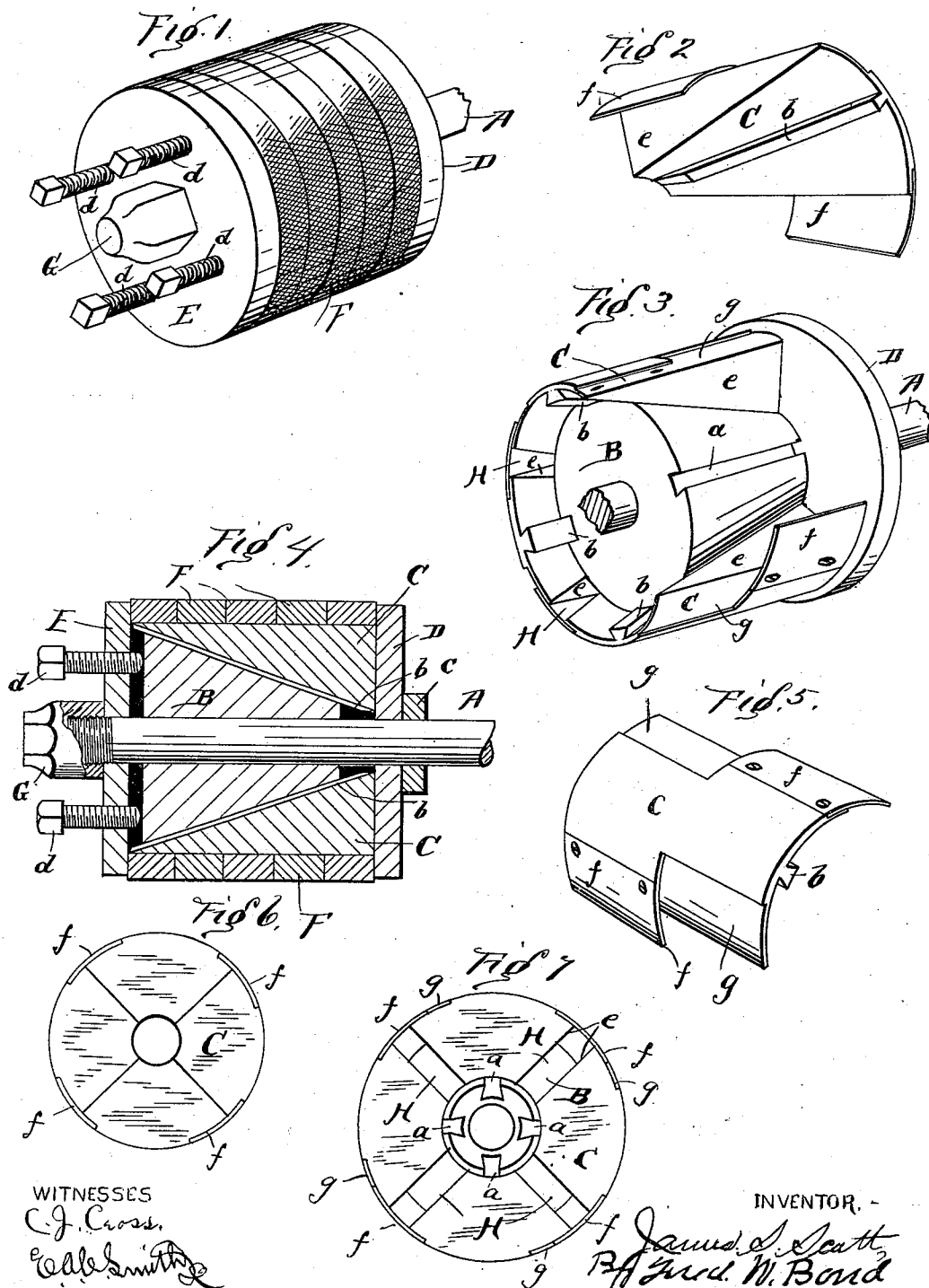


(No Model.)

