



(22) Date de dépôt/Filing Date: 2003/06/13

(41) Mise à la disp. pub./Open to Public Insp.: 2003/12/14

(45) Date de délivrance/Issue Date: 2010/09/28

(30) Priorité/Priority: 2002/06/14 (IT TO2002A 000509)

(51) Cl.Int./Int.Cl. *B64C 27/48* (2006.01),
B64C 27/32 (2006.01), *B64C 27/35* (2006.01)

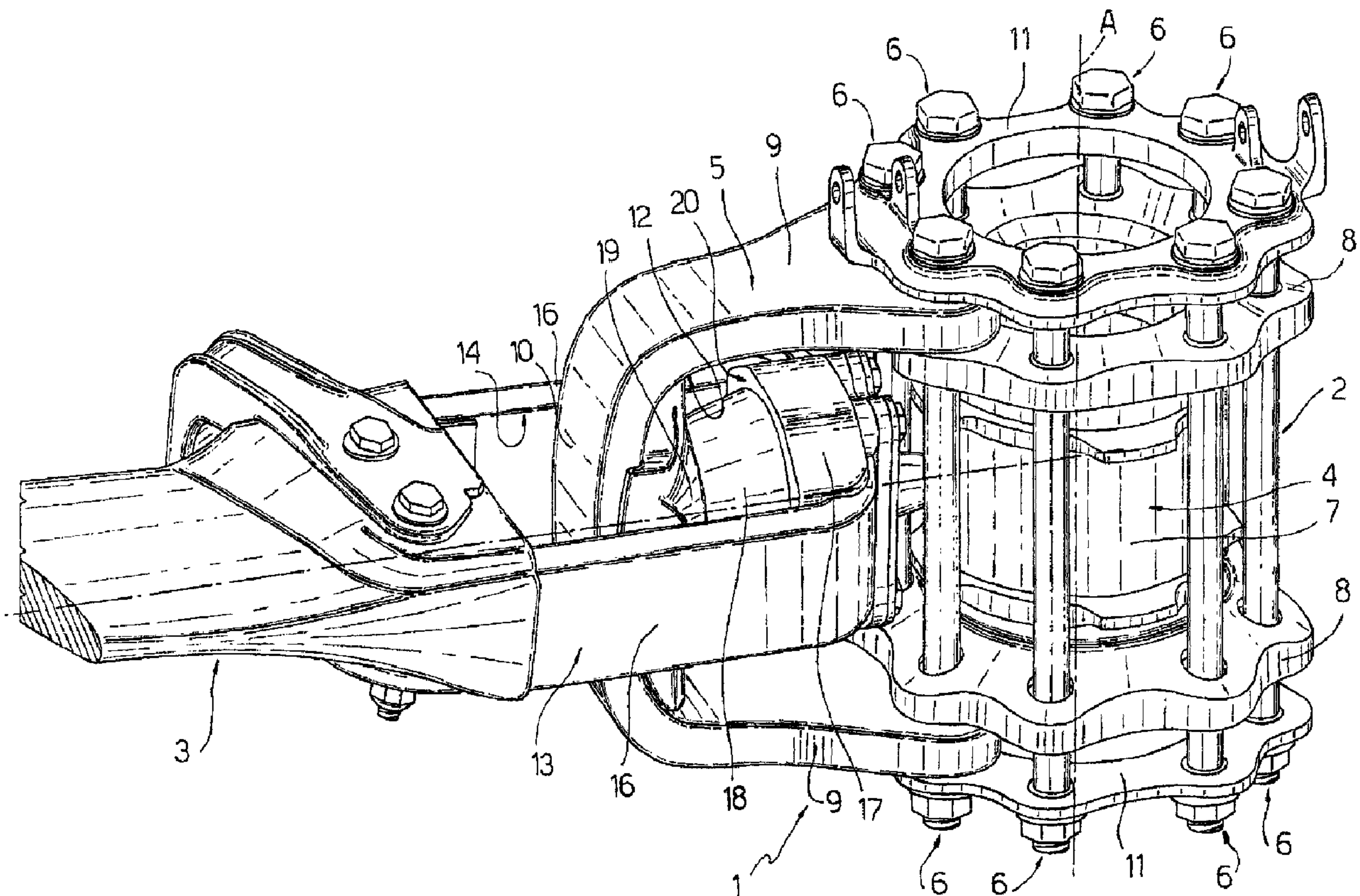
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(54) Titre : MOYEU DE ROTOR D'HELICOPTERE, ET ROTOR ASSOCIE

(54) Title: HELICOPTER ROTOR HUB, AND ROTOR FEATURING SUCH A HUB



(57) Abrégé/Abstract:

There is described a hub for a helicopter rotor, having a main body, and a number of connecting members projecting from the main body and for the connection of respective blades; the main body and the connecting members being defined by separate components connectable to one another by releasable fastening means.



