

(No Model.)

2 Sheets—Sheet 1.

W. H. ODELL.
EVAPORATING COIL.

No. 380,050.

Patented Mar. 27, 1888.

Fig. 1

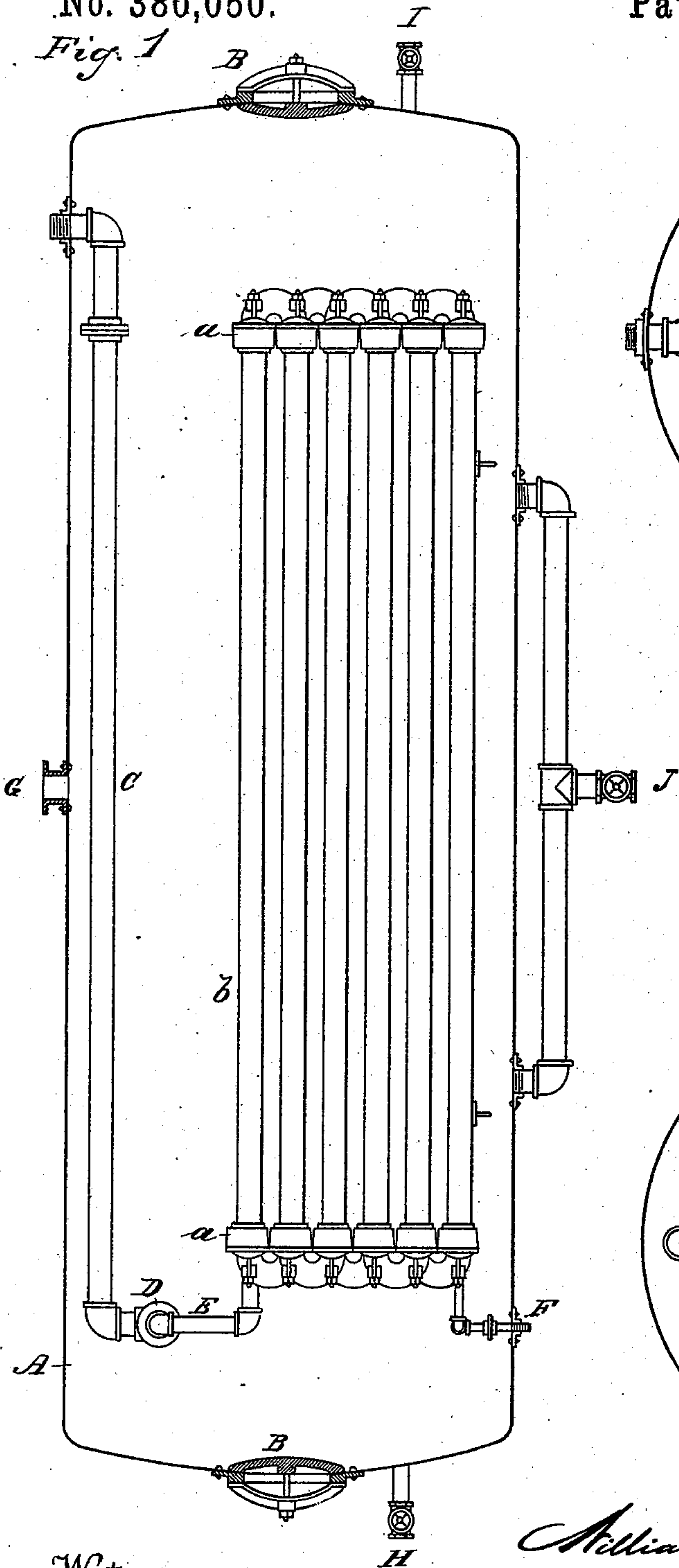


Fig. 3

