(No Model.)

R. S. EDMONDS.

OIL PUMP.

No. 446,734. Patented Feb. 17, 1891.

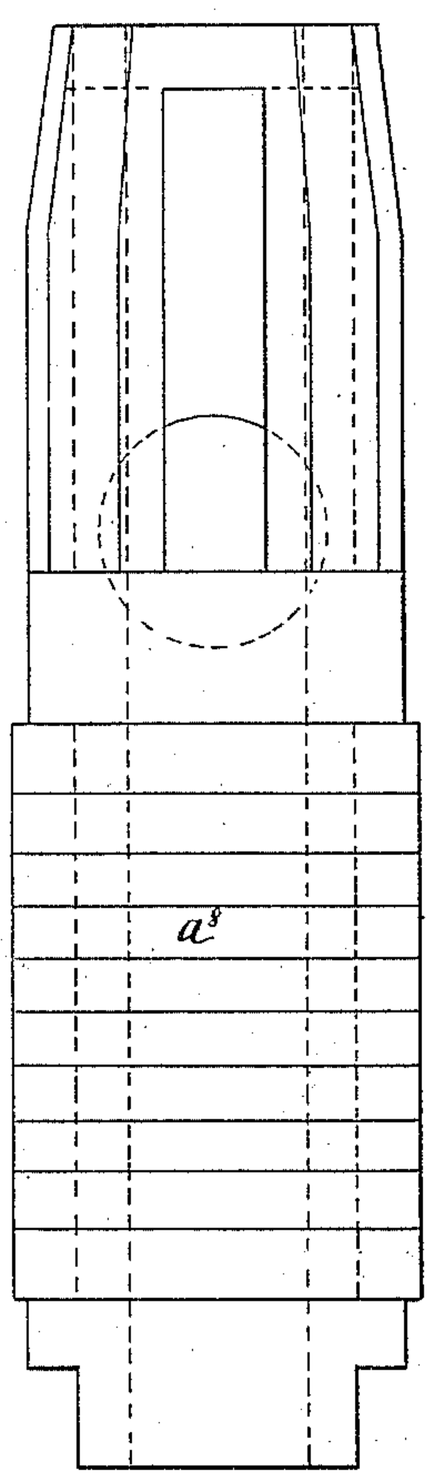

Fig. 4.

