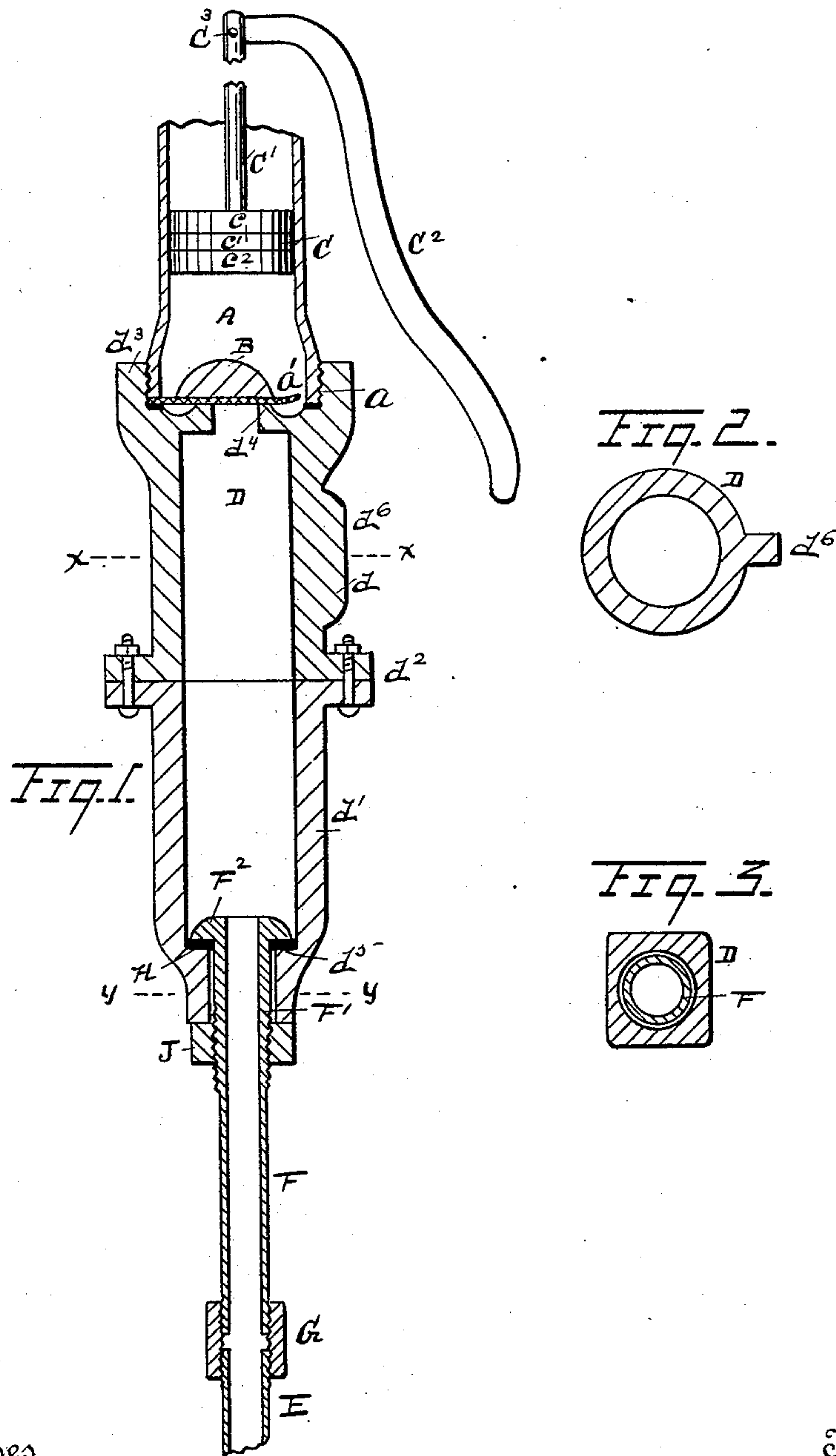


(No Model.)

