

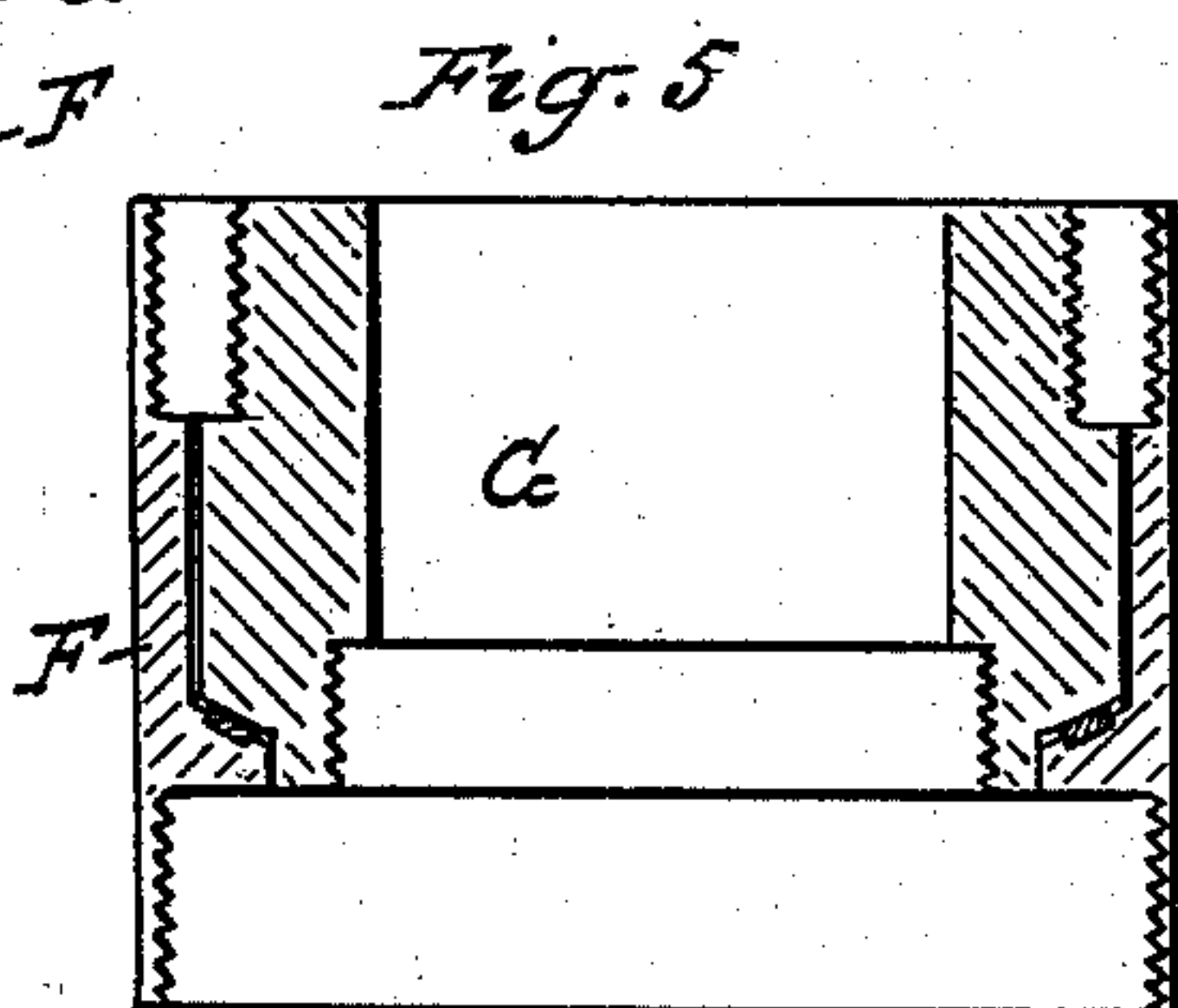
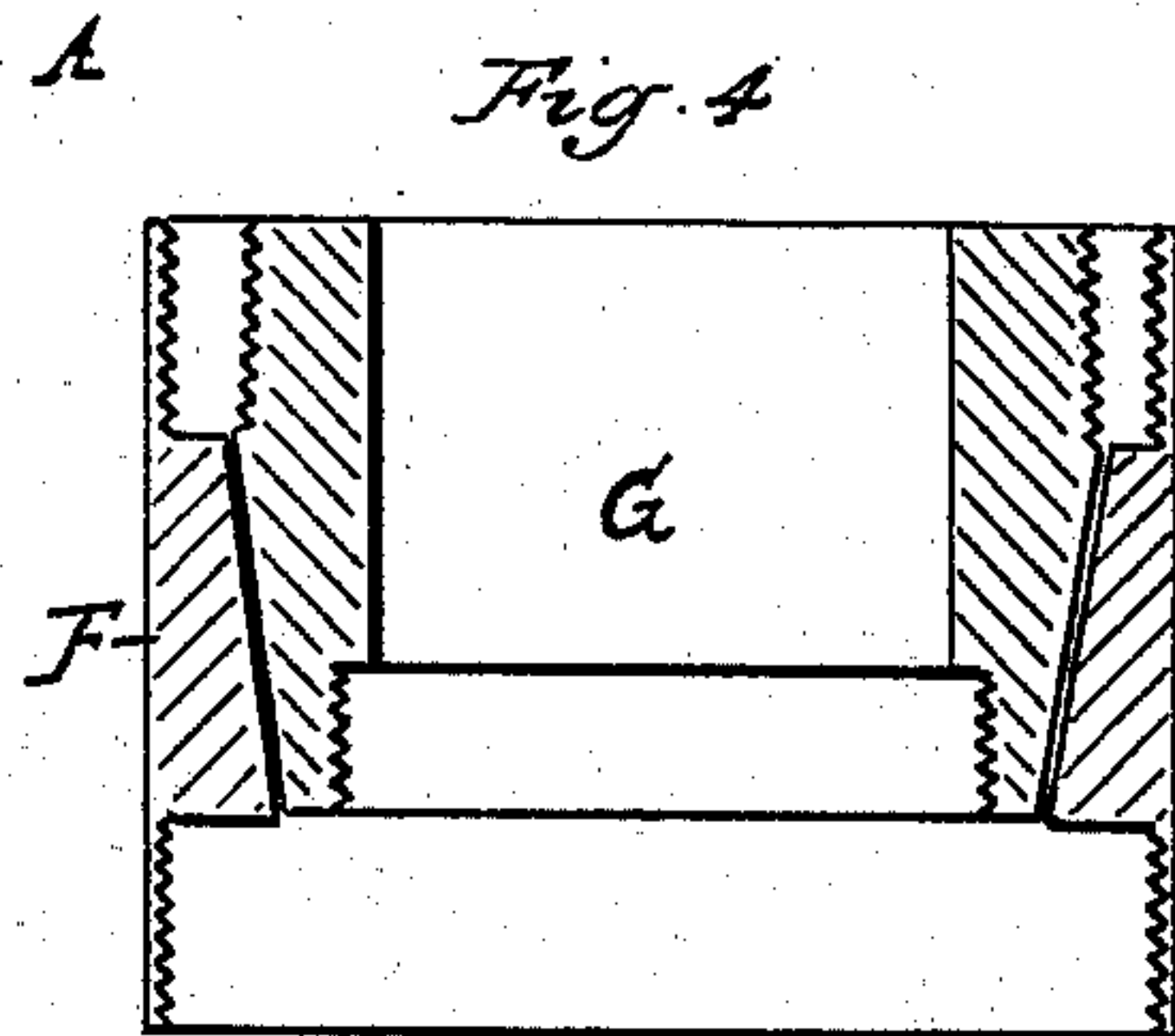