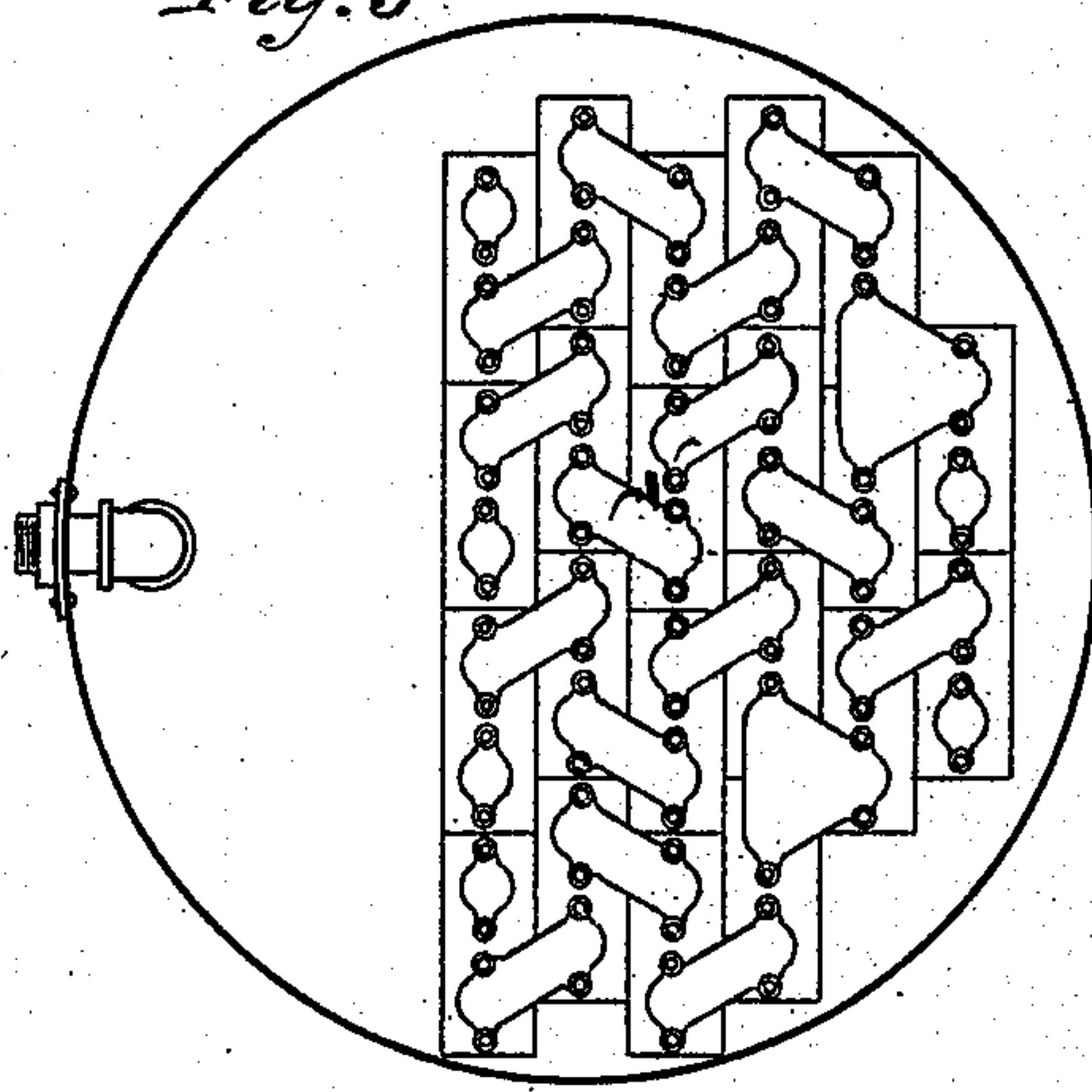
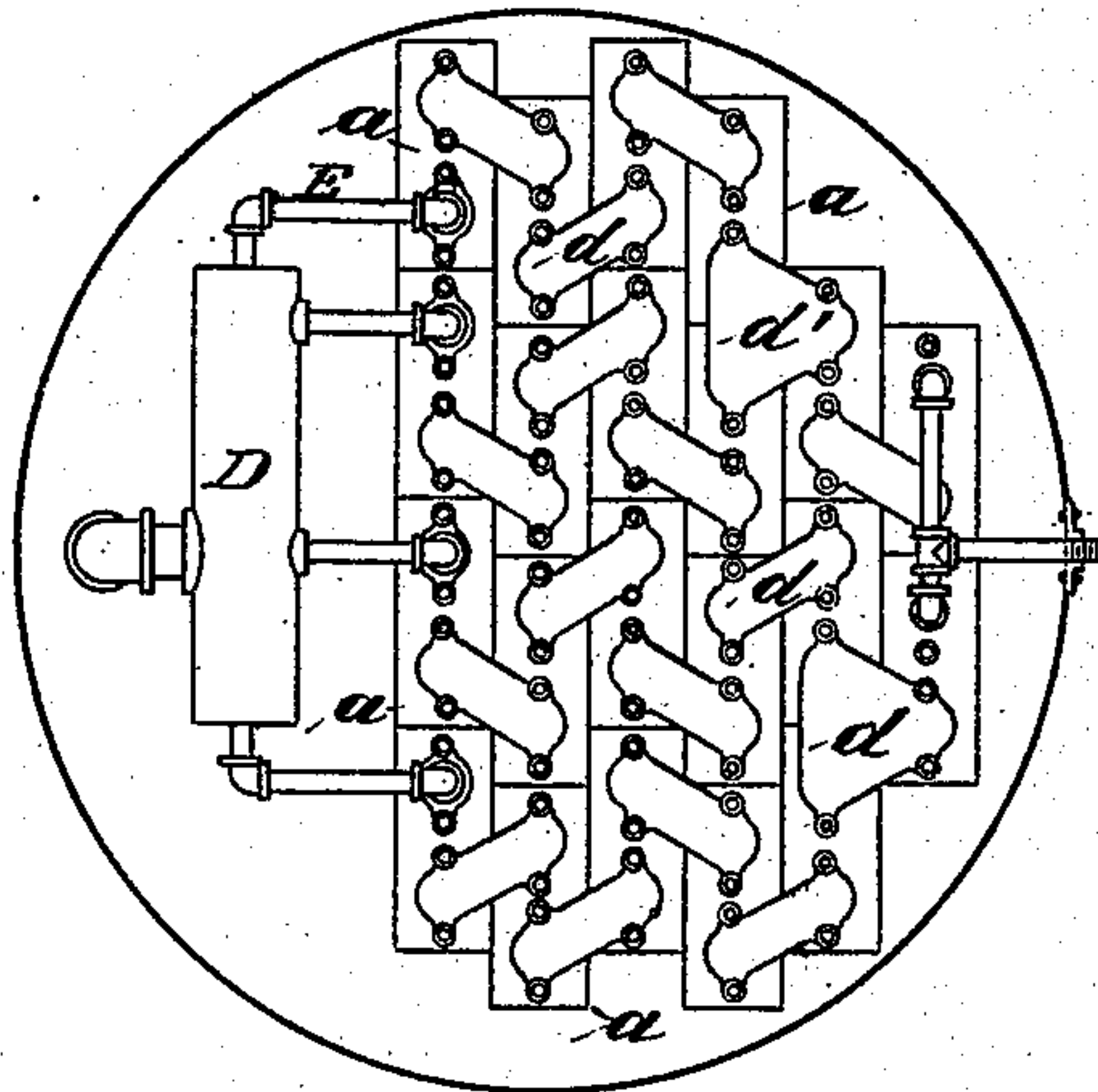


