March 18, 1924. 1,487,283

E. E. STEVENSON

ADJUSTABLE STUFFING BOX

Filed Jan. 25. 1922

Fig. 1.

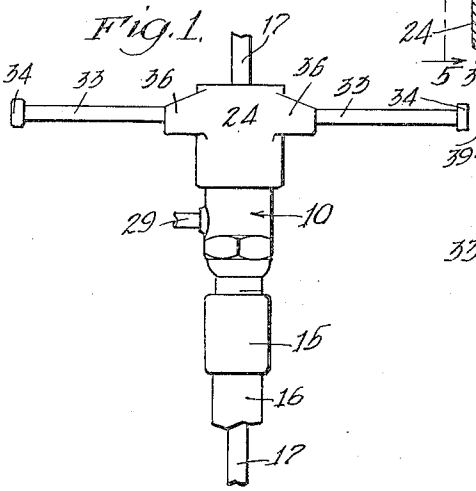


Fig. 2.

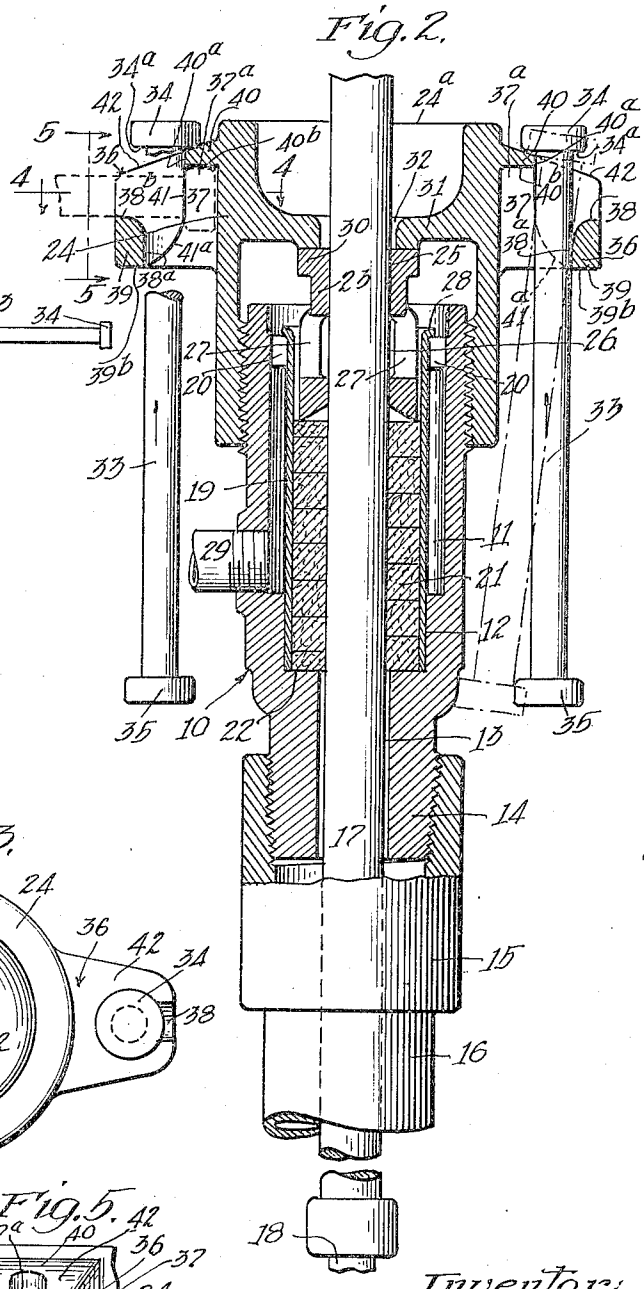


Fig. 3.

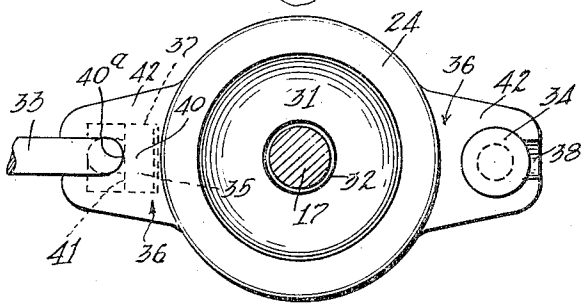


Fig. 4.