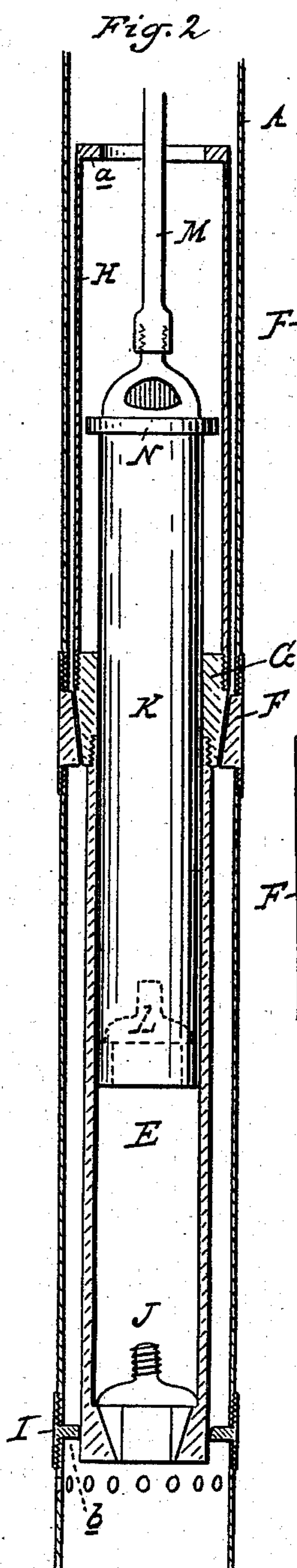
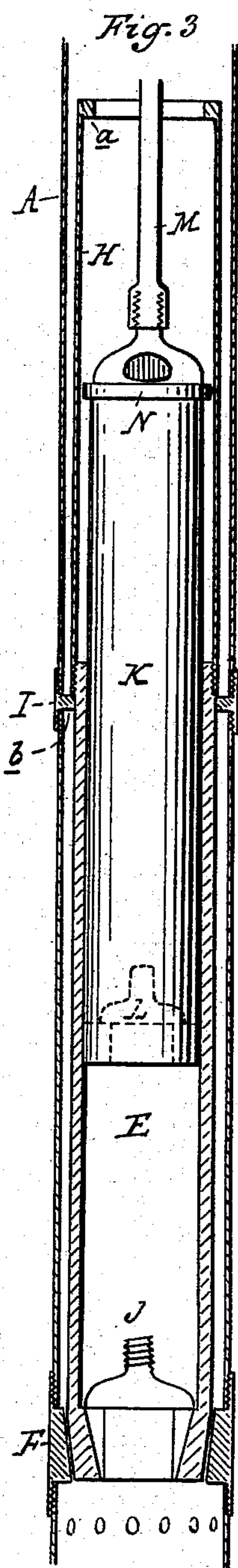