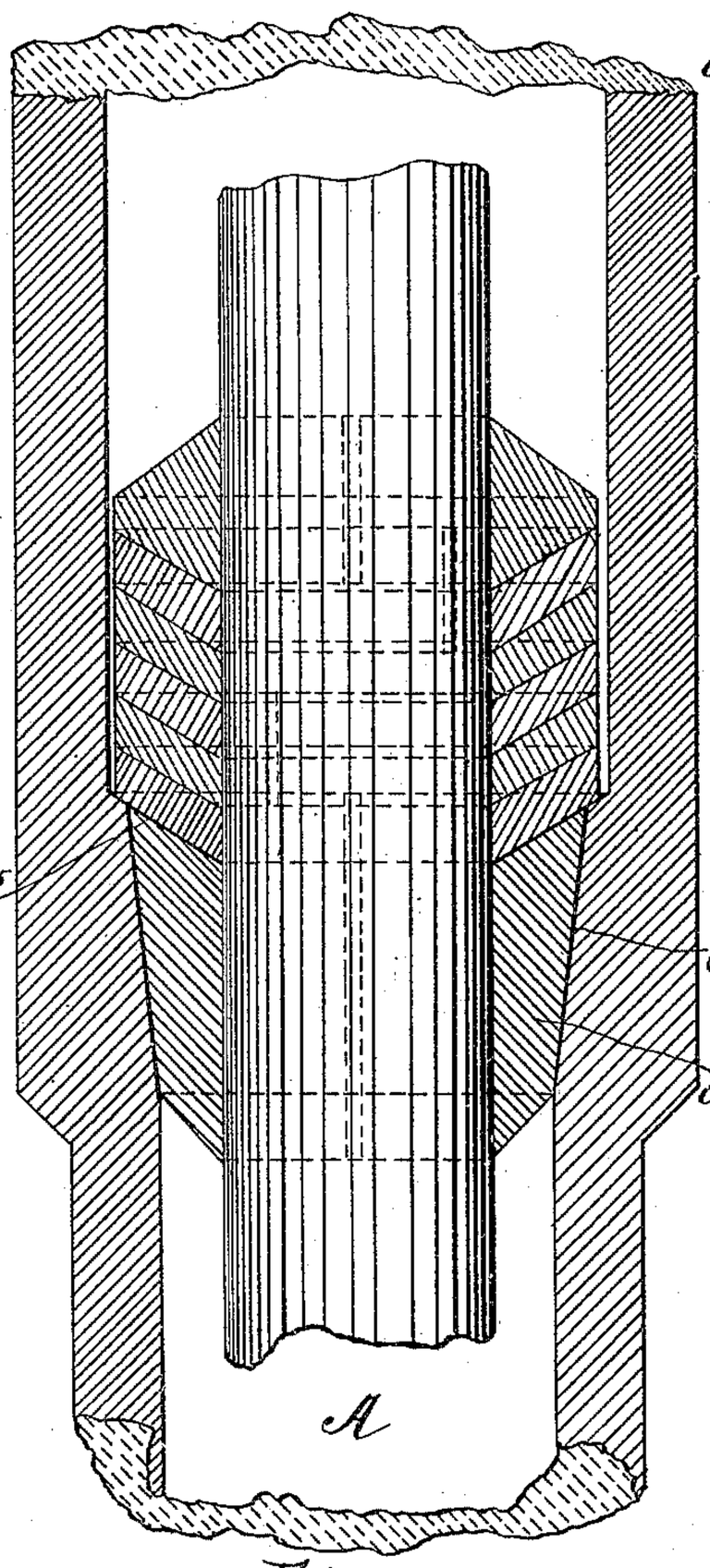

Fig. 2.

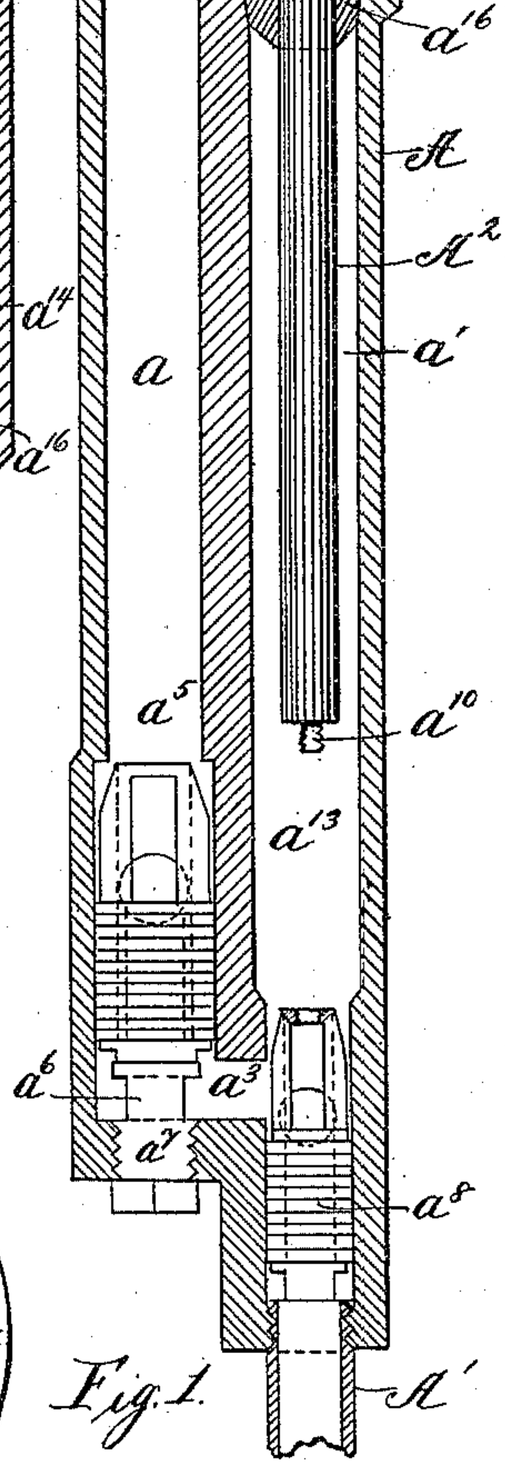

Fig. 1.

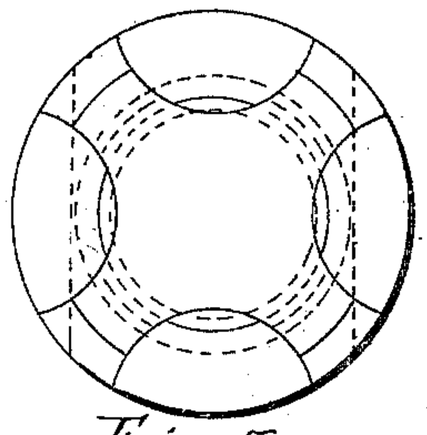

Fig. 5.

