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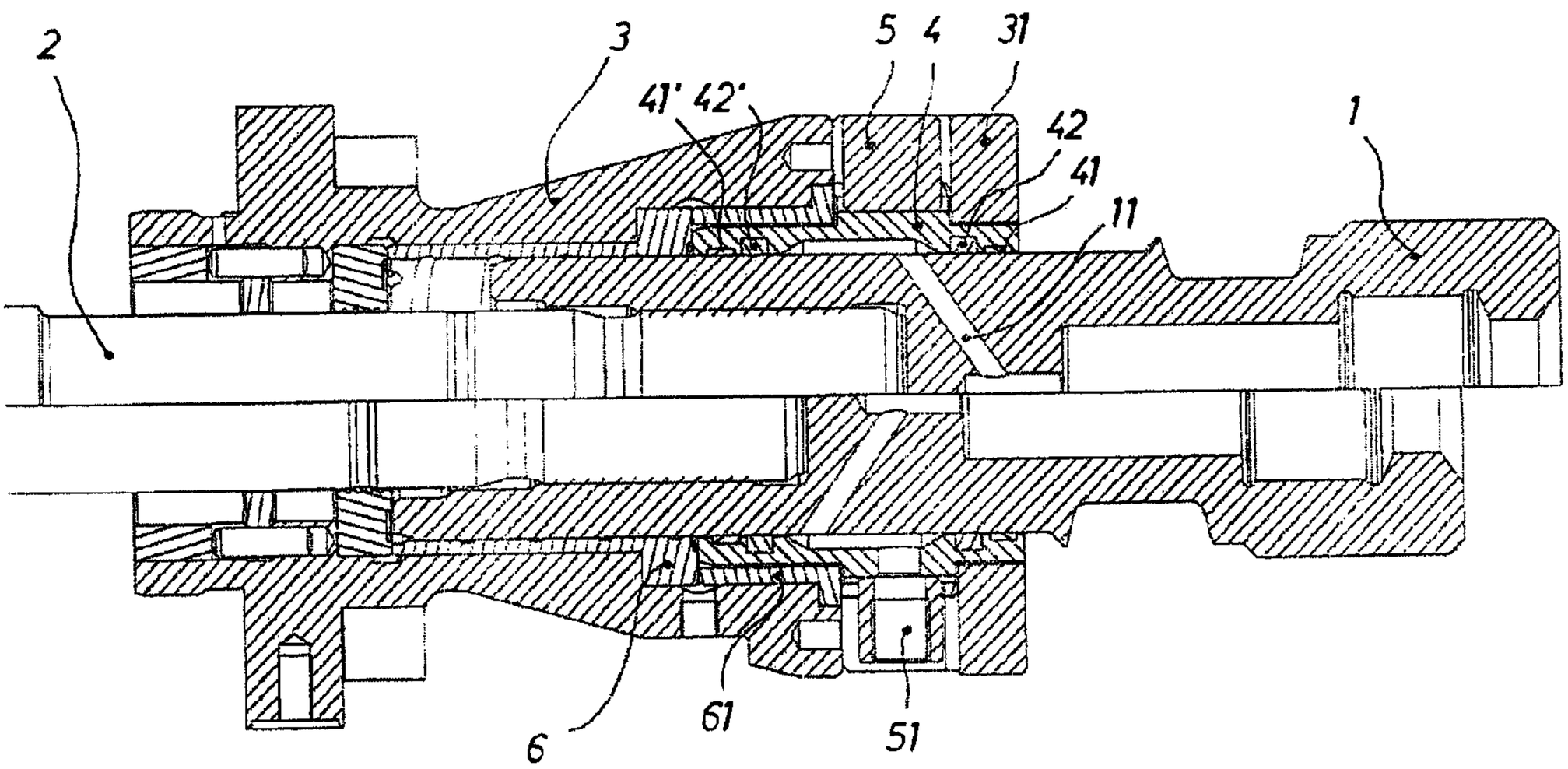
(54) Title: DEVICE FOR SUPPLYING RINSING MEDIUM IN A HAMMER DRILL



(57) Abrégé/Abstract:
The invention relates to a device for feeding a rinsing medium to the tool of a hammer drill, composed essentially of a rotatable and/or axially displaceable drilling tool holding means with at least one supply channel for the rinsing medium, a transfer part (2) interacting with the holding means (1), a housing (3) and a feed means (4) as well as a holding part with a rinsing medium inlet. In order to extend the service life of the sealing system, it is provided according to the invention that a feed means (4) shaped essentially in an axially symmetrical manner and the associated holding part (5) form a preferably permanently connected component, wherein the feed means (4) has on both sides respectively distally friction bearings (41, 41'), in particular guide belts and seals (42, 42') towards the drilling tool holding means (1) and the holding part (5) is radially displaceable in limits with bending with respect to the housing (3) and/or a fixing ring (31) connected thereto, but is positively fixed tangentially.