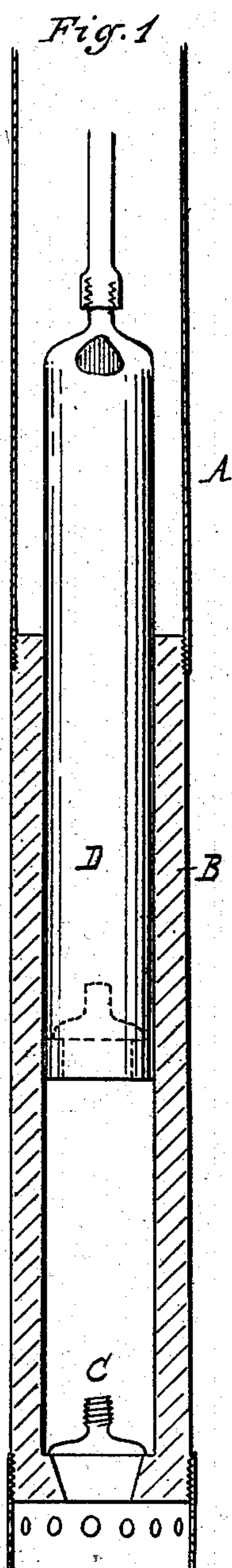
(No Model.)

