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OIL WELL PUMP PACKING BOX

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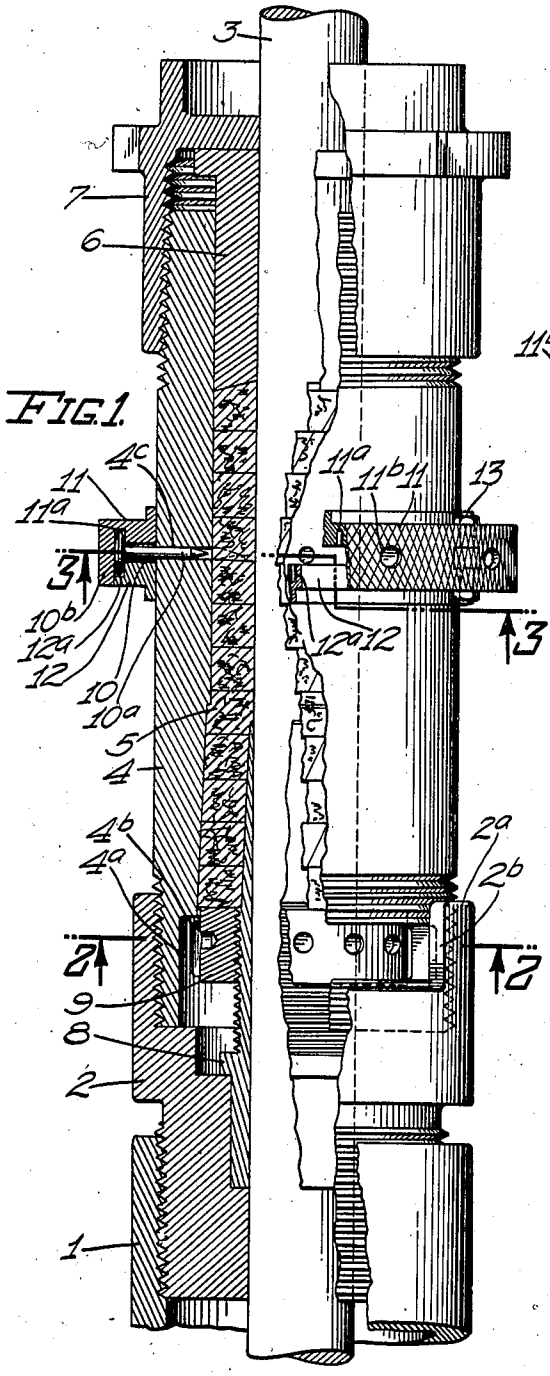


FIG. 1.

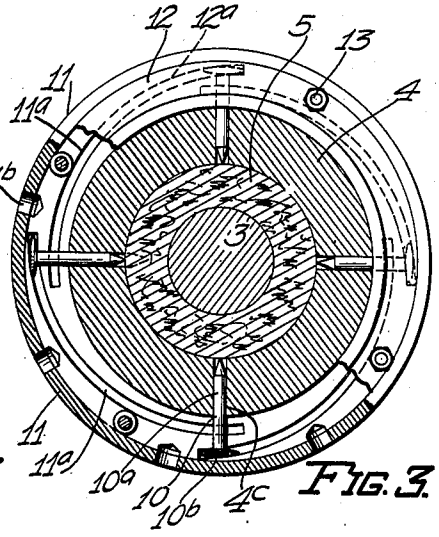


FIG. 3.

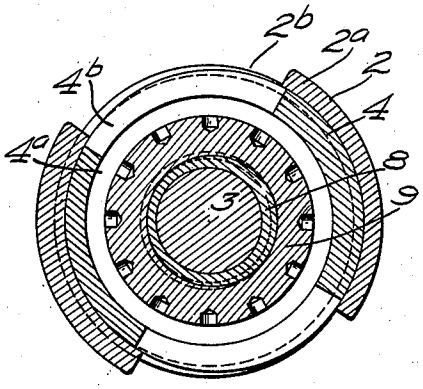


FIG. 2.

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OIL WELL PUMP PACKING BOX

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5 Claims. (Cl. 286—31)

My invention relates to a packing box, particularly adapted for oilwell pump rods, valves, propeller shafts, and the like.

