

(No Model.)

B. MERIAM.  
DRAIN TESTER.

No. 406,527.

Patented July 9, 1889.

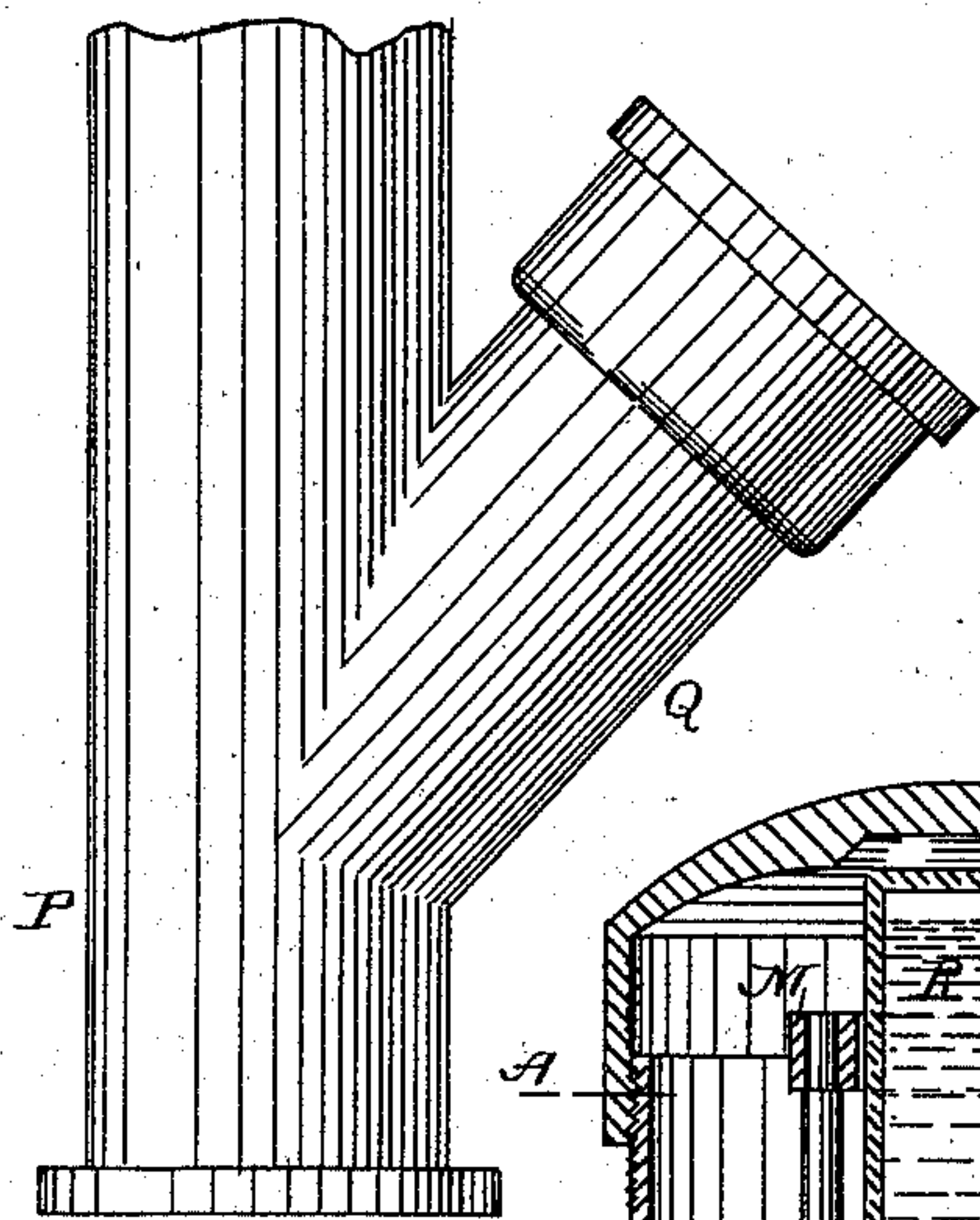


Fig. 6.