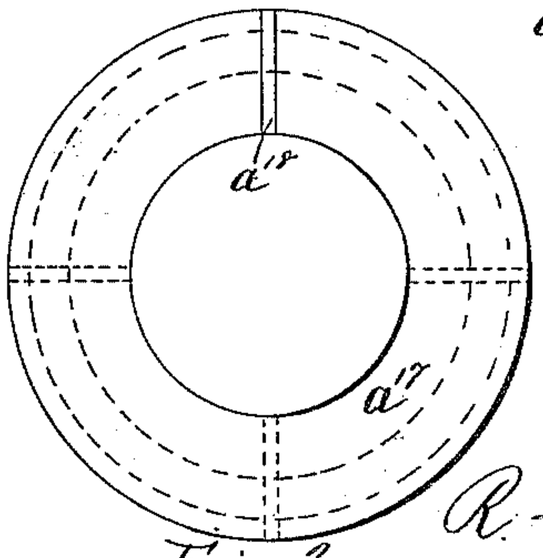

Fig. 3.

Witnesses

Franklin Moore.

Robt. B. Howard.

Inventor

R. S. Edmonds

By his Attorneys

Hallock & Hallock

UNITED STATES PATENT OFFICE.

ROBERT S. EDMONDS, OF BRADFORD, PENNSYLVANIA.

OIL-PUMP.

SPECIFICATION forming part of Letters Patent No. 446,734, dated February 17, 1891.

Application filed April 12, 1890. Serial No. 347,720. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. EDMONDS, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Oil-Pumps; and I do hereby 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.

My invention relates, generally, to pumps, and particularly to that class known as "oil-pumps."

The object and nature of the invention will more fully appear from the subjoined description, and the novelty will be pointed out in the claims.

In the accompanying drawings, which form part of this application, Figure 1 represents a vertical section of a working-barrel of a pump and part of the tubing; Fig. 2, an enlarged section of part of the working-barrel; Fig. 3, a plan of one of the disks forming part of the packing; Fig. 4, an elevation of a standing valve, and Fig. 5 a top plan of the same.

A represents the working-barrel, A′ the tubing secured to the working-barrel, and A^2 the plunger operated from the surface in any well-known manner. The working-barrel is a casting having two passages a and a', connected together at top and bottom by cross-passages a^2 and a^3. At the ends of passage a are the standing or check valves a^4 and a^5, the valve a^4 being located below the cross-passage a^2 and the valve a^5 above the cross-passage a^3. Each valve is provided with a stem a^6, carrying the nut a^7, which closes the end of passage a and prevents the escape of oil therefrom. At the lower end of passage a' is placed a check or standing valve a^8, secured in place in the usual manner and having a pin or box a^9 in its upper end to receive a box or pin a^{10}, as the case may be, in the lower end of the plunger-rod A^2, so that when desired the check-valve can be removed without removing the tubing. The upper end a^{12} of chamber a' is larger than the working-chamber a^{13}. The upper end of the latter is reamed out to form a conical opening a^{14} between it and chamber a^{12}, the bottom of which is inclined at a^{15} to meet the walls of opening a^{14}, in which is placed plug a^{16}, having a central opening for the plunger-rod to pass through. Resting upon this plug and surrounding the plunger-rod are a number of packing disks or cups a^{17}, having the splits a^{18}, which in practice are so placed upon the plunger-rod that no two splits register. The weight of the superimposed fluid holds the packing in place and prevents sand or other foreign substances from getting between the packing and the plunger-rod. As no oil passes the packing from below, the wear of both packing and rod is reduced to the minimum, and being of metal will last for a much longer time than is the case when a piston is used, and the expense of packing the piston and furnishing new barrels is obviated. The pumping is also helped, as the plunger in its down movement forces the oil into the chamber a, so that the weight of the rod is utilized in lifting the oil.

The operation of the device is as follows: Everything being in working order, the pump is started. The down movement of the rod forces the oil between the piston and the standing or check valve a^8 through lower passage a^3, standing check-valves a^4 and a^5, chamber a, and upper passage a^2 into the tubing above the packing. The up movement of the rod causes the checks in the valves a^4 and a^5 to return to their seats, and raises the check in valve a^8 to allow the oil to flow into the vacuum caused by raising the rod. If the check in valve a^8 becomes worn, the valve can be removed by lowering the rod and unscrewing the valve from the barrel and it or another one replaced by reversing the operation. One standing valve in chamber a would be sufficient, but by placing two therein the necessity of drawing the working-barrel from the well is postponed, which means a great saving of time, as the withdrawal of the barrel calls for the removal of all of the tubing.

What I claim as new is—

1. The combination of the chamber a', having the check-valve at the lower end and the loose split packing above the check-valve, the plunger-rod passing through said packing, and the chamber a, having passages a^2 and a^3, respectively above and below said packing and provided with suitable checks to pre-

vent the return of the oil to chamber a', substantially as described.

2. The combination of the chamber a', having the inlet and outlet openings provided with suitable checks, the plunger-rod, and the split-disk packing held in contact with the plunger-rod by the weight of the oil above the packing, substantially as described.

3. The combination of a pump-barrel having screw-threaded opening, and a valve having the stem a^6, provided with a solid nut for closing the opening in the barrel.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT S. EDMONDS.

Witnesses:

REED F. HOWLAND,

D. R. MORROW.