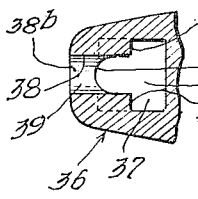
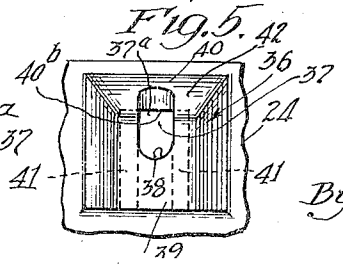


Fig. 5.



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Patented Mar. 18, 1924. 1,487,283

UNITED STATES PATENT OFFICE.

EDWARD E. STEVENSON, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO D. & B. PUMP AND SUPPLY COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

ADJUSTABLE STUFFING BOX.

Application filed January 25, 1922. Serial No. 531,679.

To all whom it may concern:

Be it known that I, EDWARD E. STEVENSON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Adjustable Stuffing Boxes, of which the following is a full, clear, and exact disclosure.

The present invention pertains generally to adjustable stuffing boxes for oil well pumping apparatus, designed to be removably secured to the upper end of the pump tubing, to furnish a package joint for the polished rod of the pump mechanism; while specifically it pertains to a new and novel arrangement of handles for effecting its adjustment.

The salient features of my invention will be described in detail in the following specification, reference being made therein to the accompanying drawings illustrating the same, in which:

Fig. 1 is an elevation of the stuffing box assembly; Fig. 2 is a transverse vertical section, on an enlarged scale, of the arrangement shown in Fig. 1; Fig. 3 is a plan view of the assembly shown in Fig. 2; Fig. 4 is a fragmentary sectional plan view, taken as indicated by the line 4—4 of Fig. 2; and Fig. 5 is a fragmentary elevation taken as indicated by the line 5—5 of Fig. 2.

While the construction and operation of the particular stuffing box herein disclosed and described in a copending application for patent filed on the 25th day of January, 1922, Serial Number 531,680; I will nevertheless generally describe it here in order that the efficacy and operation of the present improvements may be fully understood. In this connection it may be here stated that while my invention will be hereinafter described in connection with a stuffing box, it will be obvious that it need not necessarily be limited to such.

The numeral 10 designates generally a body portion of the stuffing box, cylindrical in cross sectional configuration; and having a plurity of progressively smaller concentric bores 11, 12 and 13, extending from top to bottom throughout its length. The end of the body portion 10, surrounding the bore 13, is slightly reduced in size and externally taper screw threaded at its lower end, to form a screw threaded connection with a coupling 15, connecting this reduced end 14 with the upper end of the pump tubing 16.

The bore 13 provides a guide bearing for the reciprocally movable polished rod 17, which extends therethrough; this bore being slightly larger than the rod to permit its free movement. It is well known in connection with oil well pumping apparatus that the polished rod 17 forms a connecting link between the walking beam (not shown) and a sucker rod 18.

In the present instance a tubular sleeve member 19 is rigidly mounted in the intermediate bore 12, preferably by means of a shrunk joint; this sleeve surrounding the rod 17 and forming an annular wall between it and the perimeter of the bore 11. A plurality of radial lugs 20 may be formed integral with the body portion 10, to extend into the bore 11 and engage the perimeter of the sleeve 19, adjacent its upper end, to support this end against lateral movement. The sleeve 19 is designed to contain a suitable packing 21, to form a tight joint around the rod 17, and prevent, as far as possible, the escapement of oil upwardly from the tubing 16.

The packing 21 is held tightly about the rod 17, in the sleeve 19, being confined between a shoulder 22 (between the bores 12 and 13) and the lower end of a packing gland 23; the latter being adjustably held in engagement with the packing 21 by means of an adjustable head 24.

The gland 23 is likewise cylindrical in cross sectional configuration and of a diameter to permit its easily fitting within the sleeve 19; the gland having an axial bore 25 with which the rod 17 makes a sliding fit. An annular channel 26 is formed intermediate the ends of the bore 25, and a pair of diametrically opposed slots 27 extend through the side walls of the gland, so that any oil escaping upwardly past the packing 21 will be caught within the channel 26; the excess being permitted to escape therefrom through the slots 27, over the top 28 of the sleeve 19 and into the bore 11, to be drained therefrom through a pipe 29.

