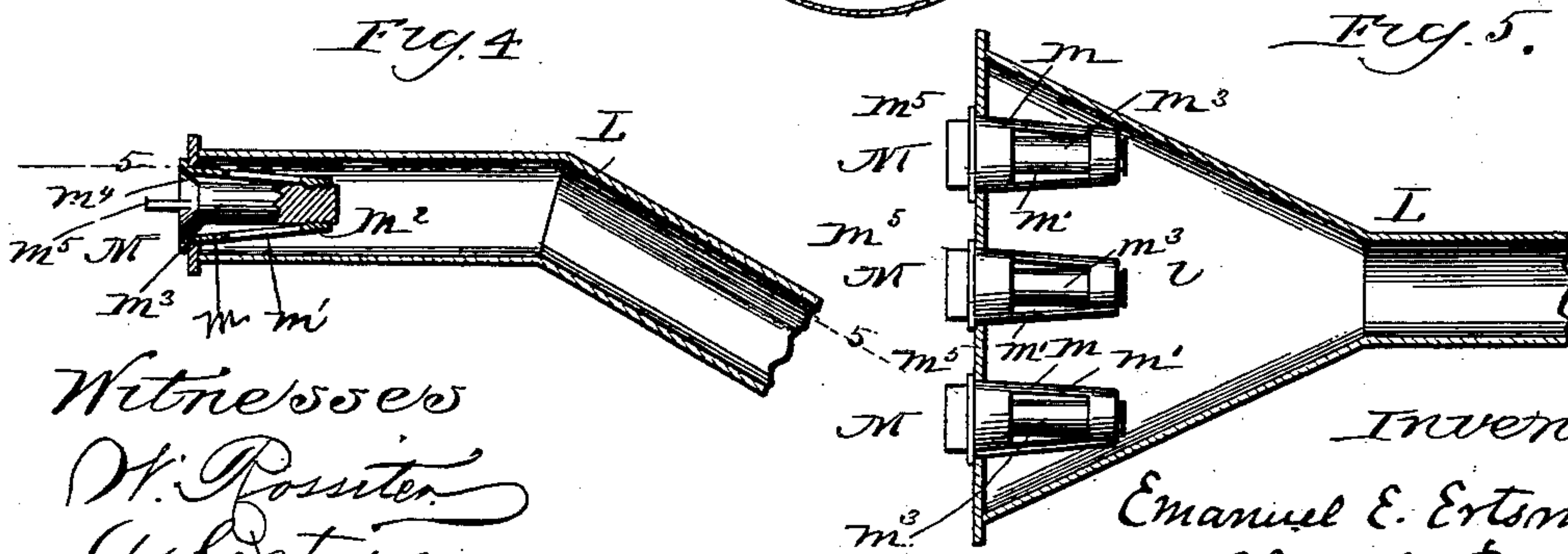
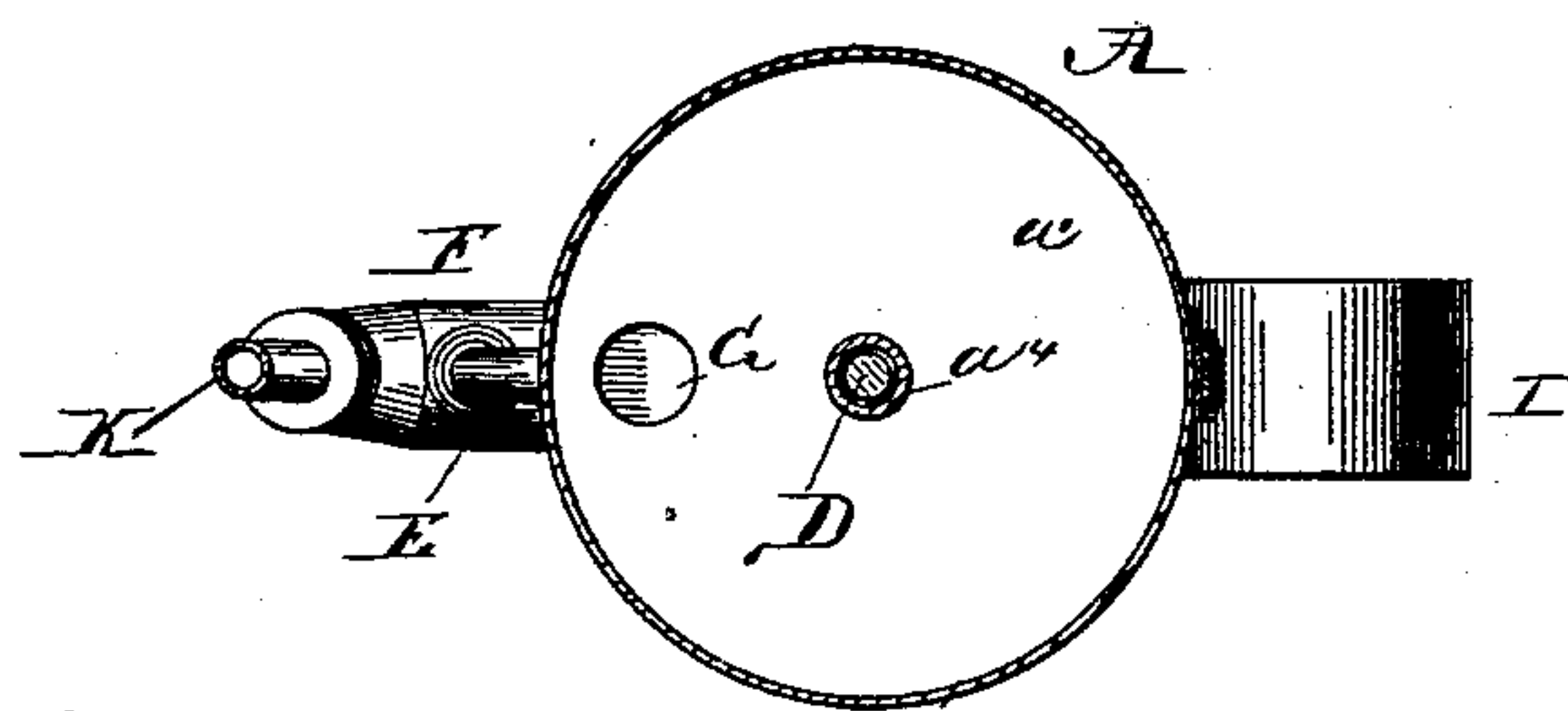
