

No. 786,500.

PATENTED APR. 4, 1905.

A. E. KEPNER.

PUMP.

APPLICATION FILED NOV. 5, 1903.

Fig. I

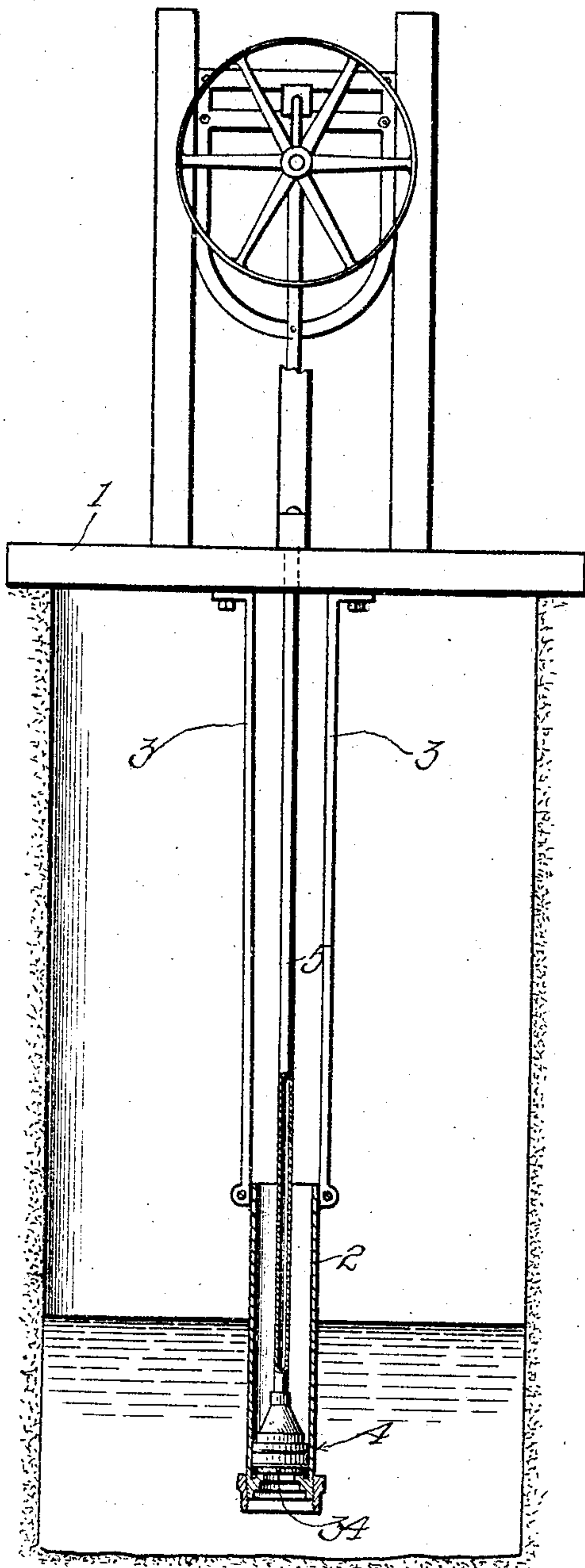


Fig. II

