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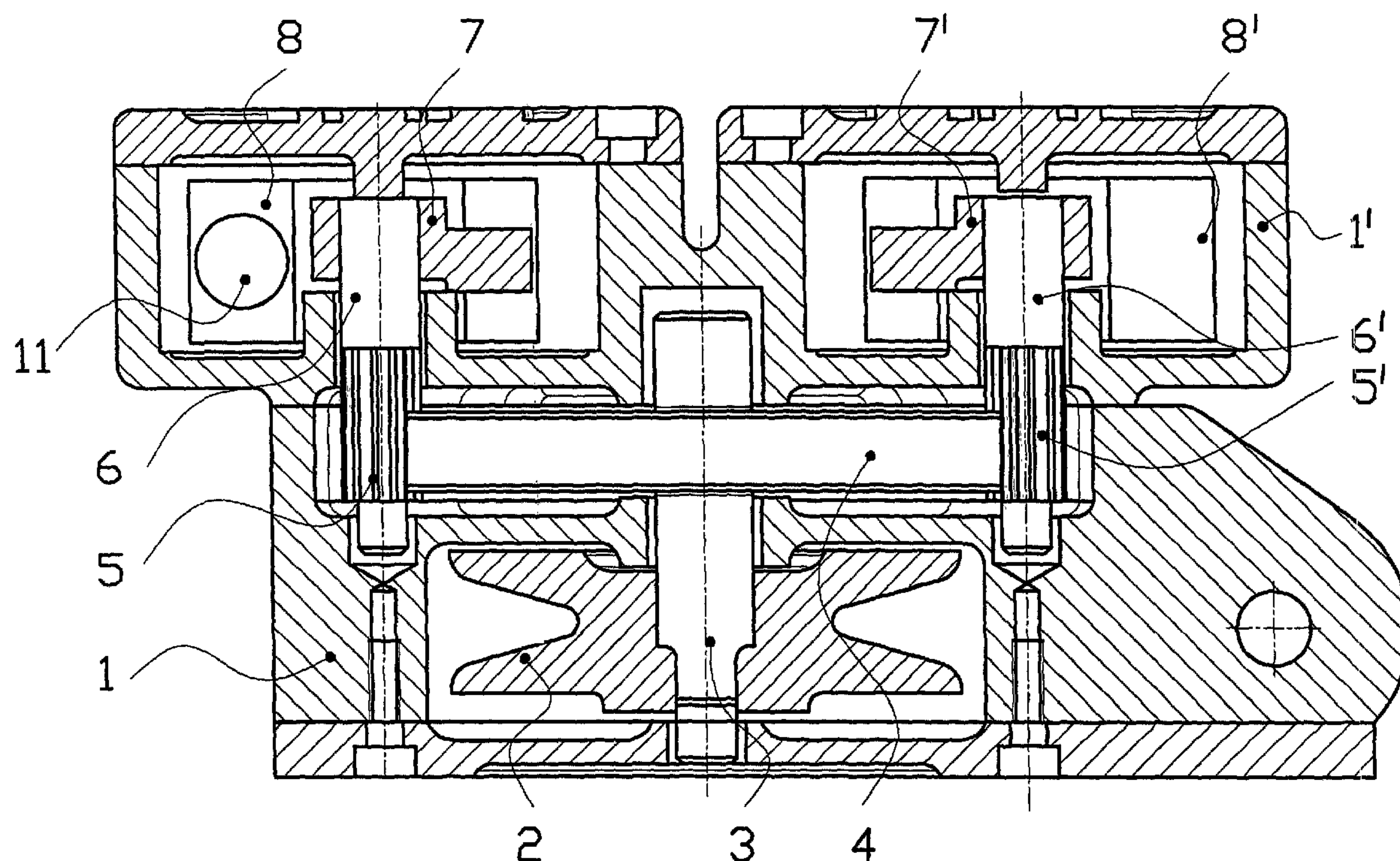
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(54) Titre : DISPOSITIF DE DESCENTE EN RAPPEL

(54) Title: RAPPELLING DEVICE



(57) **Abrégé/Abstract:**

The invention relates to an abseiling device comprising a rope guide pulley (2) which is rotationally mounted in a housing (1) and is connected by a toothed wheel (4) to two toothed shafts (5, 5') of centrifugal power braking elements comprising pairs of brake blocks (8, 8') acting on the device housing (8, 8') and comprising brake boots (10, 10') and additional safety brake boots (10''). The brake blocks of each pair are maintained in a rest position by means of a magnet (11) and an iron core (11'), which are disposed in the opposite front sides (8'') of the brake blocks.

