

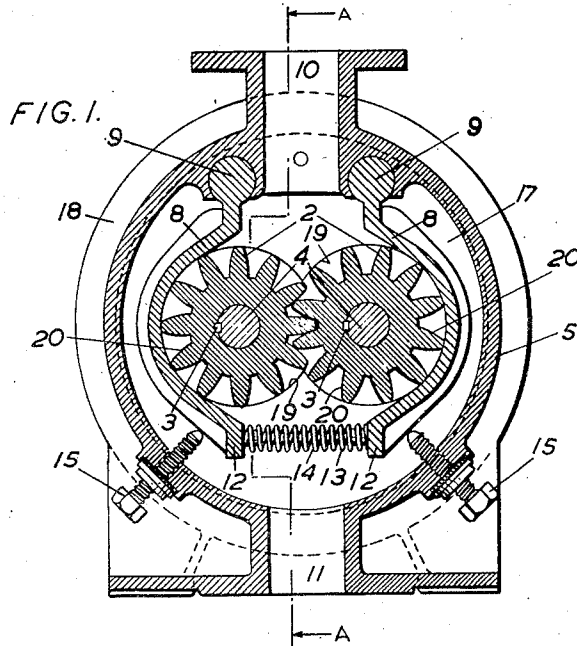
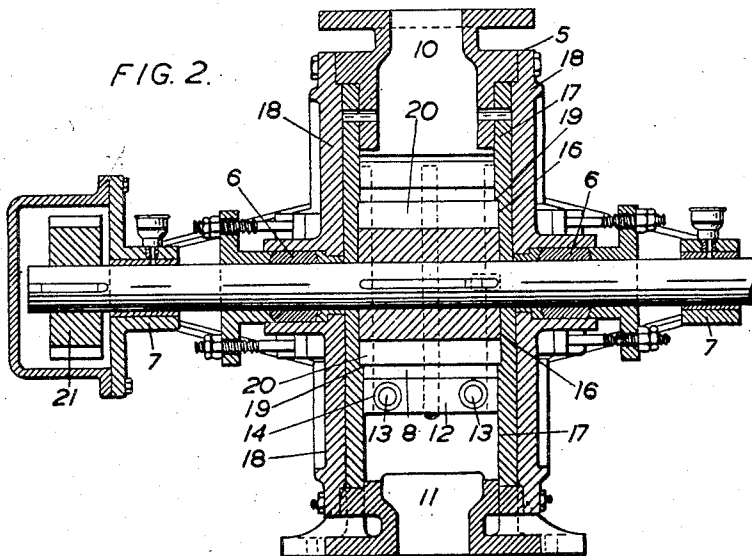
Dec. 28, 1954

C. M. BARCLAY

2,697,987

GEAR TYPE PUMP

Filed May 16, 1952



Inventor

Cecil Maddison Barclay
By
Cushman, Clarke & Cushman
Attorneys

1

2,697,987

GEAR TYPE PUMP

Cecil Maddison Barclay, Bradford, England

Application May 16, 1952, Serial No. 288,151

Claims priority, application Great Britain May 30, 1951

2 Claims. (Cl. 103—126)

This invention relates to gear type pumps. Gear type pumps are suitable for use in pumping all manner of liquids including those containing particles of solid matter in suspension such for example as Trinidad Lake asphalt and materials of a similar nature.

The main problem when dealing with such liquids or materials is the wear which takes place in the pump and where such a pump is required to have a high degree of efficiency this rapidly deteriorates after relatively short periods of use due to the abrasive action of the solids in the liquid or material pump.

The chief object of the present invention is to provide a new or improved construction of pump in which by taking up wear as it occurs the desired efficiency of pumping can be maintained for longer periods than those at present constructed.

According to the invention the periphery of the teeth of each gear or pinion is engaged by or contacts an adjustable pivotally mounted shoe hinged to the main body of the pump on the delivery side of the gears or pinions. Thus, in a gear type pump employing a pair of pinions, a pair of shoes will be provided and these may be spring loaded so as to be normally urged apart whilst positive means will be provided for adjusting them to the peripheries of the pinions. The faces of the pinions will preferably engage side plates secured to the main casing within the detachable end plates and said side plates will be recessed on their inner faces and the pinions will be arranged to be slightly oversize so that they enter the recesses. The side plates will be reversible so that when wear takes place, by reversing a side plate, wear clearance is immediately taken up an amount equivalent to the depth of the recess. In order to minimise wear on the faces of the teeth of the pinion instead of one pinion driving the other, each pinion may be driven by means of a pair of synchronised gears external to the pump. Preferably the main bearings of the pump shafts will be external of the casing and between the pinions and the main bearings suitable seals or glands will be provided.