Fig. 2



Witnesses:
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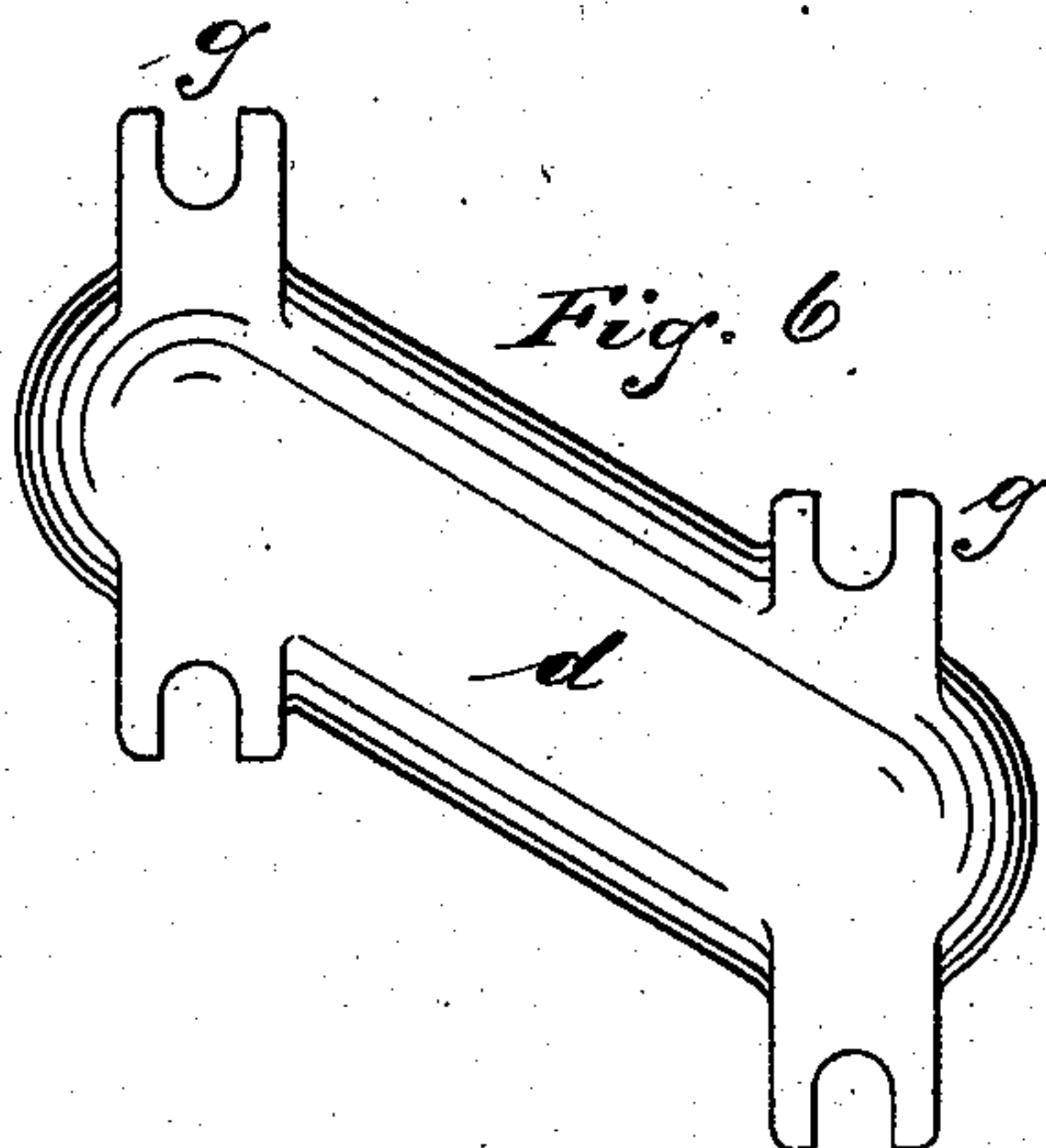