Abstract

The invention relates to an abseiling device comprising a rope guide pulley (2) which is rotationally mounted in a housing (1) and is connected by a toothed wheel (4) to two toothed shafts (5, 5') of centrifugal power braking elements comprising pairs of brake blocks (8, 8') acting on the device housing (8, 8') and comprising brake boots (10, 10') and additional safety brake boots (10''). The brake blocks of each pair are maintained in a rest position by means of a magnet (11) and an iron core (11'), which are disposed in the opposite front sides (8'') of the brake blocks.

Rappelling Device

The invention relates to a rappelling device provided with a rope guide pulley rotatably mounted in a housing and which by way of a toothed wheel is operatively connected to two toothed shafts of a centrifugal braking device provided with pairs of brake shoes acting upon housing of the device with brake pads.

Such devices which can be attached to a stationary structure such as a building, for instance, by means of a karabiner (snap hook) are known in various structures, for instance from German patent specification DE 198 18 688 C1. In these rappelling devices which serve for lowering loads, in particular persons, and which are used as rescue equipment in particular, the rappelling velocity varies as a function of the weight of the load or person to be lowered. The greater the weight, the higher is the rappelling velocity.

It is an object of the invention to improve the function of the centrifugal braking devices.

In a device of the kind referred to above, this is accomplished in accordance with the invention by of two safety brake pads being provided on the brake shoes supporting the brake pads which provide for the constant rappelling velocity of one of the centrifugal braking devices, the additional safety brake pads being actuated when the force of the brake pads decreases below a certain minimum and significantly reduce the rappelling velocity, the brake pads being maintained in the idle position disposed on opposite outer surfaces of the brake shoes.

Preferably, the brake pads and the additional brake pads are seated in

recesses to extend beyond the surface of the brake shoes. Open eye bolts mounted at both sides of the housing are useful for guiding the rope running over the rope guide pulley.

The device in accordance with the invention also provides an optical indication to its user that it requires maintenance service, i.e. that the proper brake pads are depleted and require replacement.

The invention will hereafter be described in connection with an embodiment with reference to the drawings, in which:

Fig. 1 is an axial section along line I - I of Fig. 1 of a rappelling device in accordance with the invention;

Fig. 2 is a schematic top elevation of the device of Fig. 1 with housing covers removed; and

Figs. 3-6 depict a further embodiment of the invention.

The rappelling device shown in the drawings is provided with a housing 1 assembled of several components, in which a rope guide pulley 2 is journaled for rotation on a shaft 3. A toothed wheel 4 is keyed to the shaft 3 of the rope guide pulley 2 and meshes with diametrically opposite sprockets 5 and 5' mounted on shafts 6 and 6', respectively, which are slidably mounted in the housing 1 and which at their upper end support a hub 7 and 7', respectively. An pair of arcuate brake shoes 8 and 8' mounted for pivoting at 9 on each hub 7 and 7'.

The drawing depicts the idle position in which the brake shoes 8 and 8' and their brake pads 10 and 10' abut the circular internal wall of the associated brake housing section 1'. As a result of centrifugal force, the brake pads 10 of the brake shoes 8 of the brake device at the left of Fig. 1 will during operation move into tighter engagement with the interior wall of the housing section 1' and will in this manner brake the rope roller 2 to the

necessary extent. As shown in Fig. 2, aside from brake pads 10 additional safety brake pads 10" are provided on the brake shoes 8; they are of a lesser thickness than brake pads 10. As soon as these safety brake pads 10" engage the interior wall as well, the lowering velocity will be significantly reduced, e.g. to half the former velocity.

At their free ends, the brake shoes 8, 8' are respectively provided with a circular magnet 11 and an iron core 11' by which they are maintained in their idle position. Consequently, there is no resistance when the rope is pulled. The force of the magnet is such that at a certain number of rotations, e.g. .4 m/sec, or as soon as the load exceeds a certain weight, for instance 60 - 70 kg, the shoes will open. A uniform rappelling velocity is thus ensured, even at a greater load.