ABSTRACT

There is described a hub for a helicopter rotor, having a main body, and a number of connecting members projecting from the main body and for the connection of respective blades; the main body and the connecting members being defined by separate components connectable to one another by releasable fastening means. (Figure 1)

HELICOPTER ROTOR HUB, AND ROTOR FEATURING SUCH A HUB

The present invention relates to a helicopter rotor hub, in particular for a tail rotor, to which the following description refers purely by way of example.

As is known, a helicopter tail rotor substantially comprises a hub connected angularly to the rotor drive shaft, and a number of blades fixed to and projecting radially from the hub.

10 The hub typically comprises a substantially cylindrical central body, in turn comprising an axial through hole for the drive shaft, and a number of integral outer radial supporting arms, each defining a fastening seat for connection of a respective blade.

15 Each blade is normally fitted on one end with a fastening member for connection to a relative arm on the hub. More specifically, the fastening member is typically C-shaped, and comprises opposite parallel end portions connected releasably to one end of the relative blade to define a closed through seat with the blade, and a connecting portion for connecting the end portions and fitted through the fastening seat of the relative arm on the hub.

Known hubs of the above type are extremely bulky and heavy, and therefore difficult to manage when fitting and removing the rotor to and from the helicopter. This is mainly due to the supporting arms, which greatly increase

the radial size of the hub.

The present invention provides a helicopter rotor hub designed to eliminate, in a straightforward, low-cost manner, the aforementioned drawback typically associated with known
5 hubs.

According to the present invention, there is provided a hub for a helicopter rotor, comprising a main body, and a plurality of connecting members projecting radially from the main body and defining, with the main body, respective closed
10 profile seats for receiving respective blades. Each connecting member is defined by a component separated from the main body and connectable to the main body by releasable fastening means.

A preferred, non-limiting embodiment of the present
15 invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a view in perspective, with parts removed for clarity, of a helicopter rotor hub in accordance with the present invention;

20 Figure 2 shows a cross section of the Figure 1 hub.

With reference to the accompanying drawings, number 1 indicates as a whole a rotor - in the example shown, a tail rotor - for a helicopter (not shown), and which substantially comprises a hub 2, of axis A, connected angularly to a drive
25 shaft 15 (shown partly in Figure 2) of rotor 1; and a number of blades 3 (only one of which is shown partly) fixed radially to and projecting from hub 2 in the manner described below and which constitutes the

object of the present invention.

More specifically, hub 2 comprises a hollow, substantially cylindrical, central body 4, of axis A, for receiving and rotated by drive shaft 15 in known manner not described; and a number of connecting members 5 projecting radially from body 4 and for the connection of respective blades 3.

An important characteristic of the present invention is that body 4 and connecting members 5 are defined by separate components connected to one another releasably by a number of bolts 6.

More specifically, body 4 comprises a cylindrical main portion 7 of axis A; and opposite annular end flanges 8 projecting radially from main portion 7.

Each connecting member 5 is substantially C-shaped, and is defined by two facing arms 9 joined by a transverse connecting portion 10 and fixed at their free ends to body 4 by means of bolts 6.

More specifically, the free ends of arms 9 of each connecting member 5 rest on respective flanges 8 of body 4, and are gripped between flanges 8 and respective annular end plates 11. Flanges 8 are fastened to annular plates 11 by means of bolts 6, which have axes parallel to axis A and are equally spaced angularly about axis A and outwards of the main portion of body 4.

Each connecting member 5 defines, with the portion of body 4 facing it, a closed seat 12 for receiving relative

blade 3.

As shown in the accompanying drawings, each blade comprises, at one end, a portion 13 for connection to hub 2 and defining a closed through opening 14 through which
5 connecting portion 10 of relative connecting member 5 extends.

More specifically, portion 13 of each blade 3 is substantially C-shaped with opposite ends originating from the body of blade 3; and the C's formed by each connecting
10 member 5 and by portion 13 of each blade 3 lie in planes perpendicular to each other.

Each portion 13 is defined by two substantially parallel branches 16 forming extensions of relative blade 3 and joined by a transverse connecting portion 17.

15 Each connecting member 5 is connected to portion 13 of each blade 3 by means of a bearing 18 allowing blade 3 to move in all possible planes.

More specifically, connecting portion 10 of each connecting member 5 and connecting portion 17 of portion
20 13 of relative blade 3 respectively comprise a convex projection 19 and a concave recess 20, between which bearing 18 is housed.

The advantages of rotor 1 and hub 2 according to the present invention will be clear from the foregoing
25 description.