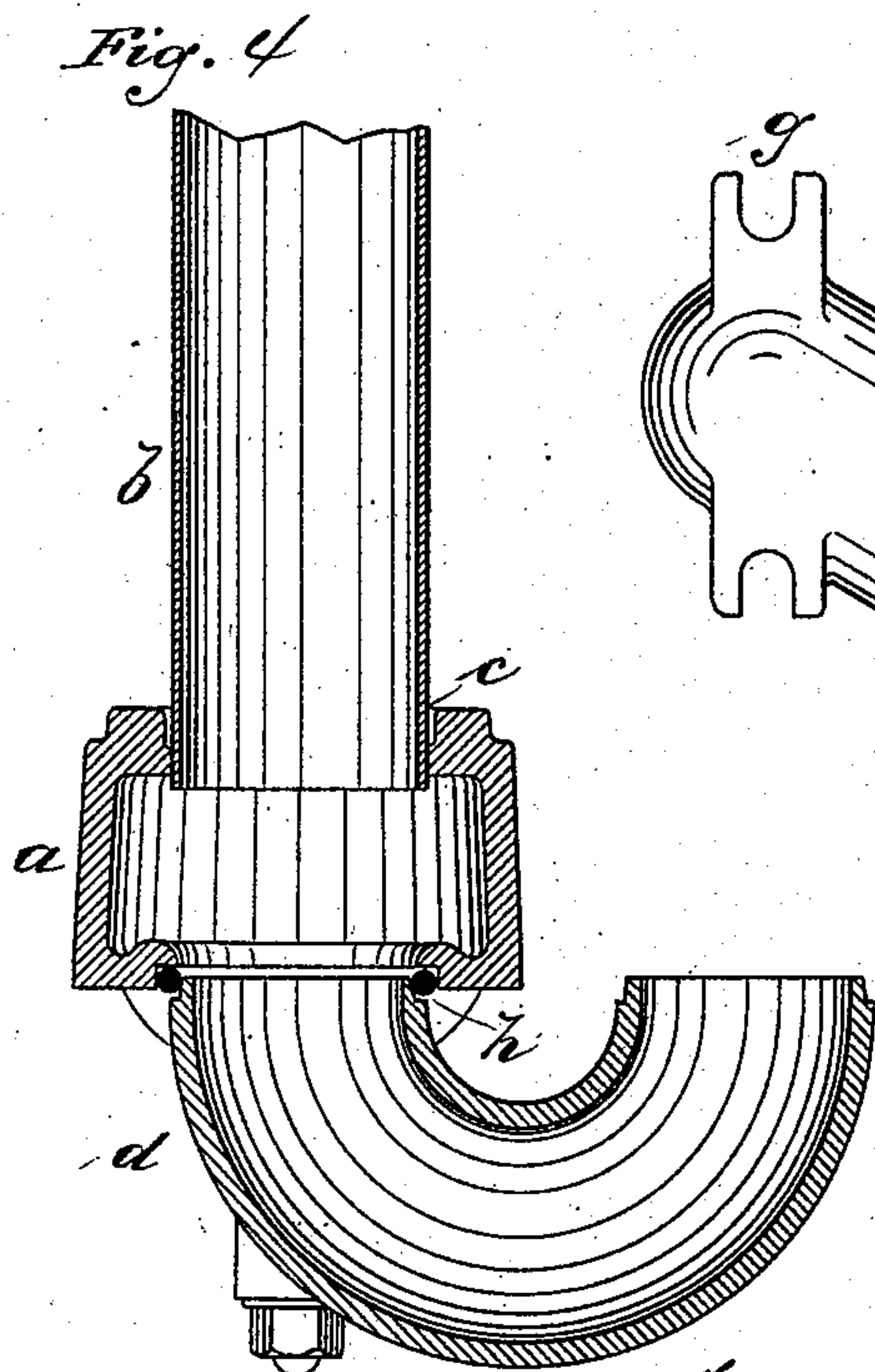
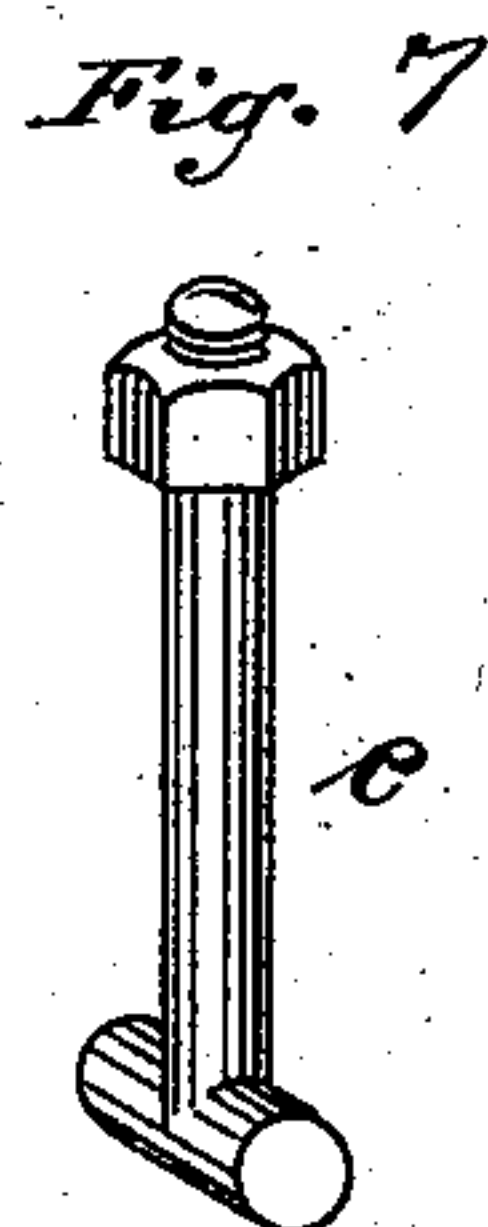
