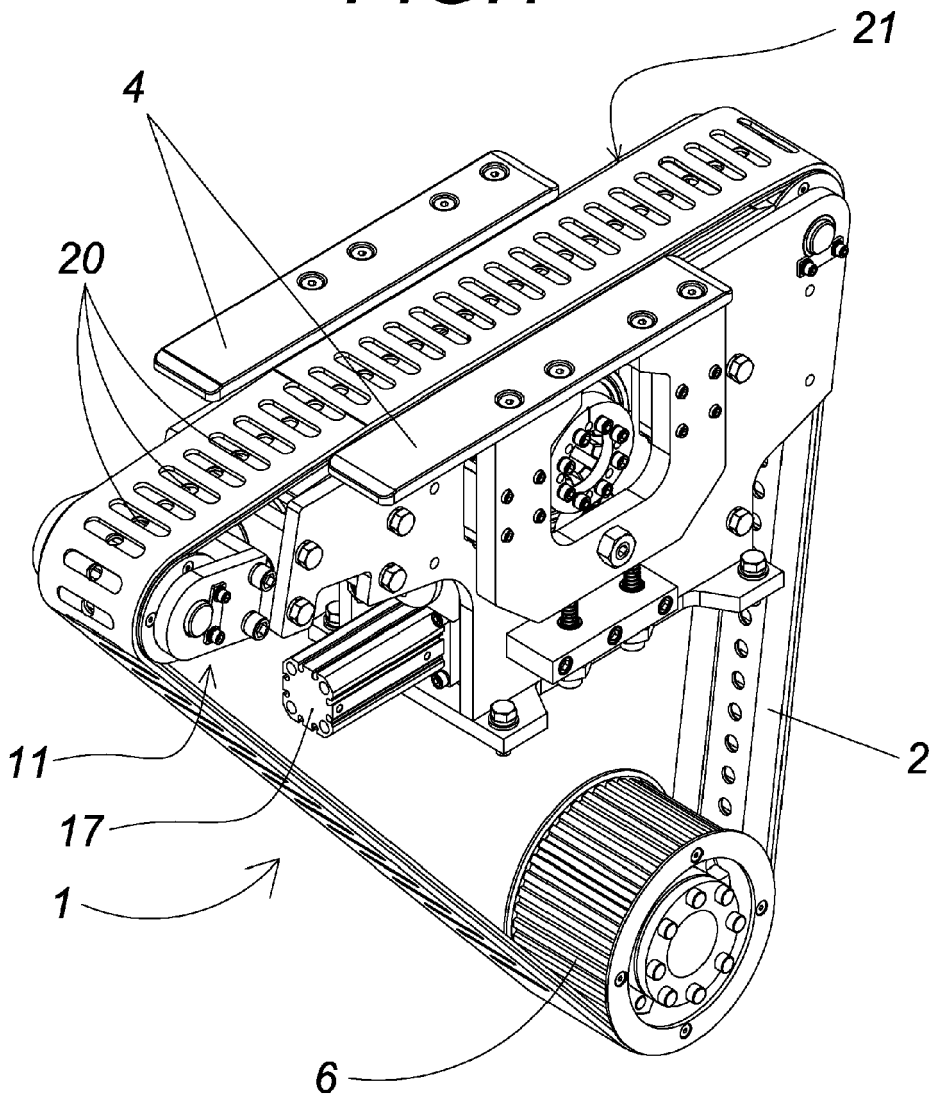


FIG.2

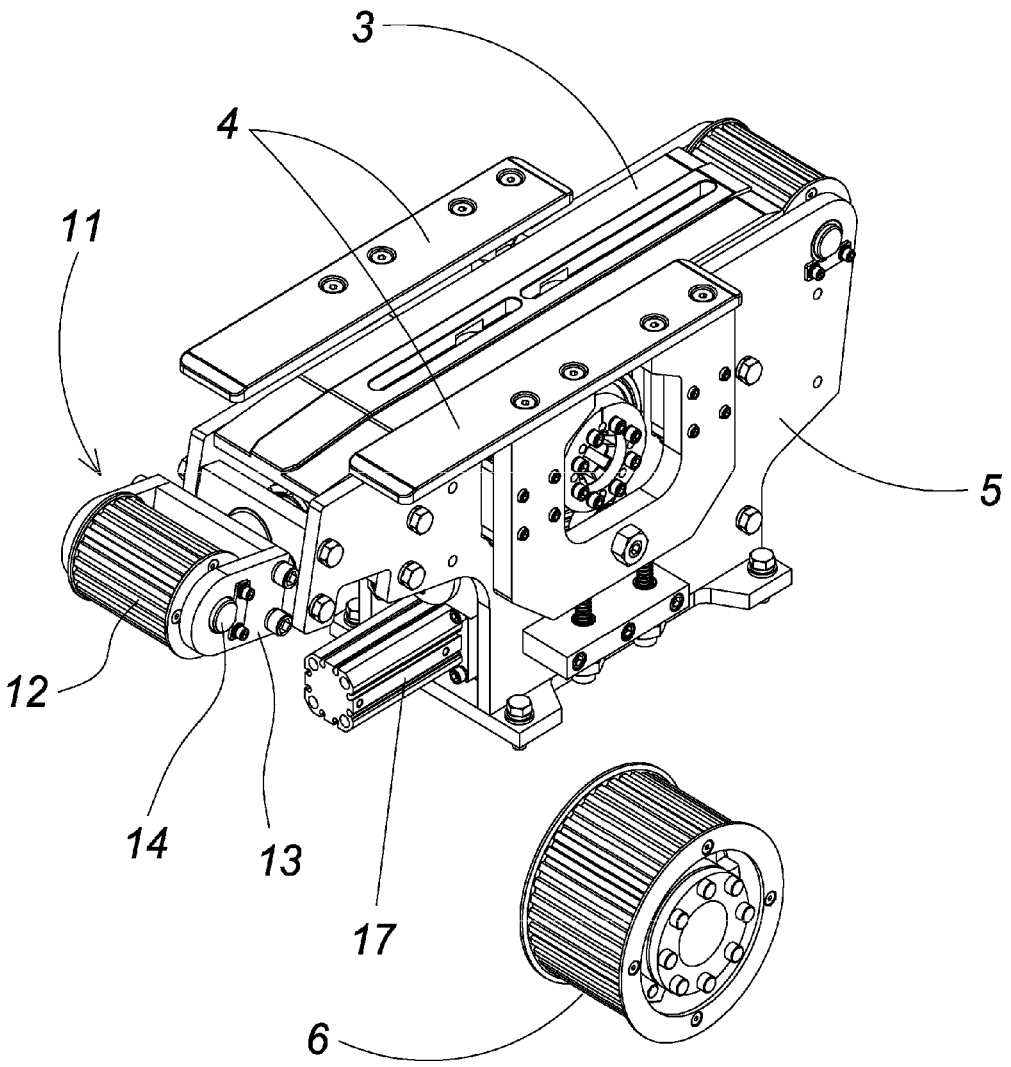


FIG.3

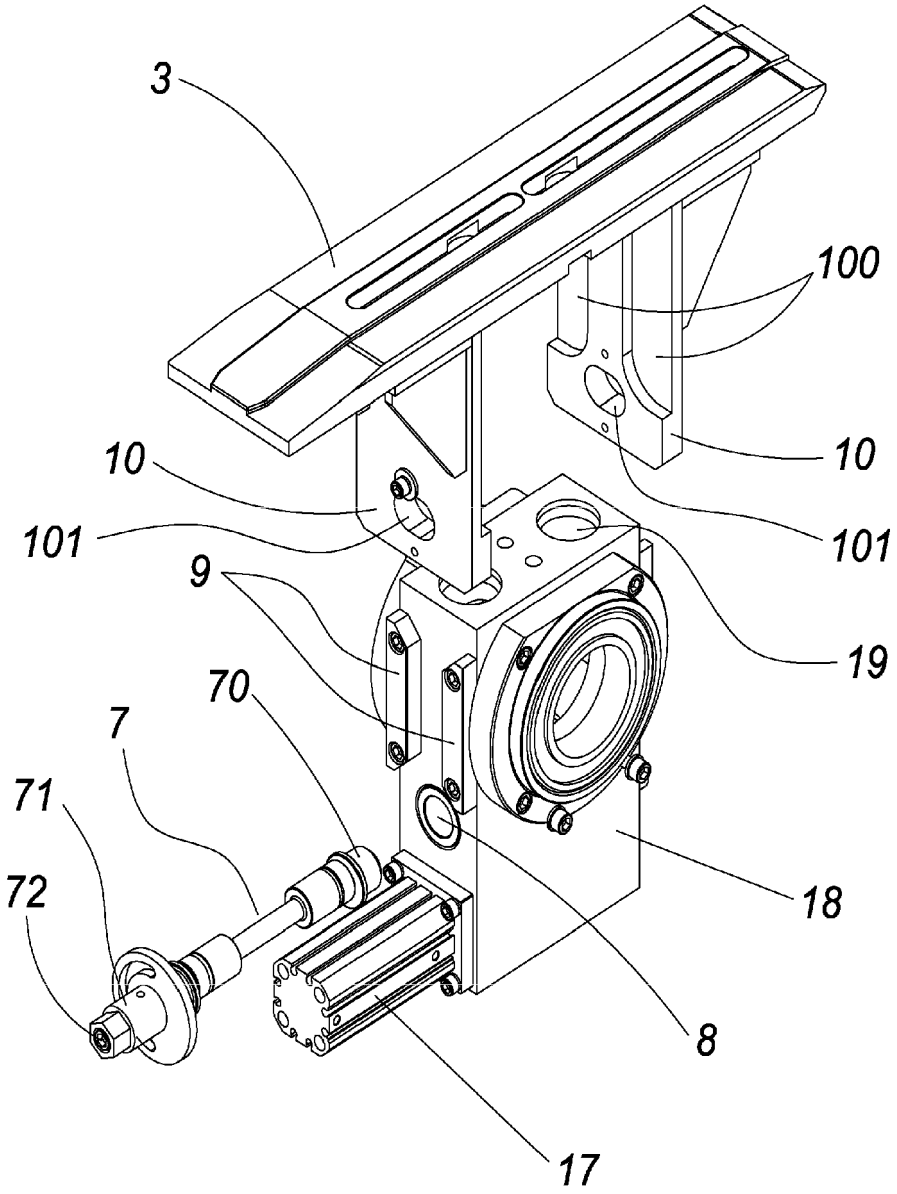


