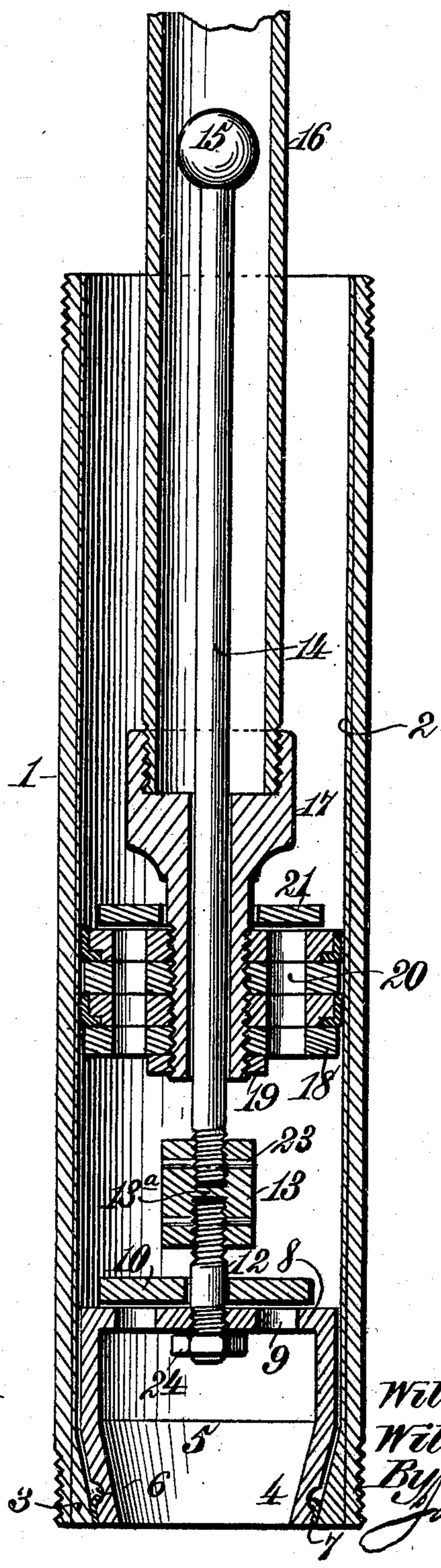
No. 624,364. Patented May 2, 1899.

W. C. MOORE & W. C. ELDER.

PUMPING APPARATUS FOR DEEP WELLS.

(Application filed Dec. 6, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

WILLIAM C. MOORE AND WILLIAM C. ELDER, OF LEXINGTON, KENTUCKY, ASSIGNORS OF ONE-THIRD TO JAMES A. VAN HOUTIN, OF SAME PLACE.

PUMPING APPARATUS FOR DEEP WELLS.

SPECIFICATION forming part of Letters Patent No. 624,364, dated May 2, 1899.

Application filed December 6, 1898. Serial No. 698,445. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM C. MOORE and WILLIAM C. ELDER, citizens of the United States, residing at Lexington, in the county of Fayette and State of Kentucky, have invented new and useful Improvements in Pumping Apparatus for Deep Wells, of which the following is a specification.

Our invention relates to pumping apparatus for deep wells, our object being to provide a construction and organization that will enable the plunger and valves to be drawn up through the pipe by the withdrawal of the pump-rod, whereby repairs and renovation of the parts can be readily made without requiring excessive time and labor.

It is our purpose also to provide a pump-cylinder which shall require no threading in order to enable the pump-rod and the working parts within the cylinder to be pulled up, whereby we dispense with a feature which, because of the battering and mutilation of the threads, has been a source of much annoyance and expense, since it required frequent removals of the pipe in order that such injuries might be repaired.

It is a further object of our invention to provide a pump-cylinder of simple and economical construction which will seldom or never have to be pulled up for repairs, in which the leathers will wear evenly, and in which the valves can be pulled up, should this be necessary, without catching the threads on the rod, which is always troublesome.

The invention consists to these ends in the novel features of construction and new combinations of parts hereinafter fully explained and then particularly pointed out in the claims which conclude this specification.