Since the device consists of two braking units, they may, by having magnets mounted on them, be set for two different magnetic forces. At a rappelling velocity of .4 m/sec only the first braking unit will open at a low weight. In this manner a person of small weight, for instance small children, may be lowered at a corresponding velocity. At a greater load, the second braking unit will be opened and reduce the velocity of the descending heavy person.

In the embodiment shown, the brake pads 10, 10' and the safety brake pads 10", unlike those of the parent patent, are not structured circularly, but as inserts exceeding the height of the brake shoes. This simplifies the manufacture of the brake shoes.

In the embodiment shown in Figs. 3 - 6, two open eye bolts 12 are mounted on the housing 1 through which the rope may be guided on both sides for stopping and arresting the rappelling person at any time with very little effort. Such stopping and arresting may be done by the rappelling person himself or by an aide.

Patent Claims

1. A rappelling device having a rope guide roller rotatably journaled in a housing and connected by a toothed wheel with toothed shafts of centrifugal braking units which are provided with pairs of brake shoes having brake pads thereon which act upon the housing of the device, characterized by the fact that in addition to the brake pads (10, 10') of the brake shoes (8, 8') which provide for a predetermined constant rappelling velocity one of the centrifugal brake devices is provided at the brake shoes (8, 8') with two safety additional brake pads (10'') which at a predetermined minimum force of the brake pads (10, 10') being exceeded are actuated and significantly reduce the rappelling velocity, with the brake shoes (8, 8') of each pair being maintained in a rest position by a magnet (11) and an iron core (11') arranged in opposite end faces of (8'') of the brake shoes (8, 8').

2. The rappelling device of claim 1, characterized by the fact that the brake pads (10, 10') and the additional brake pads (10'') are seated in recesses and exceed the surface of the brake shoes (8, 8'').

3. The rappelling device of claim 1 or 2, characterized by the fact that open eye bolts (12) are mounted at both sides of the housing (1) for guiding the rope running over the rope guide pulley (2).