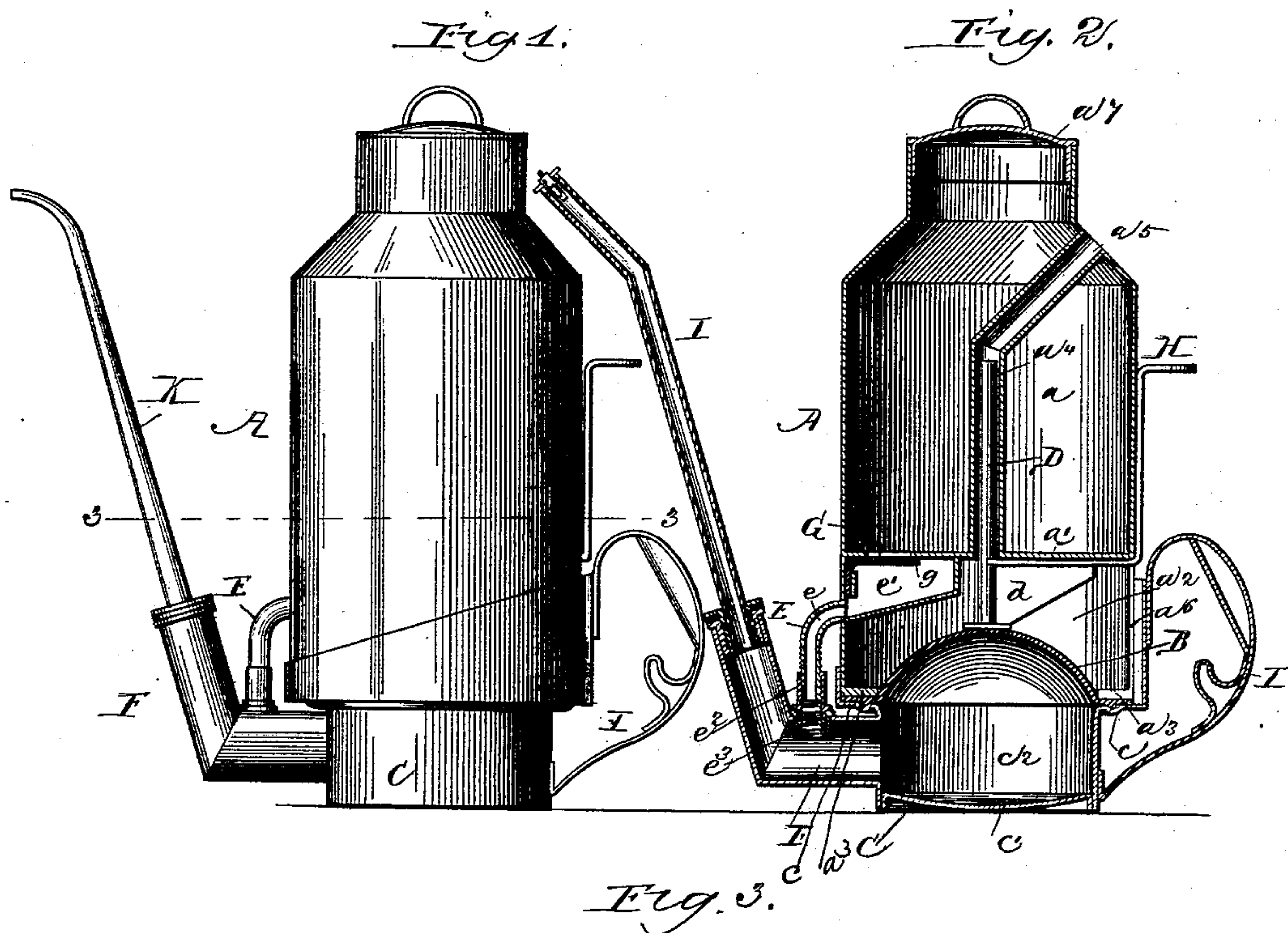


