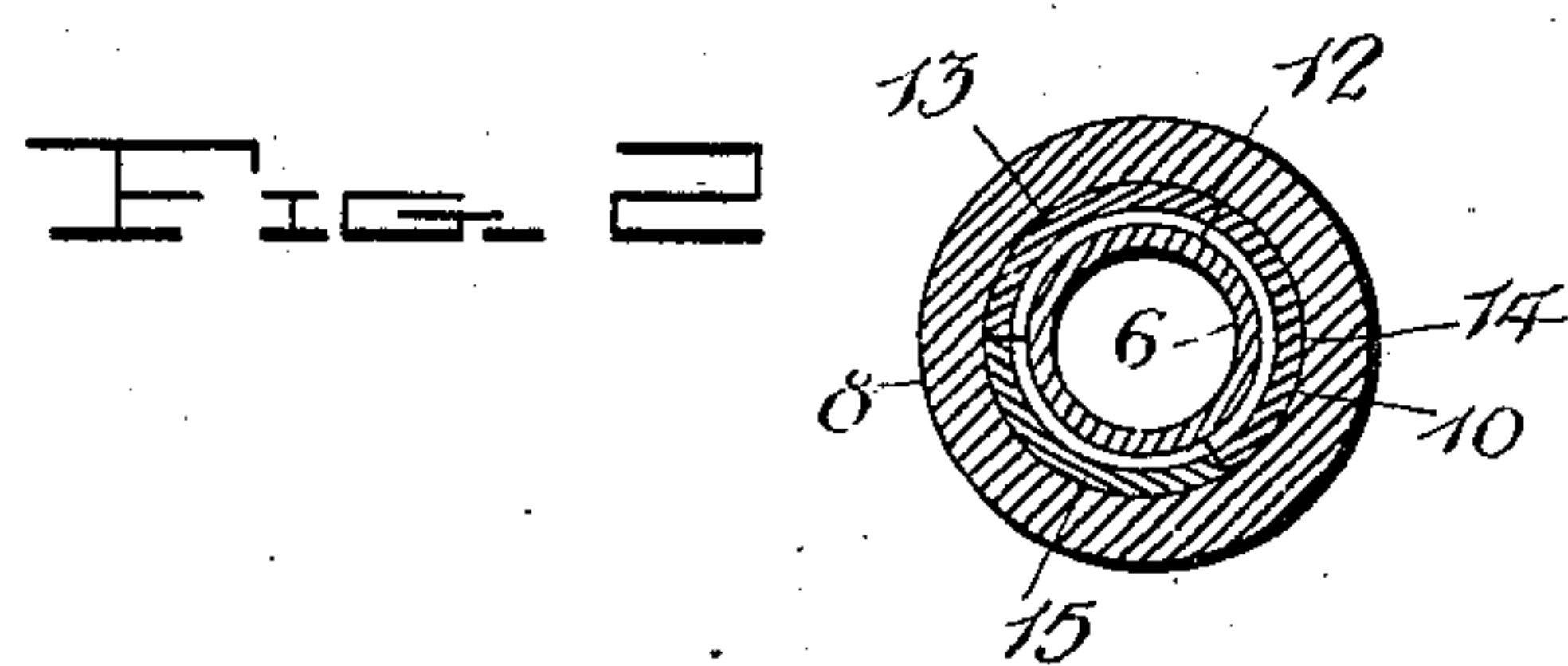
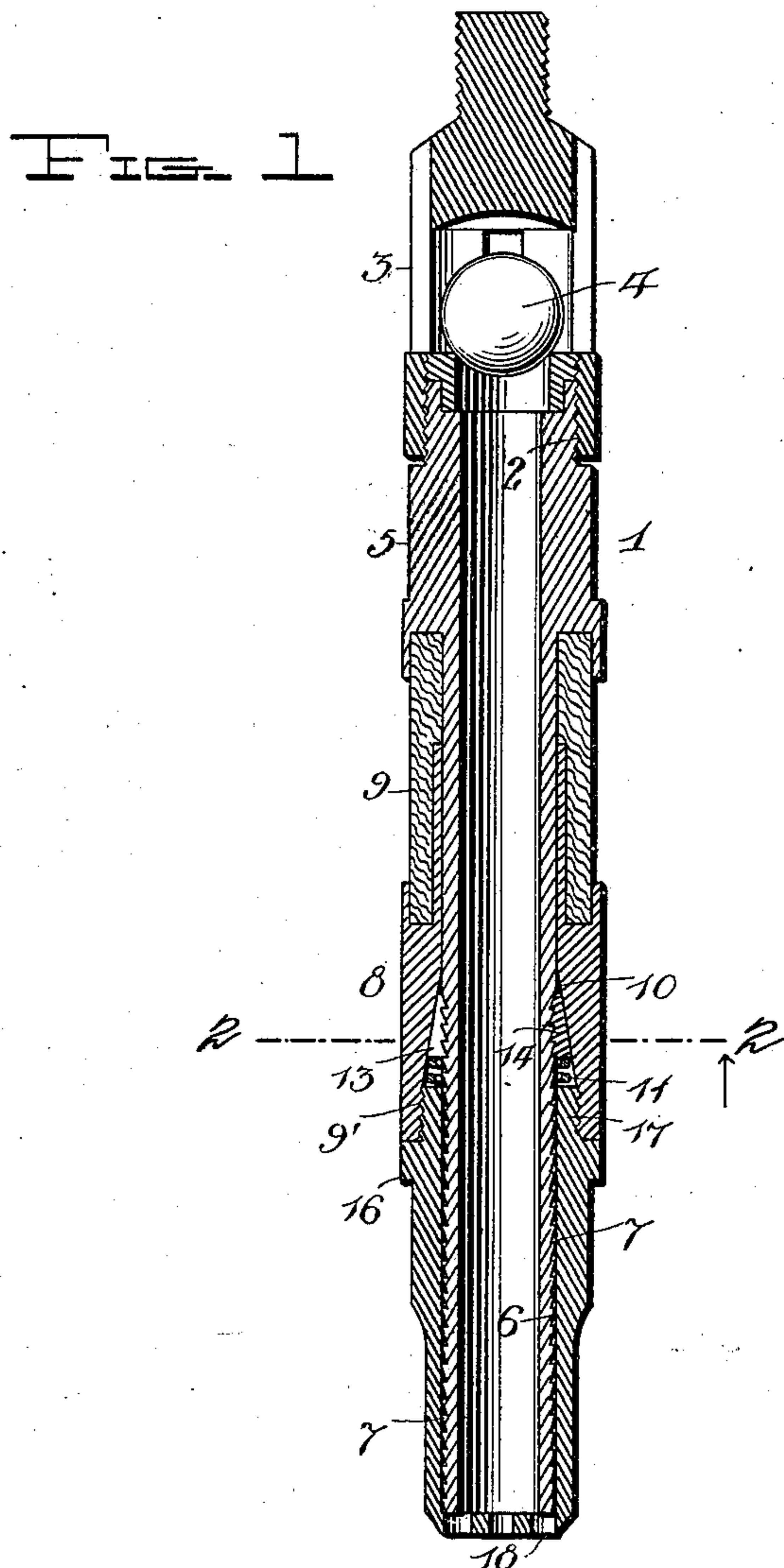