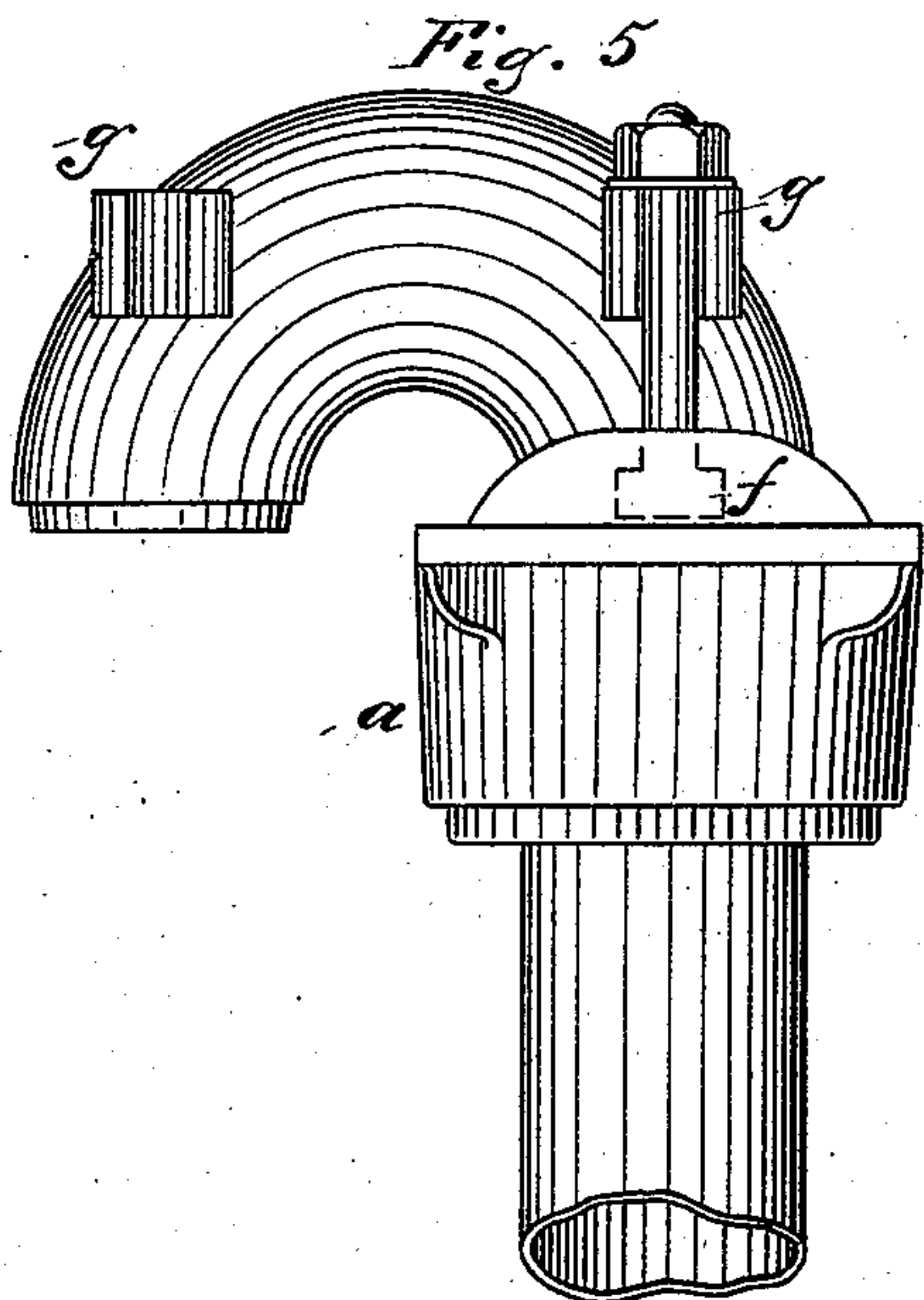
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2 Sheets—Sheet 2.