In particular, hub 2 according to the invention is easier to manage when being fitted to the helicopter, by

being defined by a number of separate, relatively small, lightweight parts (main body 4 and connecting members 5).

Clearly, changes may be made to rotor 1 and hub 2 as described and illustrated herein without, however,
5 departing from the scope of the accompanying Claims.

CLAIMS

1) A hub for a helicopter rotor, comprising a main body, and a number of connecting members projecting radially from said main body and defining, with said main body, respective closed-profile seats for receiving respective blades; each connecting member being defined by a component separated from said main body and being connectable to said main body by releasable fastening means.

2) A hub as claimed in Claim 1, wherein each connecting member is substantially C-shaped, and comprises two facing arms joined by a transverse connecting portion and fixed at their free ends to said main body by said releasable fastening means.

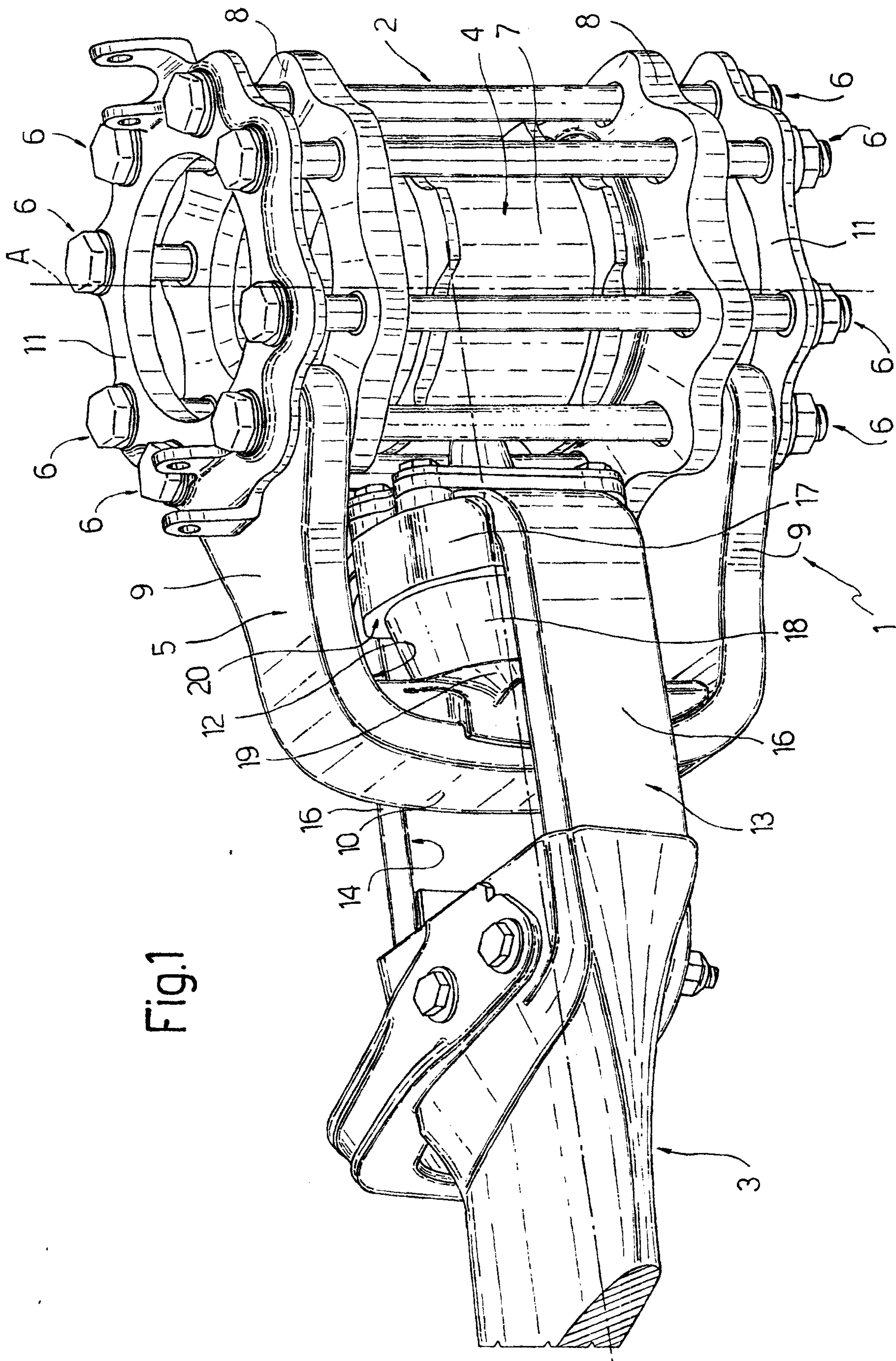
3) A hub as claimed in claim 1 or 2 wherein said main body is substantially cylindrical.

