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(71) Applicant: **Mesera Cranes Finland Oy**
21530 Paimio (FI)

(72) Inventors:
- **Salmi, Rami**
  21530 Paimio (FI)
- **Ylikoski, Tuomo**
  21530 Paimio (FI)
- **Sjöholm, Kalevi**
  21530 Paimio (FI)

(74) Representative: **Kolster Oy Ab**
Iso Roobertinkatu 23
PO Box 148
00121 Helsinki (FI)

(54) **A HOSE GUARD FOR AN ARTICULATING CRANE AND AN ARTICULATING ARM ARRANGEMENT OF AN ARTICULATING CRANE**

(57) The present invention relates to lifting equipment and cranes used for lifting and loading within the transportation industry, energy industry, process industry and manufacturing industry, and more particularly to a hose guard for an articulating crane and an articulating arm arrangement of an articulating crane. A hose guard (14) for an articulating crane according to the present invention comprises side parts (1), (2), a guard element (3) for protecting hydraulic hose conduits (17-20) running from a boom (10) of the said at least one boom via a boom nose (11), and at least two hose guide elements (4-7) for guiding said hydraulic hose conduits (17-20), which said side parts (1), (2) of the said hose guard (14) comprise holes (8), (9) in said side parts (1), (2) of the said hose guard (14) for joining the said hose guard (14) to the end-side of the said boom (10) of the articulating crane, and which said at least two hose guide elements (4-7) include a rear guide pin element (5) on the rear portion of the hose guard (14) and a front guide pin element/elements (6), (7) on the front portion of the hose guard (14).

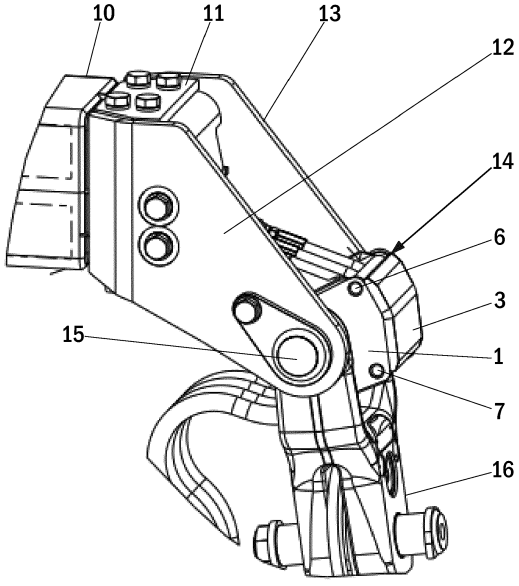

Fig. 9

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to the field of lifting equipment and cranes used for lifting and loading within the transportation industry, energy industry, process industry and manufacturing industry, and more particularly to a hose guard for an articulating crane and to an articulating arm arrangement of an articulating crane.

BACKGROUND OF THE INVENTION

[0002] Lifting equipment and cranes are used in industry for different applications, such as loading and unloading within the transportation industry and bulk material and other material handling within the process and manufacturing industry as well as within the energy industry. A crane is generally defined as a machine for lifting and moving heavy objects by means of ropes or cables suspended from a movable arm. One of the most common crane types is an articulating crane. Articulating cranes are special type of jib cranes having an articulating arm jib or boom. Articulating cranes are also often referred to as loader cranes or knuckle-boom cranes. An articulating crane has typically a hydraulically-powered articulated arm arrangement having one or more of the boom sections telescopic.

[0003] Articulating cranes are used in industry for different applications these including handling of bulk material, such as coal, mineral, scrap metal and other material within the process and manufacturing industry as well as within the energy industry. Articulating cranes are also typically used within the transportation industry as loading and unloading material these including loading and unloading of timber, bulk material, scrap metal and other material. The articulating crane may also be a mobile crane or a truck-mounted crane. A truck-mounted articulating crane is often a crane in which the numerous telescopic boom sections may be folded into a small space when the crane is not in use. Within forestry articulating cranes are used in e.g. forwarders and timber trucks for loading and unloading of timber.

[0004] One typical example of an articulating crane according to the prior art may be seen in US Patent document US 7,311,489 B2, which presents an articulating crane having an extendable telescopic arm structure, in which the hydraulic hoses are fitted outside the telescopic end-side inner boom portion. Another typical example of an articulating crane according to the prior art may be seen in US Patent document US 3,893,480. In US 3,893,480 the hydraulic hoses are fitted inside the articulated arm of the articulating crane and a separate coaxial hydraulic conduit is fitted outside the telescopic end-side inner boom portion when said boom is extended.

[0005] Some of the typical articulating cranes according to the prior art are designed to have the hydraulic hoses and pipes fitted inside the articulated arm and the telescopic end-side inner boom portion of the articulating crane. Two typical examples of this type of articulating cranes according to the prior art may be seen in US Patent documents US 5,924,837 and US 6,530,742 B2. Although the hoses and pipes may be somewhat safe from external objects these types of hoses are difficult to maintain or adjust.

[0006] European Patent document EP 1889808 B1 shows an articulating crane according to the prior art where in the connections for the hydraulic hoses are leading from a crane arm of the articulating crane to the connections at the side of a fixing device, said hydraulic hoses leading between two spaced rotary bearings of a rotary joint at the crane arm side.

[0007] In the prior art articulating cranes, where the hydraulic hoses are leading from a crane arm of the articulating crane to the connections at the side of a fixing device, the hydraulic hoses are vulnerable against hits or blows. Also in use and in transportation the hydraulic hoses are vulnerable against any external contacts or any external objects. Also in the extremely demanding working conditions and working temperatures the hydraulic hoses of the prior art articulating cranes tend to bend in undesired manner and consequently break. Also when extending and retracting the articulating crane, especially in extremely demanding working conditions and working temperatures the hydraulic hoses of the prior art articulating cranes tend to bend or bundle in undesired manner and consequently break. There are some prior art guide elements designed for guiding hoses; however these prior art guide elements typically do not withstand any hits or blows or any external contacts or any external objects. The prior art guide elements are typically quite simple in design and are not designed to stay in a correct position for guiding hoses in all articulating boom positions. Furthermore, the prior art guide elements can easily bend and wind up into an undesired position.

[0008] In today's demanding environment, the manufacturers of articulating cranes are constantly looking for improvements and cost savings in crane manufacturing. Likewise, there is also a demand in the market for a new type of a hose guard for an articulating crane and an articulating arm arrangement of an articulating crane which would improve the secure use of the crane when compared to the current prior art solutions.

BRIEF DESCRIPTION OF THE INVENTION

[0009] An object of the present invention is thus to provide a method and an apparatus for implementing the method so as to overcome the above problems and to alleviate the above disadvantages.

[0010] The objects of the invention are achieved by a hose guard for an articulating crane, said articulating crane comprising an articulating arm arrangement having at least one boom and hydraulic hose conduits running from a boom of the said at least one boom via a boom nose, which said hose guard comprises side parts,

a guard element for protecting said hydraulic hose conduits, and at least two hose guide elements for guiding said hydraulic hose conduits, which said side parts of the said hose guard comprise holes in said side parts of the said hose guard for joining the said hose guard to the end-side of the said boom of the articulating crane, and which said at least two hose guide elements include a rear guide pin element on the rear portion of the hose guard and a front guide pin element/elements on the front portion of the hose guard.

[0011] Preferably, the said at least two hose guide elements include a guide plate on the rear portion of the hose guard. Preferably, the said at least two hose guide elements are manufactured with a gliding surface material or with a gliding surface coating. Preferably, the said guide pin element/elements include a sliding sleeve arranged on the said guide pin element.