For the purposes of the following description, reference is had to the accompanying drawing, in which the figure is a central longitudinal section of a pump-cylinder with its interior fittings, showing our invention applied thereto.

The reference-numeral 1 in said drawing indicates the pump-cylinder, which is composed of brass or other suitable metal. It is provided with the interior casing 2, which covers the inner cylindrical face of the cylinder 1. Near the lower end of the latter the casing is gradually increased in thickness, thereby forming an annular section 3, which has a contracted interior surface 4, which forms a close-fitting seat for the valve-plunger 5. The part last mentioned consists of a short cylindrical section, having a slightly-contracted lower portion to seat within the contracted annulus 4. A groove 6 may be provided, if desired, to receive a packing of rubber or other suitable material, and a narrow band 7, of solder or Babbitt metal, is applied between the two contiguous surfaces at the lower edge of the contracted portion 4. The top of the cylindrical section or valve-plunger 5 is provided with a plate 8, having openings 9 for the entrance of water, and upon this plate seats the valve 10, which has play upon the stem 12 between a coupling 13 and the top plate 8.

The coupling 13 affords connection for a stem or rod 14, which extends up centrally in the cylinder and terminates in a ball or other enlargement 15. Surrounding this rod 14 is a pipe 16 of such diameter that the ball 15 can move freely therein, said pipe being connected at its lower end to a coupling 17, the upper end of which has a threaded socket to receive the end of the pipe, while the lower portion has an external thread and carries plunger-rings 18, of brass or iron, which are held by a lock-nut 19. The rings are provided with openings 20 for the passage of water, and upon the upper ring rests the valve 21, which has play on a smooth portion of the coupling 17. The rod or stem 14 passes through a central opening in the coupling. The plunger-rings 18 are provided with leather facings 22, which are preferably applied to the alternate rings. The ball or enlargement 15 lying within the pipe 16 and the latter being reciprocated upon the rod or stem 14 in order to operate the pump-plunger, the ball acts as a guide without in any way impeding the motion of the parts. When it becomes necessary to pull up the valves, the pipe is raised until the ball or enlargement 15 lies against the coupling 17, after which the parts within the cylinder can be raised without any further appliance.

We prefer to construct the coupling 13 with

an integral wall or diaphragm 13ª, which lies between threaded sockets, the lower one of which receives the end of the stem 12, while the upper is entered by the threaded end of the rod 14. When said rod and stem are screwed into these sockets, pins 23 are passed through both the coupling and the threaded ends of the coupled parts, whereby the latter are prevented from turning in their sockets.

The lower end of the stem 12 is screwed into and projects somewhat below the valve-plate 8 to receive a lock-nut 24, which prevents the threads from stripping in said plate.

What we claim is—

1. In a pumping apparatus for deep wells, the combination with a cylinder of a valve-plunger in the lower end having a plate provided with a threaded, upwardly-projecting stem, a rod in said cylinder having a ball or enlargement on its upper end and a threaded lower end, a coupling having threaded sockets to receive the rod and stem and provided with an integral wall between the sockets, a valve-plate having play on the stem between the coupling and the valve-plunger and a pipe in the cylinder, a series of plunger-rings on a coupling carried by the lower end of the pipe, said coupling and pipe surrounding the rod and the ball on its upper end, substantially as described.

2. In a pumping apparatus for deep wells, the combination with a cylinder of a valve-plunger in its lower end having a perforated plate a threaded stem rising centrally from the plate, a valve-plate loose on said stem, a rod having an enlarged upper end and a threaded lower end, a coupling between said rod and stem having threaded sockets to receive the ends of the rod and stem and provided with an integral wall between said sockets, a pipe inclosing the rod to a short distance above the coupling, plunger-rings carried by a coupling on said pipe and perforated for the passage of water, and a valve resting on the upper ring, substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

WILLIAM C. MOORE.
WILLIAM C. ELDER.

Witnesses:
EDDIE LLOYD,
THOMAS J. HEADLEY.