

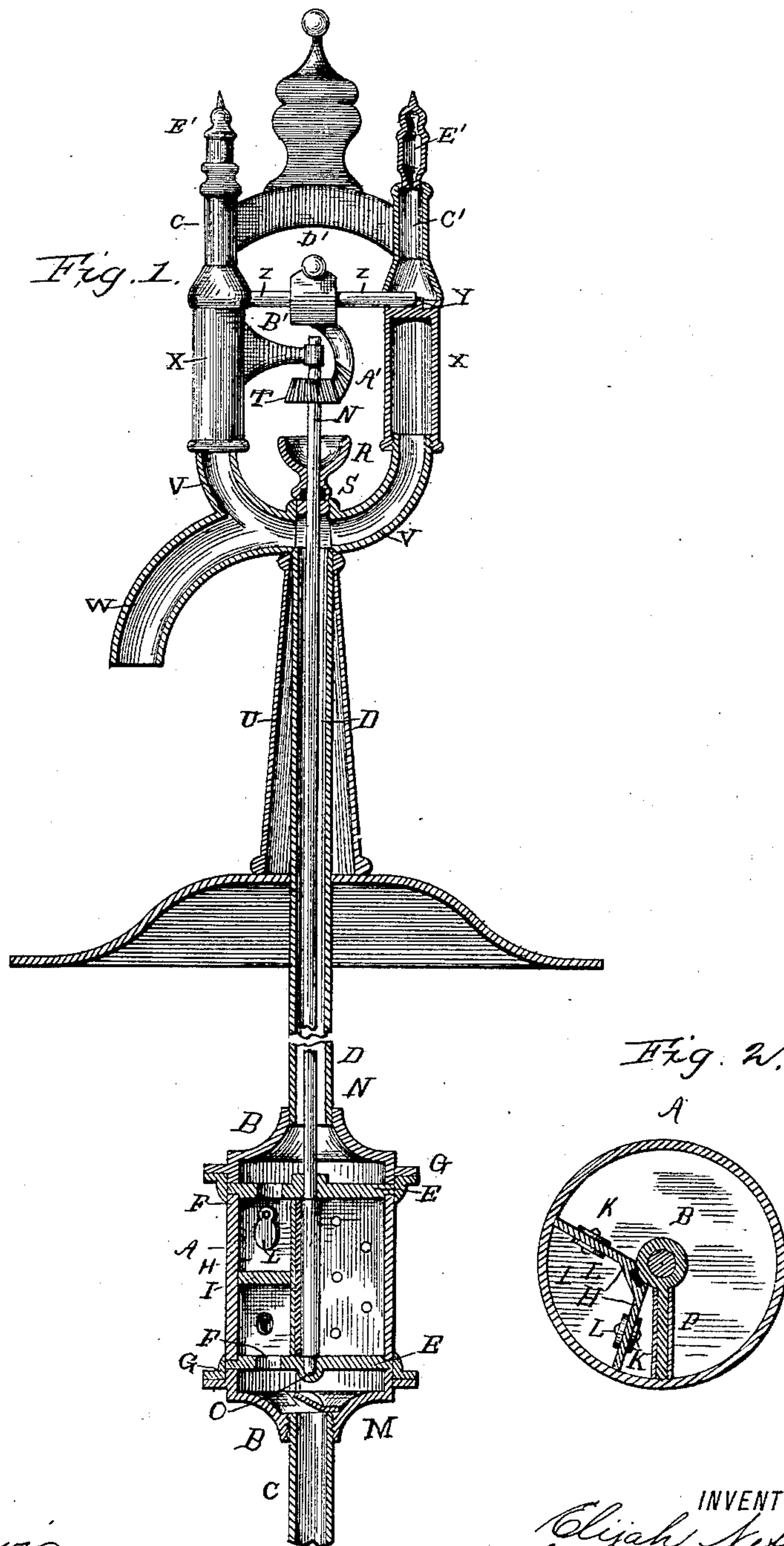
(No Model.)

E. NEFF.

PUMP.

No. 339,005.

Patented Mar. 30, 1886.



WITNESSES
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ELIJAH NEFF, OF ROCHESTER, INDIANA, ASSIGNOR TO CHRISTOPHER C. WOLF AND WILLIAM H. GREEN, BOTH OF SAME PLACE.

PUMP.

SPECIFICATION forming part of Letters Patent No. 339,005, dated March 30, 1886.