The head 24 is likewise preferably cylindrical in configuration, being internally screw threaded adjacent its lower end to engage the externally screw threaded upper end of the body portion 10, as clearly shown in Fig. 1. In this manner the head 24 is

made axially adjustable relative to the body portion 10. The gland 23 is rigidly held in engagement with the packing 21 by means of its upper end 30 (surrounding the rod 17) being engaged by a transverse wall 31; the latter being preferably formed integral with the head 24 to extend across its interior adjacent its upper end. The wall 31 has an axial bore 32 through which the rod 17 extends.

The head 24 is designed to be rotatably adjusted upon the body portion 10 by means of a pair of diametrically opposed handles 33 adjustably mounted upon it in the manner hereinafter described.

Handles 33 are preferably cylindrical, of any desired length suitable for accomplishing the work of rotatably adjusting the head 24 with ease; and, in this connection, it is apparent that the work to be done will be material in determining the length of the handles in each particular instance. Each of the handles 33 has an upper enlarged end 34 and a lower enlarged end 35. These ends 34 and 35 may be formed in any suitable manner, it being desirable only that they be of a larger diameter than the handles 33. Either one or both of them may be formed separate and attachable to the handles; it being only necessary, as will hereinafter appear, to have at least one of them on each handle removable in order that the latter may be properly assembled with the head 24. It is preferred, however, that the ends 34 be removable and that the ends 35 be formed integral with the handles.

Handles 33 are carried by diametrically opposed brackets—generally designated by the numeral 36—preferably formed integral with the head 24 adjacent its upper end, and adjustable therein so as to be moved from their inoperative positions, as shown in Fig. 2, to their operative positions as shown in Fig. 1. Normally they hang in their inoperative positions.

Each of the brackets 36 has a vertically disposed opening 37 in it for the reception of the head 35, when the handle 33 is in operative position, this opening being slightly greater in width than the head 35 and of a depth at its upper end 37^a slightly greater than the longitudinal thickness of the head 35 to permit free movement of the latter therein.

A slot 38, radial with the head 24, is cut through the bracket, leaving a small front supporting wall 39, and a top supporting wall 40 over the portion 37^a. The inner vertical faces 38^a of the walls 39, and also the top horizontal faces 38^b, are arcuate to conform to the peripheries of the handles 33, when in either their vertical or horizontal positions, as shown in Figs. 1 and 2. In a like manner the inner vertical faces 40^a of the walls 40 are arcuate to conform to the peripheries of the handles; the faces 40^a being formed relative to the vertical faces 38^a, of the wall 39, so that each will engage the handles 33 when in their vertical positions (as shown in Fig. 2) and together they form substantially cylindrical apertures to support the handles in inoperative positions. The width of the openings 38 is only slightly greater than the diameter of the handles 33, to permit a sliding movement of the latter therein, and at the same time closely conform to their diametral sizes when they are in the position shown in Fig. 1. The differences in widths between the openings 37 and 38 form ledges or shoulders 41 on opposite sides of the opening, these ledges being curved towards their bottoms—as at 41^a—to their point of juncture with the inner faces of the walls 39. Thus in moving one of the handles 33 in the direction indicated by the arrows in Fig. 2 (from the vertical position shown in that figure to the horizontal position as shown in Fig. 1) the handle is lifted by the end 34 upwardly until the head 35 engages the bottom face 39^b, of the wall 39. The upper end of the handle is then swung towards a horizontal position upon the face 38^b as a fulcrum which will cause the head 35 to engage the curved surfaces 41^a of the ledges 41, and thus following these curved surfaces around it will be guided to the position indicated in dotted lines in Fig. 2. In this position the peripheral edge of the head 35 rests against the bottom face 40^b of the wall 40, while the adjacent portion of the handle 33 rests upon the top arcuate face 38^b of the wall 39. In the last mentioned position the diametral sides of the handles are engaged by the side walls of the opening 38, while the diametrically opposite sides of the head 35 engage the vertical sides of the opening 37. In this position the handle is held against longitudinal or axial movement by the end 35 being held between the ledges 41 and the back of the opening 37; and against horizontal movement by the sides of the openings 37 and 38 engaging diametrically opposite sides of the handle 33 and end 35. When both handles 33 are thus extended in coaxial alignment the head 24 may be easily rotated thereby. To return the handles 33 from their horizontal or operative positions to their inoperative or vertical positions, it is only necessary to raise their outer ends to vertical positions and drop them down in the brackets.