No. 723,811.

PATENTED MAR. 31, 1903.

O. P. BERRY.
PUMP PISTON OR PLUNGER.
APPLICATION FILED OCT. 6, 1902.

NO MODEL.



Inventor

O. P. Berry

Witnesses

J. P. Benson
J. P. Benson

By

A. B. Wilson & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ORMAN PRYOR BERRY, OF PETROLIA, PENNSYLVANIA.

PUMP PISTON OR PLUNGER.

SPECIFICATION forming part of Letters Patent No. 723,811, dated March 31, 1903.

Application filed October 6, 1902. Serial No. 126,191. (No model.)

To all whom it may concern:

Be it known that I, ORMAN PRYOR BERRY, a citizen of the United States, residing at Petrolia, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in Pump Pistons or Plungers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a piston for well-pumping apparatus, and has for its object the production of a device of this character in which the packing is readily adjustable to at all times maintain a close engagement with the walls of the well or a tube in which the device is reciprocated.

With the above and other objects in view, which will readily appear as the nature of the invention is better understood, said invention consists in certain novel features of construction and combination and arrangement of parts, which will be hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a piston embodying my invention. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1.

Referring now more particularly to the drawings, the numeral 1 represents a barrel or stock provided at its upper end with external screw-threads 2 to engage the lower internally-threaded end of the valve-cage 3, which contains the working valve 4. Below the screw-threaded portion 2 the barrel is formed with a collar 5, and below said collar the barrel has a ratchet-surface 6, consisting of a series of annular upwardly-projecting teeth 7.

Sliding on the ratchet-toothed surface is a follower 8, and about the barrel between the upper end of this follower and the lower end of the collar is a packing 9, which may be of flax, hemp, asbestos, or any other suitable material. The collar and follower are grooved or recessed in their opposing faces to receive the ends of this packing.