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EVAPORATING COIL.

No. 380,050.

Patented Mar. 27, 1888.



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UNITED STATES PATENT OFFICE.

WILLIAM H. ODELL, OF YONKERS, NEW YORK.

EVAPORATING-COIL.

SPECIFICATION forming part of Letters Patent No. 380,050, dated March 27, 1888.

Application filed April 19, 1887. Serial No. 235,306. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ODELL, a citizen of the United States, residing at the city of Yonkers, county of Westchester, and State of New York, have invented certain new and useful Improvements in Evaporating-Coils, of which the following is a specification.

The object of this invention is to compose a system of inclosed pipe-coils which are readily separable, so that a series of connected tubes may be readily taken apart for cleaning or repairs, or so that the units of which the structure is composed may be removed independently without disturbing the remainder of the structure, or the entire system may be removed, section by section, through a man-hole from or into the interior of a shell whence it is desired to place the coil.

The separable feature of the pipe-connections renders them especially applicable for use in evaporating-tanks wherein in heating liquids that contain scale-forming impurities the entire surface of the coil becomes coated with hard scale, and readiness of removal for cleaning becomes an important feature.

Referring to the accompanying drawings, in which like letters indicate like parts throughout the several views, Figure 1 is a longitudinal sectional view of an evaporating-tank, showing the tubes in elevation within the shell; Fig. 2, a front elevation of the tube-connections, the shell of the tank being in cross-section; Fig. 3, a corresponding rear elevation; Fig. 4, an enlarged sectional view of a tube, header, and removable return-bend; Fig. 5, an elevation of the same taken at the opposite end of the same tube; Fig. 6, a front view of a return-bend, and Fig. 7 a detail view of the bolt used in fastening the return-bends to the headers.

In Fig. 1, A is the shell of the evaporator.

B B are man-holes for obtaining access to the tubes and through which the sections of coil can be introduced or removed.

C is a steam-pipe for supplying the coil.

It will be observed in Fig. 2 that the steam-pipe connects, by means of the transverse tube D and branch pipes E, to each of the upper series of headers *a* of the coils.

F is a drip-pipe for conveying away the water of condensation from the lower sections of the coils.

G is a nozzle for carrying off the vapor of the liquid under treatment.

H is an inlet for liquid to the tank.

I is an outlet for the liquid when sufficiently treated.

J is an outlet for emptying the tank or blowing off from time to time any collection of impurities.

The units of which the structure of the coil is composed consist each of a pair of hollow headers, *a*, of oblong form, connected to the opposite ends of one or more tubes, *b*. In the present illustration the tubes *b* are so connected to the headers in pairs. The ends of the tubes are secured to the headers by expanded joints or other suitable means of fastening at *c*, this joint being permanent. The removable return-bends *d* are secured in place to the headers *a* by means of T-headed bolts *e*, the heads of which fit in sockets *f* of the headers, so as to swing freely when the nuts are loosened. The nuts of the bolts *e* are screwed up against the forked lugs *g*, cast on the bends, so that the joint *h* between the bend and the header, which is preferably a packed joint, will be made thoroughly tight. Metallic packing composed of a ring of soft metal is preferably employed for the joint *h*.

Upon loosening the nuts the swiveled bolts are readily knocked out of the forked lugs *g*, swinging on the pivots of their T-heads, so as to release the bends and permit their quick removal, disconnecting the units of the structure.

In Figs. 2 and 3 I have shown three way bends, *d'*, as a modification of construction, which may be applied in the manner shown for connecting together the tubes of three separate headers.

It will be observed that in place of nuts on the bolts *e*, I may employ other tightening devices capable of being more quickly handled—as, for instance, a longitudinal slot cut through the bolt near its end—fitted with a tapered key, the flat edge of the key resting against the forked lug *g*.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

5 In an inclosed coil, the combination of separable sections composed of one or more tubes united to hollow headers, with removable return-bends connecting the said separable sections and establishing communication between

the same, said return-bends having means for a ready attachment or detachment to said headers, (as by forked lugs and swiveled bolts,) for the purposes set forth.

WILLIAM H. ODELL.

Witnesses:

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