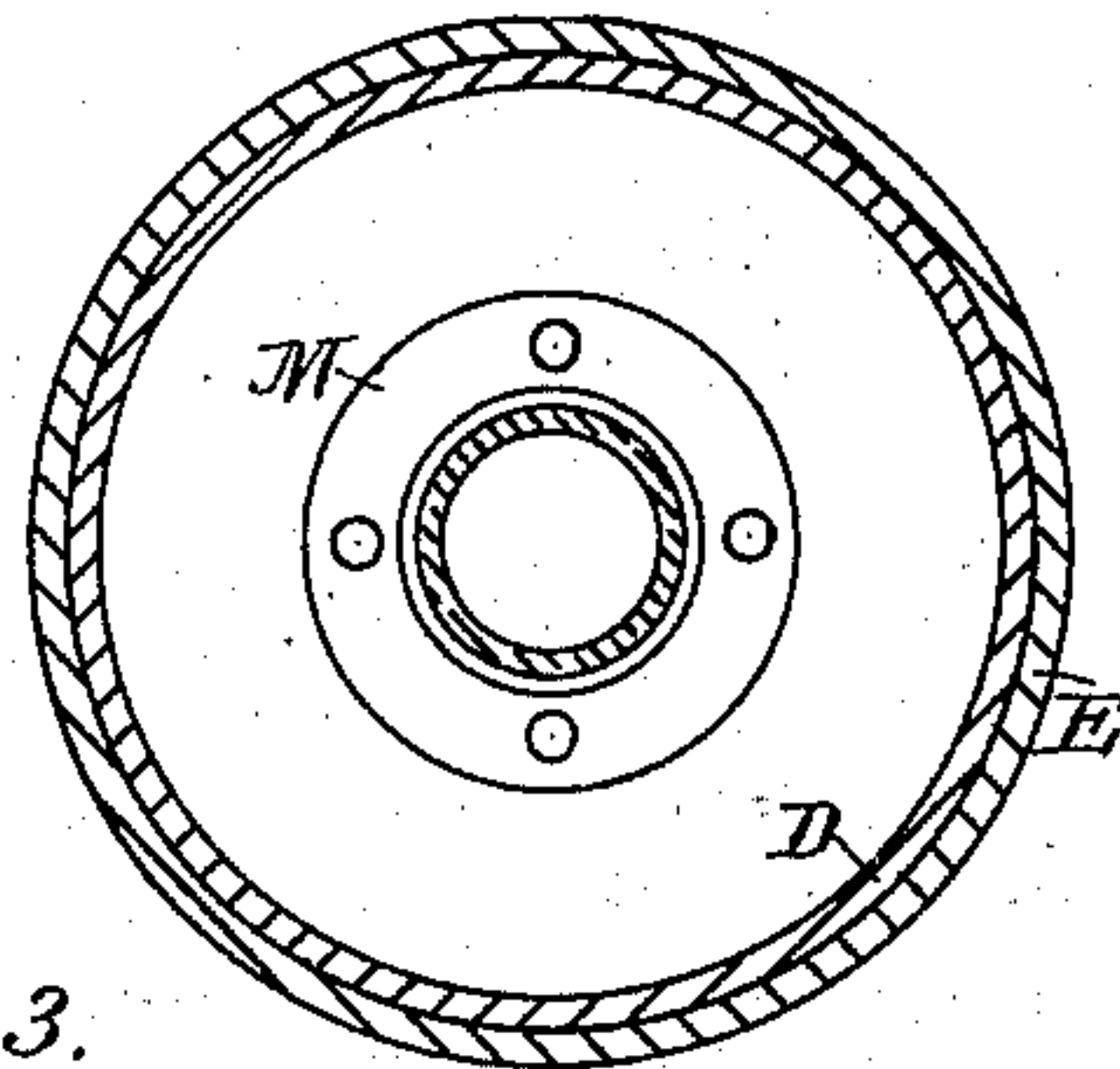


Fig. 3.