[0012] Furthermore, the objects of the invention are achieved by an articulating arm arrangement of an articulating crane, said articulating arm arrangement having at least one boom and hydraulic hose conduits running from a boom of the said at least one boom via a boom nose, which articulating arm arrangement comprises a hose guard, said hose guard having side parts, a guard element for protecting said hydraulic hose conduits, and at least two hose guide elements for guiding said hydraulic hose conduits, which said side parts of the said hose guard comprise holes in said side parts of the said hose guard for joining the said hose guard to the end-side of the said boom of the articulating crane, and which said at least two hose guide elements include a rear guide pin element on the rear portion of the hose guard and a front guide pin element/elements on the front portion of the hose guard.

[0013] Preferably, in the articulating arm arrangement, the said hydraulic hose conduits are lead to an accessory device or to a working implement between the said at least two hose guide elements. Preferably, in the articulating arm arrangement, the said at least two hose guide elements include a guide plate on the rear portion of the hose guard.

[0014] Preferably, in the articulating arm arrangement, the said at least two hose guide elements are manufactured with a gliding surface material or with a gliding surface coating. Preferably, in the articulating arm arrangement, the said guide pin element/elements include a sliding sleeve arranged on the said guide pin element.

[0015] Preferably, in the articulating arm arrangement, the said hydraulic hose conduits are lead to an accessory device or to a working implement in front of the said guide plate and in front of the said rear guide pin element and behind the said two front guide pin elements.

[0016] Furthermore, the objects of the invention are achieved by an articulating crane, said articulating crane comprising an articulating arm arrangement having at least one boom and hydraulic hose conduits running from a boom of the said at least one boom via a boom nose, which articulating arm arrangement comprises a hose guard, said hose guard having side parts, a guard element for protecting said hydraulic hose conduits, and at least two hose guide elements for guiding said hydraulic hose conduits, which said side parts of the said hose guard comprise holes in said side parts of the said hose guard for joining the said hose guard to the end-side of the said boom of the articulating crane.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Figure 1 shows a front view of one embodiment of a hose guard for an articulating crane according to the present invention;

Figure 2 shows a rear view of one embodiment of a hose guard for an articulating crane according to the present invention;

Figure 3 shows a side view of one embodiment of a hose guard for an articulating crane according to the present invention;

Figure 4 shows a top view of one embodiment of a hose guard for an articulating crane according to the present invention;

Figure 5 shows a bottom view of one embodiment of a hose guard for an articulating crane according to the present invention;

Figure 6 shows a first perspective view of one embodiment of a hose guard for an articulating crane according to the present invention;

Figure 7 shows a second perspective view of one embodiment of a hose guard for an articulating crane according to the present invention;

Figure 8 shows a partial perspective front view of one embodiment of an articulating arm arrangement of an articulating crane according to the present invention;

Figure 9 shows a partial perspective side view of one embodiment of an articulating arm arrangement of an articulating crane according to the present invention.

[0018] In the following, the invention will be described in greater detail by means of preferred embodiments with reference to the accompanying drawings of Figures 1 to 9.

DETAILED DESCRIPTION OF THE INVENTION

[0019] Figure 1 shows a front view of one embodiment of a hose guard for an articulating crane according to the present invention. The hose guard for an articulating crane according to the present invention comprises side parts 1, 2 and a guard element 3 combining said side parts 1, 2 in the front portion of the hose guard.

[0020] Figure 2 shows a rear view of one embodiment of a hose guard for an articulating crane according to the present invention. The hose guard for an articulating

crane according to the present invention comprises side parts 1, 2 and a guard element 3 combining said side parts 1, 2 in the front portion of the hose guard. The hose guard according to the present invention also comprises at least two hose guide elements 4, 5 for guiding the hoses of the articulating crane. In the hose guard according to the present embodiment the said at least two hose guide elements 4, 5 include a guide plate 4 on the rear top portion of the hose guard and a rear guide pin element 5 on the rear bottom portion of the hose guard.

[0021] Figure 3 shows a side view of one embodiment of a hose guard for an articulating crane according to the present invention. The hose guard for an articulating crane according to the present invention comprises side parts 1 and a guard element 3 combining said side parts 1 in the front portion of the hose guard. The hose guard according to the present invention also comprises at least two hose guide elements 4-7 for guiding the hoses of the articulating crane. In the hose guard according to the present embodiment the said at least two hose guide elements 4-7 include a guide plate 4 on the rear top portion of the hose guard, a rear guide pin element 5 on the rear bottom portion of the hose guard and a front guide pin elements 6, 7 on the front portion of the hose guard.

[0022] The hose guard according to the present invention also comprises holes 8 in said side parts 1 of the hose guard through which said holes 8 a joining axle joins the said hose guard to the end-side of a boom of the articulating crane. An articulating arm arrangement of an articulating crane according to the present invention may comprise holes for the said joining axle in the side plates of a boom nose of the articulating crane. Furthermore a link device linking the said articulating crane according to the present invention to an accessory device, e.g. a rotator or to a working implement may comprise holes for the said joining axle.

[0023] Figure 4 shows a top view of one embodiment of a hose guard for an articulating crane according to the present invention. The hose guard for an articulating crane according to the present invention comprises side parts 1, 2 and a guard element 3 combining said side parts 1, 2 in the front portion of the hose guard. The hose guard according to the present invention also comprises at least two hose guide elements 4-7 for guiding the hoses of the articulating crane. In the hose guard according to the present embodiment the said at least two hose guide elements 4-7 include a guide plate 4 on the rear top portion of the hose guard, and a rear guide pin element 5 on the rear bottom portion, a top front guide pin element 6 on the front top portion and a bottom front guide pin element 7 on the bottom front portion of the hose guard. In Figure 4 the bottom front guide pin element 7 is only partially shown behind the top front guide pin element 6.

[0024] Figure 5 shows a bottom view of one embodiment of a hose guard for an articulating crane according to the present invention. The hose guard for an articulating crane according to the present invention comprises side parts 1, 2 and a guard element 3 combining said side parts 1, 2 in the front portion of the hose guard. The hose guard according to the present invention also comprises at least two hose guide elements 4-7 for guiding the hoses of the articulating crane. In the hose guard according to the present embodiment the said at least two hose guide elements 4-7 include a guide plate 4 on the rear top portion of the hose guard, and a rear guide pin element 5 on the rear bottom portion, a top front guide pin element on the front top portion and a bottom front guide pin element 7 on the bottom front portion of the hose guard.

[0025] Figure 6 shows a first perspective view of one embodiment of a hose guard for an articulating crane according to the present invention. The hose guard for an articulating crane according to the present invention comprises side parts 1, 2 and a guard element 3 combining said side parts 1, 2 in the front portion of the hose guard. The hose guard according to the present invention also comprises at least two hose guide elements 4-7 for guiding the hoses of the articulating crane. In the hose guard according to the present embodiment the said at least two hose guide elements 4-7 include a guide plate 4 on the rear top portion of the hose guard, and a rear guide pin element 5 on the rear bottom portion, a top front guide pin element 6 on the front top portion and a bottom front guide pin element 7 on the bottom front portion of the hose guard.

[0026] The hose guard according to the present invention also comprises holes 8 in said side parts 1 of the hose guard through which said holes 8 a joining axle joins the said hose guard to the end-side of a boom of the articulating crane. An articulating arm arrangement of an articulating crane according to the present invention may comprise holes for the said joining axle in the side plates of a boom nose of the articulating crane. Furthermore a link device linking the said articulating crane according to the present invention to an accessory device, e.g. a rotator or to a working implement may comprise holes for the said joining axle.

[0027] Figure 7 shows a second perspective view of one embodiment of a hose guard for an articulating crane according to the present invention. The hose guard for an articulating crane according to the present invention comprises side parts 1, 2 and a guard element 3 combining said side parts 1, 2 in the front portion of the hose guard. The hose guard according to the present invention also comprises at least two hose guide elements 4-7 for guiding the hoses of the articulating crane. In the hose guard according to the present embodiment the said at least two hose guide elements 4-7 include a guide plate 4 on the rear top portion of the hose guard, and a rear guide pin element 5 on the rear bottom portion, a top front guide pin element 6 on the front top portion and a bottom front guide pin element 7 on the bottom front portion of the hose guard.