(No Model.)

E. E. ERTSMAN.
FORCE CAN.

No. 412,918.

Patented Oct. 15, 1889.



Witnesses
H. Posner
A. Carter

Inventor
Emanuel E. Ertzman
By Chas. G. Page
Atty.

UNITED STATES PATENT OFFICE.

EMANUEL E. ERTSMAN, OF PULLMAN, ILLINOIS.

FORCE-CAN.

SPECIFICATION forming part of Letters Patent No. 412,918, dated October 15, 1889.

Application filed April 12, 1889. Serial No. 307,066. (No model.)

To all whom it may concern:

Be it known that I, EMANUEL E. ERTSMAN, a citizen of the United States, residing at Pullman, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Force-Cans, of which the following is a specification.

The principal object of my invention is to provide a can for containing water or oil or other liquid with simple and efficient means whereby an operator may readily eject the liquid from the can either with a moderate or with considerable force, further objects being to permit the operator while holding the can with one hand to also utilize the same hand as a means for operating the liquid-ejecting device; also, to permit the device to be readily taken apart and cleaned; to provide the can with a highly-efficient construction of adjustable spraying-nozzle; to provide a construction which, while rendering the device particularly serviceable as a closed sprinkler, shall also permit it to be readily and conveniently used as an oiler, and to provide certain novel and improved details of construction.

To the attainment of the foregoing and other useful ends my invention consists in matters hereinafter set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 represents in elevation a force-can embodying my invention. Fig. 2 is a vertical central section of the same. Fig. 3 is a horizontal section on line 3 3 in Fig. 1. Fig. 4 is a longitudinal section, on a larger scale, of the discharge portion of the spout shown in Fig. 2, it being observed that while I have in Fig. 1 shown the can provided with an ordinary tapered discharge-spout I have in Fig. 2 provided the can with my improved rose or spray nozzle. Fig. 5 represents a section taken through the discharge end of the spout shown in Fig. 4 on line 5 5, the valves or spray-regulating devices of the nozzle being, however, shown in plan view.

