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2,278,347

PACKING MEANS FOR PUMP RODS

Filed Aug. 7, 1940

2 Sheets-Sheet 1

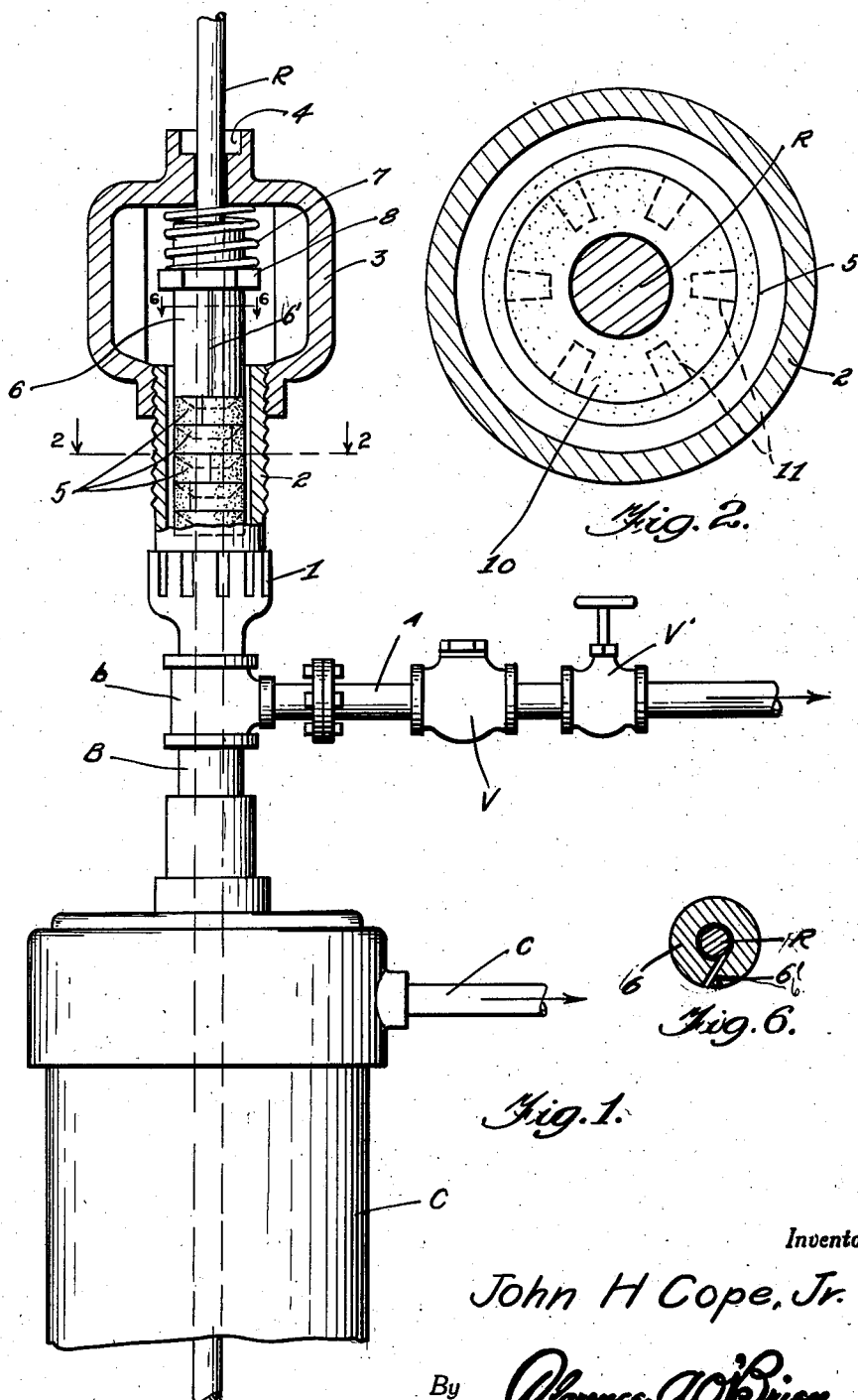


Fig. 1.

Fig. 6.

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2 Sheets-Sheet 2

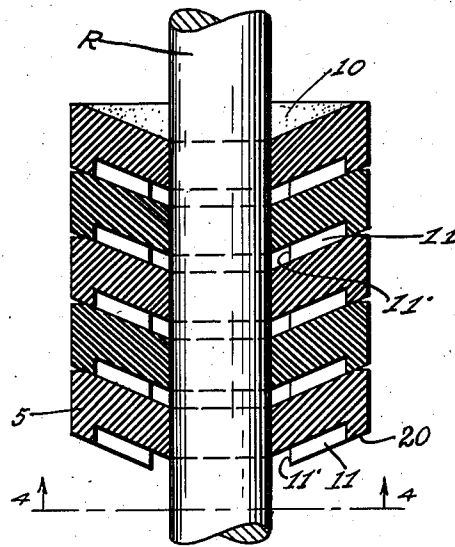


Fig. 3.

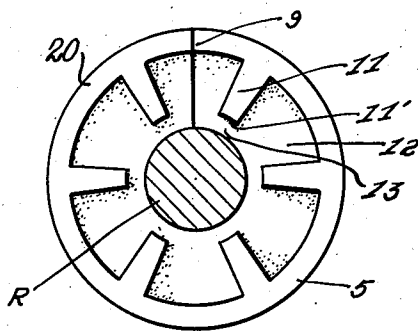


Fig. 4.