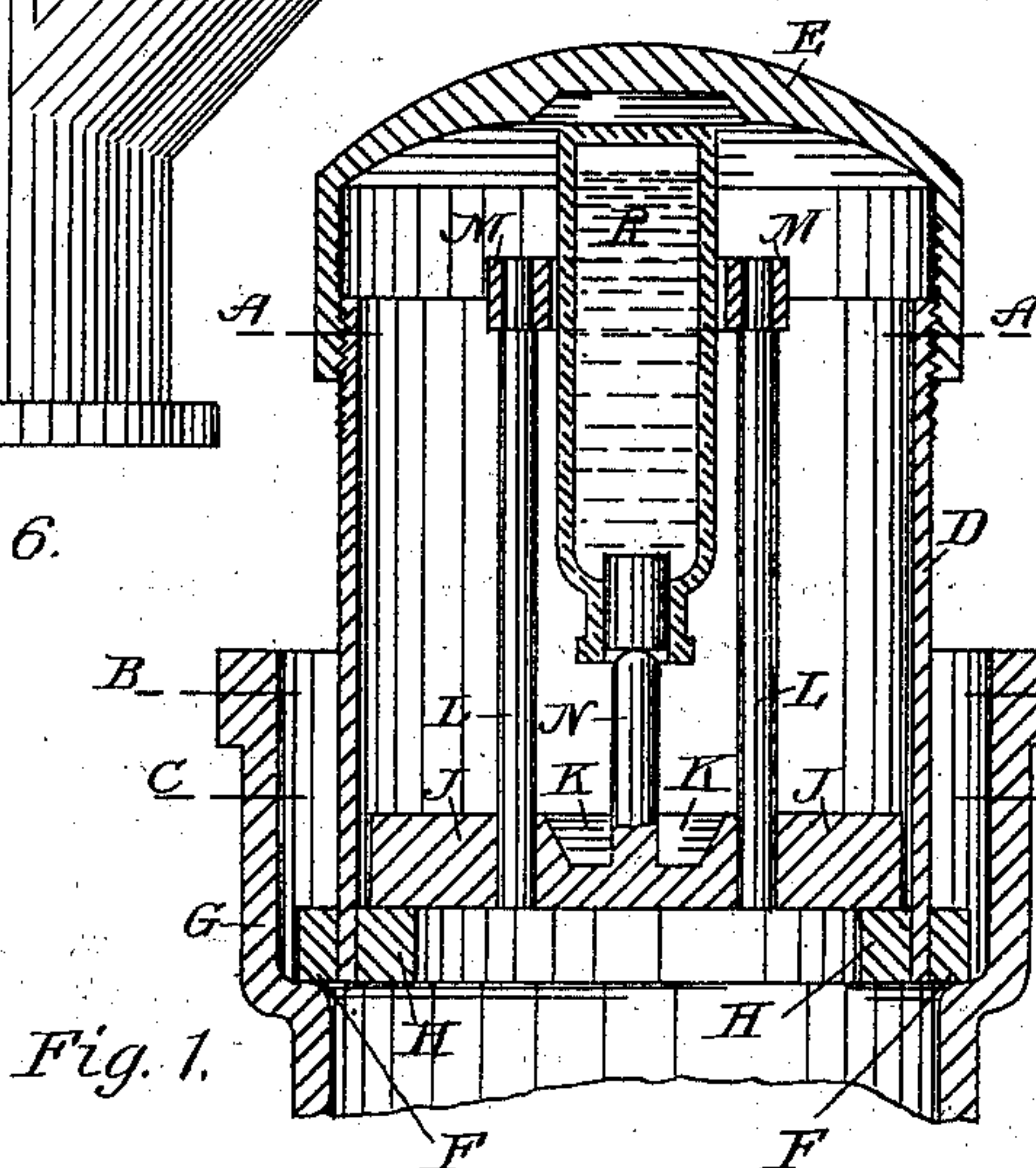


Fig. 1.