Abstract

The invention relates to a device for feeding a rinsing medium to the tool of a hammer drill, composed essentially of a rotatable and/or axially displaceable drilling tool holding means with at least one supply channel for the rinsing medium, a transfer part (2) interacting with the holding means (1), a housing (3) and a feed means (4) as well as a holding part with a rinsing medium inlet.

In order to extend the service life of the sealing system, it is provided according to the invention that a feed means (4) shaped essentially in an axially symmetrical manner and the associated holding part (5) form a preferably permanently connected component, wherein the feed means (4) has on both sides respectively distally friction bearings (41, 41'), in particular guide belts and seals (42, 42') towards the drilling tool holding means (1) and the holding part (5) is radially displaceable in limits with bending with respect to the housing (3) and/or a fixing ring (31) connected thereto, but is positively fixed tangentially.

Fig. 1

Device for supplying rinsing medium in a hammer drill

The invention relates to a device for supplying a rinsing medium to the tool of a hammer drill, in particular to a tool of a taphole power drill at the blast furnace, composed essentially of a rotatable and/or axially displaceable drilling tool holding means with at least one supply channel for the rinsing medium, a transfer part interacting with the holding means, a housing and a feed means as well as a holding part with a rinsing medium inlet.

Hammer drills with a drilling tool in heavy impact operation and optionally rotary operation, in particular for opening taphole openings of metallurgical vessels, usually require a supply of a rinsing agent to the work area of the tool in order to carry out drill cuttings from the bore hole and optionally to cool the tool blades.

In general, the drilling tool having at least one rinsing agent channel running axially is fixed in a drilling tool holding means or adapter, which is supported in a housing in a displaceable and rotatable manner within limits.

A supply of a rinsing medium can thereby be carried out by means of lines or recesses from the housing into the drilling tool holding means, wherein seals prevent the medium from escaping between these parts.

However, this type of rinsing agent guidance to the tool has the disadvantage that with a moderate wear of the bearing points between the drilling tool holding means and the housing of the hammer, although it rendered possible a further trouble-free hammer operation, a repair has to be carried out due to sealing problems.

It has already been tried to arrange a separate feed means for a rinsing agent on a drilling tool holding means extended in the axial direction, which feed means is not integrated into the hammer housing, but has the disadvantages of a shortened drill length and an increased load on the bearing points.

The object of the invention is to overcome the disadvantages of the prior art and to create a device for supplying a rinsing medium to the tool of a hammer drill, in particular to a tool of a taphole power drill on a metallurgical vessel of the type mentioned at the outset, which has a low abrasion in the hard drill operation and essentially at the same time necessitate a

replacement of the bearing bushings between the drilling tool holding means and the housing and a replacement of the seals in the feed path for the rinsing agent.

This object is attained in an innovative manner with a generic device in that a feed means shaped essentially in a axially symmetrical manner and the associated holding part form a preferably permanently connected component, wherein the feed means has on both sides respectively distal friction bearings, in particular guide belts and seals towards the drilling tool holding means and the holding part is radially displaceable in limits with bending with respect to the housing and/or a fixing ring connected thereto, but is positively fixed tangentially.

The advantages obtained with the feed means and the associated holding part according to the invention are essentially that this is shaped to be radially moveable within limits as a so-called "floating" feed means or feed element, which can bear against the drilling tool holding means in a sealing manner, and a guide through the housing takes place positively only in the direction of rotation. The drilling tool holding means with an abrasion of the bearing points within limits can perform a radial displacement in the housing, wherein although the component, feed means with holding part, is secured against twisting, it can follow a displacement of the drilling tool holding means.