The top faces 42, of the brackets 36, are beveled to incline downwardly from the top, so that when the handles 33 are hanging in their vertical positions, as shown in Fig. 2, the under faces 34^a, of the ends 34, will engage these inclined surfaces, tending to hold the lower ends of the handles inwardly toward the body portion 10, as indicated by dot-dash lines in Fig. 2. This tendency to

swing inwardly at their bottom ends is due to the weight of the handles and the fact that the faces 34ª engaging the inclined surfaces 42 are at right angles to their longitudinal axes. Thus the handles are at all times, except when in use in their horizontal positions, held inwardly towards the body portion 10 in a position to avoid catching upon adjacent objects when the stuffing box is being raised or lowered relative to the derrick floor.

Furthermore the surfaces 42 are located, relative to the top surface 24ª of the head 24, so that when the handles 33 are hanging in their normal inoperative positions (shown in Fig. 2) the ends 34 will be below the surface 24ª. This permits an elevator to be secured to the rod 17, and rest upon the top 24ª, for drawing the pump from its tubing, without striking or interference from the handles.

While I have herein shown and described a preferred specific embodiment of my invention, I nevertheless reserve the right to make any changes or modifications in structure which will properly come within the scope of the appended claims.

Having described a preferred form of my invention, what I claim is:

1. Handle means for rotating a rotatable member; said means comprising a bracket on said member having a slot; said slot being radial and enlarged at its inner end; a handle axially movable in said slot from an inoperative position substantially axially parallel to said rotatable member to an operative position at substantially right angles thereto; enlarged ends on said handle to prevent its removal from said slot; said slot having a wall extending across the bottom of its radial portion, and a wall extending across the top of its enlarged portion, the former to support the handle and the latter to engage an enlarged end, when the handle is in its operative position; the slot except at its enlarged portion being of a width substantially equal to thickness of the handle, and the width of the enlarged portion of the slot being substantially equal to the thickness of the enlarged handle end, so that the slot walls form lateral abutments against which the handle bears.

2. Handle means for rotating a rotatable member; said means comprising a bracket on said member having a slot; said slot being radial and enlarged at its inner end; a handle axially movable in said slot from an inoperative position substantially axially parallel to said rotatable member to an operative position at substantially right angles thereto; enlarged ends on said handle to prevent its removal from said slot; said slot having an outer wall extending across the bottom of its radial portion and an inner wall extending across the top of its enlarged portion, the former to support the handle and the latter to engage an enlarged end when the handle is in its operative position, the top face of the bracket being inclined downwardly towards its outer end so that when said top face supports the handle in inoperative position the upper enlarged handle end will tend to slip down and outwardly on the bracket until the handle comes into contact with the outer lower wall of the slot and so that thus the lower end of the handle tends to be kept in close to the rotatable member.

3. Handle means for rotating a rotatable member; comprising a slotted bracket on the member, said slot extending radially and widened at its inner end and having an inwardly facing shoulder in its side wall between its wide and narrow parts, the bracket having a wall extending across the lower outer part of the slot and a wall extending across the upper inner enlarged part of the slot, a handle with enlarged ends, the handle fitting the narrow part of the slot and the enlarged end fitting the widened part of the slot, the wall shoulder engaging the enlarged handle end to keep the end of the handle in the inner part of the slot.

4. Handle means for rotating a rotatable member; comprising a slotted bracket on the member, said slot extending radially and widened at its inner end and having an inwardly facing shoulder in its side wall between its wide and narrow parts, the bracket having a wall extending across the lower outer part of the slot and a wall extending across the upper inner enlarged part of the slot, the shoulder extending, from a point at the lower edge and outer end of the slot, inwardly and upwardly to a point at the upper edge near the inner end of the slot, a handle with enlarged ends, the handle fitting the narrow part of the slot and the enlarged end fitting the widened part of the slot, the wall shoulder engaging the enlarged handle end to keep the end of the handle in the inner part of the slot.

5. Handle means for rotating a rotatable member, said means comprising a bracket on said member having a slot; a handle axially movable in said slot from an inoperative position substantially axially parallel to said rotatable member to an operative position at substantially right angles thereto; enlarged ends on said handle to prevent its removal from said slot; the said slot being formed to engage an enlarged end and the handle adjacent thereto when the latter is in its operative position.

In witness that I claim the foregoing I have hereunto subscribed my name this 13 day of Jan. 1922.

EDWARD E. STEVENSON.

Witness:

E. D. CAVENDER.