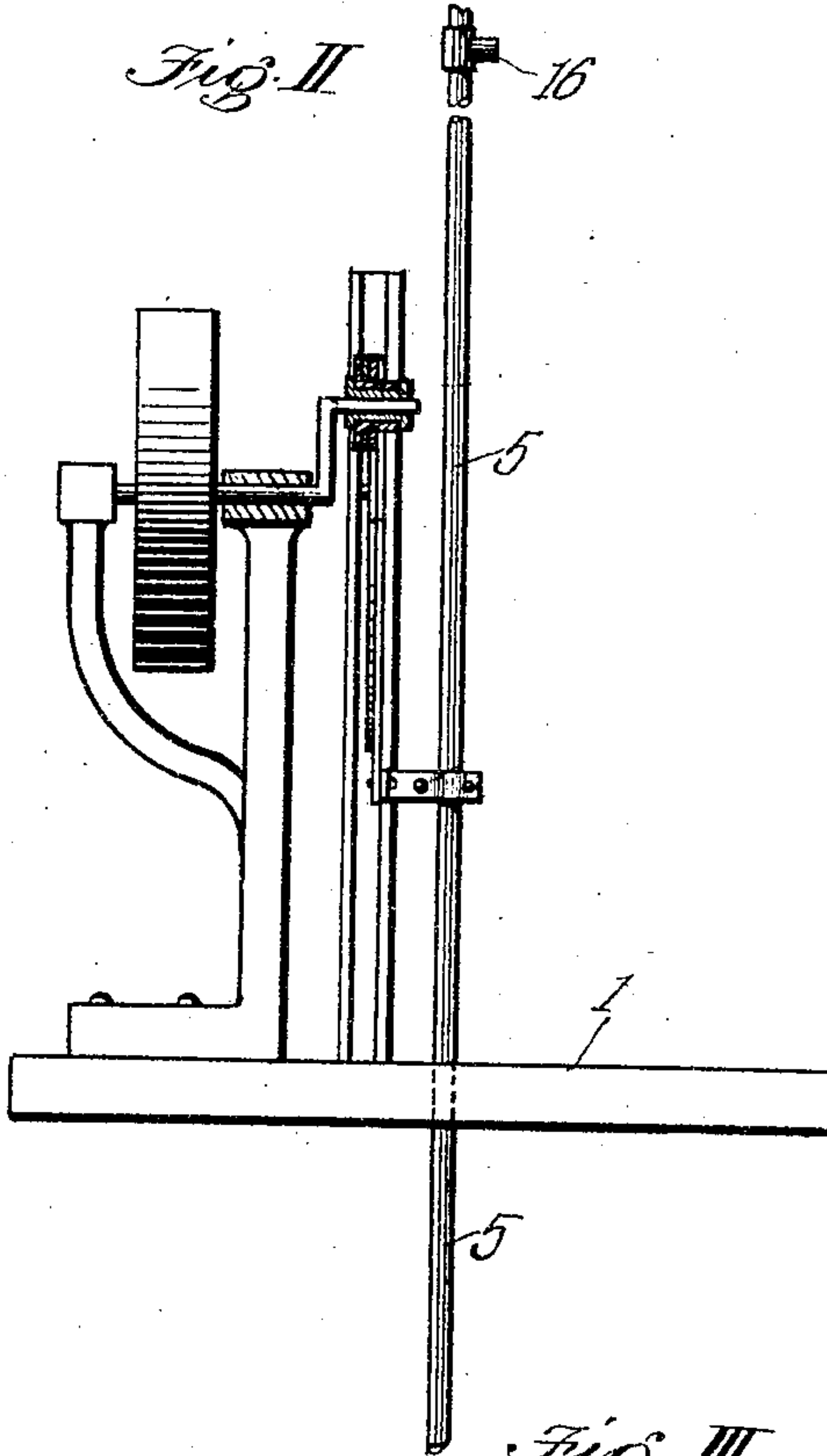
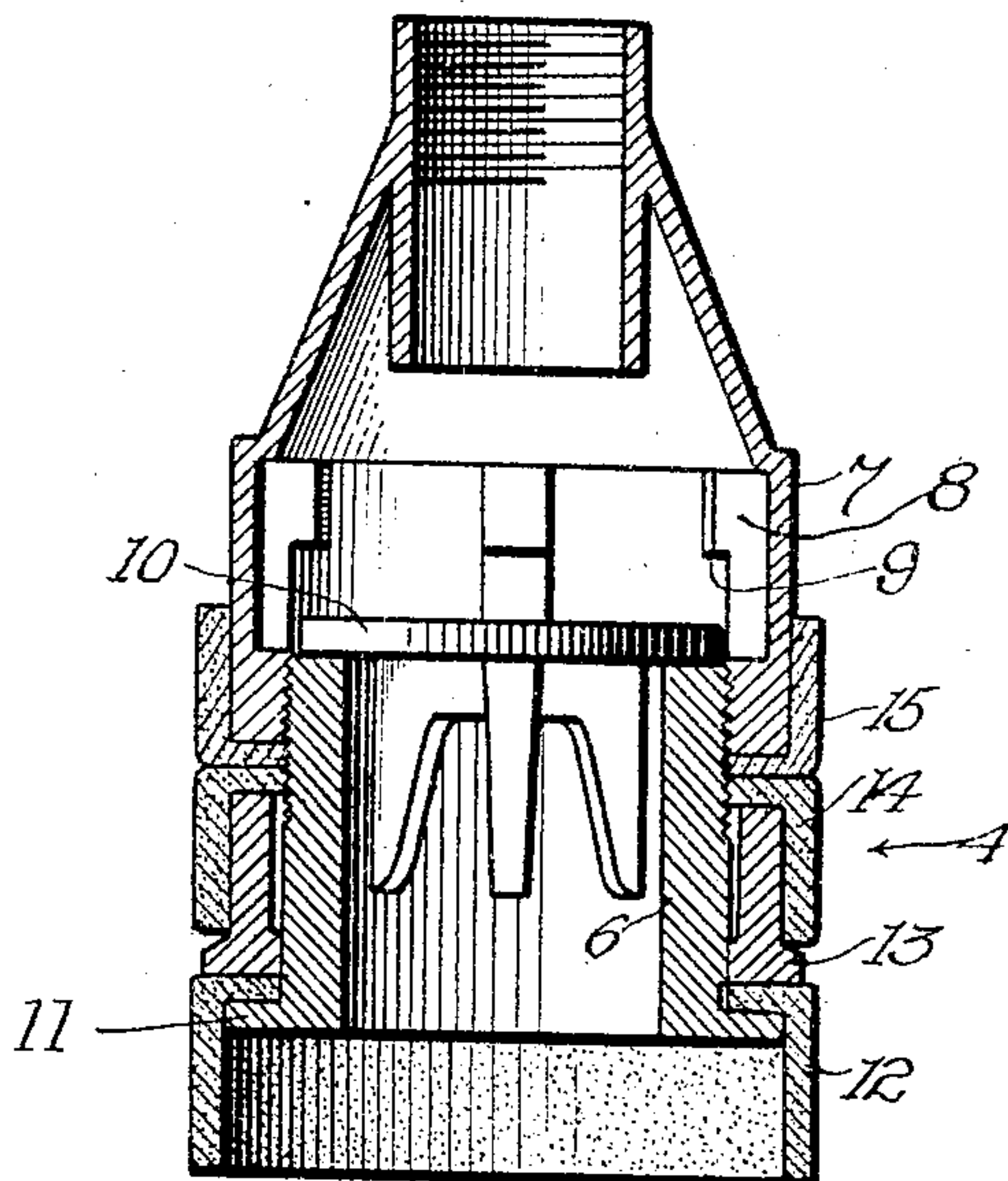