One of the principal objects of this invention is to provide a packing box of this class by means of which the packing around a reciprocating or other movable pump or other rod may be easily replaced without dismantling any material portion of the packing box, and particularly by means of which old or worn packing may be easily removed while retaining the other portions of the packing or while adding new packing.

Another important object of this invention is to provide a novel packing box of this class which is so constructed that the old or worn packing may easily be removed from the packing box through the side thereof and from one end of the packing box while new packing is added or inserted into the opposite end.

A further object of this invention is to provide novel and simple means whereby the packing may be readily gripped, clamped, or held in its normal position while the packing gland is removed for the addition of new packing.

With these and other objects in view, as will appear hereinafter, I have devised a packing box of the class mentioned which has certain novel features of construction, combination, arrangement of parts and portions, as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawing and to the characters of reference thereon, which form a part of this application, in which:

Fig. 1 is a side elevational view, partly in section, of my packing box, in one form, embodied in or connected to the upper end of an oilwell casing pump with the pump rod extending therethrough;

Fig. 2 is a transverse section, taken through 2—2 of Fig. 1, showing particularly the opening in the packing barrel for the removal of worn out packing; and,

Fig. 3 is a transverse sectional view thereof taken through 3—3 of Fig. 1, showing the means for gripping the packing, and showing portions thereof broken away and in section to facilitate the illustration.

In conventional construction, the stuffing or packing box is secured to the upper end of the conventional oil well casing pump 1. My packing box is secured in the same manner by means of a base fitting 2. The usual pump rod 3 extends through the packing box into the oilwell pump casing in the usual manner.

The packing barrel 4 is externally threaded at its lower end and extends into a threaded socket at the upper end of the fitting 2. The packing 5, which consists preferably of a multiplicity of split packing rings, is located within the barrel and around the pump rod 3. The packing 5 is forced into the barrel by the usual packing gland 6, which in turn is forced and held inwardly by a cap 7 screwably held by the outer end of the packing barrel.

A sleeve 8 is provided coaxially with the base fitting 2 and extends considerably thereabove. The lower portion of the sleeve is secured to, and preferably driven into the base fitting, forming substantially an integral part thereof. The upper end of the sleeve is tapered to a substantially thin edge at the upper end. This sleeve slidably embraces the pump rod. The tapered portion causes the packing rings 5, which are forced downwardly or inwardly by the gland to be spread, preparatory to their removal, as will be hereinafter described. The portion between the secured end of the sleeve and the tapered portion is externally threaded, and on this portion is mounted a nut 9, which serves as an adjustable packing stop for the innermost packing ring 5.

This nut or sleeve is adjusted on the threaded portion of the sleeve 8 by means of a spanner wrench.

The portion of the packing barrel, which is screwed into the base fitting, is counterbored at 4^a, and the inner end of the wall of this counterbored portion is provided with an opening or openings 4^b through which the inner packing rings may be removed as will be described hereafter. The openings 4^b are arranged opposite the adjustable packing nut or stop 9 so that the latter may be easily adjusted or moved downwardly on the threaded portion of the sleeve 8, by means of a spanner wrench extended through one of the openings 4^b.

Intermediate the ends of the barrel are provided means for gripping or holding the packing in place while the packing gland is removed. Such means is shown as consisting of a plurality of gripping members or jaws 10 which are extensible radially through holes 4^c in the wall of the packing barrel. These gripping members are forced inwardly and outwardly by means of an annular adjusted means consisting of rings 11 and 12 which are secured together by combined spreader and tie members 13. The gripping members consist of shanks 10^a which are pointed at their inner ends, and enlarged portions or heads 10^b at the outer ends. The heads extend into spiral grooves,

a portion of the head extending into a spiral groove provided in the ring 11, as designated by 11a, and the other portion extending into a spiral groove 12a in the ring 12. These rings are retained in such positions by the combined spacer and tie members 13. The outer flange of the enclosing ring 11 is provided with holes 11b so that, by means of a spanner wrench, the rings may be rotated with respect to the barrel for adjusting the gripping members, prongs, or jaws inwardly or outwardly by reason of the spiral grooves.