[0028] The hose guard according to the present invention also comprises holes 8, 9 in said side parts 1 of the

hose guard through which said holes 8, 9 a joining axle joins the said hose guard to the end-side of a boom of the articulating crane. An articulating arm arrangement of an articulating crane according to the present invention may comprise holes for the said joining axle in the side plates of a boom nose of the articulating crane. Furthermore a link device linking the said articulating crane according to the present invention to an accessory device, e.g. a rotator or to a working implement may comprise holes for the said joining axle.

[0029] Figure 8 shows a partial perspective front view of one embodiment of an articulating arm arrangement of an articulating crane according to the present invention. An articulating arm arrangement of an articulating crane according to the present invention comprises a boom 10 of the articulating crane. The boom 10 comprises a boom nose 11 supporting two nose side plates 12, 13. An articulating arm arrangement of an articulating crane according to the present invention comprises hydraulic hose conduits 17-20 running from the said boom 10 via said boom nose 11 and between said two nose side plates 12, 13.

[0030] An articulating arm arrangement of an articulating crane according to the present embodiment comprises a hose guard 14, which hose guard 14 comprises side parts 1 and a guard element 3 combining said side parts 1 in the front portion of the hose guard. In the present embodiment the hose guard 14 also comprises at least two hose guide elements 6, 7 for guiding the hydraulic hose conduits 17-20 of the articulating crane. In the present embodiment the said at least two hose guide elements 6, 7 of the hose guard 14 include a guide plate on the rear top portion of the hose guard, and a rear guide pin element on the rear bottom portion, a top front guide pin element 6 on the front top portion and a bottom front guide pin element 7 on the bottom front portion of the hose guard.

[0031] In the present embodiment the two nose side plates 12, 13 of the boom nose 11 of the boom 10 of the articulating crane comprise holes in the said two nose side plates 12, 13. The hose guard 14 according to the present invention also comprises holes in said side parts 1 of the hose guard 14 through which said holes in the said two nose side plates 12, 13 and in the said side parts 1 of the hose guard 14 a joining axle 15 joins the said hose guard to the boom nose 11 of the boom of the articulating crane. In the present embodiment there is also a link device 16 linking the said articulating crane according to the present invention to an accessory device, e.g. a rotator or to a working implement. In the present embodiment the said link device 16 comprises holes for the said joining axle, which said joining axle 15 joins the said link device 16 to the boom nose 11 of the boom 10 of the articulating crane.

[0032] The articulating arm arrangement of an articulating crane according to the present embodiment may comprise an articulated boom and at least one extendable boom, which said at least one extendable boom may comprise an extendable crane-side outer boom and a further extendable end-side inner boom 10. In the articulating arm arrangement of an articulating crane according to the present embodiment the guard element 3 of the said hose guard 14 protects the hydraulic hose conduits 17-20 of the articulating crane during use against hits or blows or any external contacts or any external objects. Furthermore the at least two hose guide elements 6, 7 of the said hose guard 14 guide the hydraulic hose conduits 17-20 of the articulating crane, so that the hydraulic hose conduits 17-20 bend appropriately when leading to an accessory device, e.g. a rotator or to a working implement. In the present embodiment the said at least two hose guide elements 6, 7 of the hose guard 14 include a guide plate, a rear guide pin element and two front guide pin elements 6, 7. In the present embodiment the hydraulic hose conduits 17-20 are lead in front of the said guide plate and in front of the said rear guide pin element and behind the said two front guide pin elements 6, 7. The said rear guide pin element and the said two front guide pin elements 6, 7 keep the hose guard 14 in a correct position for guiding hoses in an optimal manner. The hose guard 14 protects the hydraulic hose conduits 17-20 and guides the said hydraulic hose conduits 17-20 in all articulating boom positions.

[0033] Figure 9 shows a partial perspective side view of one embodiment of an articulating arm arrangement of an articulating crane according to the present invention. An articulating arm arrangement of an articulating crane according to the present invention comprises a boom 10 of the articulating crane. The boom 10 comprises a boom nose 11 supporting two nose side plates 12, 13. An articulating arm arrangement of an articulating crane according to the present invention comprises hydraulic hose conduits running from the said boom 10 via said boom nose 11 and between said two nose side plates 12, 13.

[0034] An articulating arm arrangement of an articulating crane according to the present embodiment comprises a hose guard 14, which hose guard 14 comprises side parts 1 and a guard element 3 combining said side parts 1 in the front portion of the hose guard. In the present embodiment the hose guard 14 also comprises at least two hose guide elements 6, 7 for guiding the hydraulic hose conduits of the articulating crane. In the present embodiment the said at least two hose guide elements 6, 7 of the hose guard 14 include a guide plate on the rear top portion of the hose guard, and a rear guide pin element on the rear bottom portion, a top front guide pin element 6 on the front top portion and a bottom front guide pin element 7 on the bottom front portion of the hose guard.

[0035] In the present embodiment the two nose side plates 12, 13 of the boom nose 11 of the boom 10 of the articulating crane comprise holes in the said two nose side plates 12, 13. Also the said hose guard 14 comprises holes in said side parts 1 of the hose guard 14 through which said holes in the said two nose side plates 12, 13

and in the said side parts 1 of the hose guard 14 a joining axle 15 joins the said hose guard to the boom nose 11 of the boom of the articulating crane. In the present embodiment there is also a link device 16 linking the said articulating crane according to the present invention to an accessory device, e.g. a rotator or to a working implement. In the present embodiment the said link device 16 comprises holes for the said joining axle, which said joining axle 15 joins the said link device 16 to the boom nose 11 of the boom 10 of the articulating crane.

[0036] In the articulating arm arrangement of an articulating crane according to the present embodiment the guard element 3 of the said hose guard 14 protects the hydraulic hose conduits of the articulating crane during use against hits or blows and against any external contacts or any external objects. Furthermore the at least two hose guide elements 6, 7 of the said hose guard 14 guide the hydraulic hose conduits of the articulating crane, so that the hydraulic hose conduits bend appropriately when leading to an accessory device, e.g. a rotator or to a working implement. In the present embodiment the said at least two hose guide elements 6, 7 of the hose guard 14 include a guide plate, a rear guide pin element and two front guide pin elements 6, 7. In the present embodiment the hydraulic hose conduits are lead in front of the said guide plate and in front of the said rear guide pin element and behind the said two front guide pin elements 6, 7. The said rear guide pin element and the said two front guide pin elements 6, 7 keep the hose guard 14 in a correct position for guiding hoses in an optimal manner. The hose guard 14 protects the hydraulic hose conduits 17-20 and guides the said hydraulic hose conduits 17-20 in all articulating boom positions.

[0037] In the articulating arm arrangement of the articulating crane according to the present invention the said guard element 3 of the said hose guard 14 is a strong and solid guard element 14 that can withstand subjected hard hits or blows. The said guard element 3 of the said hose guard 14 according to the present invention may be manufactured from aluminium, steel, cast iron, spheroidal graphite iron or from a composite material.

[0038] In the articulating arm arrangement of the articulating crane according to the present invention the said at least two hose guide elements 4-7 of the said hose guard 14 are designed so that the movement of the hydraulic hose conduits is allowed. The said at least two hose guide elements 4-7 of the hose guard 14 according to the present invention may be manufactured with a gliding surface material or with a gliding surface coating. The said guide pin elements 5-7 of the hose guard 14 according to the present invention may also include a sliding sleeve arranged on the said guide pin element 5-7.