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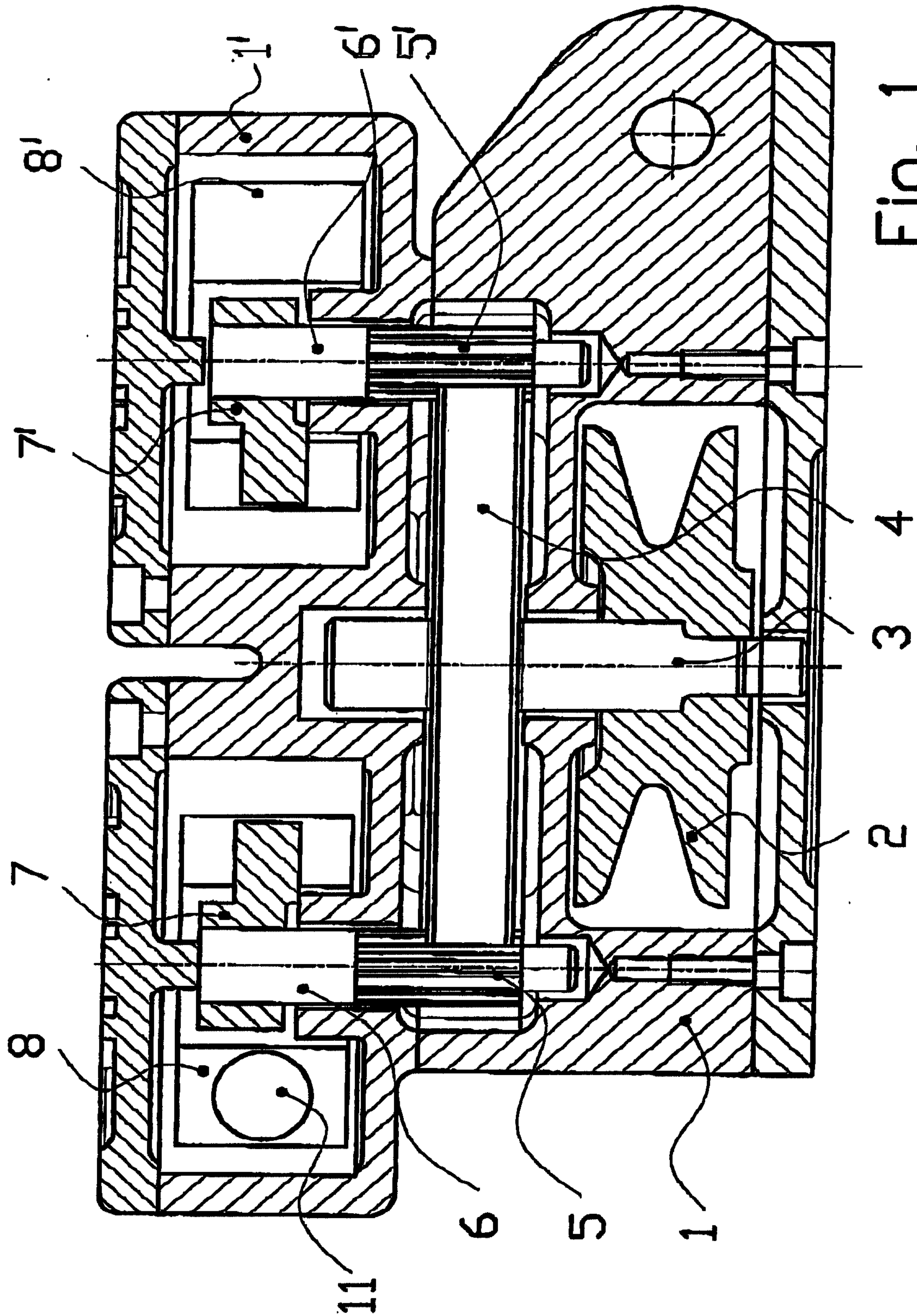
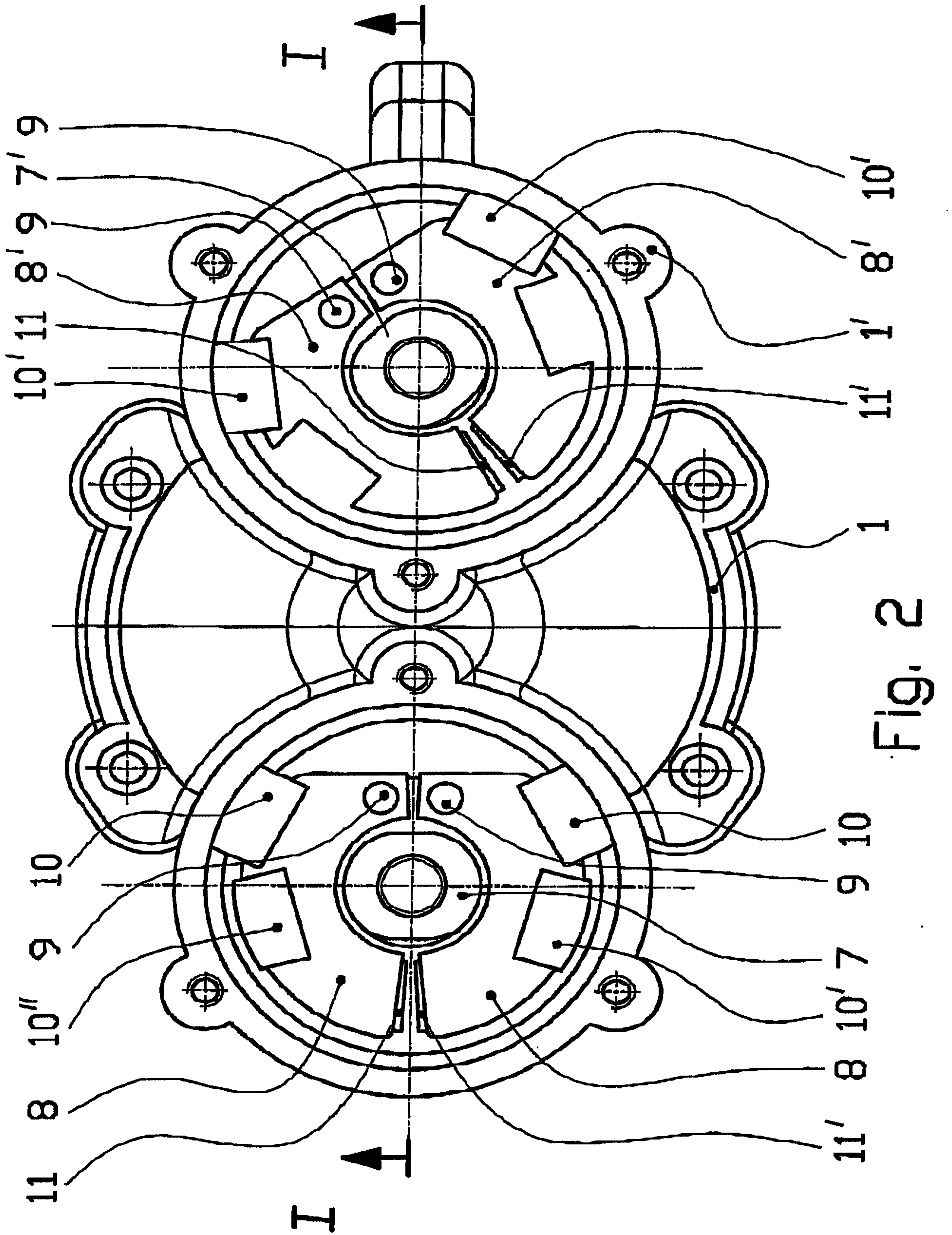


