

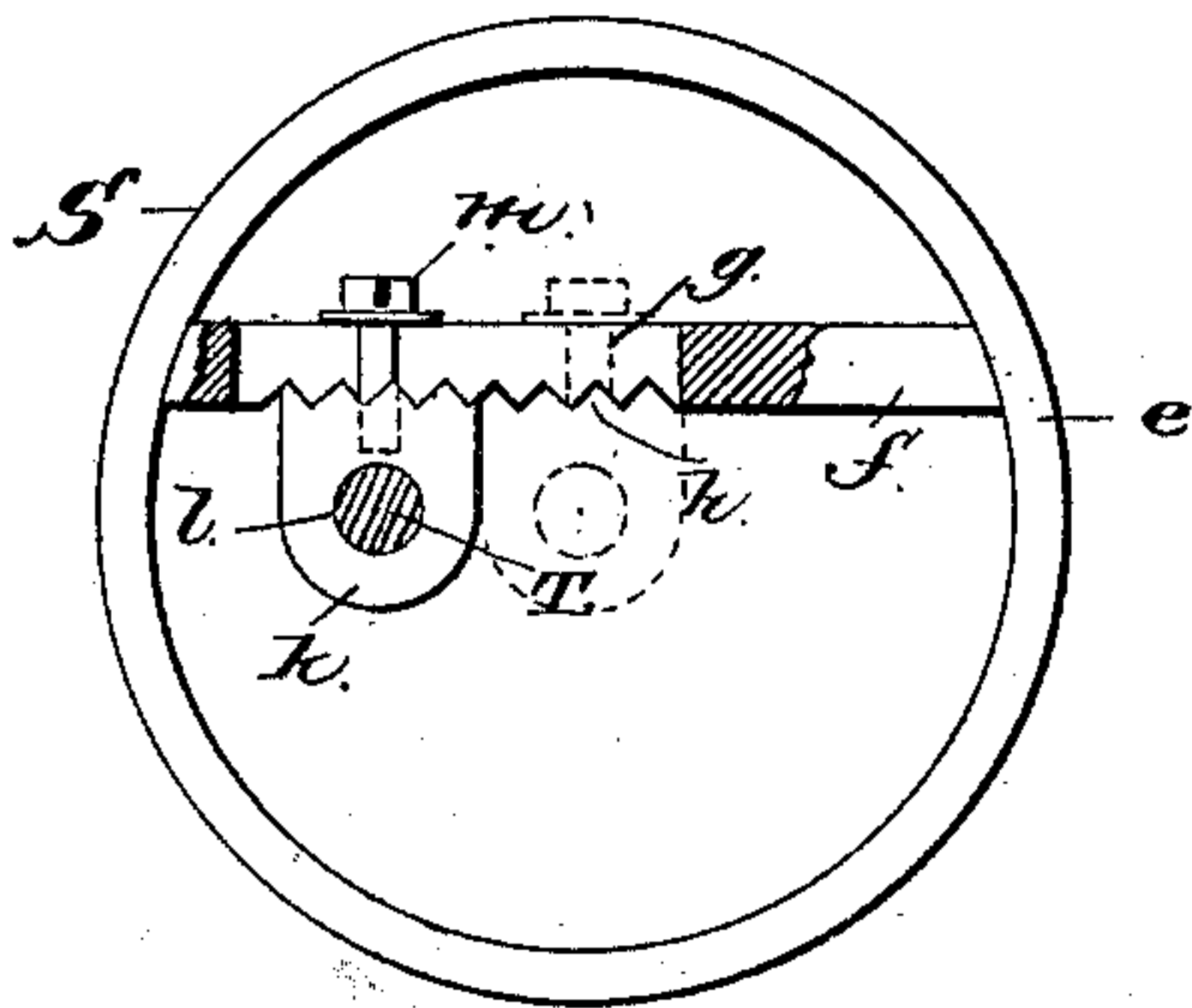