More specifically, the present invention provides a device for supplying a rinsing medium to a tool of a hammer drill, comprising a rotatable and/or axially displaceable drilling tool holding means with at least one supply channel for the rinsing medium, a transfer part interacting with the holding means, a housing and a feed means as well as a holding part with a rinsing medium inlet, wherein a feed means shaped substantially in an axially symmetrical manner and the associated holding part form a connected component, wherein the feed means has on both sides respectively distally friction bearings, and seals towards the drilling tool holding means and the holding means is radially displaceable in limits with bending with respect to the housing and/or a fixing ring connected thereto, but is positively fixed tangentially.

In one embodiment, the radially displaceable component, formed by the feed means for the rinsing medium and holding part, is positioned axially adjacent to the bearing bushing, fixed by a spacer element, and after the release of the fixing ring from the housing the component with the feed means together with guide belts and seals and the bearing bushing with spacer element can be drawn out thereof.

In this manner, with an essentially simultaneous wear of the bearings and sealing elements, a repair can be quickly carried out easily and economically. The seals and the guide belts of the feed means for the rinsing medium as well as the bearing bushing for the drilling tool holding means can be replaced in the housing in one operation, wherein no additional components have to be dismantled and assembled, whereby the necessary repair time of the hammer drill can be efficiently reduced.

One exemplary embodiment of the invention which represents only one way of carrying out the same, is shown in the drawing and is described below.

It shows:

Fig.1 a device for supplying for a rinsing medium to the tool of a hammer drill.

A list of reference numbers is intended to facilitate an assignment of the functional means and parts in the representation.

They represent:

1	Drilling tool holding means
11	Supply channel for rinsing medium
2	Transfer part
3	Housing
31	Fixing ring
4	Feed means
41, 41'	Friction bearing
42, 42'	Seal
5	Holding part
51	Rinsing medium inlet
6	Bearing bushing
61	Spacer element

Fig. 1 shows in section a device according to the invention, wherein above the centerline the drilling tool holding means is shown in an extended position and below the centerline is shown in a retracted position.

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A drilling tool holding means 1 has a receiving region for a tool with rinsing channel in the distal projecting region. A cavity is located centrally in the base region of a tool seat of the holding means 1, which cavity forms a feed channel 11 for a rinsing medium by means of an oblique bore outwards.

A drilling tool holding means 1 is driven by a transfer part 2 intermittently and optionally rotationally and has an extended and a retracted position, based on the work, with respect to a housing 3.

In order to ensure an uninterrupted supply of a rinsing agent to the tool, a feed means 4 has an axially symmetrical radial recess with a length which corresponds at least to a distance between the extended and retracted position of the drilling tool holding means 1.

A feed means 4 is firmly connected with a holding part 5 to form a component 4, 5, wherein there is a rinsing medium inlet 51 in the holding part 5 with a connection to the radial recess in the feed means 4.

Friction bearings or guide belts 41, 41' directed distally inwards to the axis and seals 42, 42' towards the drilling tool holding means 1 are arranged on both sides of a radial recess in the feed means 4.

A component composed of feed means 4 and holding part 5 bears against the outer surface of the drilling tool holder 1 by means of bearings 41, 41' and seals 42, 42' on the one hand and is on the other hand is loosely guided by the holding part 5 from the housing 3 with fixing ring 31.

A loose guidance is carried out such that the component 4, 5 is displaceable in the radial direction, but tangentially a flat or the like stop prevents a rotation of the element, so that the feed means 4, as it were "floating" on the drilling tool holding means 1, follows the radial displacement thereof.

If according to the invention the bearing bushing 6 in the housing 3 for the drilling tool holding means 1, fixed by a spacer element 61, and a feed means 4 for a rinsing medium, are positioned axially adjacent, as can easily be seen from Fig. 1, after a release of a fixing ring 31 in a simple manner during a repair of the hammer drill after removal of the drilling tool

holding means 1, the feed means 4 and the bearing bushing 6 with the spacer element 61 can be drawn off and serviced parts can be inserted into the housing 3 again.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A device for supplying a rinsing medium to a tool of a hammer drill, comprising a rotatable and/or axially displaceable drilling tool holding means with at least one supply channel for the rinsing medium, a transfer part interacting with the holding means, a housing and a feed means as well as a holding part with a rinsing medium inlet, wherein a feed means shaped substantially in an axially symmetrical manner and the associated holding part form a connected component, wherein the feed means has on both sides respectively distally friction bearings, and seals towards the drilling tool holding means and the holding means is radially displaceable in limits with bending with respect to the housing and/or a fixing ring connected thereto, but is positively fixed tangentially.

