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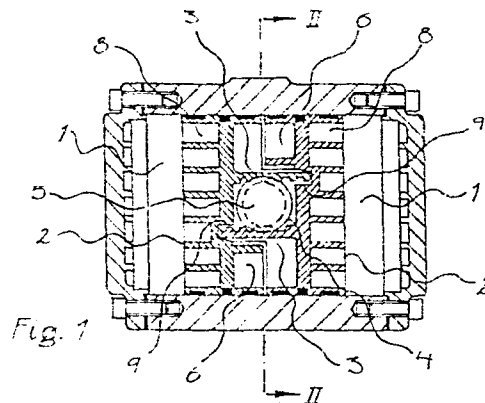
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54 An improved mechanism for driving turning shafts.

57 A mechanism in which the length of the piston strokes as well as the width of the piston plates are substantially increased, whereas the weight of the whole decreases by virtue of the hollow structure of both the pistons, which is provided with vertical walls that in the rear face of the piston plates create a sort of cells for eventually mounting of respective helicoidal springs, whereas in the front face the said walls reinforce the toothed arm that forms a gear with the turning shaft driven by the mechanism, and a diametrically opposed projecting portion that when the piston plates reach the nearest position to each other, staggered engages with the corresponding hollow portion formed in the facing arm, the increasing in the length of the piston strokes being obtained by means of an enlarged slot formed in the front face of the piston plates adapted for including the end of the opposite toothed arm when the pistons reach the said position.



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"An improved mechanism for driving turning shafts"

The invention relates to an improved mechanism for driving turning shafts, the said mechanism being of the type that comprises a chamber within which a pair of opposite pistons are movable, the latter being provided with a toothed arm forming a gear with a turning shaft that crosses the said chamber, the walls of which are provided with several holes in order to allow the circulation of a fluid designed to alternatively hit against both the faces of the piston plates, with which the latter perform their stroke in one or other direction.

Up to the present it occurs that in mechanisms of the described type, in order that the chamber could be as smaller as possible, and at the same time the pistons could perform a stroke as long as possible, the plates of the latter had to have the smallest possible thickness. Although this condition involved an improvement in the length of the stroke, prejudicial vibrations have simultaneously appeared, in damage to the working and duration of the mechanism.

To avoid these disadvantages it has been proposed to widen the circular contour of the plates, but in such a manner that the thickness of their walls is smaller than that of the conventional ones, so that it results in a diminution of weight, and, in the other hand, the shape of the said plates is such as to include several helicoidal springs in case that the fluid under

pressure that acts the mechanism is supplied and evacuated from the center of the chamber.

5 The following is a detailed description of an embodiment of the invention, reference being made to the accompanying drawings in which:

Figure 1 is a longitudinal section of the mechanism showing the piston plates in the nearest position to each other, and

10 Figure 2 is a cross section of the same mechanism in coincidence with the shaft designed to be driven by both the pistons.

The mechanism comprises a chamber 1 within which a pair of pistons are movable. These pistons are provided with respective plates 2
15 integral with which respective hollow arms 3 eccentrically protrude, a portion of the contour of same being adapted to that of the chamber, whereas one of their faces is toothed in order to form a gearing with the toothed surface 4 of the
20 shaft 5, transversally mounted in the middle of the chamber 1.