Fig. III



WITNESSES

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UNITED STATES PATENT OFFICE.

AARON E. KEPNER, OF LEMON, CALIFORNIA.

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SPECIFICATION forming part of Letters Patent No. 786,500, dated April 4, 1905.

Application filed November 5, 1903. Serial No. 179,886.

To all whom it may concern:

Be it known that I, AARON E. KEPNER, a citizen of the United States, residing at Lemon, in the county of Los Angeles and State of California, have invented a new and useful Pump, of which the following is a specification.

One object of this invention is to provide a pump having a plunger so constructed that it is practically impossible for sand or other sediment carried by the water or other liquid which is being pumped to work in between the plunger and the cylinder, which is a frequent source of annoyance in pumps as ordinarily constructed and which causes cutting of the rings and cylinder and excessive wear of the same and consequent friction.

Another object is to increase the effectiveness of the pump by a construction which will perform heavier duty with a given power than will pumps as heretofore constructed with the same power, the construction being such that the weight of the plunger and rod, with its attached head, act by gravity in assisting the forcing up of the water.

The accompanying drawings illustrate the invention, and referring to the same—

Figure I is a view, partly in section, of the invention, showing the pump in position. Fig. II is a side elevation of the upper works illustrated in Fig. I. Fig. III is a vertical sectional view through the plunger.

1 designates a supporting-base.

2 designates a pump-cylinder which is immersed in the water or other liquid to be pumped and which is supported from the base 1 by suitable standards 3.

4 designates in a general way the plunger, which is carried by a hollow rod 5, which is driven through the medium of a suitable pump-head.

Referring more particularly to Fig. III, 6 is a thimble, to the upper end of which is screwed a cap 7, having lugs 8, and which is screwed to the lower end of the hollow rod 5. The lugs 8 have shoulders 9 somewhat above the upper edge of the thimble 6, and resting upon the upper edge of the thimble 6 is a puppet 10. The lower edge of the thimble 6 is provided with a flange 11, upon which rests an annular cupped leather packing 12, sur-

mounted by a space-ring 13, which latter is nested within a second cupped leather 14, the free edge of which lies at the bottom. 15 is another annular cupped leather similar to the leather 14, but which is arranged with its free edge at the top. When the thimble 6 is screwed into the cap 7, the three leathers 12, 13, and 14 are tightly held in place.

34 is an ordinary check-valve at the bottom of the cylinder.

At a suitable distance above the ground the pipe 5 is provided with a discharge-T 16. As the plunger is moved up and down by the pipe 5 the following action occurs: Upon the downstroke of the plunger the upward rush of water or other liquid exerts a pressure against the leather 12 which spreads the same and tightly forces its walls into close engagement with the walls of the cylinder 4, thus practically preventing the entrance of any sand or sediment between the leather 12 and the cylinder-walls, and as at this time the water which is adjacent the plunger is in movement the sediment or sand is carried in suspension, so that it is practically impossible for sand to get in between the leather 12 and the cylinder 4 during the downstroke of the plunger. As the plunger moves downward the puppet 10 is raised by the upward rush of water until it strikes the shoulders 9, and the water rushes around the edge of the puppet 10 and thence into the hollow rod 5, through which it is forced up and is discharged through the T 16. Upon the upstroke of the plunger the puppet 10 seats itself, retaining the amount of water which is contained within the pipe 5, and as the plunger moves up the leather 12 rides with little friction against the walls of the cylinder for the reason that its free edge is at the bottom and there is no internal pressure to force it against the cylinder. During the upstroke if by any possibility there should have accumulated some sand between the leather 12 and the cylinder-walls the same either escapes by falling or by being rolled or scraped away from the leather as the latter moves upward, the walls of the leather yielding inwardly and permitting the easy downward escape of the sand.

The leathers 14 and 15 form auxiliary pack-

ing designed to reduce the wear upon the leather 12 by distributing the area of bearing-surface which is in contact with the cylinder-walls, and they prevent any water from getting above the plunger inside of the cylinder.

I regard the above features for keeping the plunger free from sand as the most important features of my invention and very valuable.

What I claim, and desire to secure by Letters Patent of the United States, is—

A cylinder, a plunger therein comprising a thimble, a cap screwed to the upper end thereof and provided with inwardly-projecting lugs radially disposed and having shoulders, a valve resting on the upper edge of the thimble being guided in its upward movement by said lugs and its movement being limited by said shoulders, a flange on the lower edge of said thimble, an annular cupped leather rest-

ing against the flange, a space-ring encircling the thimble and resting on said leather, another annular cupped leather nested over the space-ring, another annular cupped leather resting on the last-named leather and reversely arranged, said three leathers and space-ring being clamped between said flange and said cap, a check-valve at the lower end of the cylinder, and a hollow rod screwed to the cap for operating the plunger.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 29th day of October, 1903.

AARON E. KEPNER.

Witnesses:

GEORGE T. HACKLEY,
JULIA TOWNSEND.