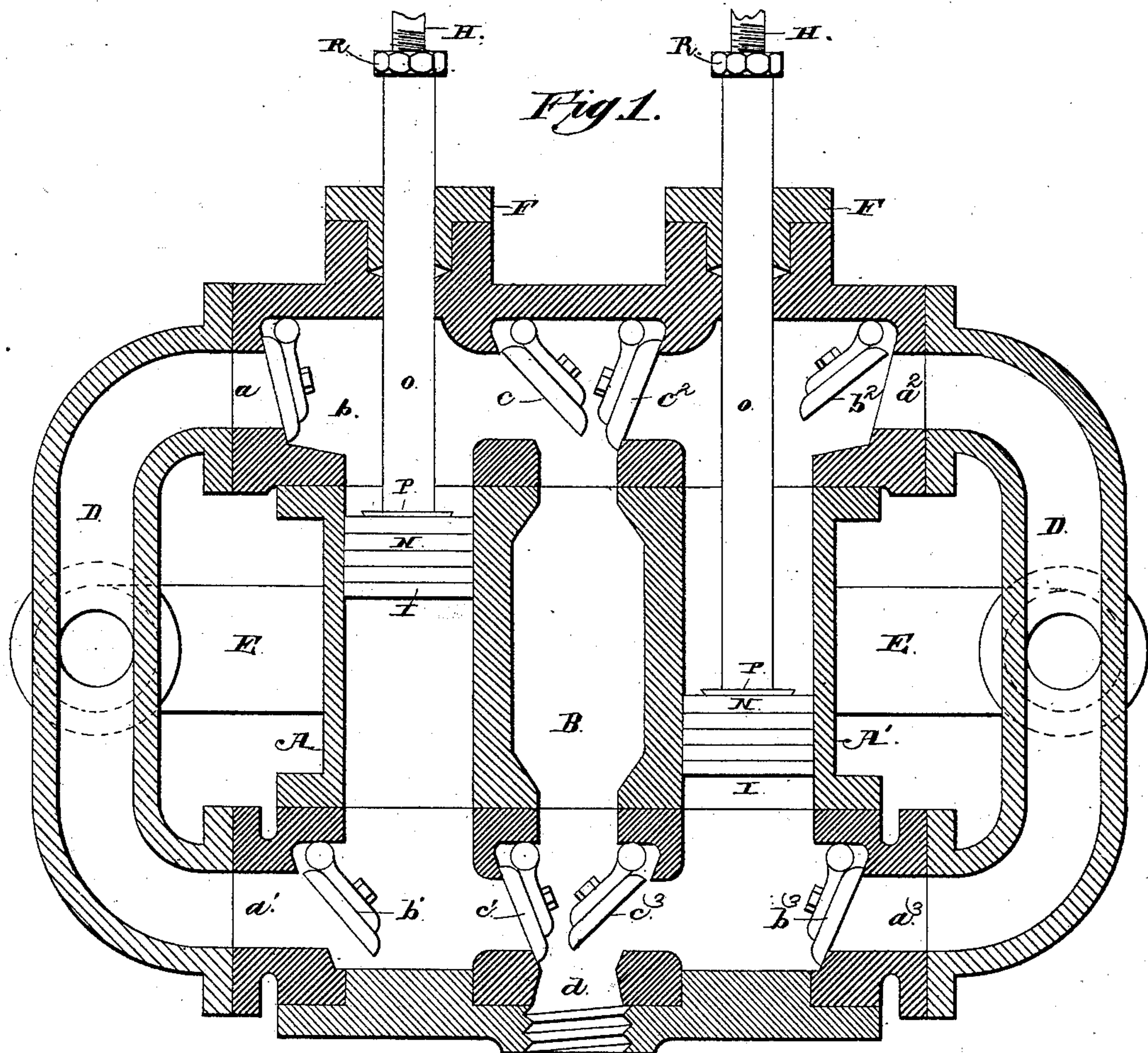
(No Model.)

