MEANS FOR INTRODUCING AND MIXING CHEMICALS INTO AN OIL STREAM

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MEANS FOR INTRODUCING AND MIXING CHEMICALS INTO AN OIL STREAM

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1 Claim. (Cl. 137—165)

This invention relates to means for introducing and mixing chemicals in a stream of oil.

The principal object of the present invention is to provide a fluid motor in an oil line between the usual well and the separator or stock tank in conjunction with a chemical pump and chemical tank to the end that chemicals can be dispensed into the pipe line in direct proportion to the volume of oil passing through the motor, and to so arrange and construct the parts that chemicals are thoroughly mixed with the oil.

Other important objects and advantages of the invention will become apparent to the reader from the following specification.

1. In the drawings:

Figure 1 represents a diagrammatic view disclosing the pump, fluid motor and chemical tank and the relationship between the same;

Figure 2 is a longitudinal sectional view through the motor assembly;

Figure 3 is a transverse sectional view on line 2—2 of Figure 2;

Figure 4 represents an elevational view of the periphery of the rotor;

Figure 5 represents a fragmentary side elevational view of the motor.

Referring to the drawings wherein like numerals designate like parts, it will be seen that numeral 5 refers to the fluid motor, while numeral 6 generally refers to the chemical pump.

As shown in Figure 2, as well as in Figure 3, the fluid motor includes a stator or housing structure 7 from which the inlet and outlet nipples 8—9, respectively extend. These nipples extend tangentially with respect to the stator 7 and below the axis thereof and each is threaded at its free end as at 10 to accommodate a suitable coupling 11 whereby the fluid motor assembly is connected in an oil pipe line 12, usually between the well separator or stock tank, (not shown).

The stator 7 is provided with a cover plate 13 at one side thereof in which the bearing assembly 14 is provided and in the opposite side wall of the stator is another bearing assembly at 15. Through these assemblies extends the shaft 16 to which the hub 17 of the rotor 18 is keyed. At equal circumferentially spaced intervals on the rotor 18 are the vanes 19, each vane structure being in the form of a V with its apex broken away.

The vanes thus divided into sections afford spacing 20 through which any gas pressure can escape.

It will be observed in Figure 2 that the peripheral portion of the stator 7 is brought down in a lip formation 21 so as to provide a constricted inlet 22 for the motor. This develops a jet projection of the oil against the vanes of the rotor.

As shown in Figure 3, the shaft 16 extends through the packing gland 23 and has a crank 24 secured to its outer end. Pivotedly connected to this crank 24 is the lower end of the connecting rod 25 which extends upwardly and is connected to the pump 6 by a bolt 26 which extends through the slot 27 in the operating arm 28 of the pump. The pump includes the casing 29, the piston 29' and the cam projection 35 on shaft 36 so that the cam reciprocates the piston as the shaft is rocked by the connections shown. This pump is of a well known type and is on the suction principle, pumping chemical through the conduit 30 from the chemical tank 31 and delivering the same through the conduit 32 to the inlet nipple 8 of the assembly shown in Figure 2. Obviously, the less oil passing through the fluid motor, the less will be the dispensing of the chemical by the pump 6.

It is thus seen that the chemical is dispensed or pumped to the oil line in direct proportion to the volume of oil acting on the motor 5. It will be seen that the chemicals are introduced into the flow line in front of the fluid motor so that the chemicals are mixed with the fluid by the vanes 19 of the motor and also by the jet action produced by the projecting part 21 as well as the specific arrangement of the vanes 19 and their openings 20.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size, and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

Means for introducing and mixing chemicals into an oil stream, comprising a conduit through which the oil passes, a casing connected with the conduit and opening thereinto, a rotor in the casing having vanes thereof acting upon the oil flow for imparting movement to the rotor, each vane comprising a pair of converging members spaced apart at their forward and adjacent ends, means actuated by the rotor for introducing chemicals into the conduit in front of the casing and means for restricting the entrance of the conduit with the casing to produce a jet of the oil against the vanes, said jet action and the formation of the vanes acting to mix the chemicals with the oil.

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