Fig. 1



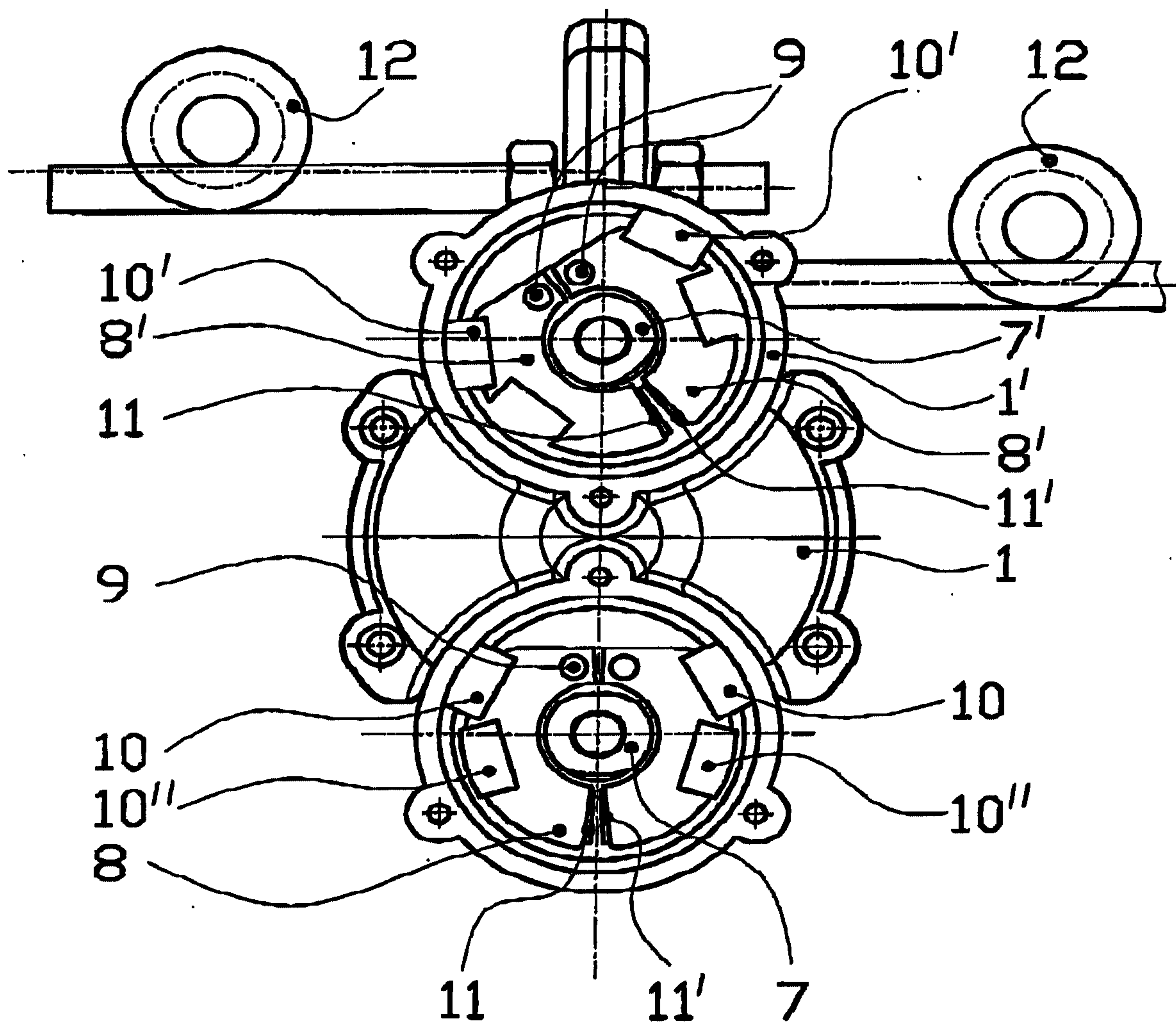