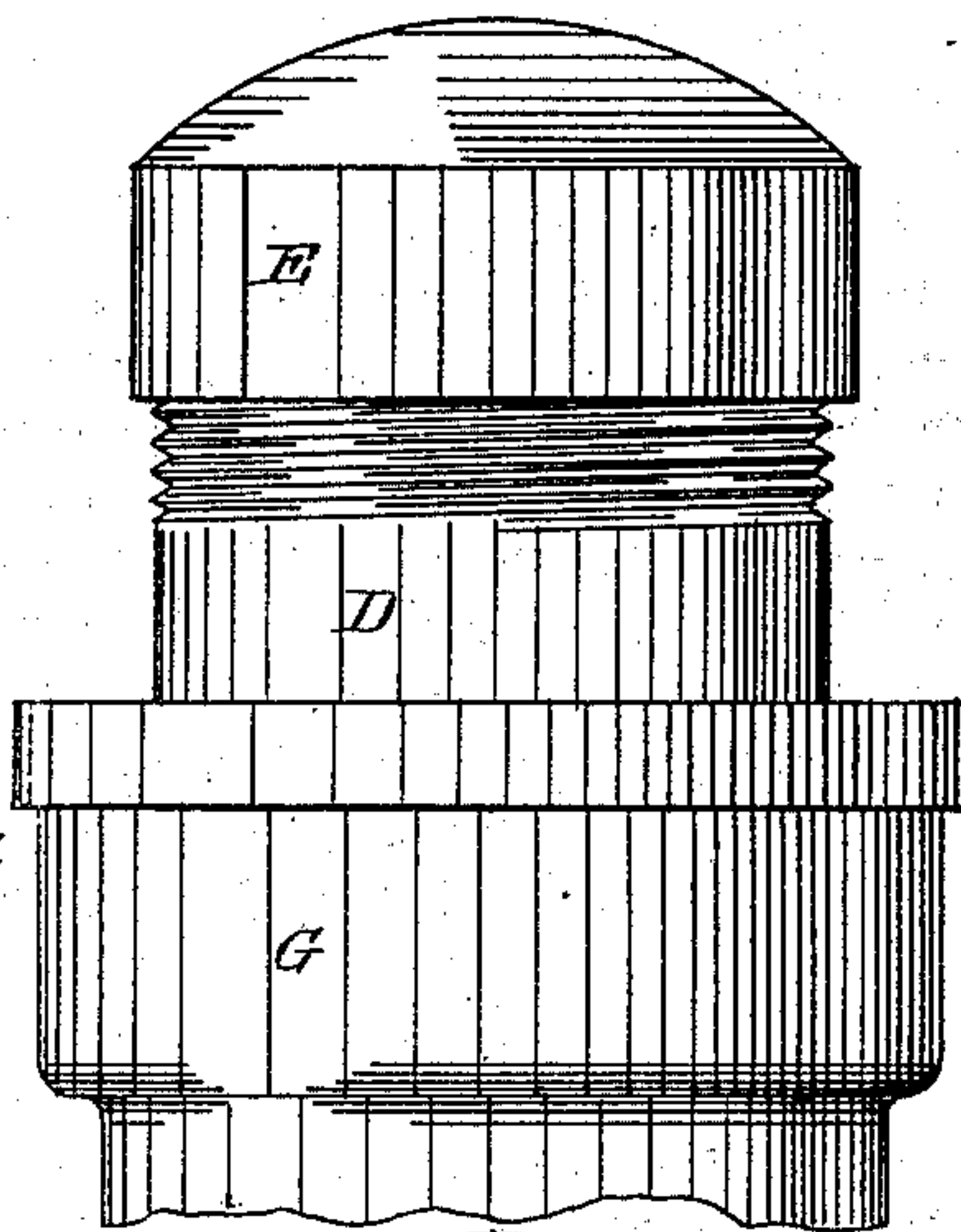


Fig. 2.