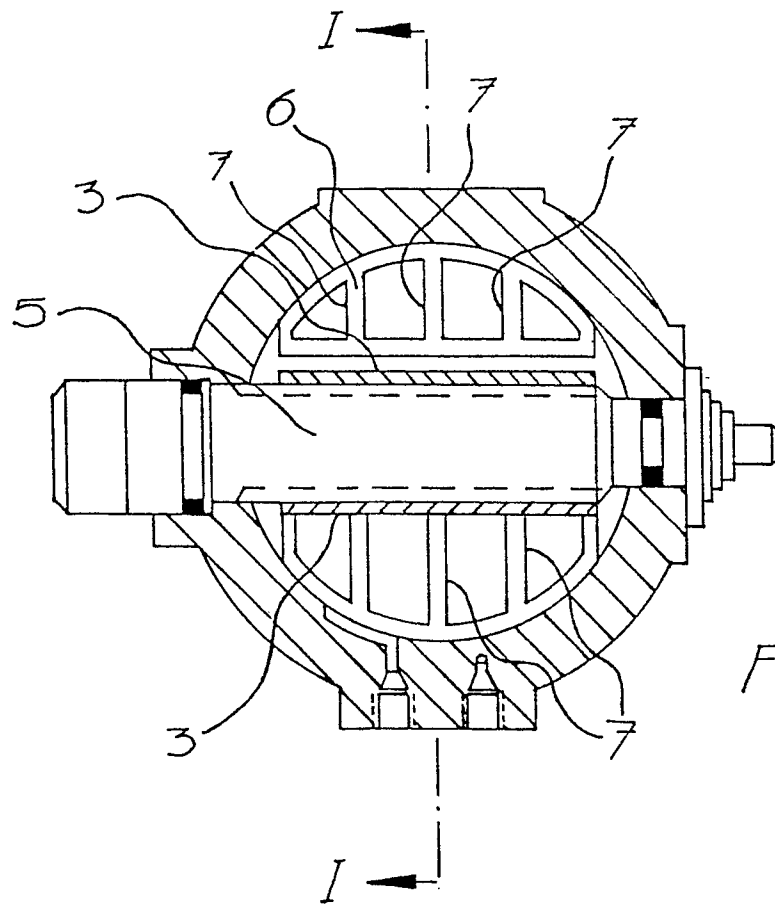
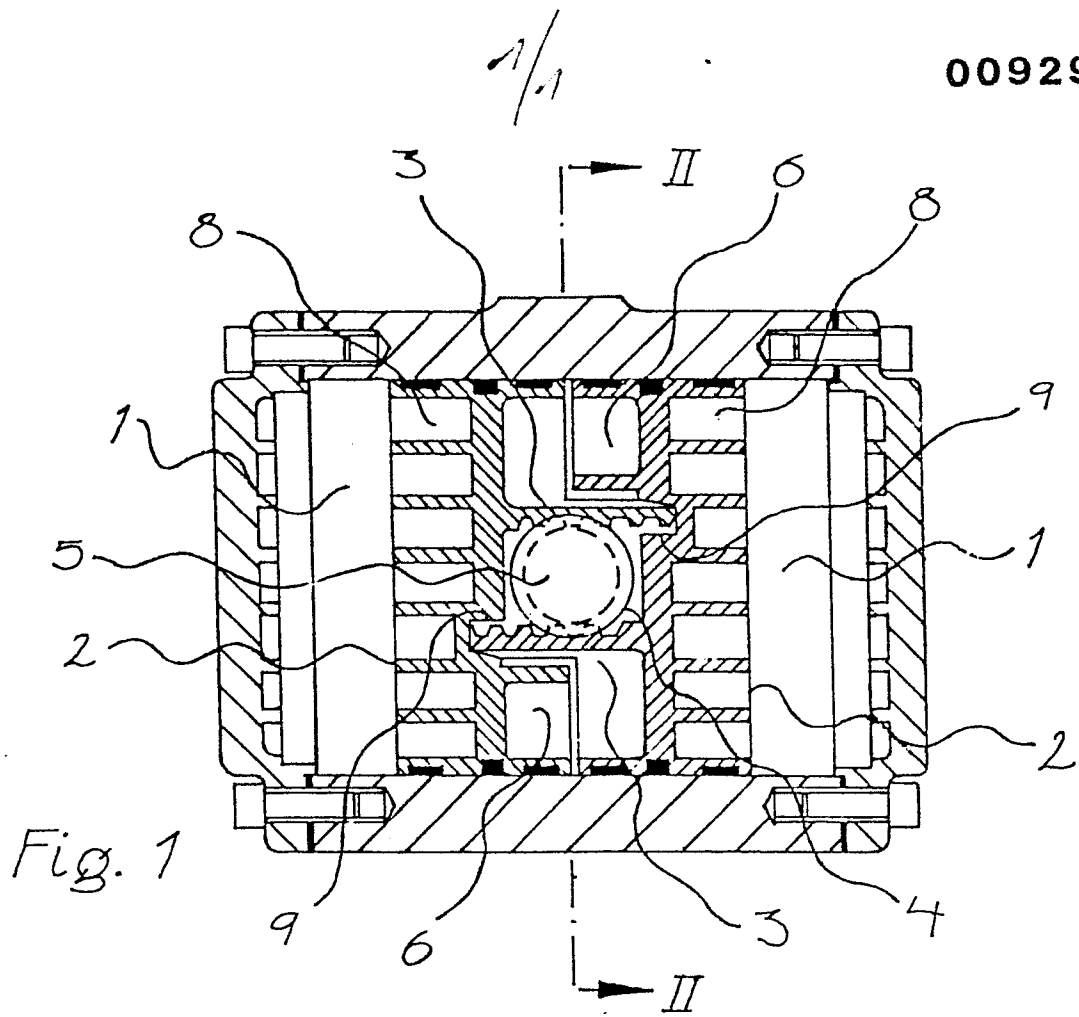
Diametrically opposed to the arms 3, the plates 2 are provided with projecting portions 6, which contour also partially adapts to that of the
25 chamber, whereas when the piston plates reach the nearest position to each other, the said portions staggered engage with corresponding hollow portions formed in the said arms.

