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PACKING FOR A RECIPROCATING PUMP

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1 Claim. (Cl. 103—153)

The present invention relates to packing and more particularly to a packing assembly for the plunger of a reciprocating pump.

In a reciprocating pump in which a plunger is slidably disposed within a pumping chamber for reciprocating movement therein it is necessary to provide packing for the plunger to prevent the leakage of liquid out of the pumping chamber between the plunger and the cylinder wall.

It is a common practice to provide a bore in the head of the pumping chamber for the packing box. However, with this type of construction it is difficult to replace the worn packing without removing the plunger from the head of the pumping chamber, especially if the packing is of the closed ring type.

In accordance with the present invention, a removable packing insert or assembly is provided which fits into the pumping chamber and which is removable from the head of the pumping chamber without removal of the pump plunger.

The present invention further provides inlet and outlet ring valves which are also removable from the head of the pumping chamber.

The invention will be better understood from the following description when considered in connection with the accompanying drawing showing a sectional view of the pumping chamber of a reciprocating pump embodying the packing assembly of the present invention.

Referring to the drawings, the reference numeral 10 designates the pumping chamber head of a reciprocating pump having a pumping chamber 12 in which is disposed a plunger 13 for reciprocating movement therein. Plunger 13 is provided with a packing insert or assembly 14 comprising a hollow cylindrical body 15 open at the opposite ends thereof and having an inwardly extending flange portion 16 at the upper end thereof for retaining packing 17 disposed therein. An annular locking ring 19 is threaded into said body at 18 for compressing the packing 17 therein to prevent leakage of fluid between the plunger 13 and the packing. Other packing 20 is disposed in the lower portion of body 15 and retained therein by a snap ring 21 inserted in a circumferential groove 22 adjacent the body. Body 15 is provided with an outwardly extending shoulder portion 23 above threads 18 for supporting the body in a cylinder liner guide housing 24.

The pumping chamber head is provided with inlet or suction chambers 25 and 26 on opposite sides thereof in communication with inlet passages 27 and 28, respectively, extending through body 15 and in communication with inlet valve 29 disposed in an inlet valve ring or insert 31 positioned in pumping chamber 12 above body 15 and supported thereby. An outlet valve ring or insert 32 is positioned in the cylinder above valve ring 31 and supported thereby. Outlet or discharge valve 33 is disposed in outlet valve ring 32 in communication with pumping chamber 12 for discharging fluid therefrom. A pumping chamber head locking ring or nut 36 is threaded into the upper portion of the pumping chamber head for securing the insert valve rings 32 and 31 and insert assembly 14 rigidly in the cylinder.

In the present invention, when it is desired to replace packing in the plunger, the packing assembly 14 is first removed from head 10 by removing the pumping chamber head locking ring or nut 36 from the top of the pumping chamber and pulling out or removing from pumping chamber 12 outlet and inlet valve rings 32 and 31 and then insert 14. Thereafter, with the insert removed from the pumping chamber head, snap ring 22 is removed through the bottom of the insert, packing 20 removed therefrom, locking ring 19 is thereafter removed. Thereafter, packing 17 in the upper part of the insert may be replaced by new packing, the insert reassembled and replaced back in the chamber. Thus, the present invention provides a packing assembly for a plunger type reciprocating pump which can be removed without removal of the plunger to replace worn packing.

It will be understood that the invention is not to be limited to the specific construction or arrangement of parts shown but that they may be widely modified within the invention defined by the claim.

What is claimed is:

The combination of a reciprocating pump having a pumping chamber therein, a plunger disposed for reciprocating movement in said pumping chamber, a packing insert in said pumping chamber and supported thereby, said insert comprising a hollow cylindrical body arranged around said plunger, said body having an inwardly extending portion adjacent the upper end thereof, packing in said insert, a locking nut threaded into said body for retaining packing in the insert, an inlet valve ring having a suction valve therein disposed in said pumping chamber above said body and supported thereby, an outlet valve ring having a discharge valve therein disposed in said pumping chamber above said inlet ring and supported thereby, and detachable pumping chamber head locking nut disposed adjacent said outlet ring for maintaining said rings and insert rigidly fixed to said pumping chamber.

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