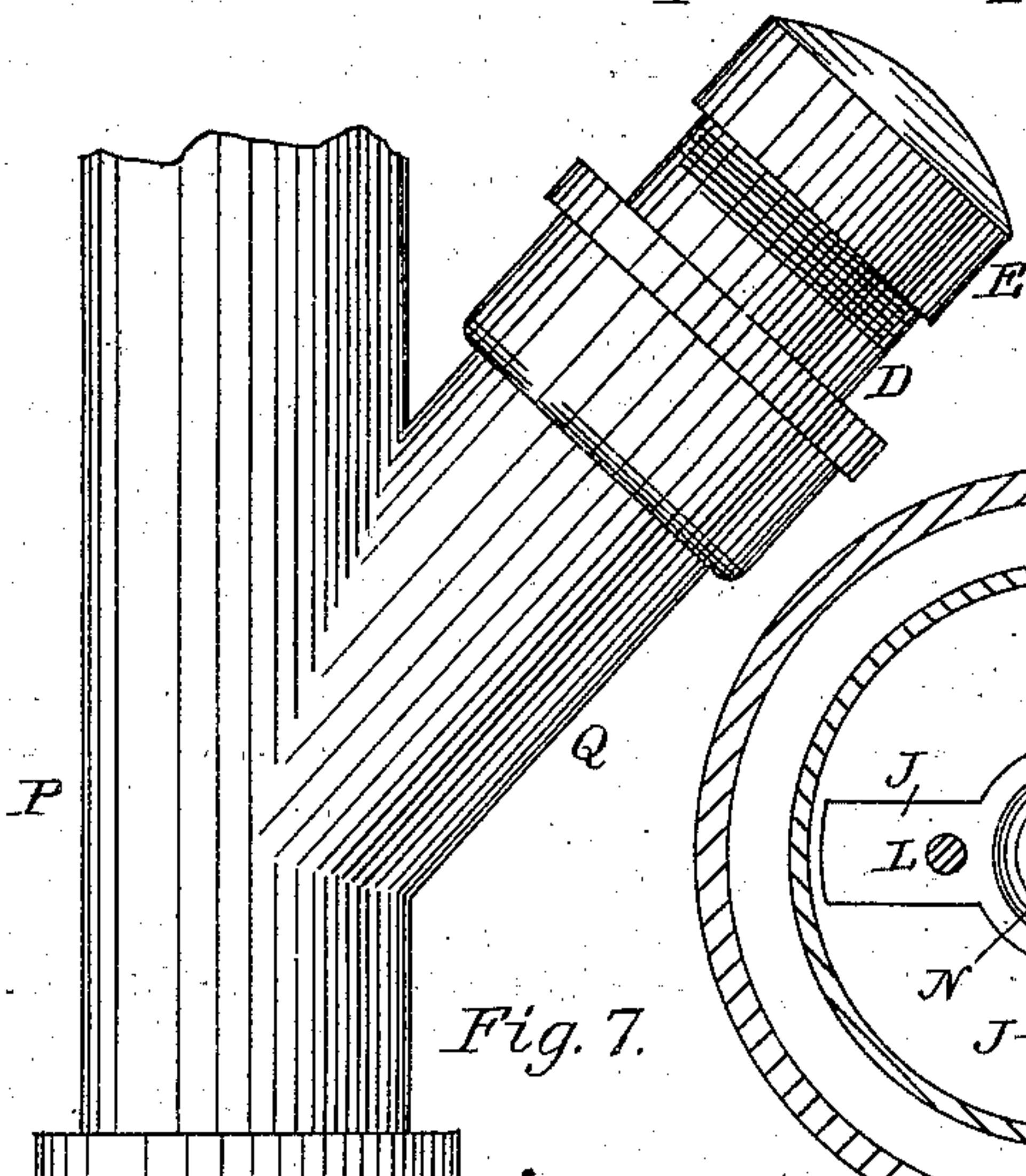


Fig. 7.