The hollow spaces of the arms 3, as well
30 as the projecting portions 6, are reinforced by several equidistant vertically arranged walls 7. On the other hand, several hollow spaces 8 are also formed in the opposite face of the piston plates, said spaces 8 being arranged for optative mounting
35 of respective helicoidal springs. This arrangement is specially devised for mechanisms of the described type in which the acting fluid is only received, as previously indicated, through a point placed in the

middle of the chamber, but in case the mechanism is designed to receive the acting fluid upon both the piston faces, i. e. the inner and the outer ones (making it unnecessary the presence and action of
5 said helicoidal springs), then the hollow spaces 8 serve to reduce the weight of the pistons, in spite of the enlarged contour width of their plates. It is to be pointed out that the wall of the piston plates is provided with an enlarged slot 9 in order to
10 include the end of the opposite toothed arm 3, with a substantial increasing in the length of the piston stroke within the chamber.

CLAIMS

1. An improved mechanism for driving turning shafts, the said mechanism being of the type that comprises a pair of pistons which respective toothed arm, partially adapted to the inner contour of the enclosing chamber, forms a gear with the pinion of a crossing shaft laying in the chamber where the cited elements are mounted, characterised by the fact that each toothed arm, as well as a diametrically opposed portion that projects from the respective piston plate and is also partially adapted to the inner contour of the enclosing chamber, have a hollow structure reinforced by equidistantly distributed walls, the cited arms and projecting portions staggered engaging when the pistons reach the nearest position to each other, whereas on the opposite face of the piston plates several hollow spaces are opened for optative mounting of respective helicoidal springs, all this being arranged to reduce the weight of the pistons and, at the same time, to increase the width of the corresponding plates, being the wall of the latter provided with an enlarged slot in order to include the end of the respective opposite toothed arm in order to increase the length of the piston strokes.





DOCUMENTS CONSIDERED TO BE RELEVANT			EP 83302288.2		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)		
A	GE - A - 816 143 (SPRAGUE DEVICES) * Totality *	1	F 15 B 15/06		
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A	GE - A - 1 285 515 (GACHOT) * Totality *	1			
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A	US - A - 4 167 897 (BUNYARD) * Totality *	1			
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A	US - A - 4 203 351 (SCHWIND) * Totality *	1			
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A	EP - A1 - 0 040 976 (WORCESTER CONTROLS LTD) * Totality *	1	TECHNICAL FIELDS SEARCHED (Int. Cl. 3)		
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A	WO - A1 - 80/01 096 (WIREMATIC REGLER AB) * Totality *	1	F 15 B 15/00 F 16 H 39/00		

The present search report has been drawn up for all claims					
Place of search VIENNA		Date of completion of the search 29-06-1986	Examiner SCHATEK		
EPO Form 1501 03 87 <table> <tr> <td> CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document </td> <td> T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document </td> </tr> </table>				CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document	T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document
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