2 Sheets—Sheet 1.

F. L. WHEELER.
DOUBLE ACTING PUMP.

No. 336,459.

Patented Feb. 16, 1886.



Witnesses
M. E. Fowler
J. W. Gannett

Inventor
Frank L. Wheeler

By his Attorneys
C. A. Snow & Co.

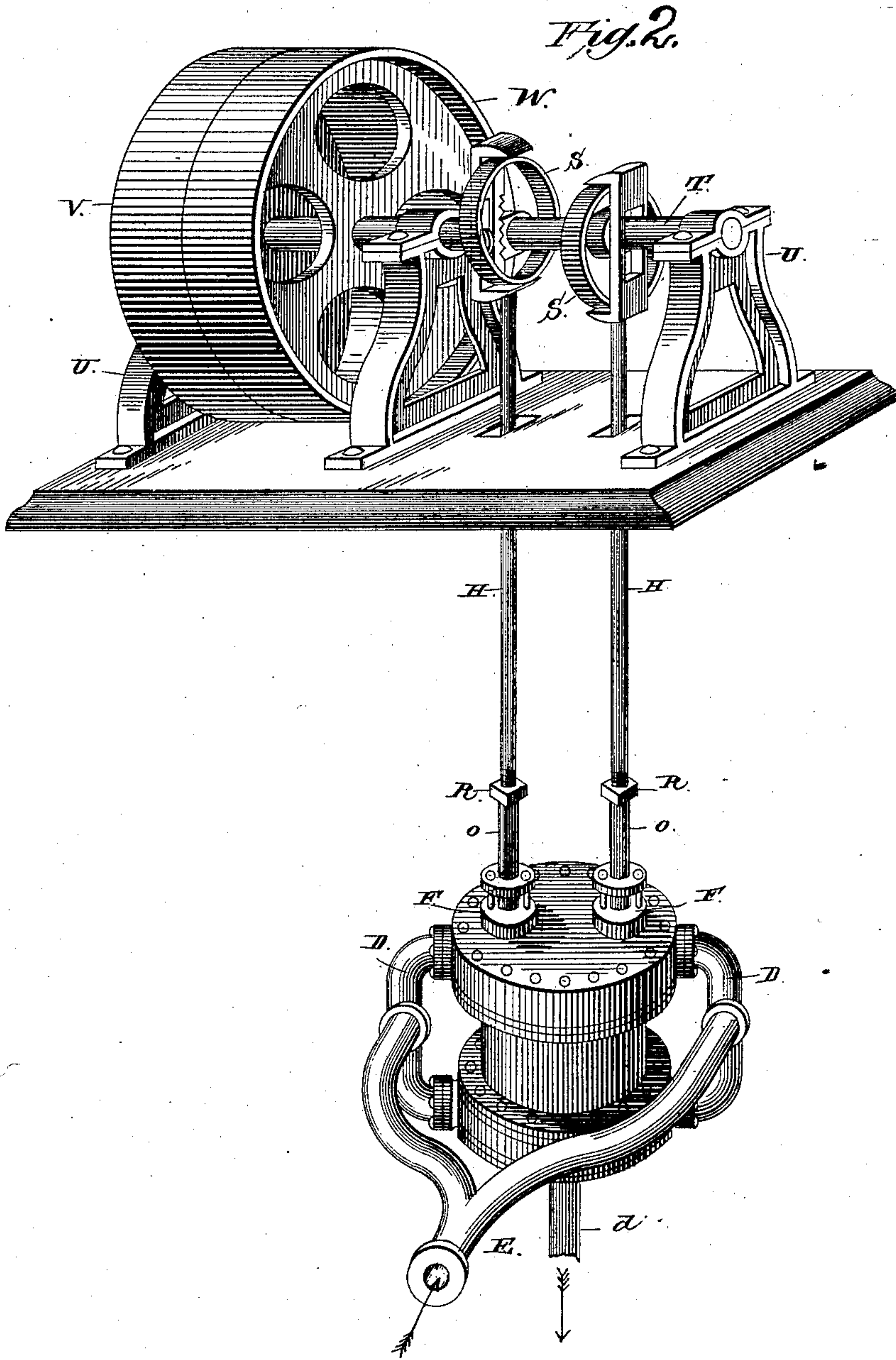
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F. L. WHEELER.
DOUBLE ACTING PUMP.