In said drawings, A indicates the can, which contains a chamber a for oil or water, and as a means for providing said chamber I arrange within the can at a suitable distance above its lower end a horizontal partition or false bottom a' , as in Fig. 2. By reason of said arrangement of partition or false bot-

tom the lower interior portion of the can-body forms a chamber a^2 , which said chamber serves to receive the elastic diaphragm B when said diaphragm is in its normal raised condition, as in said Fig. 2. The diaphragm B in its normal condition assumes a semi-spherical condition, excepting its circular edge portion, which said edge portion is suitably clamped and held at the lower end of the can—as, for example, the can is herein provided with a central opening in its bottom end, whereby, while said opening permits the semi-spherical portion of the diaphragm to rise within the can, the flat circular edge portion of the diaphragm can be clamped between the annular flange a^3 at the lower end of the can-body and the flanged portion c of a cup C, which is so flanged along its upper edge that it may be detachably fitted to the lower end of the body of the can A. The cup C is provided with a suitable bottom c' , and is closed at its top by the flexible diaphragm, which latter may be forced by a piston D down into said cup. By reason of such arrangement the cup C, when applied to the can, constitutes a portion of the same, whereby the can has three chambers—namely, the upper chamber a , which serves as a reservoir for the liquid, the chamber a^2 , which may be termed the “piston” or “diaphragm” chamber, and the chamber c^2 , which is formed within the cup C, and which may be said to constitute the ejecting-chamber or the liquid-receiving portion of the piston-chamber. The ejecting-chamber c^2 communicates with the reservoir-chamber a through the medium of a passage e , which at its lower end opens into the spout F and at its upper end opens into a chamber e' , which communicates with the reservoir-chamber a through the medium of the valved port G, that is formed in the partition a' . The passage e is desirably formed by a tube E, while the small chamber or passage e' is desirably formed by a suitably-shaped small case or partition arranged within the chamber a^2 , it being observed that this small chamber e' is desirable in order that the port G can be closed by a suitable flap or check valve, which opens downwardly from the reservoir-chamber a and inwardly into the passage e' . The plunger or piston D rests at its lower end upon the diaphragm

and has its vertical stem portion arranged thin and guided by a tubular bearing a^4 , which rises centrally from the partition a' . The tubular bearing a^4 is, however, desirably bent or deflected at its upper end portion, so that its upper end a^5 may terminate at a point where a lubricant can be readily introduced therein for the purpose of lubricating the piston-stem and its cylindric bearing or guide.

By the foregoing arrangement, when the elastic diaphragm is depressed by the piston, the valve g will be closed and liquid within the chamber c^2 will be ejected therefrom through the spout F . When the piston is released and the diaphragm permitted to rise to its normal condition, the tendency to create a vacuum within the ejecting-chamber c^2 will cause the check-valve g to open, and hence permit liquid from the reservoir-chamber a to flow through the port G into the valve-chamber e' , and thence through the passage e into the ejecting-chamber by way of the lower or inner portion of the spout F .

As an exceedingly simple, convenient, and efficient means for operating the piston I provide a thumb-piece H , which has its upper vertical portion arranged to slide along the outer side of the can and its lower horizontal portion arranged to enter the can, so as to connect with the piston, and in this connection I prefer providing the piston with a brace d , which serves to hold the thumb-piece in rigid connection with the piston. In order to permit the required up-and-down movement of the thumb-piece, the can is provided at its lower portion with a vertical slot a^6 , Fig. 2, through which the lower horizontal portion of the thumb-piece passes. The can is also provided with a handle I , which is arranged adjacent to the thumb-piece, so that while the operator may readily grasp the can by its handle he may use the thumb or finger of his hand which holds the can-handle as a means for depressing the thumb-piece. By such arrangement, therefore, the operator may hold the can by its handle with one hand and use the thumb or a finger of the same hand for depressing the thumb-piece, which, when depressed, necessarily draws down the piston and thereby causes the same to depress the diaphragm, which will thereby serve to eject liquid from the ejecting-chamber.