2. The device according to claim 1, wherein the radially displaceable component, formed by the feed means for the rinsing medium and holding part, is positioned axially adjacent to the bearing bushing, fixed by a spacer element and after the release of the fixing ring from the housing, the component with the feed means together with friction bearings and seals and the bearing bushing with spacer element can be drawn out thereof.

3. A device according to claim 1 or 2, wherein the friction bearings are guide belts.

4. A device according to claim 1, 2 or 3, wherein the tool is a tool of a taphole power drill at a blast furnace.

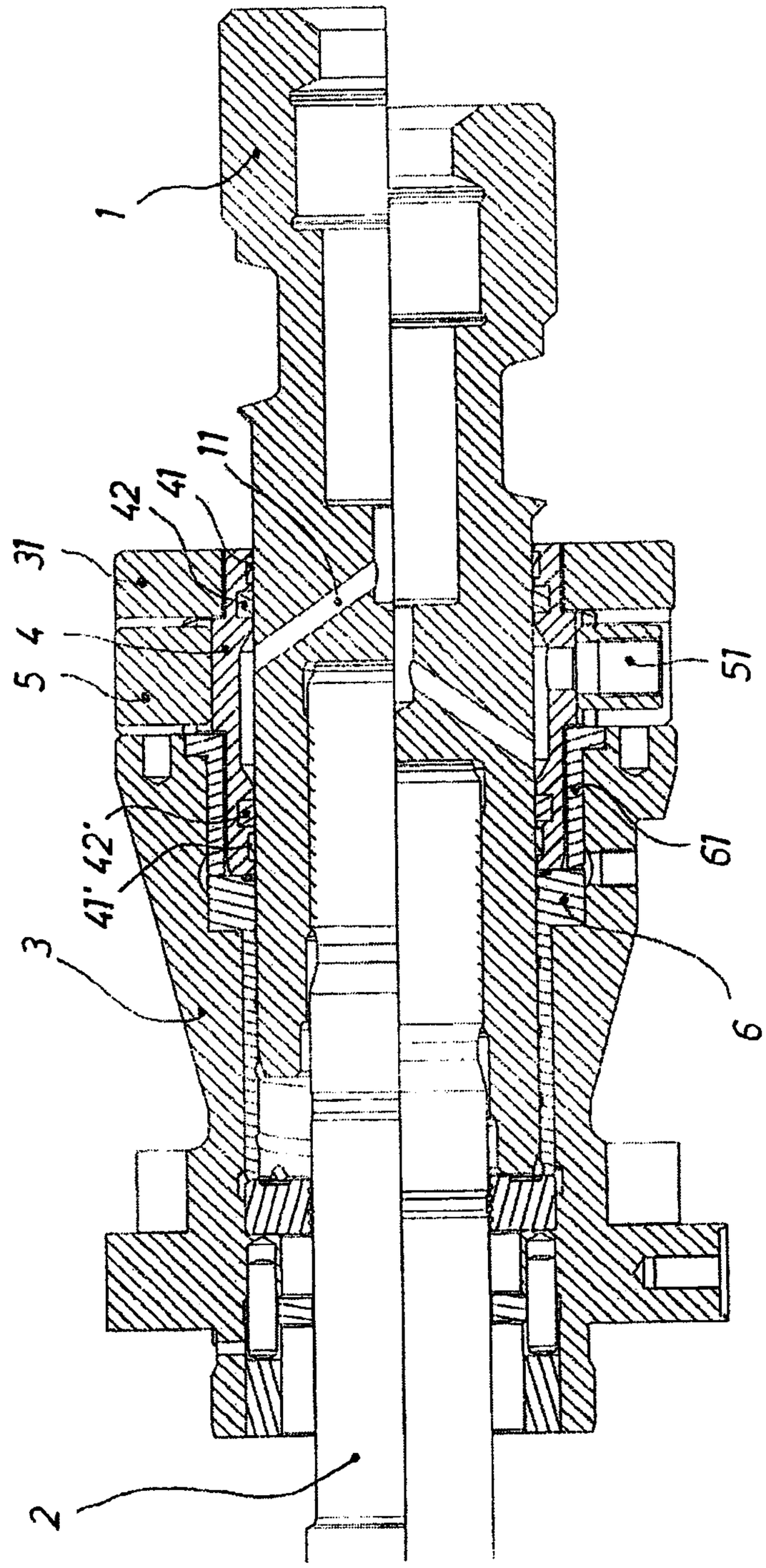
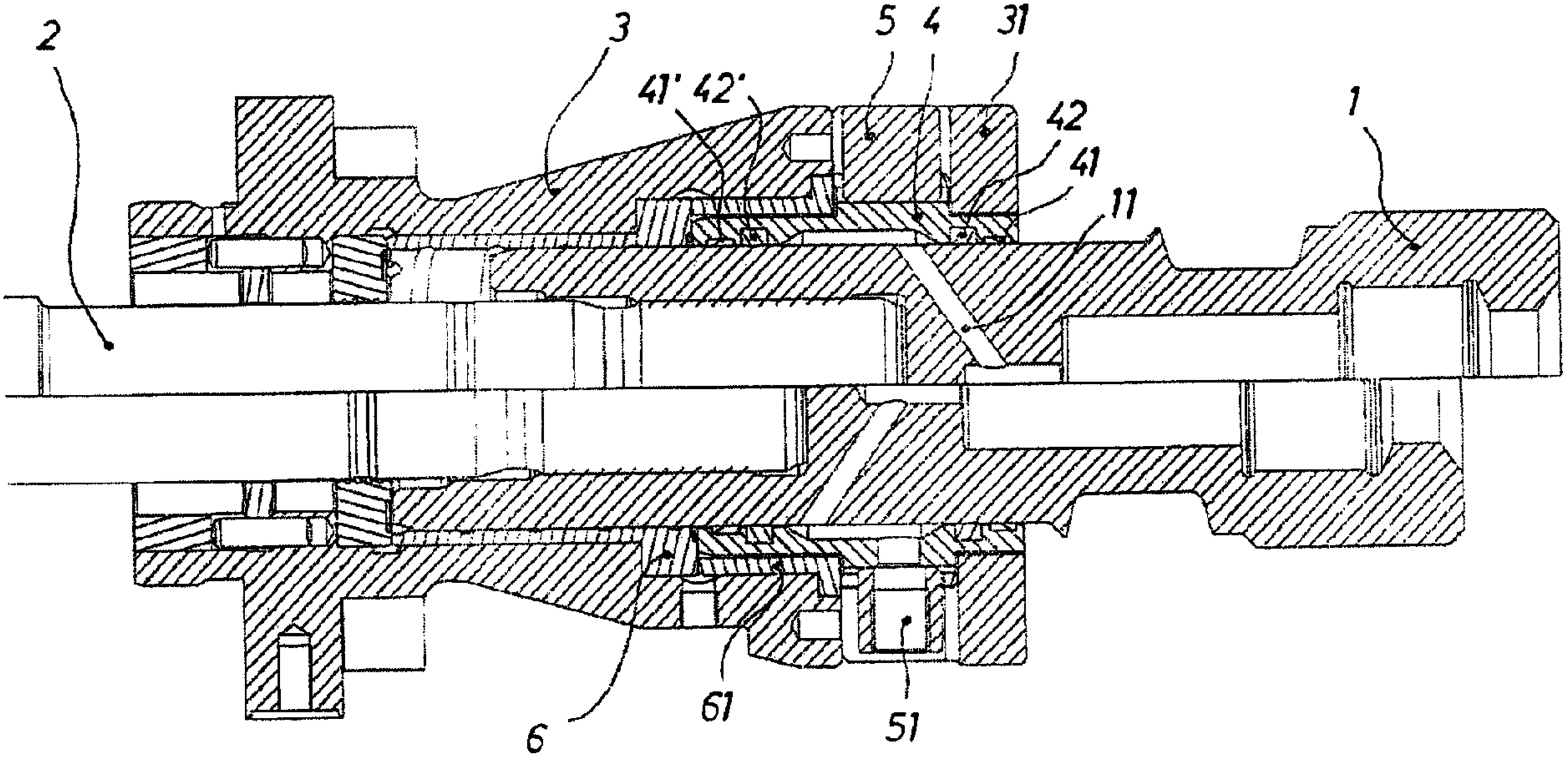


Fig. 1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