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UNITED STATES PATENT OFFICE.

FRANK L. WHEELER, OF WESTFIELD, MASSACHUSETTS.

DOUBLE-ACTING PUMP.

SPECIFICATION forming part of Letters Patent No. 336,459, dated February 16, 1886.

Application filed November 10, 1885. Serial No. 192,383. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. WHEELER, a citizen of the United States, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Double-Acting Pumps, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to an improvement in double-acting pumps; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claim.

In the drawings, Figure 1 is a vertical sectional view of the operating parts of a pump embodying my invention. Fig. 2 is a perspective view of my invention complete. Fig. 3 is a detailed elevation, partly in section, of one of the pump-rod-operating cams.

A A' represent a pair of pump-cylinders, and B represents a water-cylinder located between the pump-cylinders and communicating with both of the latter at its upper and lower ends.

The cylinder A has an inlet-port, *a*, at its upper end, and a similar port, *a'*, at its lower end, and the cylinder A' is likewise provided with inlet-ports *a''* and *a'''*. Inwardly-opening valves *b*, *b'*, *b''*, and *b'''* are arranged in the inlet-ports, as shown, and outwardly-opening valves *c*, *c'*, *c''*, and *c'''* are located in the passages between the pump-cylinders and the water-cylinder. The latter is provided with a discharge-opening, *d*, and to the cylinders are attached pipes D, communicating with the inlet-ports of the cylinders, and these pipes are connected by a Y-coupling pipe, E, to a suitable pipe for supplying water to the pump-cylinders. The upper ends of the cylinders are provided with stuffing-boxes F.

H represents the piston or pump rods, that are secured at their lower ends in piston-heads I.

The piston-rods are connected at their upper ends, by suitable eccentric-straps, with eccentrics or cams S on a shaft, T, mounted in suitable bearings, U, and having a fast pulley, V, and a loose pulley, W, and adapted to be rotated by any suitable power. The cams extend from the shaft in diametrically-opposite directions, so as to operate the pistons in opposite directions simultaneously—

that is to say, one of the pistons is being raised while the other is being lowered. When the piston in the cylinder A rises, the valve *b* is closed, and the valve *c* is opened, and the water above the piston forced into the water-cylinder, and the valve *b'* is opened and the valve *c'* closed, so as to fill the cylinder A with water below the piston, and the operation in the cylinder A' is exactly reverse, its piston being on the downstroke, closing the valves *c''* and *b'''*, and opening the valves *c'''* and *b''*, forcing the water in the lower portion of cylinder A' out through the discharge-opening in the water-chamber, and filling said cylinder above the piston. Each piston is thus double-acting, forcing water at both the up and down stroke in a single rotation of the shaft, and as two cylinders and pistons are employed a pump is produced of great power and capacity.

In order to regulate the stroke of the pistons, and thus control the capacity of the pump, I provide means for shifting the cams on the shaft to give them greater or less eccentricity, a convenient form of said means being shown in Fig. 3, in which the cam is composed of a circular rim, *e*, across which, out of center, extends a transverse bar, *f*, having a slot, *g*, throughout its length. The side of this bar nearest the center of the cam has teeth *h*.

A block, *k*, having an opening, *l*, is keyed on the shaft, and has teeth on one side adapted to match the teeth in the cross-bar, and the block is secured to the latter by a set-screw, *m*, that passes through the slot *g* and enters the blocks. By this means it will be readily understood that the block *k* may be adjusted along the bar, and secured thereto at any desired point, and thus regulate the throw or eccentricity of the cam.

Having thus described my invention, I claim—

The combination of the cams having the toothed and slotted cross-bars, the blocks having teeth, and set-screws passing through the slots to secure the blocks to the cross-bars, said blocks being adapted to be secured to a shaft, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

Witnesses: FRANK L. WHEELER,
COWPER GIBBS,
HENRY FULLER.