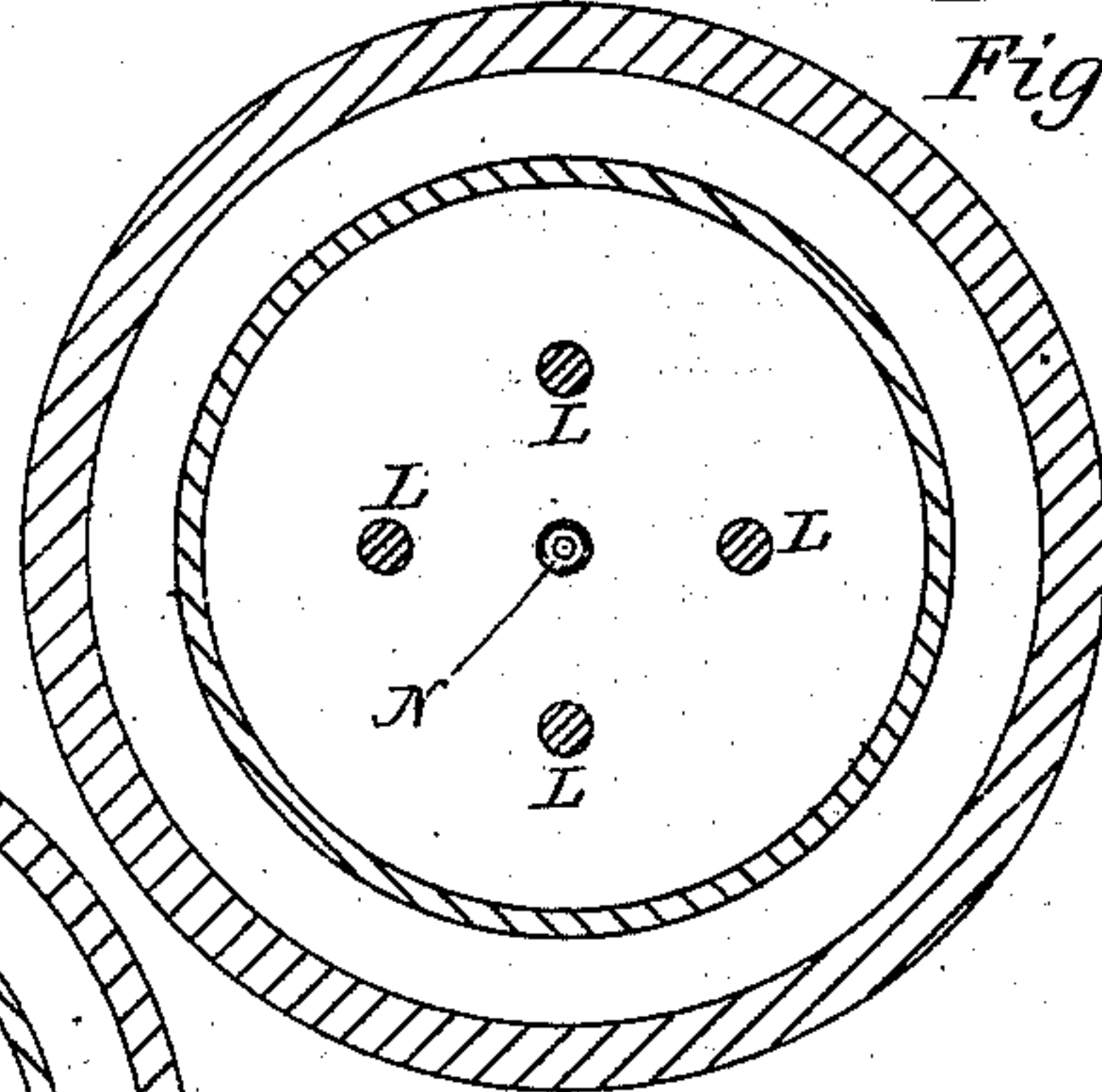


Fig. 4.