R. A. OWEN.  
CYLINDER AND CYLINDER CAP.

No. 486,680.

Patented Nov. 22, 1892.



Witnesses  
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# UNITED STATES PATENT OFFICE.

ROBERT A. OWEN, OF CORAL, MICHIGAN.

## CYLINDER AND CYLINDER-CAP.

SPECIFICATION forming part of Letters Patent No. 486,680, dated November 22, 1892.

Application filed March 3, 1892. Serial No. 423,572. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT A. OWEN, a citizen of the United States, residing at Coral, county of Montcalm, State of Michigan, have  
5 invented a certain new and useful Improvement in Cylinder-Caps and Cylinders; and I 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 ap-  
10 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object certain new and useful improvements in a cylinder-cap  
15 and cylinder, and relates more particularly to improvements in pump-cylinder caps, the purpose of my invention being to facilitate the removal of the check-valve or plunger-valve without the necessity of removing the  
20 pump from the well therefor or disturbing its position, thereby saving time and expense in making needed repairs.

To this end my invention consists of the devices and appliances, their construction,  
25 combination, and arrangement, as hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section illustrating my invention. Fig. 2 is a cross-section on the  
30 line  $x x$ , Fig. 1. Fig. 3 is a cross-section on the line  $y y$ , Fig. 1.

I carry out my invention as follows:

A represents a pump-cylinder. B is the check-valve located at its lower end below  
35 the plunger C.

D represents my improved cylinder-cap, preferably constructed in two separable parts  
40  $d d'$ , united in any suitable manner intermediate their extremities, as shown, for example, at  $d^2$ .

At the end adjacent to the end of the cylinder A the cap has a removable engagement with the cylinder—as, for instance, by a screw-threaded connection shown at  $a$ , the upper  
45 end of the cap being constructed with an upwardly-extended screw-threaded flange  $d^3$  and also with a valve-seat  $d^4$ .

E denotes the usual pump-tube communicating with the pump-cylinder. I connect the  
50 tube E with the cap D by means of a coupling F. This coupling is made of a suitable size at the end adjacent to the tube E, to be

united thereto, as by a union G. At the upper end the coupling is constructed with an enlarged extremity, as shown at  $F'$ , passed  
55 freely through the lower end of the cap, and with a flanged head  $F^2$ . The end of the cylinder-cap adjacent thereto is formed with an inwardly-directed flange or shoulder, as shown at  $d^5$ , upon which said head rests. Before  
60 the two parts  $d d'$  of the cylinder-cap are united, as at  $d^2$ , the coupling F is slipped down through the lower end of the cap. A rubber gasket or other suitable packing-ring  
65 H is interposed between the flange  $d^5$  and the head  $F^2$  of the coupling, the head seating on said gasket when in place. The enlarged end F of the coupling is screw-threaded on its exterior to receive a lock-nut J, which, when  
70 tightened up, will force the head  $F^2$  down firmly upon the gasket, rendering the base of the cap water-tight in its connection with the coupling. The lower end of the coupling is of less diameter than the screw-  
75 threaded end thereof, as shown. From this construction it will be evident that when the nut J is loosened up sufficiently it may drop  
80 down upon the union G, permitting the cylinder-cap to be disunited from the cylinder, so as to afford ready access to the valves.

To facilitate unscrewing the cap from the cylinder, the lower end of the cap may be squared, as indicated in Fig. 3, to permit the engagement of an ordinary wrench therewith,  
85 or a portion of the cap may be constructed with a rib  $d^6$  to facilitate the engagement of a different form of wrench therewith. It is thus clear that when the nut J is loosened and dropped down the cylinder-cap may be  
90 unscrewed from the cylinder and lowered downward on the coupling F, affording access to the check-valve B. Should it be desired to repair the plunger C or gain access thereto, the plunger-rod  $C'$  may be disconnected from  
95 the pump-handle  $C^2$  at the joint  $C^3$ , when the plunger itself may readily be slipped down through the lower end of the cylinder without disturbing other parts of the pump. In this manner repairs may readily, conveniently,  
100 and quickly be made with a considerable saving of time, labor, and expense, whereas heretofore it has been necessary to remove the entire pump from the well to make such repairs.