J. S. SCOTT.  
PUMP PLUNGER.

No. 541,634.

Patented June 25, 1895.



# UNITED STATES PATENT OFFICE.

JAMES S. SCOTT, OF DELL ROY, OHIO, ASSIGNOR OF ONE-HALF TO NEWTON RUSSELL, OF SAME PLACE.

## PUMP-PLUNGER.

SPECIFICATION forming part of Letters Patent No. 541,634, dated June 25, 1895.

Application filed February 11, 1895. Serial No. 537,859. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES S. SCOTT, a citizen of the United States, residing at Dell Roy, in the county of Carroll and State of Ohio, have invented certain new and useful Improvements in Pump-Plungers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a view of the plunger complete, showing the packing properly located thereon.

Fig. 2 is a detached view of one of the segmental blocks, showing its inner side and illustrating the position of the convexo-concave plates. Fig. 3 is a view showing the location of the frustum with reference to the plunger-rod, illustrating one of the segmental blocks removed, also showing one of the follower-disks. Fig. 4 is a sectional view of the plunger, showing the different parts placed in proper position and illustrating the packing properly located thereon. Fig. 5 is a detached view of one of the segmental blocks, showing the outside of said block, and illustrating the position of the convexo-concave plates. Fig. 6 is an end view of the segmental blocks, showing said blocks compressed. Fig. 7 is an end view of the segmental blocks, showing the same expanded, and illustrating the smaller end of the frustum.

The present invention has relation to pump plungers and it consists in the different parts and combination of parts hereinafter described and particularly pointed out in the claims.

Similar letters of reference indicate corresponding parts in all of the figures of the drawings.

In the accompanying drawings, A represents the plunger rod which is connected in the ordinary manner, and is constructed with reference to properly attaching my improved plunger.

Upon the plunger end of the rod A, is located the frustum B, which is cylindrical in cross section, and is formed somewhat shorter than the length of the plunger proper, and is

so formed for the purpose hereinafter described.

Upon the periphery of the frustum B are located the dove-tailed grooves *a*, which grooves are formed of a length to correspond with the length of the frustum. Upon the frustum B are located the segmental blocks C, which segmental blocks are tapered upon their inner sides to correspond substantially with the taper of the frustum B. The inner sides of the blocks C are also concaved the concavity corresponding substantially to the convexity of the periphery of the frustum B.

The inner faces of the blocks C are provided with the dove-tailed ribs *b*, which dove-tailed ribs fit into the dove-tailed grooves *a*, substantially as illustrated in Figs. 3 and 7. The object and purpose of forming the grooves *a* and the ribs *b* dove-tailed, are to prevent the blocks C from becoming accidentally detached from the frustum B at the time the packing is removed from the plunger proper, and at the same time allowing the frustum B to be moved endwise between the segmental blocks C, as hereinafter described. For the purpose of holding the follower disk D at the desired point upon the rod A, the collar *c* is provided, which collar is securely attached in any convenient and well known manner to the rod A.

The follower disk E is located upon the rod A, substantially as illustrated in Figs. 1 and 4, and as shown the follower disk E is provided with the lug bolts *d*, which lug bolts extend through screw-threaded apertures formed in the follower disk E. The lug bolts *d* are so located and arranged that their inner ends will come in contact with the larger end of the frustum B, as illustrated in Fig. 4, and are for the purpose of holding the frustum at the desired point of adjustment between the inner faces of the follower disks D and E.

The packing F is of the ordinary kind used for pump plungers, and is located between the follower disks D and E, and upon the outer sides of the blocks C, substantially as illustrated in Figs. 1 and 4. At the time new packing is placed upon the plunger proper the segmental blocks C, are compressed, as illustrated in Fig. 6, said blocks being brought into that

position by adjusting or moving the frustum B toward the pointed or tapered ends of the blocks C.