The lower end of the follower 8 has a tapered or flaring chamber 9', which is threaded at its lower end and above the threads is

smooth-surfaced and tapers inwardly at its upper end to a shoulder 10. Inclosed in this chamber and pressed against said shoulder by a spiral spring 11 is a ring-shaped pawl 12, composed of independent segmental sections 13, 14, and 15, which are toothed to engage the ratchet-surface 6, the teeth upon said pawl-sections being so arranged as to slide over the teeth when the follower moves upward and to engage said teeth to lock the follower against downward movement. The sectional construction of the ring-pawl is advantageous in that it permits of the ready application and removal of the same and at the same time gives a more secure connection than can be obtained by the use of one or a series of ordinary pawls. The pawl is supported by the spring 11, which retains the pawl-sections 13, 14, and 15 in proper alignment, while permitting them to move downward and expand in the tapering chamber 9' to the proper extent to ride over the ratchet-teeth when the follower is forced upward on the stock.

Closing the chamber 9' is a cap 16, which has a threaded upper end 17 to engage the internal screw-threads of said chamber, and this cap is preferably extended or elongated to form a sleeve sliding with the follower and serving to inclose and protect the exposed portion of the ratchet-surface when the follower is adjusted to the limit of its upward movement. As shown, this cap or sleeve has a perforated head 18 at its lower end; but, if desired, this end of the cap may be left open. The cap bears upon the spring 11, by means of which the pressure of said spring may be regulated to retain the pawl in proper position.

In operation the packing is automatically maintained in a properly-expanded state by the action of the device on its downward movement, the pressure of the oil or water on the cap or sleeve 17 causing the follower to ride up on the barrel whenever the packing fails to exert the necessary pressure on the wall of the well or tubing, such movement of the follower effecting the outward projection or expansion of the packing in an obvious manner, so that said packing will at all times maintain a fluid-tight joint between the barrel and wall of the well. On the upward

movement of the follower the pawl rides over the ratchet-surface and then engages the ratchet-teeth to hold the packing expanded and prevent downward displacement of the follower. If a greater degree of adjustment be desired, this may be effected by striking the cap or sleeve against the bottom of the well or stand-valve, thus forcing the follower toward the collar 5. Thus it will be seen that the packing may be kept tight until worn out without removing the device from the well.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, mode of operation, and advantages of my improved automatic working valve will be readily apparent without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a plunger for well-pumps, the combination of a stock provided at its upper end with a collar and below the same with upwardly-projecting ratchet-teeth, a follower slidable upward on the stock and having a pawl to engage said ratchet-teeth, said pawl permitting the follower to move upward on the stock toward the collar but preventing downward movement thereof, and packing about the barrel between the collar and follower, the said follower inclosing the lower portion of the stock and projecting below the same, whereby the lower end of the follower forms a striking-point which may be struck against the bottom of the well or stand-valve to force the follower upward on the sleeve, substantially as described.

2. The combination of a stock provided at its upper end with a collar and having ratchet-teeth below the collar, a follower slidable upward on the stock and having a pawl inclosed therein to engage said ratchet-surface, said pawl permitting the follower to move upward toward the collar but preventing its downward movement, packing about the barrel between the shoulder and follower, and a sleeve detachably connected to the barrel and confining the pawl therein and projecting below the barrel to provide a striking-point, substantially as described.

3. The combination of a stock having a collar and a ratchet-surface, a sliding follower having a chamber at its lower end, packing about the barrel between the collar and upper end of the follower, a sectional ring-pawl fitted in said chamber and adapted to engage said ratchet-surface to allow the follower to move freely toward the collar but to lock it against movement in the reverse direction, a spring bearing upon the pawl, and a retainer connected to the follower and bearing upon the spring to retain the same and the pawl in position, substantially as and for the purpose set forth.

4. The combination of a stock having a collar and a ratchet-surface, a sliding follower having a chamber at its lower end and adjustable upward toward said collar and on said ratchet-surface, packing about the barrel between the collar and upper end of the follower, a sectional ring-pawl fitted in said chamber and adapted to engage said ratchet-surface to allow the follower to move freely toward the collar but to lock it against movement in the reverse direction, and a spring for retaining the pawl in position in the chamber, substantially as described.

5. The combination of a stock having at its upper end a bearing-surface, packing engaging said surface, a follower slidable upward on the stock for expanding and forcing the packing toward said surface, a clutch connection between the stock and follower for permitting the latter to slide upward toward said bearing-surface but to lock it against downward movement, and a projection from the follower extending below the stock and forming a striking-point whereby the follower may be forced upward on the stock, substantially as described.

6. The combination of a stock having a collar and a ratchet-surface, a sliding follower provided with a chamber, packing about the stock between said collar and follower, a spring-pressed sectional ring-pawl in said chamber to engage said ratchet-surface, and means for retaining the pawl and spring within the chamber, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ORMAN PRYOR BERRY.

Witnesses:

SYLVESTER F. BOWSER,
GEORGE F. BOWSER.