The plunger C is of ordinary construction, provided with an upper leather *c*, a lower leather *c'*, and a follower *c*<sup>2</sup>. To facilitate the engagement of the plunger in the cylinder, I prefer to flare or enlarge the lower end of the cylinder, as shown at *a'*, Fig. 1. Where the cylinder is of uniform size throughout, there is experienced considerable difficulty in entering the upper leather, since the upper leather turns up; but by flaring the cylinder at its lower end, as shown, the entire plunger is readily entered into the cylinder.

No tools are required for getting at the valves to make the necessary repairs, except an ordinary wrench.

I have shown and described my improved cap engaged with the lower end of the cylinder; but I would have it understood that the cap may be applied to either end or on both ends, as may be desired.

The cap is of economical construction. Its use dispenses with the necessity of disconnecting any pipes.

What I claim as my invention is—

1. The combination, with a pump-cylinder provided with a plunger and check-valve, of a cylinder-cap having a detachable engagement with the end of the pump-cylinder adjacent to the check-valve, a coupling loosely passed through the opposite end of the cylinder-cap, and a lock-nut to tighten the engagement of the coupling with the cylinder-cap, the diameter of said coupling reduced beyond the engagement of the nut therewith to allow the loosened nut and disconnected cylinder-cap to slip down over the reduced portion of the coupling and afford access to the check-valve and plunger of the pump-cylinder, substantially as described.
2. The combination, with a pump-cylinder provided with a plunger and check-valve, of a cylinder-cap detachably engaged with the end of the cylinder, said cap constructed with a valve-seat at the end adjacent to said cylinder and with an inwardly-projected shoulder *d*<sup>5</sup> at the opposite end, a coupling F, passed through one end of said cap and extending outward therefrom, said coupling provided with a head seated upon said shoulder, and a lock-nut having a screw-threaded engagement with said coupling adjacent to the corresponding end of the cap, the diameter of said coupling exterior to said cap reduced below the screw-threaded engagement of the nut

therewith to allow the loosened nut and cylinder-cap to slip down over the reduced portion of the coupling and thereby afford access to the check-valve and plunger, substantially as described.

3. The combination, with a pump-cylinder provided with a plunger and check-valve, of a cylinder-cap having a direct screw-threaded engagement with the cylinder, said cap constructed with a valve-seat for the check-valve and with an interior shoulder at its opposite end, a coupling F, passed loosely through the shouldered end of the cap, provided with a head seated upon said shoulder, a gasket located between said shoulder and the head of the coupling, and a lock-nut having a threaded engagement with the coupling to tighten its head upon the gasket, the diameter of said coupling reduced below the threaded engagement of the lock-nut therewith to allow the loosened nut and cylinder cap to slip down over the reduced portion of the coupling, the loosening of the cylinder-cap affording direct access to the check-valve and plunger, substantially as described.

4. The combination, with a pump-cylinder provided with a check-valve and plunger, of a cylinder-cap made in two parts united, one part constructed with a contracted valve-seat for the check-valve and having a screw-threaded engagement with the adjacent end of the pump-cylinder, the other part of said cylinder-cap constructed with an inwardly-projecting shoulder, a coupling F, passed through the shouldered end of said cap and projecting outward therefrom, said coupling provided with a flanged head seated upon said shoulder, and a lock-nut having a threaded engagement with said coupling adjacent to the corresponding end of the cap to seat the head firmly upon said shoulder, the diameter of said coupling reduced below the threaded portion thereof to allow the loosened nut and cylinder-cap to slip down over the reduced portion of the coupling, thereby affording access to said check-valve and plunger, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

ROBERT A. OWEN.

Witnesses:

N. S. WRIGHT,  
JOHN F. MILLER.