After the packing F has become worn from use, and it is desired to bring the packing into proper position with reference to the cylinder of a pump, the follower disk E is released so as to free the ends of the segmental blocks C, after which the lug-bolts *d* are turned in the direction to crowd the frustum B toward the larger ends of the segmental blocks C, thereby expanding or increasing the diameter of the plunger proper. After the lug-bolts *d* have been turned to adjust the frustum the screw-threaded nut G is turned up against the outer face of the follower disk E, thereby securely clamping the segmental blocks between the inner faces of the follower disks D and E, and at the same time clamping the frustum B, by reason of the lug-bolts *d* being carried with the follower disk E, as said follower disk is moved upon the rod A, by means of the screw-threaded nut G.

It will be understood that the follower disk E is to be removed but a short distance by means of the screw-threaded nut G, inasmuch as it is only necessary to move the disk E backward a sufficient distance to release the ends of the segmental blocks C, and as the disk E is brought into position to securely clamp the ends of the segmental blocks C, the lug-bolts *d* will be firmly seated against the larger end of the frustum B.

As the segmental blocks C are expanded or lifted away from their common center, spaces, such as H will be formed between the faces *e*, and for the purpose of bridging said spaces, the convexo-concave plates *f* are provided, which plates are attached to the segmental blocks C, substantially as illustrated in the drawings, and for the purpose of providing for a continuous surface upon the peripheries or outer faces of the segmental blocks C, recesses *g* are formed for the reception of the convexo-concave plates *f*, which plates fill the recesses when the blocks C are brought into the position illustrated in Fig. 6.

It will be understood that as the segmental blocks C are expanded, a portion of the recesses *g* will be uncovered or exposed, and for the purpose of changing the position of the open or exposed portions of the recesses *g*, the plates *f* are placed upon opposite sides of the segmental blocks C. The object of locating the segmental plates *f* as shown is to divide the length of the opening over the recesses *g*, thereby presenting a better surface for holding the packing F.

In use I prefer to use the plunger until the packing has become about half worn down, after which the worn packing is removed and placed to one side and new packing substituted, and after the second new packing has become worn about half, the first worn packing is placed upon the second quantity of packing, thereby providing for consuming the entire amount of packing without waste.

It will be understood that the diameter of the plunger proper is to be adjusted with reference to the packing, and the diameter increased from time to time so that the packing will properly fit the pump cylinder at all times. It will also be understood that the follower disks D and E should be somewhat less in diameter than the inner diameter of the pump cylinder, thereby allowing a free reciprocating motion of the disks.

In the drawings I have illustrated four segmental blocks, but it will be understood that in the construction of large plungers a greater number of segmental blocks may be employed, inasmuch as plungers of large size would necessarily require large segmental blocks, and for the purpose of dividing the radial spaces such as H, the number of segmental blocks may be increased.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a pump plunger, the combination of the plunger rod A, having located thereon the sliding frustum B, provided upon its periphery with grooves *a*, the segmental blocks C tapered upon their inner faces and provided with ribs *b*, the follower disks D and E, the screw-threaded nut G, the lug bolts *d* located through one of the follower disks, the convexo-concave plates *f* secured to opposite segmental blocks and the segmental blocks provided with recesses *g* and packing located around the segmental blocks, substantially as and for the purpose specified.

2. The combination of the frustum B, mounted upon the rod A, and provided with grooves upon its periphery, the segmental blocks C surrounding the frustum and provided with the convexo-concave plates *f*, and the recesses *g*, follower disks located at the ends of the segmental blocks, lug bolts *d* located through one of the follower disks, the screw-threaded nut G, and packing located around the segmental blocks, substantially as and for the purpose specified.

3. In a pump plunger the combination of a longitudinally movable frustum, located upon the rod A, segmental blocks surrounding the frustum, and tapered to correspond substantially with the taper of the frustum, follower disks mounted upon the rod A and at the ends of the segmental blocks, lug bolts *d* located through one of the follower disks, the convexo-concave plates *f* secured to opposite segmental blocks C, and the recesses *g* formed upon the outer faces of the segmental blocks, and packing located around and upon the segmental blocks, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JAMES S. SCOTT.

Witnesses:

F. W. BOND,

E. A. C. SMITH.