In order that the invention may be more clearly understood and readily carried into effect the same will now be more fully described with reference to and by the aid of the accompanying drawings, wherein:

Figure 1 is a sectional elevation of a gear pump constructed in accordance with the invention.

Figure 2 is a sectional elevation on the line A—A of Figure 1.

Referring to the drawings the pump comprises a pair of pinions 2 each keyed at 3 to its shaft 4 and the shafts 4 project through the main casing 5 of the pump, through glands or seals 6 to main externally mounted bearings 7.

Within the casing 5 of the pumps there is hinged a pair of arcuate shoes 8 which partly encircle and engage or are in close proximity to the external periphery of the pinions 2. The shoes 8 are hinged by means of hinges 9 or their equivalent preferably of the kind wherein the hinge pin is formed by one of the members hinged together at the delivery side 10 of the pinions, preferably at points slightly offset and outside the centre lines of the shafts 4 of the pinions 2. The ends of the shoes 8 at the suction side 11 of the pinions 2 are formed with

2

flanges 12 and pegs or their equivalent 13 which support a helical compression spring 14 which acts to normally force the shoes 8 apart and clear of the pinions 2.

Projecting through the main casing 5 of the pump on each side of the suction inlet 11 of the casing is a set screw 15 which bears against its adjacent shoe 8 so that by adjusting the set screws 15, the respective shoes 8 can be brought into close proximity to or engagement with the pinions 2 and thereby wear on the overall diameter of the pinions can be taken up as it takes place.

The faces 16 of the pinions 2 (see Figure 2) bear against side plates 17 detachably secured between the pinions 2 and the detachable end plates 18 of the pump body 5. The inner faces of the side plates 17 will be slightly recessed at 19 to initially accommodate the faces 16 of the pinions 2, which will be of such a size that they slightly overlap the shoes 8 when the pump is constructed. When wear takes place on the faces 16 of the pinions 2 one or other of the side plates 17 can be turned round or reversed with the effect that wear is taken up an amount equal to the depth of the recess. In order to reduce wear on the meshing surfaces of the teeth 20 of the pinions 2 instead of one pinion driving the other, the shafts 4 of the pinions 2 may be connected by a pair of synchronised gears 21 (one being shown) which effect the transfer of the drive from one shaft 4 to the other thus removing the drive from the pinions 2 of the pump.

It will be seen that by the present invention means are provided whereby the wear which reduces the efficiency of the pump can be taken up as it occurs at the different points thus prolonging the life of the pump and enabling efficiency to be maintained over a longer period.

I claim:

1. In a gear type pump, the combination of a casing, said casing having inlet and delivery ports, a pair of meshing pinions mounted in said casing, a pair of pivotally mounted shoes each hinged to the inside of said casing on one side of the delivery side of the meshing pinions, said shoes having arcuate internal surfaces to engage the periphery of the teeth of said pinions, said shoes having flanges formed on the free ends thereof, said flanges being provided with pegs, a helical spring mounted on said pegs, said spring acting to force the shoes away from the periphery of the teeth of the pinions and means for maintaining the shoes in contact with the teeth of the pinions comprising a pair of set screws screwed through the casing and each engaging a shoe, said casing having detachable end plates to which are secured internal reversible side plates, said side plates engaging the sides of the pinions and each having a recess on a face of the side plate to receive the sides of the pinions.

2. In a gear type pump, the combination of a casing, said casing having inlet and delivery ports, a pair of meshing pinions mounted in said casing, a pair of pivotally mounted shoes each hinged to the inside of said casing one on each side of the delivery side of the meshing pinions, said shoes having arcuate internal surfaces to engage the periphery of the teeth of said pinions, a helical spring mounted between the free ends of said shoes, said spring acting to force the shoes away from the periphery of the teeth of the pinions and means for maintaining the shoes in contact with the teeth of the pinions comprising a pair of set screws screwed through the casing and each engaging a shoe.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
164,147	Conver	June 8, 1875
1,118,533	Crocker	Nov. 24, 1914
1,783,209	Wilsey	Dec. 2, 1930
1,982,027	Sieper	Nov. 27, 1934
2,344,628	Monahan	Mar. 21, 1944
2,504,230	Smith	Apr. 18, 1950