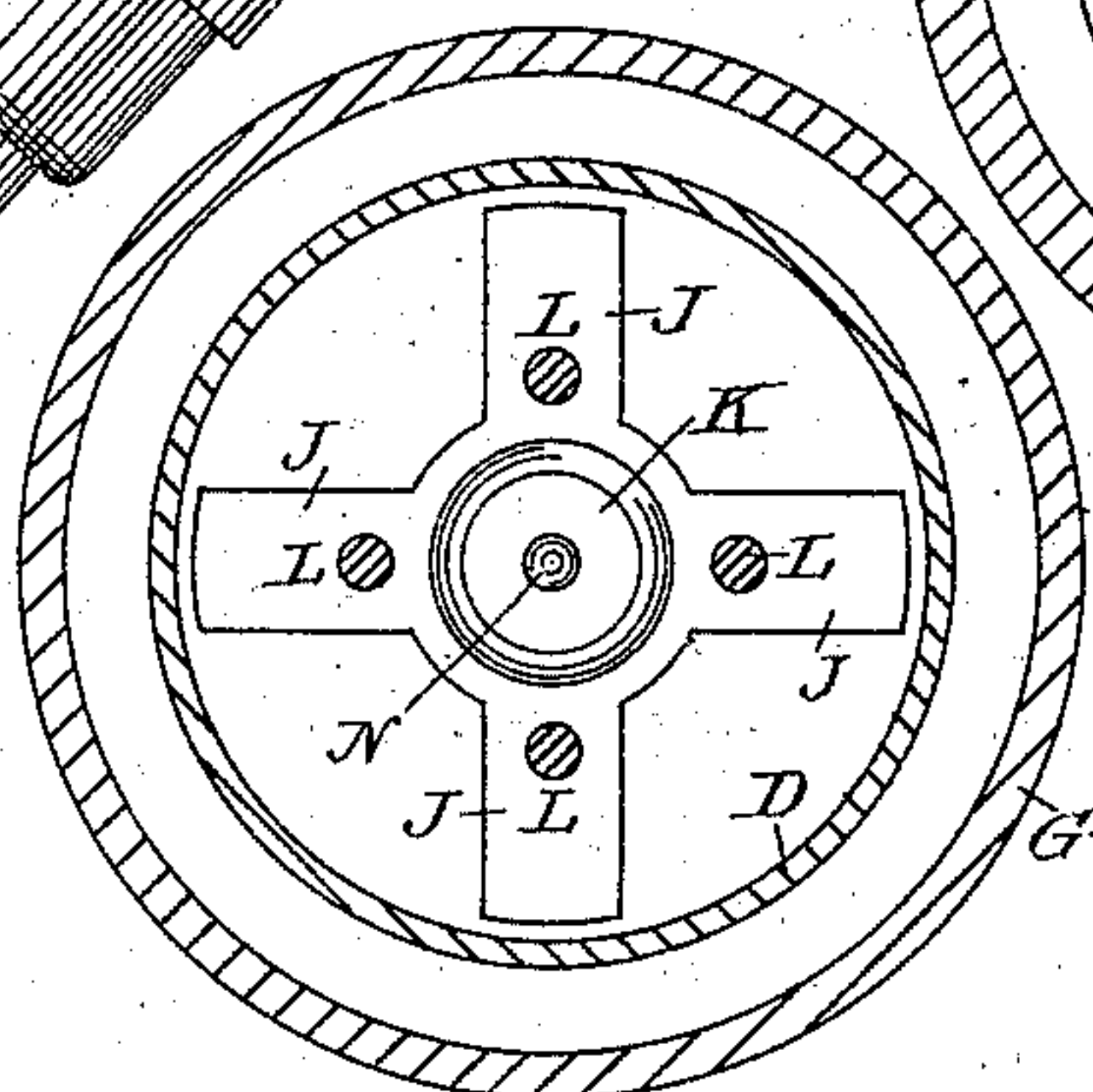


Fig. 5.

Witnesses.

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# UNITED STATES PATENT OFFICE.

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## DRAIN-TESTER.

SPECIFICATION forming part of Letters Patent No. 406,527, dated July 9, 1889.

Application filed February 15, 1889. Serial No. 300,065. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN MERIAM, a citizen of the United States, residing at the city of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Drain-Tester, of which the following is a specification.

The nature of my invention is that of a vessel (preferably metallic) permanently attached (by means of a branch pipe or Y-pipe, or other means) to a drain-pipe in a house. This vessel, when occasion requires its use, receives a bottle (or other vessel) filled with an odorous liquid substance, (preferably oil of peppermint,) which bottle carries a cork, and the bottle being placed in the vessel bottom side up, the cork rests on the point of a finger or short shaft proceeding upward from the bottom part of a small frame fitted to hold the bottle in an upright position. The cover of the vessel being then screwed tightly down, the bottle is forced down upon the finger, which presses the cork upward into the bottle. The bottle being thus unstopped, the peppermint falls out, a small part remaining in a cavity formed in the bottom of the frame and the balance passing by gravitation into the drain-pipe below, and subsequently permeating with its odor the drain-pipe and all its ramifications; and the object is to detect by the odor of the peppermint as it passes to the atmosphere through any abnormal opening in the pipe the location of any leak or solution of continuity in the drain-pipe.

In the drawings, Figure 1 is a view in vertical section of my device (one-quarter the size practically used.) Fig. 2 is a side view of the same. Figs. 3, 4, and 5 are respectively views in horizontal section taken at different elevations of Fig. 1. Fig. 6 is a side view of a piece of drain-pipe furnished with a branch pipe or Y-pipe. Fig. 7 is the same pipe with my device attached to the Y-pipe, as I usually practice with it.

In the drawings, D, Fig. 1, is a cylinder, preferably of brass, bearing a screw round its upper end, onto which screws the cover E.

F F is a ring fastened firmly round the lower end of the cylinder D, and by this ring, called the "supporting-ring," the device is supported on the shelf or shoulder seen to be

formed by the contraction (and reduction of the diameter of the bore) of the inside of the branch pipe. (See Fig. 1.)

H, Fig. 1, is another ring, called the "frame-holder ring," which is fastened firmly just within the lower end of the cylinder D. Upon the ring H rests the frame-base J, Figs. 1 and 5, which is composed of two pieces of metal, of shape as seen, cast together at right angles to each other in the form of a St. George's cross. At the center these pieces of metal are held together by a circular piece of metal, (cast with them,) in which is a small cavity K, Fig. 1, called the "reserve-chamber," large enough in the size of the device practically used to hold, say, a tea-spoonful of peppermint-oil. (See Fig. 5.) When the peppermint emerges from the bottle, a portion of it fills this reserve-chamber, while the rest of the oil falls downward and passes into the lower pipe, the portion remaining in the chamber being reserved measurably from evaporation, in order that the exhibition of the odor may be continued for a longer period.

L L L L, Fig. 5, (L L, Fig. 1,) are four metallic rods firmly attached by their lower ends, respectively, one to each arm of the cross. (Seen in Fig. 5.) These rods, called the "bottle-rods," project upward, reaching nearly to the top of the cylinder D, where they bear a ring M, Figs. 1 and 3, called the "bottle-ring." Down through this ring and between the bottle-rods L L, &c., passes a bottle R, Fig. 1, going in upside down, made of glass or other convenient substance and filled with oil of peppermint. (See the lines in Fig. 1.) The bottle-cork (seen at the lower end, the bottle being reversed) rests upon the finger or small upright shaft N, Figs. 1, 4, and 5, called the "discharging-peg."