[0039] In the articulating arm arrangement of an articulating crane according to the present invention the strong and solid guard element of the said hose guard according to the present invention withstands hits or blows and protects the hydraulic hoses conduits against any external contacts or any external objects. Furthermore, the hose guide elements of the said hose guard according to the present invention guide the hydraulic hose conduits so that the hydraulic hoses do not bend in undesired manner and therefore do not break due to undesired bending.

[0040] Likewise, in the an articulating arm arrangement according to the present invention the hydraulic hose conduits have more space and are not so easily subjected to wear against the moving boom or booms of the said articulating arm arrangement. With the help of the solution according to the present invention the manufacturers of articulating cranes may produce articulating cranes that are more durable in use than the prior art articulating crane solutions.

[0041] It will be obvious to a person skilled in the art that, as the technology advances, the inventive concept can be implemented in various ways. The invention and its embodiments are not limited to the examples described above but may vary within the scope of the claims.

Claims

1. A hose guard (14) for an articulating crane, said articulating crane comprising an articulating arm arrangement having at least one boom and hydraulic hose conduits (17-20) running from a boom (10) of the said at least one boom via a boom nose (11), **characterized in that** said hose guard (14) comprises side parts (1), (2), a guard element (3) for protecting said hydraulic hose conduits (17-20), and at least two hose guide elements (4-7) for guiding said hydraulic hose conduits (17-20),

   - which said side parts (1), (2) of the said hose guard (14) comprise holes (8), (9) in said side parts (1), (2) of the said hose guard (14) for joining the said hose guard (14) to the end-side of the said boom (10) of the articulating crane, and
   - which said at least two hose guide elements (4-7) include a rear guide pin element (5) on the rear portion of the hose guard (14) and a front guide pin element/elements (6), (7) on the front portion of the hose guard (14).

2. A hose guard (14) according to claim 1, **characterized in that** the said at least two hose guide elements (4-7) include a guide plate (4) on the rear portion of the hose guard (14).

3. A hose guard (14) according to claim 1 or claim 2, **characterized in that** the said guard element (3) is manufactured from aluminium, steel, cast iron, spheroidal graphite iron or from a composite material.

4. A hose guard (14) according to any one of claims 1 to 3, **characterized in that** the said at least two hose

guide elements (4-7) are manufactured with a gliding surface material or with a gliding surface coating.

5. A hose guard (14) according to any one of claims 1 to 4, **characterized in that** the said guide pin element/elements (5-7) include a sliding sleeve arranged on the said guide pin element (5-7).

6. An articulating arm arrangement of an articulating crane, said articulating arm arrangement having at least one boom and hydraulic hose conduits (17-20) running from a boom (10) of the said at least one boom via a boom nose (11),
characterized in that said articulating arm arrangement comprises a hose guard (14), said hose guard (14) having side parts (1), (2), a guard element (3) for protecting said hydraulic hose conduits (17-20), and at least two hose guide elements (4-7) for guiding said hydraulic hose conduits (17-20),

- which said side parts (1), (2) of the said hose guard (14) comprise holes (8), (9) in said side parts (1), (2) of the said hose guard (14) for joining the said hose guard (14) to the end-side of the said boom (10) of the articulating crane, and
- which said at least two hose guide elements (4-7) include a rear guide pin element (5) on the rear portion of the hose guard (14) and a front guide pin element/elements (6), (7) on the front portion of the hose guard (14).

7. An articulating arm arrangement according to claim 6, **characterized in that** the said hydraulic hose conduits (17-20) are lead to an accessory device or to a working implement between the said at least two hose guide elements (4-7).

8. An articulating arm arrangement according to claim 6 or claim 7, **characterized in that** the said at least two hose guide elements (4-7) include a guide plate (4) on the rear portion of the hose guard (14).

9. An articulating arm arrangement according to any one of claims 6 to 8, **characterized in that** the said guard element (3) is manufactured from aluminium, steel, cast iron, spheroidal graphite iron or from a composite material.

10. An articulating arm arrangement according to any one of claims 6 to 9, **characterized in that** the said at least two hose guide elements (4-7) are manufactured with a gliding surface material or with a gliding surface coating.

11. An articulating arm arrangement according to any one of claims 6 to 10, **characterized in that** the said guide pin element/elements (5-7) include a sliding sleeve arranged on the said guide pin element (5-7).

12. An articulating arm arrangement according to any one of claims 6 to 11, **characterized in that** the said hydraulic hose conduits (17-20) are lead to an accessory device or to a working implement in front of the said guide plate and in front of the said rear guide pin element and behind the said two front guide pin elements (6), (7).

13. An articulating crane, **characterized in that** said articulating crane comprises an articulating arm arrangement according to any one of claims 6 to 12.