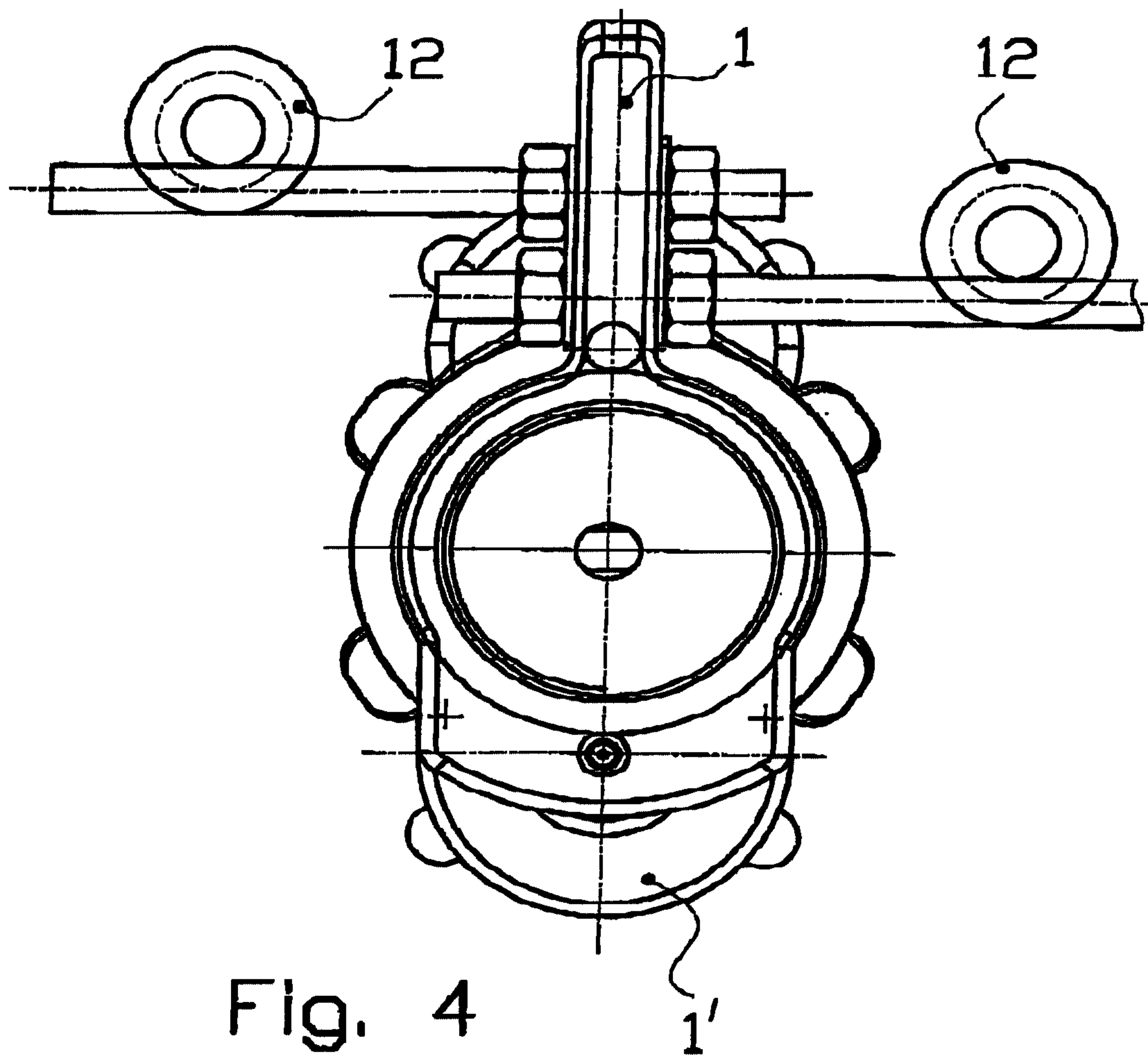