FIG.4

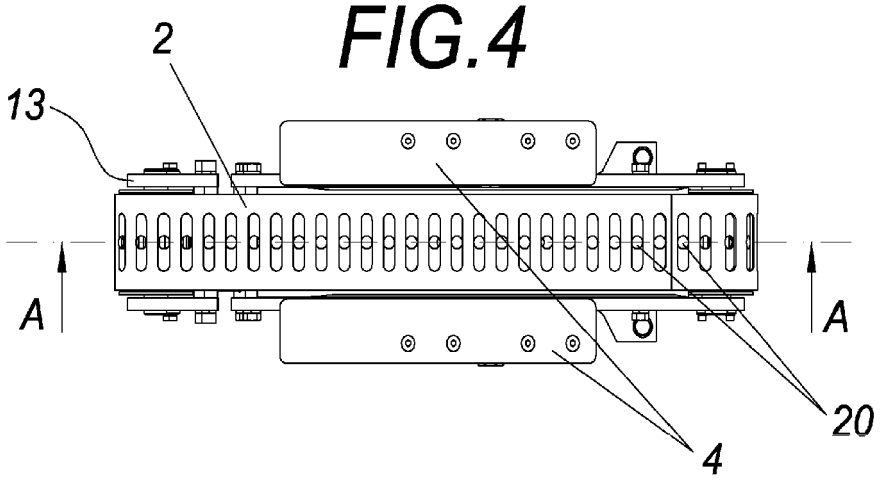


FIG.5

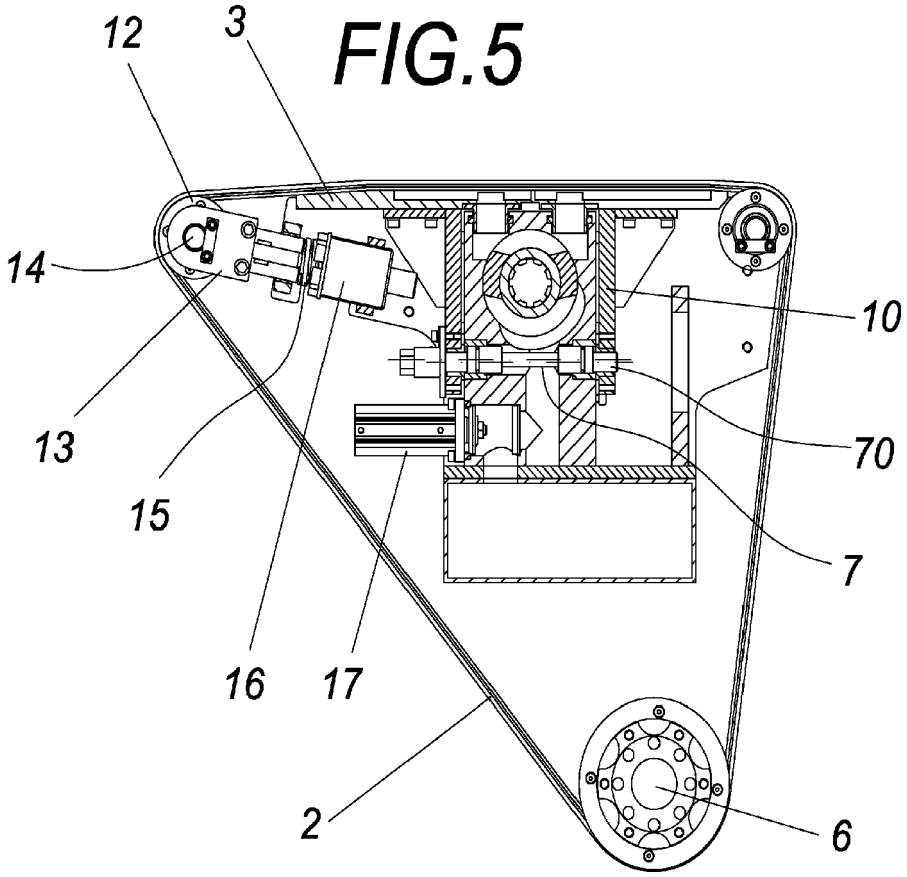
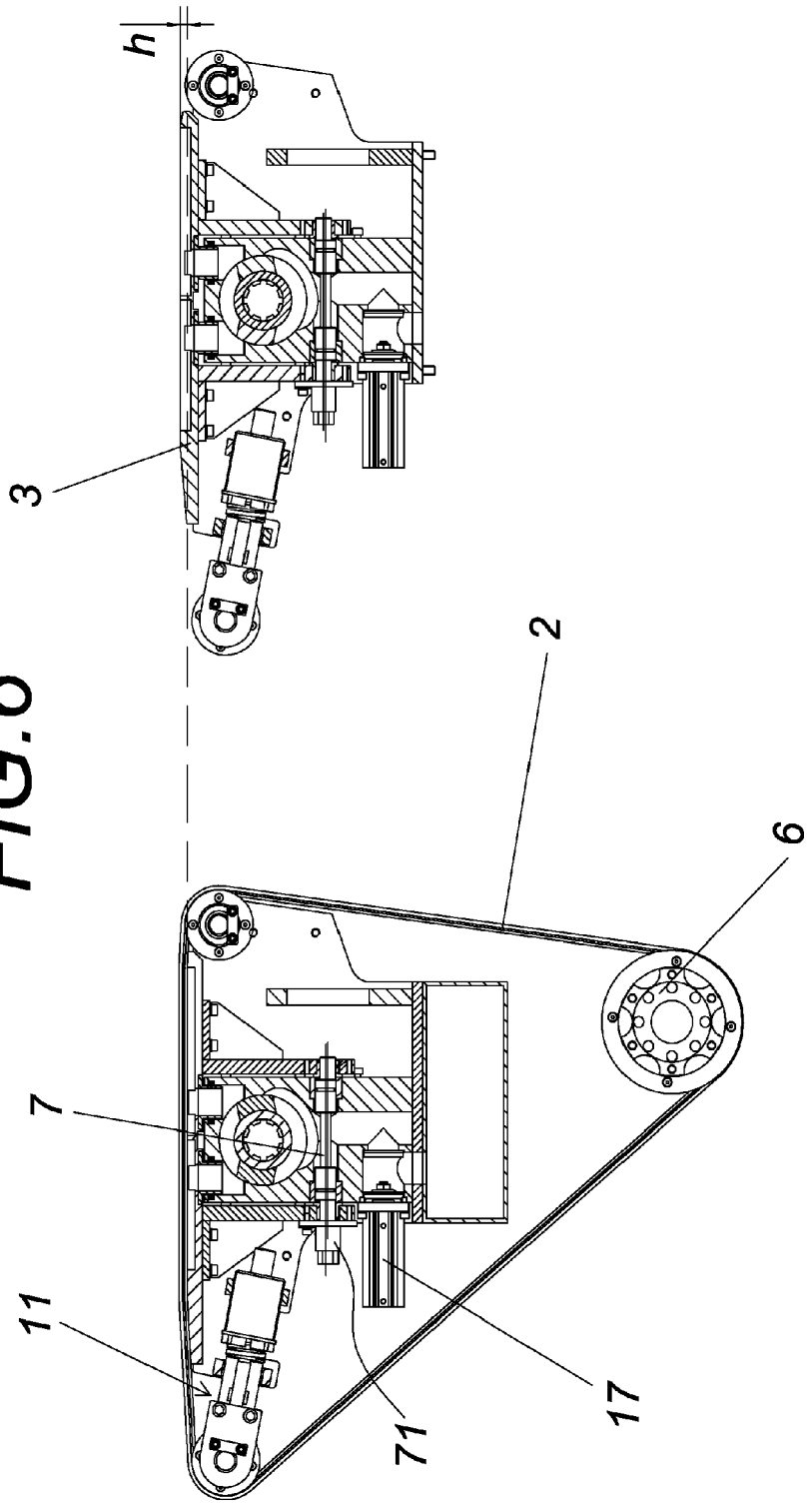


FIG.6



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EUROPEAN SEARCH REPORT

Application Number
EP 20 38 2770

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	5 February 2021	Athanasiadis, A

CATEGORY OF CITED DOCUMENTS

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