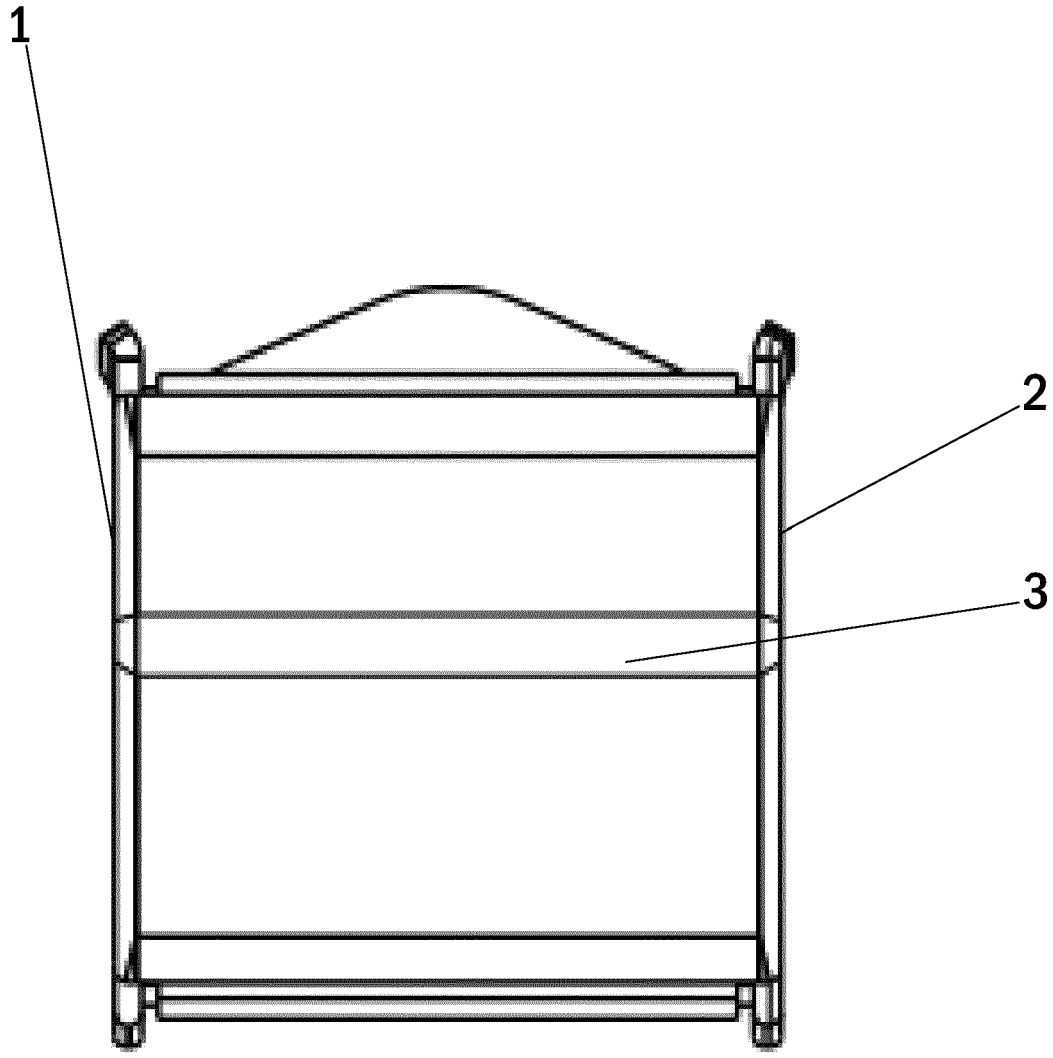

Fig. 1

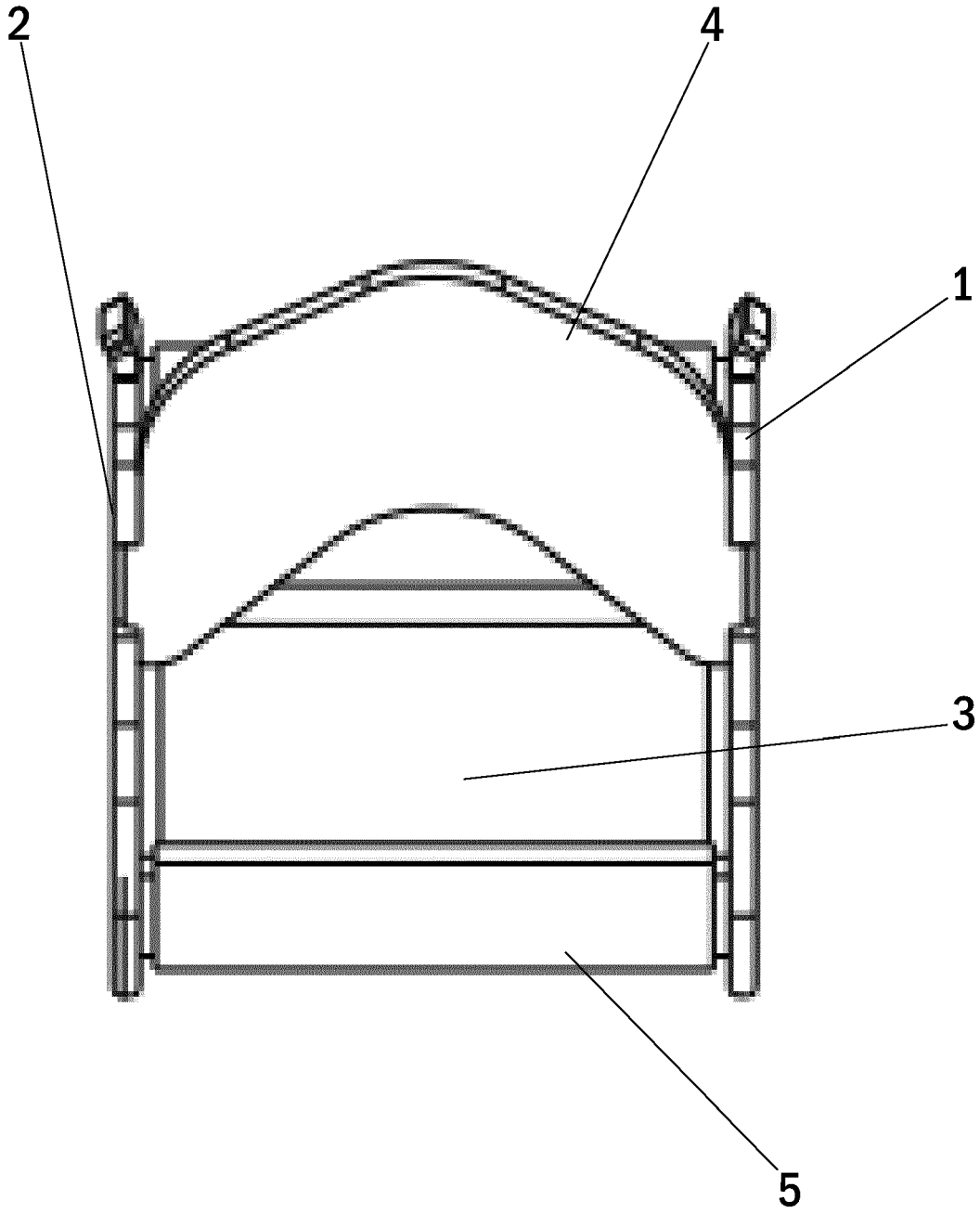

Fig. 2

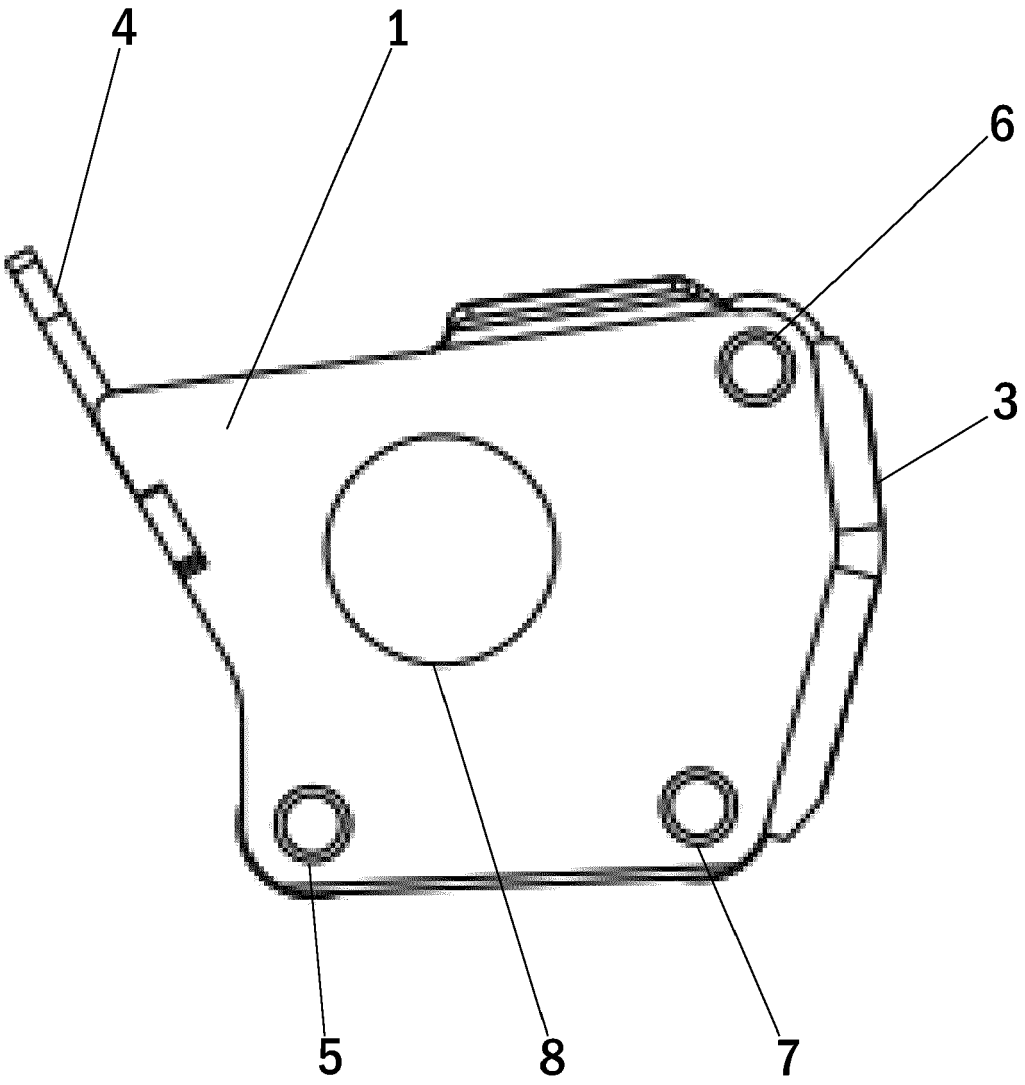

Fig. 3