4) A hub as claimed in Claim 3, wherein said main body defines integrally, at opposite axial ends, respective radial flanges for supporting and fastening respective said free ends of each connecting member.

5) A hub as claimed in Claim 4, wherein said releasable fastening means comprise a number of bolts having axes parallel to the axis of said main body, and connecting said free ends of each connecting member to said flanges.

6) A helicopter rotor comprising a hub, and a plurality of blades extending radially from said hub, said hub being formed as claimed in any one of claims 1 to 5, and each blade comprising a connecting portion for connection to said hub and defining a through opening through which said connecting portion of the relative connecting member extends.

7) A rotor as claimed in Claim 6, including bearing means interposed between said connecting portion of each blade and said connecting portion of the relative connecting member.



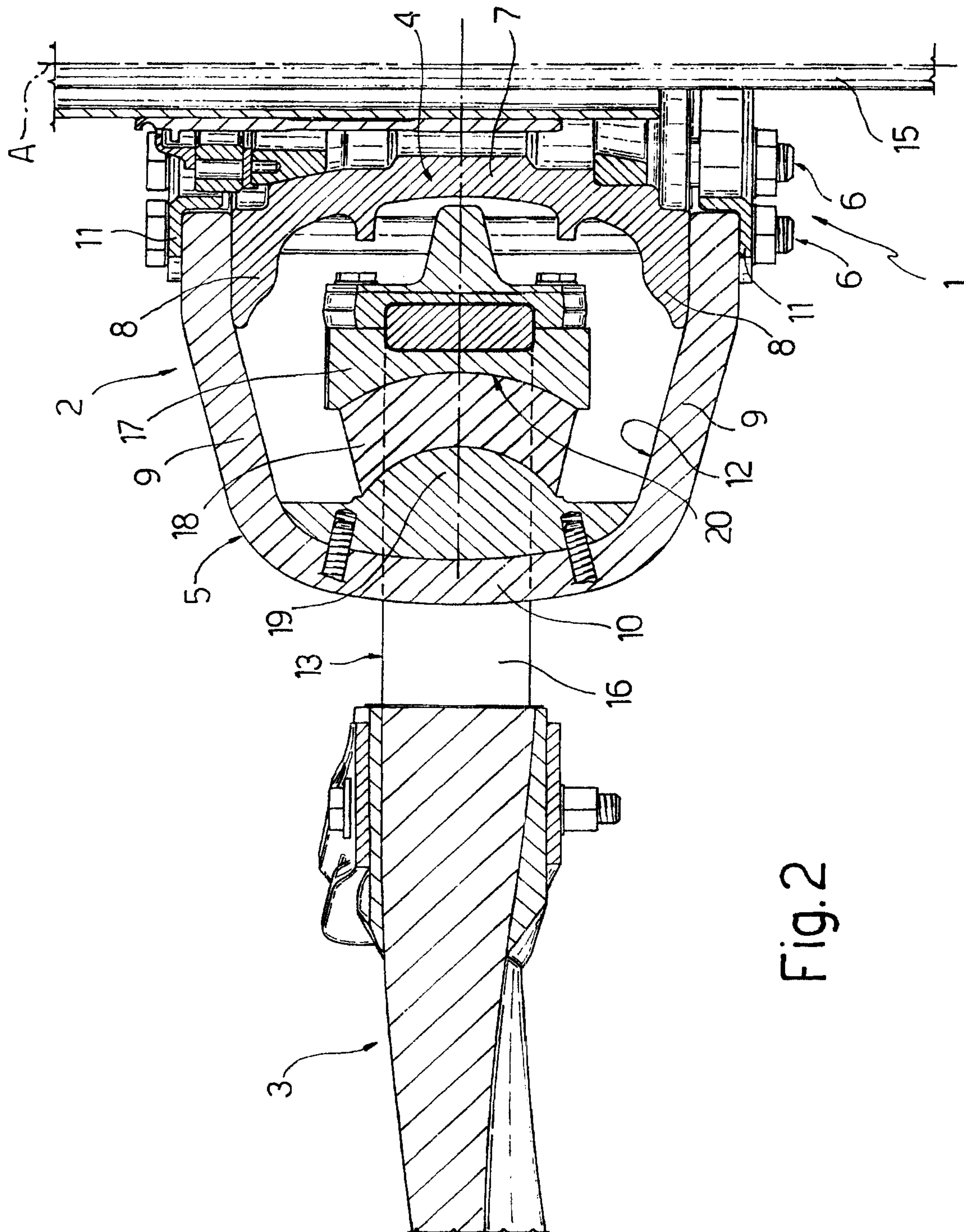


Fig. 2