Fig. 3



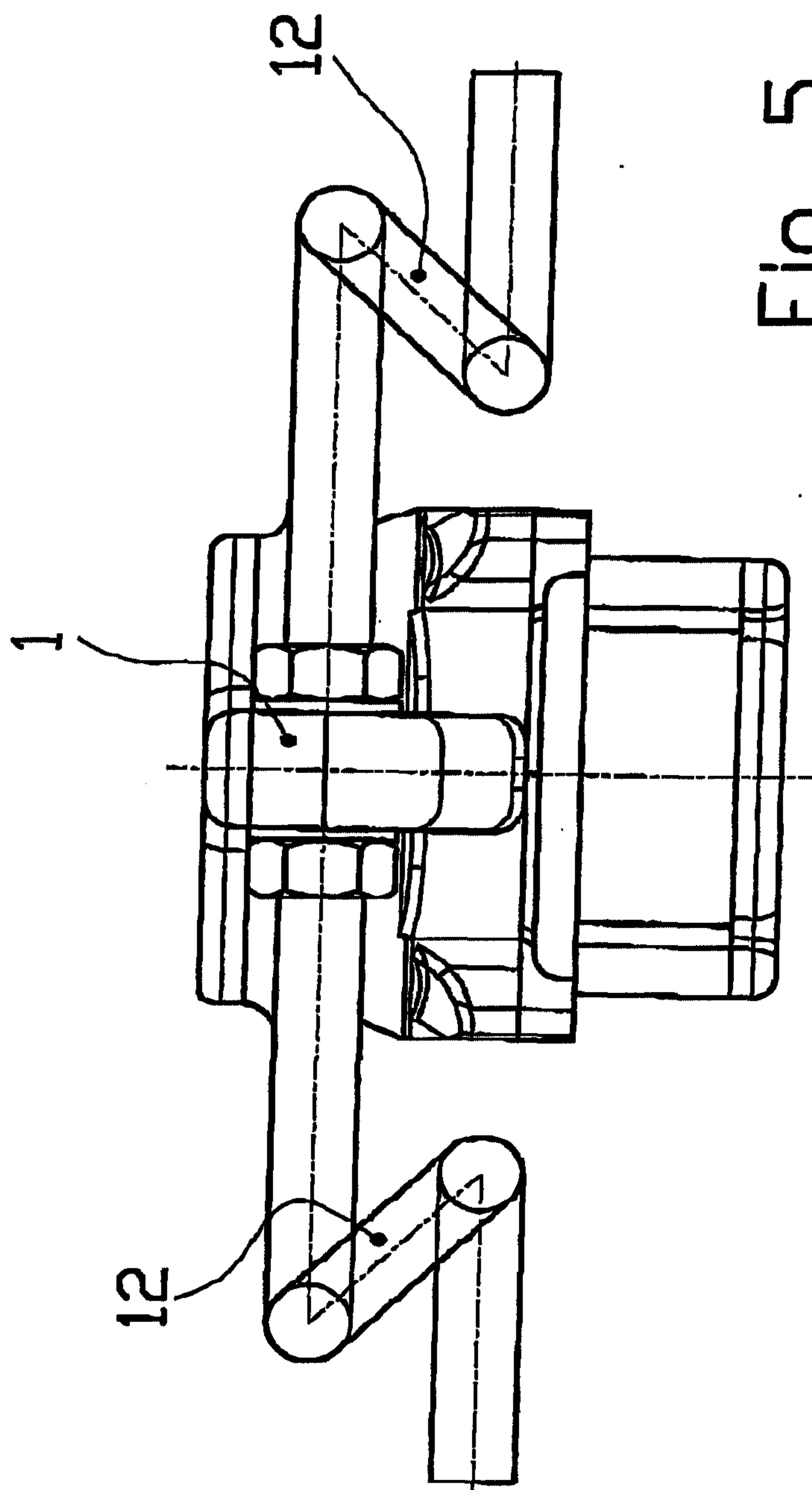