Application filed October 5, 1885. Serial No. 179,006. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH NEFF, a citizen of the United States, residing at Rochester, in the county of Fulton and State of Indiana, have invented certain new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in pumps, and is designed to produce a pump that will carry the fluid to any desired height, giving a constant and steady flow, combining the lift and force impulses.

The improvement consists, essentially, in providing a means of lubricating the bearings, air-chambers for regulating the flow, and a means whereby the pump mechanism is centrally located on the pipe.

In the drawings, Figure 1 represents a vertical section of the pump, and Fig. 2 a cross-section through the pump-cylinder.

The cylinder, as a whole, consists of a barrel, A, carrying heads B, each with a central opening, to which connect the inlet-pipe C to the lower head and the outlet-pipe D to the upper head. Between the heads and the barrel are diaphragms E, each provided with a perforation, F. The barrel, heads, and interposed diaphragms are held in conjunction by collars G.

Within the barrel, between the diaphragms, is a frame, H, preferably quadrantal in form. This frame coincides with the perforations F, and is divided into two chambers by a lateral diaphragm, I. The lower chamber is provided with outlet-valves K and the upper chamber with inlet-pipes L. The inlet-pipe C is capped by a valve, M.

To the pump-rod N, which passes centrally through the upper diaphragm and is stepped in a central boss, O, in the lower diaphragm, is secured a radial plate, P, which with its packing fits snugly between the frame H and the wall of the cylinder and between the diaphragms E. The rod N passes upward centrally through the outlet-pipe D and a lubricator-cup, R, having suitable packing, S, and is provided near its upper end with a pinion, T.

On a hollow standard, U, through which the pipe D extends, and is secured and supported at its upper end, is a U-shaped or branched pipe, V, with a continuation, W, forming the

spout of the pump. The pipe V has connection to the outlet-pipe D. On each of the arms of the pipe V is supported a chamber, X, forming air-chambers, being above the outlet or spout. The upper ends of the chambers X are closed, and have on top sockets Y, for the transverse shaft Z, on which is a segment-gear, A', meshing with the pinion T on the rod N, the upper end of which rod has a guiding-bearing consisting of an arm, B', projecting from one of the chambers X. Surmounting the said chambers, and inclosing the ends of the shaft Z and its bearings, are extended caps C', connected by a piece, D'. On top these caps rest the oil or lubricator cups E', feeding the lubricant to the bearings of the said shaft Z.

Space and material are economized by utilizing the air-chambers as supports for the operating-shaft and its lubricators. The cylinder is also strengthened and material economized by forming it in such a manner as to permit all the connections being central.

The operation is so simple as to need but a brief notice. The rod is given by means of the gear a vibrating movement, covering nearly three-quarters of a revolution at each stroke. As the plate P moves within the cylinder, it causes the fluid to flow into the lower chamber in the frame H and out the valve from which it is receding into the barrel. On the return of the plate the valve in the lower chamber closes and that in the upper chamber opens, permitting the entrance of the fluid therein. The chamber having been filled, the fluid passes through the opening in the upper diaphragm into and up the outlet-pipe. The fluid constantly flows out of one chamber and into the other. According to the rapidity with which the pump is worked, the fluid will encroach more or less into the air-chambers. The air therein, acting as a cushion, will cause the fluid to steadily flow from the spout.

The pump is equally applicable to deep or shallow wells, in the former case some power—such as steam—being applied.

I claim—

1. Combined with a vibrating piston consisting of a radial plate on a pump-rod, a cylinder consisting of a barrel, a sector-frame divided into two chambers provided with valves and contained in said barrel, perforated dia-

phragms at each end of said barrel, and heads connected centrally to the inlet and outlet pipes of the pump, substantially as and for the purpose specified.

- 5 2. A pump having a pump-rod with a vibrating movement, a rock-shaft connected by gearing to said rod, bearings for the shaft, consisting of a branched pipe and air-chambers on the same, on top of which chambers the shaft rests,
10 caps resting on said chambers, and lubricator-cups on said caps, substantially as and for the purpose specified.

3. A pump consisting of a cylinder with valved chambers, a central rod having a vibra-

tive movement, a radial plate on said rod, forming a piston, an outlet-pipe surrounding said rod, a branched pipe on top of said outlet, air-chambers on said branched pipe, a rock-shaft resting on said chambers and connected to said rod, and caps with oil-cups surmounting said chambers, substantially as and for the purpose specified. 15 20

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

ELIJAH NEFF.

Witnesses:

ALBERT E. DAVISSON,
GEORGE W. HOLMAN.