J. M. LAING.

PUMP.

No. 284,310.

Patented Sept. 4, 1883.



Attest:

A. Barthel
E. Souly.

Inventor:

Jas. M. Laing
by his Atty. W. S. Sprague

UNITED STATES PATENT OFFICE.

JAMES M. LAING, OF BAY CITY, MICHIGAN.

PUMP.

SPECIFICATION forming part of Letters Patent No. 284,310, dated September 4, 1883.

Application filed February 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. LAING, of Bay City, in the county of Bay and State of Michigan, have invented new and useful Improvements in Pumps; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in the construction of pumps of that class which are designed for deep wells, such as are employed in salt-wells; and the invention consists in the peculiar construction and application of the working-barrel within the tube, by means of which such working-barrel, with its various valves and plunger, may be simultaneously removed from the tubing for the purposes of repair and inspection without the necessity of removing the tubing, all as more fully hereinafter set forth.

Figure 1 is a vertical section, showing the construction of pumps such as are now employed in salt-wells. Fig. 2 is a vertical section, showing my improved construction. Fig. 3 is a modification of the same. Fig. 4 is an enlarged vertical section of the shoe detached. Fig. 5 is a modification of Fig. 4.

In the accompanying drawings, which form a part of this specification, A represents the tubing of the well in Fig. 1, the working-barrel B forming a portion or section of such tubing, which is supplied with a valve, C, and a plunger and valve, D, this arrangement being the usual construction. When it is found that the pump is not properly performing its work and it is desired to ascertain what portion needs repair, the plunger, with its valve, has to be first withdrawn. If these parts are found to be in good order, they are disconnected from the pump-rod, which latter has to be again inserted down the tubing and engage with the valve C at the bottom of the working-barrel, from which it is withdrawn and inspected. If it be found in good order, it is then ascertained that the difficulty must lie in the working-barrel, and in order to effect any repair upon this the entire tubing has to be withdrawn from the well at considerable expense and labor.

In my construction, Fig. 2, I connect the section of tubing within which is placed the

working-barrel E by means of a shoe, F, with the lower end of the section of tubing next above. To the upper end of the working-barrel E, I secure a head, G, which, when the parts are in place, is seated within the shoe F, and to the upper end of this head G, I secure a piece of pipe or tubing, H, the upper end of which is provided with an inwardly-projecting annular flange, *a*. As the working-barrel is of smaller diameter than the interior of the tubing, to prevent a swaying of the lower end of the working-barrel, I secure the lower end of that section of tubing with the suction-section immediately below it by means of a coupling, I, which is provided with a central inwardly-projecting annular flange, *b*, the edge of which is slightly beveled, and into which the lower end of the working-barrel, when in place, snugly fits, thus preventing any vibration or wobble to the lower end of the working-barrel, in which is located the valve J.

K represents the plunger which carries the valve L, and which is reciprocated by means of the pump-rod M. These last-described parts are constructed as in the ordinary manner, with the exception that I provide the upper end of the plunger with a collar, N.

When from any cause this pump fails to perform its work and it is desired to repair the same, the plunger is withdrawn until its collar N comes in contact with the flange *a*. A continued withdrawal now compels the plunger to draw up with it the pipe H, which is connected to the head G, which in turn is connected to the working-barrel; and hence it will readily be seen that by removing the plunger the working-barrel and its valve must necessarily follow. By this construction I am enabled to readily get at and repair the working parts of a pump without being compelled to pull up or remove a thousand feet (more or less) of tubing, as is absolutely necessary when any repairs are needed to be made in the pumps of the ordinary construction.

In Fig. 3 I show a modification of the arrangement above described, wherein the shoe is placed at the bottom of the tubing, the lower end of the working-barrel being seated in such shoe. In this construction I do away with the employment of the head G, while the coupling I, above described, is placed at the upper end

of the working-barrel, and in this construction the tubing H is connected directly to the upper end of the working-barrel.

In Fig. 5 I show a modification of the shoe in Fig. 4, in which the internal walls of the shoe are vertical instead of being bevel, but terminate in a bevel-seat, in which is inserted an annular leaden ring, upon which the head G seats itself.

10 What I claim as my invention is—

1. In a pump substantially as described, and in combination with a stationary tubing, a working-barrel, H, having an internal flange formed in one piece therewith, a head, G, 15 screwed to said barrel, and a plunger having an external flange, N, adapted to engage the

flange *a* and lift the barrel out of the tubing, as specified.

2. In a pump, and in combination with the tubing A, having shoe F, the working-barrel 20 E, having head G, and the coupling I, having flange *b*, all arranged for joint operation, as set forth.

3. In a pump, and in combination with the tubing A thereof, the working-barrel E, flanged 25 pipe H, shoe F, and plunger K, having collar N, substantially as described.

JAS. M. LAING.

Witnesses:

H. S. SPRAGUE,
E. W. ANDREWS.