

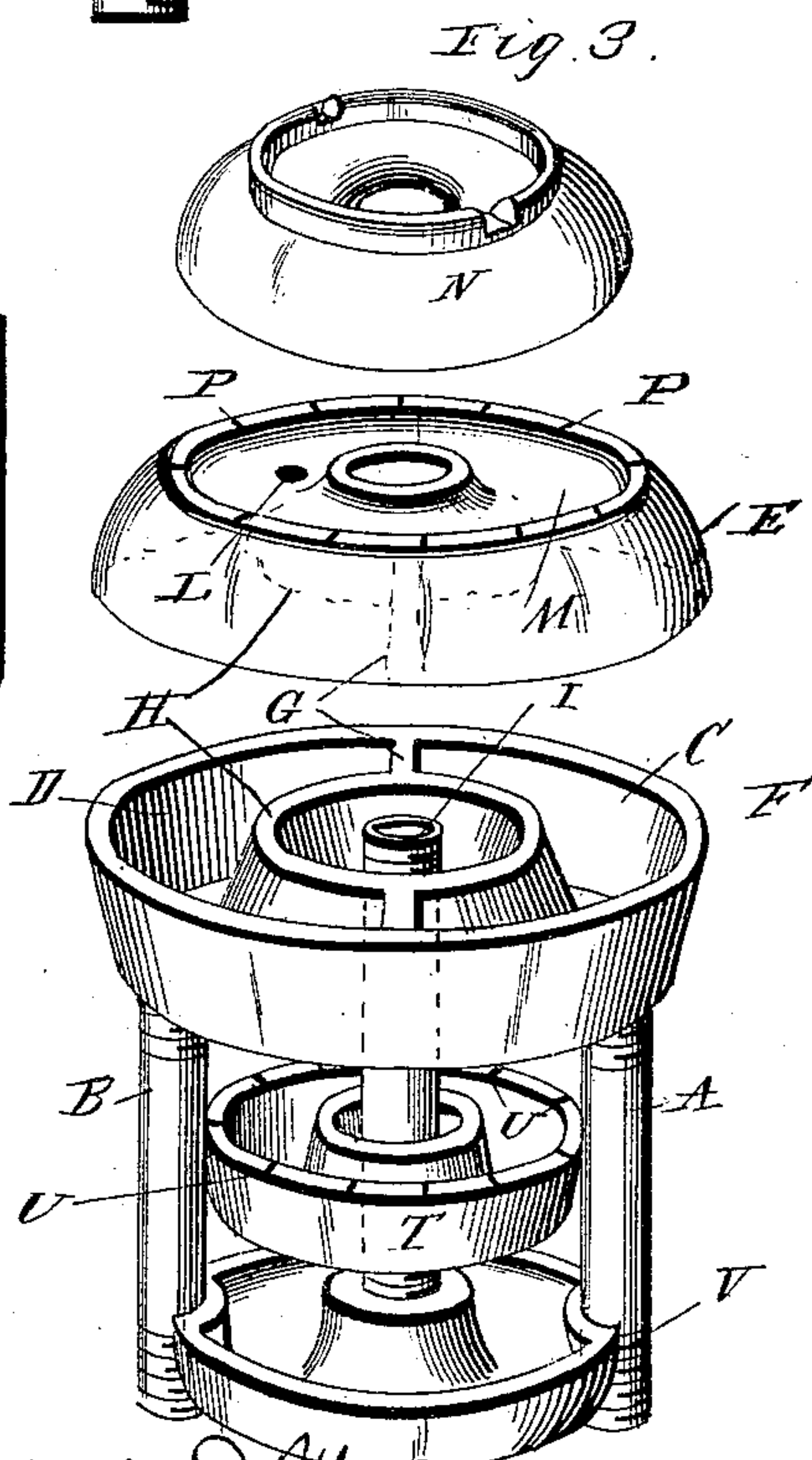