The operation of the packing box, for removing the packing, is as follows:

The rings 11 and 12 are first rotated in order to force the gripping members or prongs into the packing. A spanner wrench is employed to screw the nut or stop 9 downwardly free from the lowest packing ring. This spanner wrench is inserted through one of the openings 4b. When the internally threaded portion of the base 2 extends above the openings 4b, there are also provided corresponding openings at the upper portion of the base 2 which are in registry with the openings of 4b. The packing gland cap 7 is then unscrewed and the packing gland 6 is raised. New packing rings 5 are inserted into the packing barrel 4 around the rod 3. The rings 11 and 12 are then rotated in the opposite direction in order to withdraw the gripping members, prongs, or jaws. The packing gland is forced inwardly by means of the cap 7, causing the lower-most packing rings 5 to be forced opposite the opening or openings 4a, through which it may then be removed. When all of the desired worn out packing rings are removed, the nut or stop is screwed upwardly against the lowermost packing ring. As shown, the openings 4b and the corresponding openings in the base remain open. The openings 4b may be closed by partially rotating the barrel with respect to the base, or other suitable means may be provided for closing such openings.

The portions 2a, which extend upwardly from the base, determine the arcuate extent of the openings 2b, referred to above, which openings are positioned opposite or in registry with the openings 4b. The packing barrel 14 is located approximately 90° from the position shown, with the arcuate portions 2a covering the openings 4b. In the latter event, the barrel and base fitting are so arranged that the former is seated tightly within the bottom of the latter when the openings 4b are closed.

Though I have shown and described a particular construction, combination, and arrangement of parts and portions, I do not wish to be limited to the same, but desire to include in the scope of my invention the construction, combination, and arrangement substantially as set forth in the appended claims.

I claim:

1. In a rod packing box of the class described, a packing barrel adapted to receive coaxially therethrough a movable rod, a base fitting screwably securing one end of the barrel to a casing, ring-like packing positioned between the barrel and rod, and a packing gland adjustably mounted at one end of the barrel against the packing, the casing end of the barrel and base having openings adapted to register with each other for the removal of said packing, said openings being closed by screwing the fitting and the packing barrel a portion of a revolution with respect to each other.

2. In a rod packing box of the class described, a packing barrel adapted to receive coaxially therethrough a movable rod, ring-like packing positioned between the barrel and rod, a packing gland adjustably mounted at one end of the barrel against one end of the packing, a tapered packing spreader sleeve at the opposite end of the barrel, said rod extending through the sleeve, and an adjustable packing stop mounted on the sleeve for retaining the opposite end of the packing within the barrel, axial adjustment of the stop with respect to the barrel and from the packing providing clearance at the latter end of the barrel to permit removal of the packing.

3. In a rod packing box of the class described, a packing barrel adapted to receive coaxially therethrough a movable rod, ring-like packing positioned between the barrel and rod, a packing gland adjustably mounted at one end of the barrel against the packing, the barrel having an opening at the opposite end for removing packing at the latter end, a tapered packing spreader sleeve at said opposite end of the barrel, said rod extending through the sleeve, and an adjustable packing stop mounted on the sleeve for retaining the opposite end of the packing within the barrel, said stop being adjustable on the sleeve to uncover the opening in the barrel to permit removal of the packing.

4. In a rod packing box of the class described, a packing barrel adapted to receive coaxially therethrough a movable rod, packing positioned between the barrel and rod, a packing gland adjustably mounted at one end of the barrel against one end of the packing, an annular packing stop mounted coaxially with the rod and positioned at the opposite end of the packing and axially adjustable with respect to the barrel, the barrel having an opening at the end opposite the gland for adjusting the stop and for removing packing from the end adjacent the stop.

5. In a rod packing box of the class described, a packing barrel adapted to receive co-axially therethrough a movable rod and provided at one end with a packing-removing opening, packing positioned between the barrel and rod, a packing gland adjustably mounted at the other end of the barrel against one end of the packing, a tapered packing spreader sleeve at the first end of the barrel, said rod adapted to extend through the sleeve, and an adjustable packing stop mounted on the sleeve for retaining the opposite end of the packing within the barrel, axial adjustment of the stop with respect to the barrel and from the packing providing clearance at the latter end of the barrel to permit removal of the packing through the opening.

CHARLES L. PRUIETT.