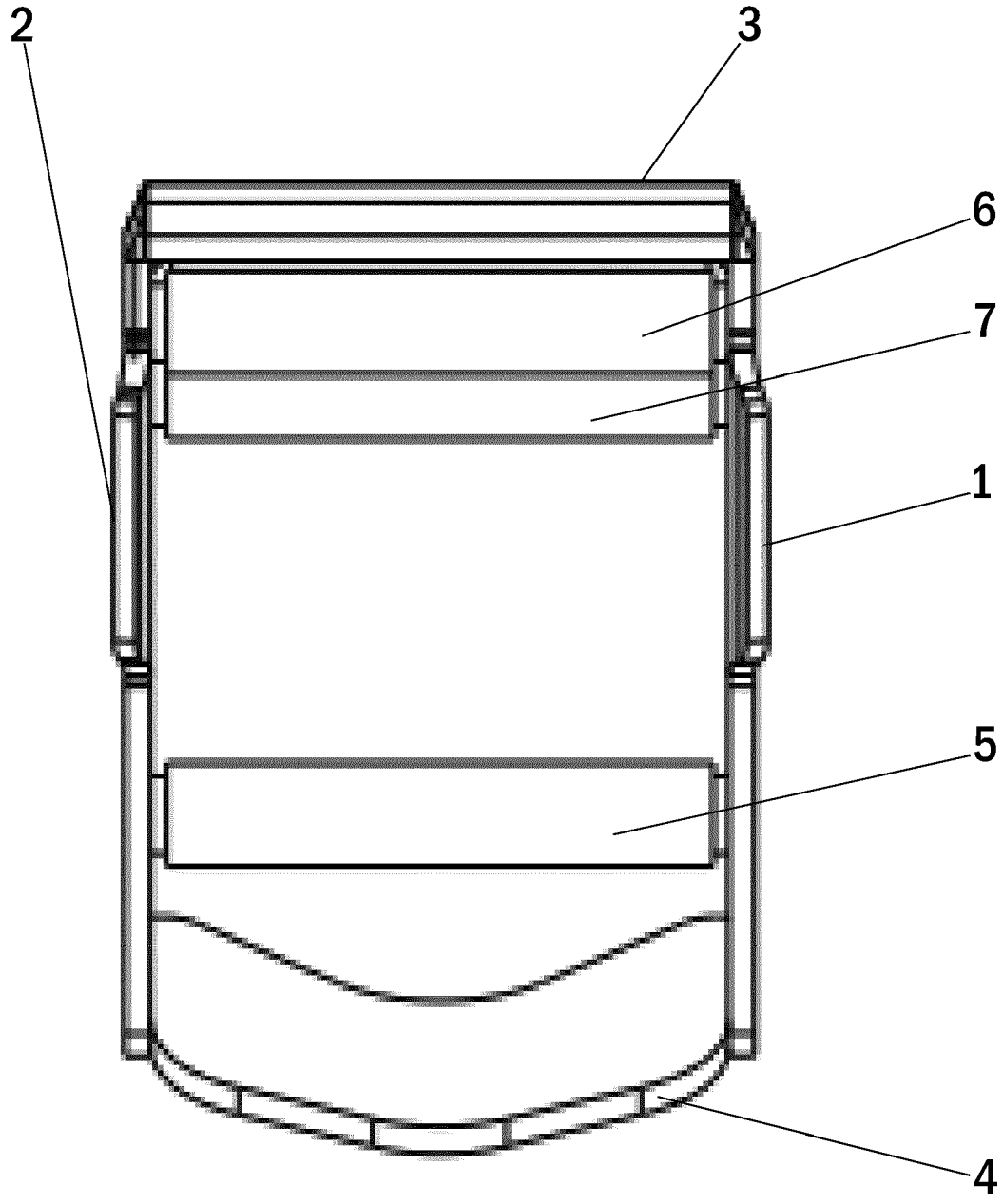

Fig. 4

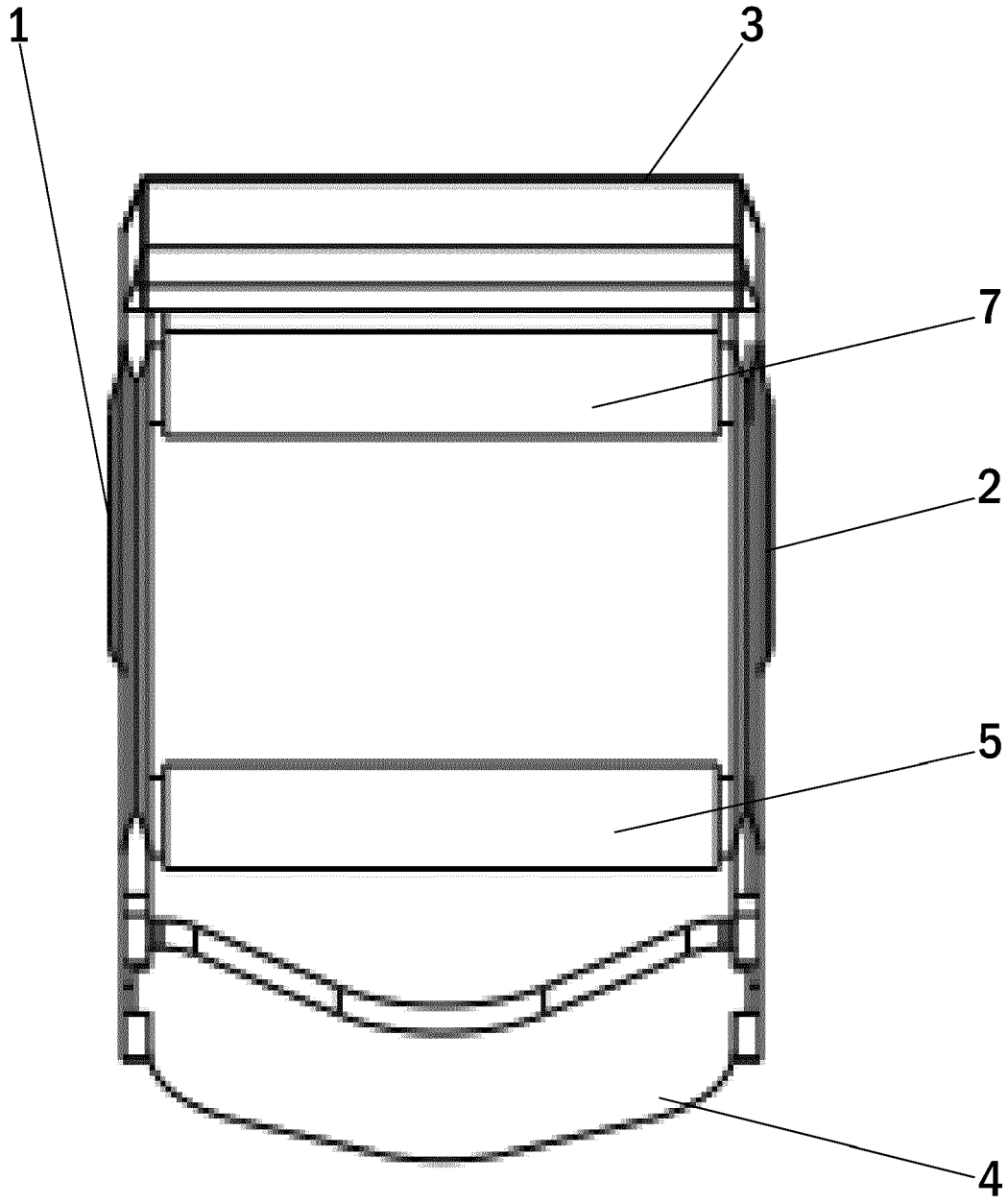

Fig. 5

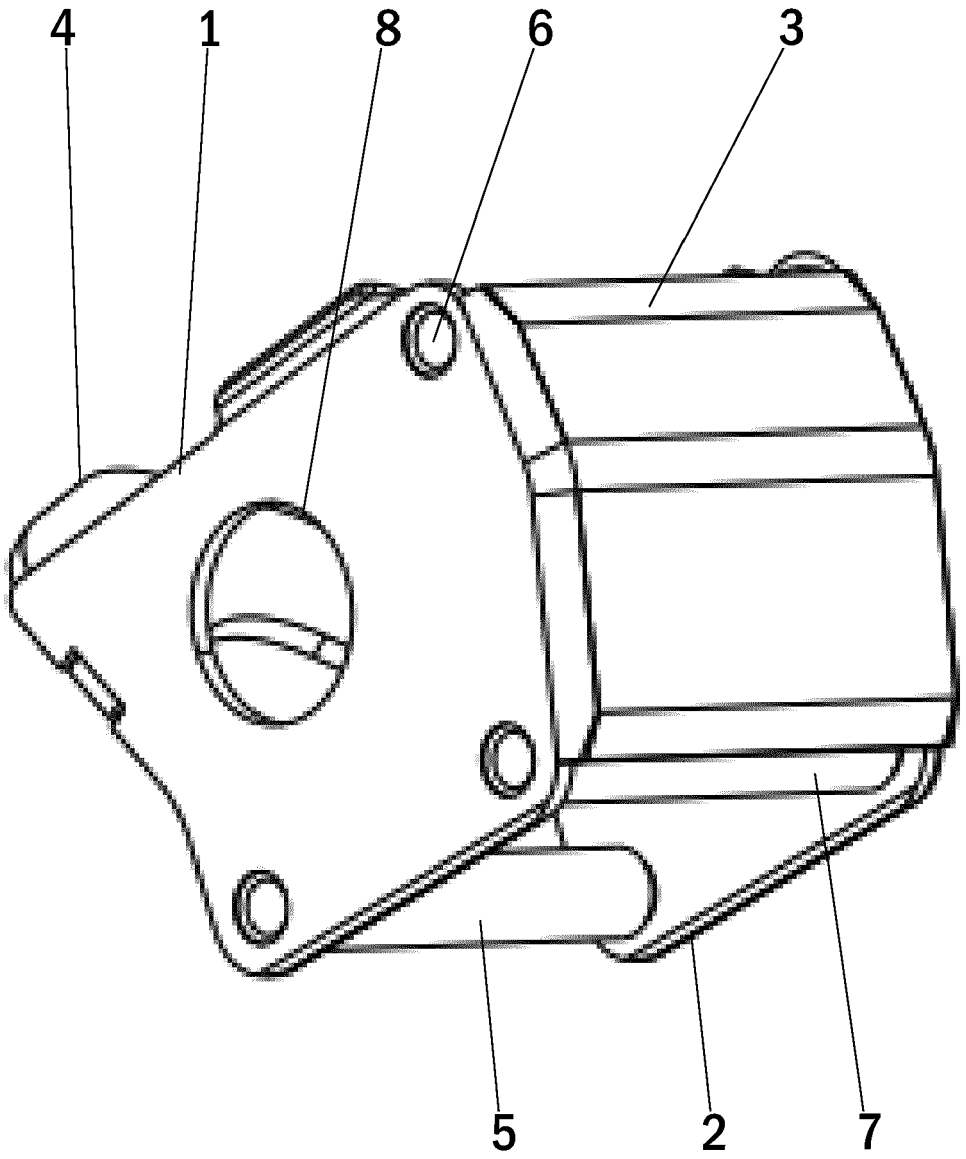

Fig. 6