Fig. 5

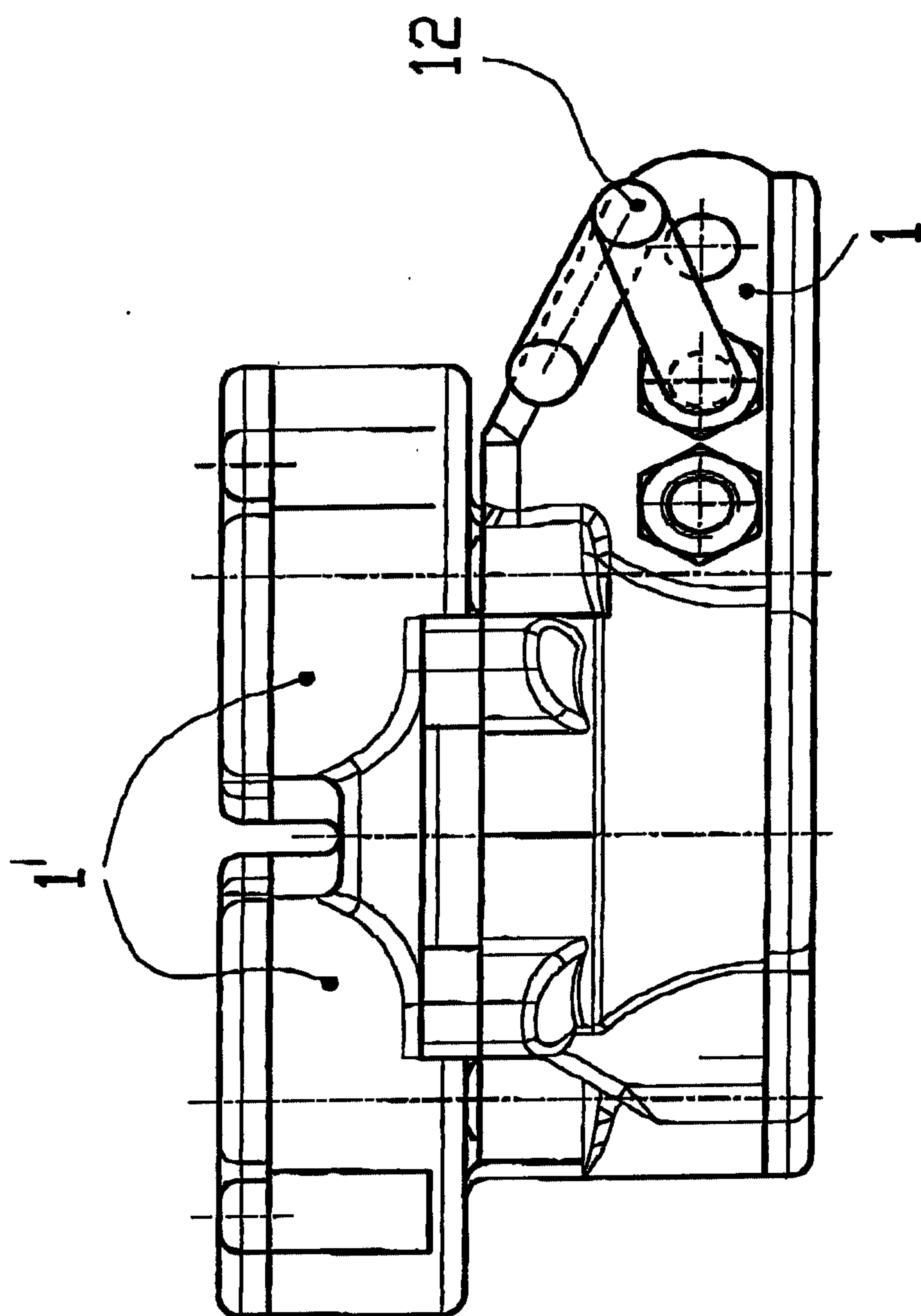


Fig. 6