The cup C , which practically constitutes a detachable bottom for the can, may be removed for the purpose of cleaning out the ejecting-chamber, and to such end the tube E is coupled to the spout F by a threaded sleeve or coupling e^2 , which at one end connects with the tube E by a threaded joint and at its other end screws into a threaded seat e^3 , with which the spout F is provided. The tube E is threaded some way up from its lower end, whereby, when it is desired to detach the cup from the body of the can, the coupling e^2 can be screwed up on the tube E , so as to disengage the coupling from the spout F .

For some purposes I propose providing the spout F with an ordinary nozzle K , having a small discharge end, as in Fig. 1, such arrangement being particularly desirable when the can is to be used as an oiler. As a further feature of improvement, however, I propose providing the can with a nozzle L , having a widened discharge end portion l , provided with a set of valves or spray-regulating devices M . As best illustrated in Figs. 4 and 5, each one of said valves or spray-regulating devices consists of a conical or tapered sleeve or tube m , provided with inlets m' and having at its inner end a threaded bearing m^2 for the threaded end of a screw m^3 , which said screw has a flared head m^4 and a flat lug or projection m^5 , which extends outwardly from the face of said head. The screws m^3 constitute adjustable valves, while the sleeves m constitute valve-seats having inlet-ports m' and outlet-ports, the latter being the outer and larger ends of said hollow conical valve-seats. The lugs m^5 upon the screws or valves m^3 are simply provided as means whereby an operator may with his fingers readily take hold of and turn the valves, so as to adjust them with reference to the desired area of opening between the heads m^4 of the valves and the outer ends of the hollow conical valve-seats. By such arrangement the valves can be adjusted so as to permit the water to be discharged in extremely thin sheets, it being observed that for sprinkling clothes and the like I find such arrangement highly effective.

The can may be made as large as desirable and when made for sprinkling clothes it should be of such size that when filled the operator can easily hold it in one hand. It may of course when adapted for use as an oiler be made much smaller.

The can is provided at its top with a suitable cover a^7 , which can be removed for the purpose of filling the reservoir-chamber a .

The elastic diaphragm D may be made in one piece, and while it can be held in various ways along its edge portions, I prefer the arrangement herein shown for the reason that the parts can be separated when so desired. The lowest portion of the can which is formed by the cup C may be screwed to the lower end of the body of the can or otherwise suitably fitted thereto, and the nozzles K and L may be detachably fitted to the spout F , so that one may be substituted for the other, according to requirements.

When the parts are fitted together, the device as a whole will have a simple and neat appearance, as in Fig. 1. The handle I is also desirably attached to the lower portion C of the can, which for convenience I have hereinbefore termed a "cup," whereby there will be no danger of the detachment of the lower portion of the can when it is lifted by the operator.

What I claim as my invention is—

1. A force-can for the purpose set forth

comprising the reservoir-chamber a , the ejecting-chamber c^2 , the chamber a^2 , intervening between said two chambers, the flexible diaphragm B, arranged to normally rise within
5 said intervening chamber, the vertically-sliding piston arranged to bear upon the flexible diaphragm, a thumb-slide for operating the piston, a valved passage leading from the reservoir-chamber to the ejecting-chamber,
10 and a spout connected with the ejecting-chamber by a lateral passage, said members being combined and organized for operation, substantially as set forth.

2. The combination, with the can provided
15 with an ejecting-chamber, a flexible diaphragm, and a piston, for the purpose set forth, of the spout connected with the ejecting-chamber and having a widened discharge end l , provided with a set of spray-regulating
20 devices M, each consisting of a conical tube

m , having an inlet m' , and containing a screw m^3 , arranged so that its head can be set with reference to the larger outer end of the tube, substantially as and for the purpose set forth.

3. The combination, substantially as here- 25
inbefore set forth, of the body of the can containing a reservoir-chamber, the cup C, provided with a spout and an ejecting-chamber and detachably applied to the body of the can, the piston and flexible diaphragm for 30
forcing liquid from the ejecting-chamber, and a valved passage connecting the reservoir-chamber with the said cup and consisting of the tube E and a coupling for detachably connecting said tube with the cup, for the pur- 35
pose described.

EMANUEL E. ERTSMAN.

Witnesses:

CHAS. G. PAGE,
ANNIE COATES.