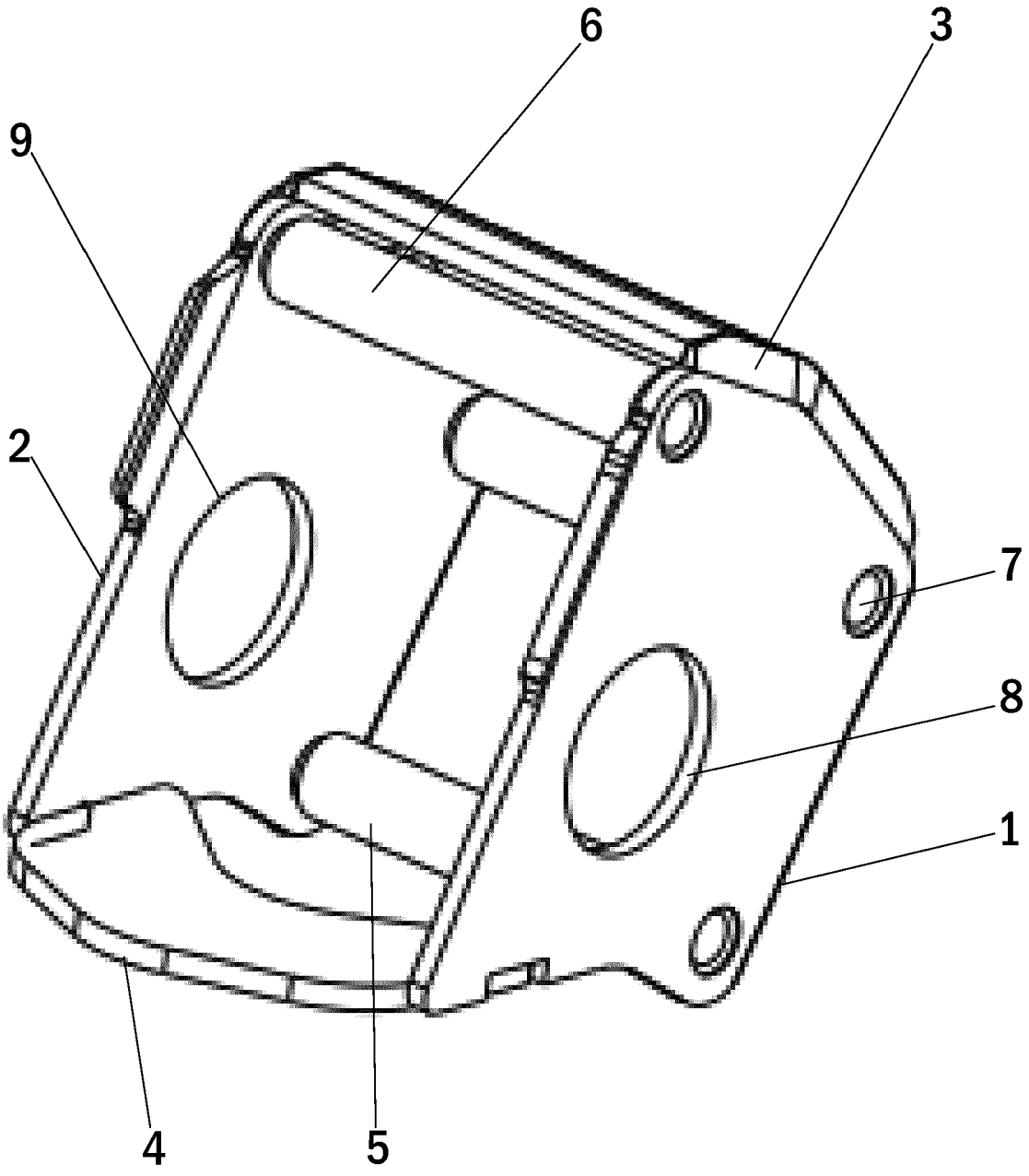

Fig. 7

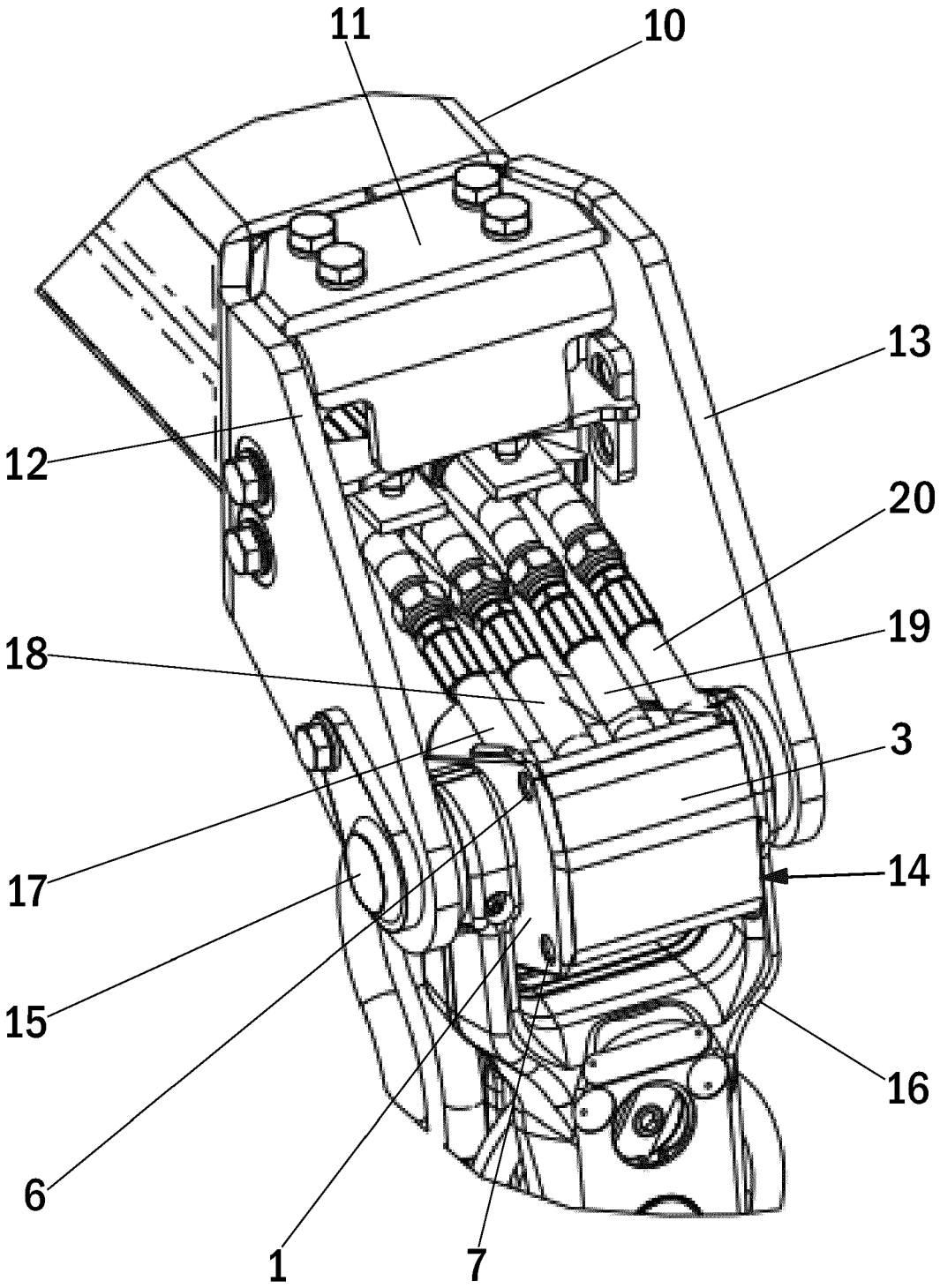

Fig. 8

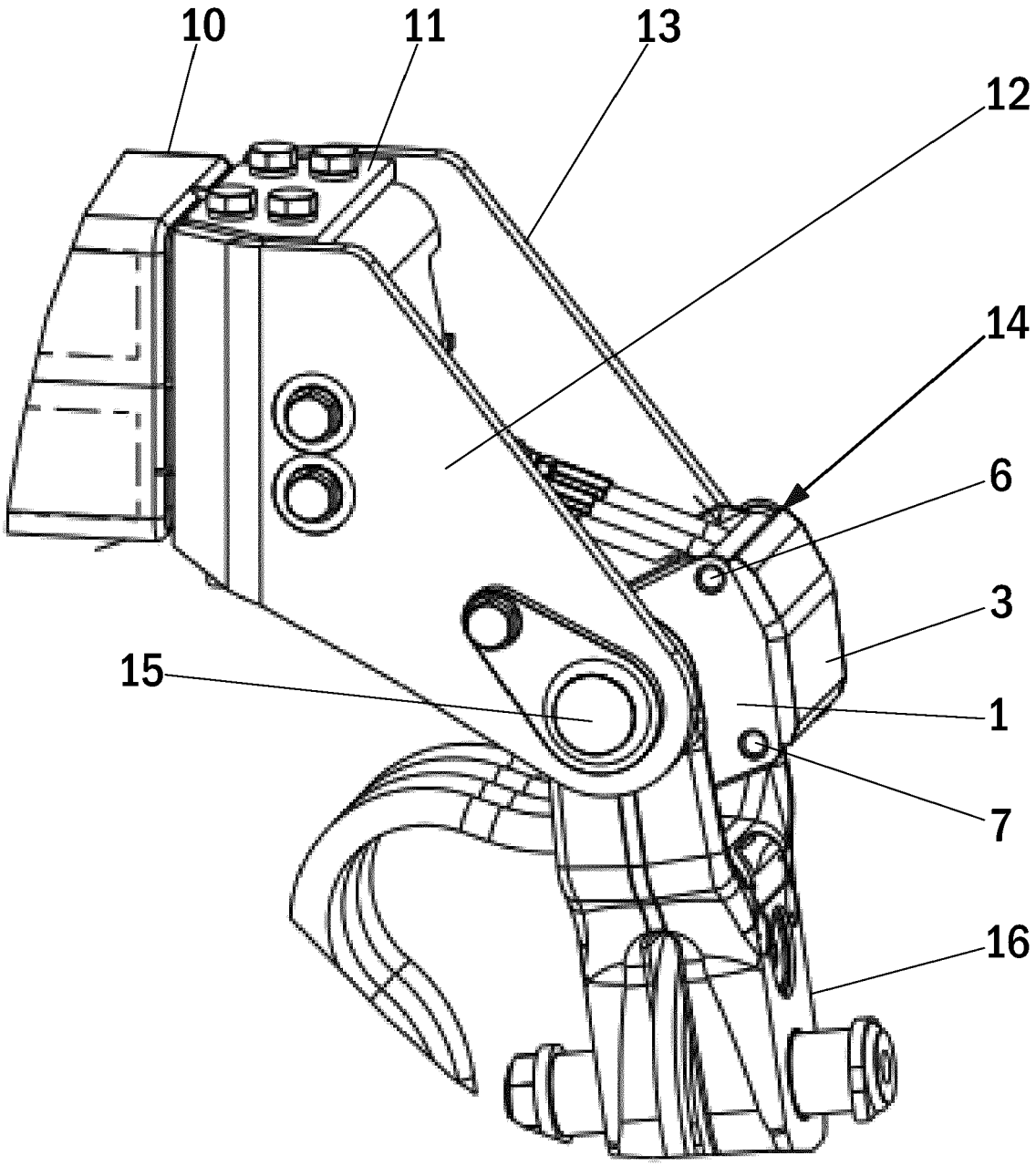

Fig. 9

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EUROPEAN SEARCH REPORT

Application Number
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