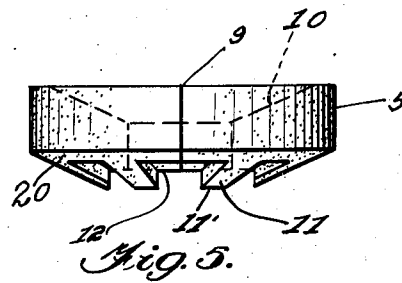


Fig. 5.

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PACKING MEANS FOR PUMP RODS

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3 Claims. (Cl. 288-4)

This invention relates to packing means for pump rods, the general object of the invention being to provide means for preventing waste of oil or other fluid from a well pumping outfit, with means whereby the pump rod is thoroughly lubricated.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is an elevational view of the top part of a pumping outfit with the packing means in section.

Figure 2 is a section on the line 2-2 of Figure 1.

Figure 3 is a longitudinal sectional view through the packing members with a part of the rod in elevation.

Figure 4 is a section on the line 4-4 of Figure 3.

Figure 5 is an edge view of one of the packing members.

Figure 6 is a section on the line 6-6 of Figure 1.

In these views the letter C indicates a portion of the well casing from the upper portion of which leads a pipe c for carrying off gases forming in the well and a tubular arrangement B extends upwardly from the top of the casing and has a T b therein from which the oil line A leads off, this line leading to a tank or the like and containing check valve V and the manually operated valve V', these parts being of any suitable or desired arrangement. The upper part of the tubular arrangement is enlarged as shown at 1 to receive the exteriorly threaded pipe 2 through which the polished rod R passes into the pump assembly. A casing 3 has its lower end threaded to the pipe 2 and its upper end has a plain bore therein through which the rod R passes and a recess 4 is formed in this part of the casing for receiving lubricant. A plurality of packing members 5 is arranged in the pipe 2 and surrounds the rod and a follower sleeve 6 is located in the casing and has its lower end extending into the pipe 2 to engage the uppermost one of the members 5 and a spring 7 encircles the upper part of the sleeve and bears against a collar 8 on an intermediate part of the sleeve

and against the top of the casing 3 so that the sleeve will hold the members 5 under pressure.

These members 5 are formed of rubber or any other suitable material and they are of ring-like form and each is provided with a slit 9 so that it can be opened to be placed around the rod. Each member 5 is formed with a substantially conical recess 10 in its upper face and its lower face is of convex shape to fit in the recess 10 of the next lower member 5 and this convexed or conical face is formed with an annular rib 20 at its outer edge and with a plurality of ribs 11 extending inwardly from the rib 20 and which are radially arranged and terminate short of the inner circumference of the member as shown at 11'. These ribs 20 and 11 form a plurality of recesses 12 in the lower face of each member with the recesses joined together at the inner part of each member by the spaces 13 left by terminating the inner ends of the ribs 11 short of the inner circumference of the member.

When the pump is in operation, on the up-stroke of the rod the lower edges of the circular openings of the members 5 will wipe the oil from the rod and cause the oil to collect in the crevices or recesses 12. On the down-stroke the exterior of the polished rod is dry but friction is prevented as the ribs 11 hold the cavities 12 open so that the oil that has collected in the cavities will flow back upon the rod, thus lubricating the rod and this collection of the oil will keep the members 5 cool. When tension is placed on the devices 5 by the spring they automatically feed down because of their slanting construction and by terminating the ends of the ribs short of the inner circumference of the members 5 the oil will equalize in all the cavities 12. As shown in Figure 3 the outer portion of the bottom of each ring is formed at a different angle from the outer portion of the top of the ring, which outer portion of the top of the ring is substantially flat so that a small annular space is formed between the outer portion of the bottom of one ring and the outer portion of the top of the next lower ring and these spaces prevent the sides of the ring from adhering to the wall of the encircling sleeve.

The casing 3 is of non-circular shape in cross section so that it can be readily turned by a wrench or the like and the collar 8 is also of non-circular shape so that it can be turned by a wrench or the like so that the follower can be readily removed if it should become stuck in the member 2. This follower is also formed with a longitudinally extending and slanting slot

6' for permitting oil to pass from the casing 3 through the slot into the bore of the follower and then pass down the follower upon the packing members 5. This slot extends through the collar 8 and it is more clearly shown in Figure 6. Thus this slot permits the oil to reach that part of the polish rod which passes through the follower and it also permits the oil to reach the packing members.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claims.

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

1. Packing means for a packing gland for a reciprocating rod comprising a plurality of superimposed rings, each ring having a conical recess in its top and a conical lower face which fits in the recess of the next lower ring and each conical face having an annular rib thereon at its outer edge and a plurality of radial ribs thereon extending inwardly from the annular rib, the inner ends of the radial ribs being spaced from the inner circumference of the ring, said ribs forming oil collecting cavities.

2. Packing means for a packing gland comprising a plurality of rings, each ring having a conical recess in its top terminating short of the outer periphery of the ring with that part of the ring between the recess and said outer periphery being substantially flat, the lower face of each ring being of substantially conical form to fit in the recess of the next lower ring, the substantially flat top part of one ring forming an annular space with the outer portion of the conical lower part of the next ring above, each conical lower face having thereon an annular rib at the outer edge of said face and a plurality of radial ribs on said face extending inwardly from the annular rib, said radial ribs having their inner ends spaced from the inner circumference of the ring, said ribs forming oil collecting cavities and said rings being formed of flexible material.

3. A packing ring formed of resilient material and having one face of conical form and an outer annular rib and a plurality of radial ribs on said conical face, said radial ribs having their outer ends connected with the annular rib and their inner ends spaced from the inner circumference of the ring, said annular and radial ribs forming oil collecting cavities.

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