In Fig. 6 is seen a portion of an ordinary house drain-pipe P, provided, as is habitually practiced, with a branch pipe or Y-pipe Q, proceeding diagonally outward and upward from the pipe proper.

In Fig. 7, which, as to the pipe and branch pipe, is the same as Fig. 6, is seen at E D the upper portion of my device (the rest being enveloped by the branch pipe) drawn on a scale of half the size of that of the figures



other than 6 and 7, or one-sixteenth the size used in actual practice.

Operation of the invention: The case D, with its cover, (the bottle of peppermint being absent,) being, as heretofore stated, firmly fastened to the Y-pipe mouth, the open lower end of the case D communicates with the bore of the Y-pipe, and thus with the drain-pipe and all its connections. An effluvium being perceived in the house, coming, as its peculiar odor declares, from escaping malarious gases and probably the product of decomposition in the sewer or the drain-pipe, it is likely—the plumbing having originally been performed so as to leave the pipes air-tight—that some breakage or solution of continuity has occurred in the pipes. It is a peculiar characteristic of sulphureted hydrogen gas—the cause in most cases of drain effluvia—that it mixes very readily with atmospheric air and the foul smell consequent upon the escape of the gas from some leakage in the drain-pipe is all-pervading in the rooms of the tenement. Thus the location of the breakage is practically untraceable by ordinary means. To find it a stronger odor, with well-marked characteristics, must be set free in the drain-pipe. I unscrew the top (seen in Figs. 2 and 7) of the case or box D and place inside the case, upside down, between the rods L L, &c., the corked bottle R, Fig. 1, of peppermint-oil, with the cork resting upon the discharging-peg N. Then replacing the top or case-cover E, I screw it down as far as it will go. (See the screw in Fig. 2.) The cover E, impinging (at the hollow on its under side, seen in Fig. 1) upon the reversed bottom of the bottle R, presses the latter downward, when the discharging-peg N drives the cork into the bottle, opening the bottle. The peppermint-oil runs out, fills the reserve-chamber K and then passes between the arms (see Fig. 5) of the cross, down into the Y-pipe Q, Fig. 7, and thence into the drain-pipe P, and as far down into the drain-pipe as, before evaporation, it can reach. The strong odor of the peppermint instantaneously diffuses itself throughout the pipes. The operator then proceeds to task his olfactory organs to ascertain where, if at all, the peppermint odor emerges from the pipes. If none comes out into the apartments, the pipes are in perfect order and the fouling of the atmosphere does not proceed from the drains and the cause must be sought elsewhere. Numerous other sources, which it is unnecessary to particularize, may originate the foul odor, even in a well-regulated house; or the origin may be outside the house. Whereso-

ever it may be, if the peppermint experiment does not reveal its location it is not from leakage in the drain-pipe. The unerring test made by my device has fully demonstrated that, and my invention has done its work. It remains only to unscrew the top or cover E and withdraw the bottle R, screw on the cover, and leave the device till it shall be again wanted.

It is seen that no fragments of a broken bottle are left to encumber the drain-pipe passage, forming the nucleus of an accumulation of substances liable to obstruct or even to choke up wholly the drain-pipe. The bottle can be used over and over again. Nothing of the whole device needs renewal except the evaporated peppermint-oil. The case D, with its attachments permanently fixed to the Y-pipe, may stay there as long as the drain-pipe does, never getting out of order, and thus never needing repairs. Originating, as I did, a number of years ago, the mode of testing drains by the use of oil of peppermint, (or other strong-smelling evaporable substance,) I have found the device above described to be the cheapest, most permanent, most easily managed; and practically the best device for the purpose described that has yet come under my observation.

The frame, as composed of the parts M M, L L L L, and J J, though original with me and practically of great use, is not an essential part of my device. Numerous other easily-imaginable devices can be substituted for it. I use any other convenient device to hold my bottle in place. Nor is there any special need of placing my device in the mouth of a Y-pipe, except that branch pipes are commonly used with drain-pipes, and the device once placed there need never be removed, and while not in the way can always be found.

I claim—

In a drain-tester, the combination of an outer vessel open at its bottom and optionally closed by a screw-cap at its top and adapted to be attached to the drain-pipe; a smaller vessel removably contained in said outer vessel, a removable stopper in said inner vessel, a pin in contact with said stopper, and a screw-cap upon the outer vessel, the parts being so arranged that screwing down the cap on the outer vessel operates to remove the cork from the inner vessel, substantially as and for the purpose specified.

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Witnesses:

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