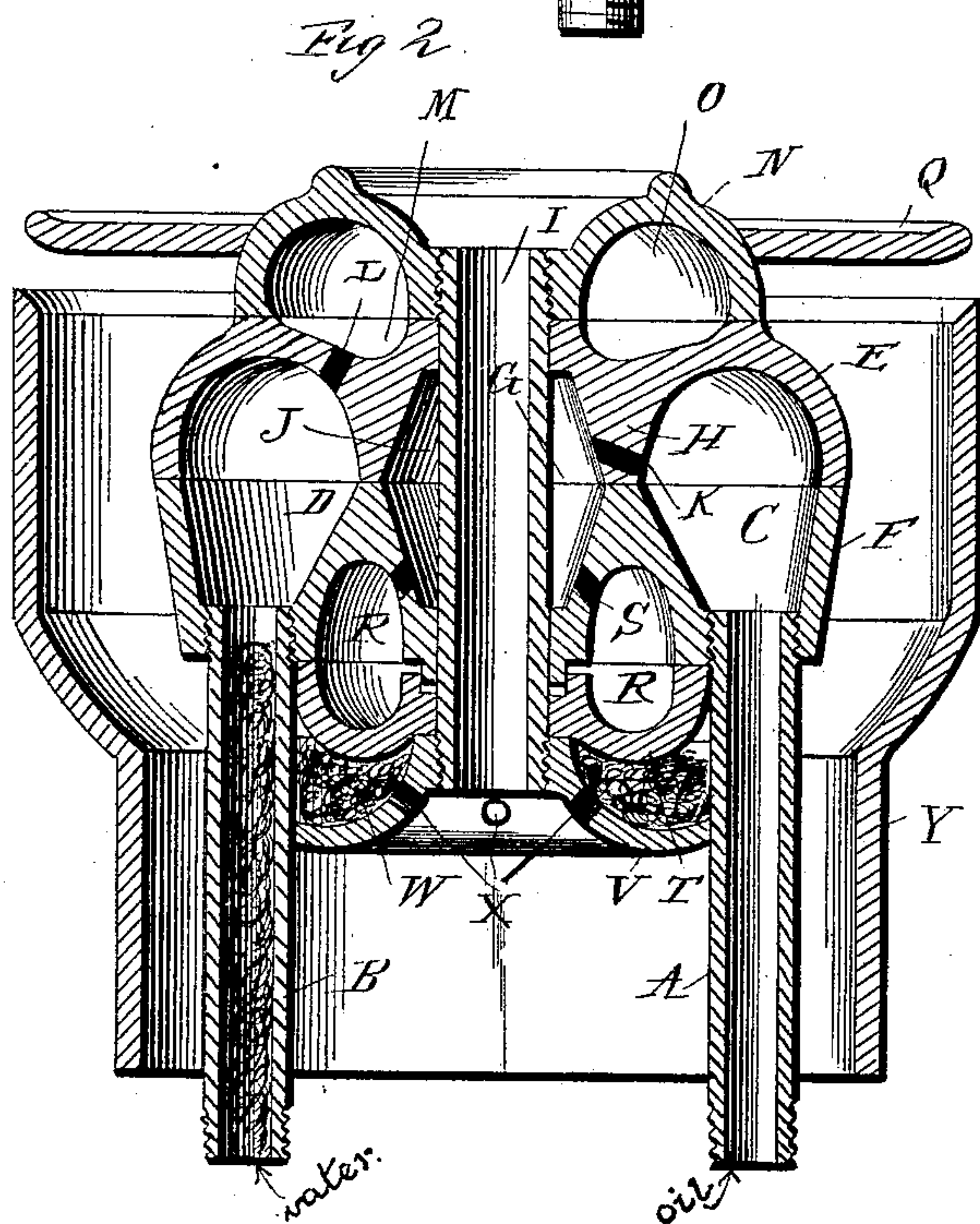
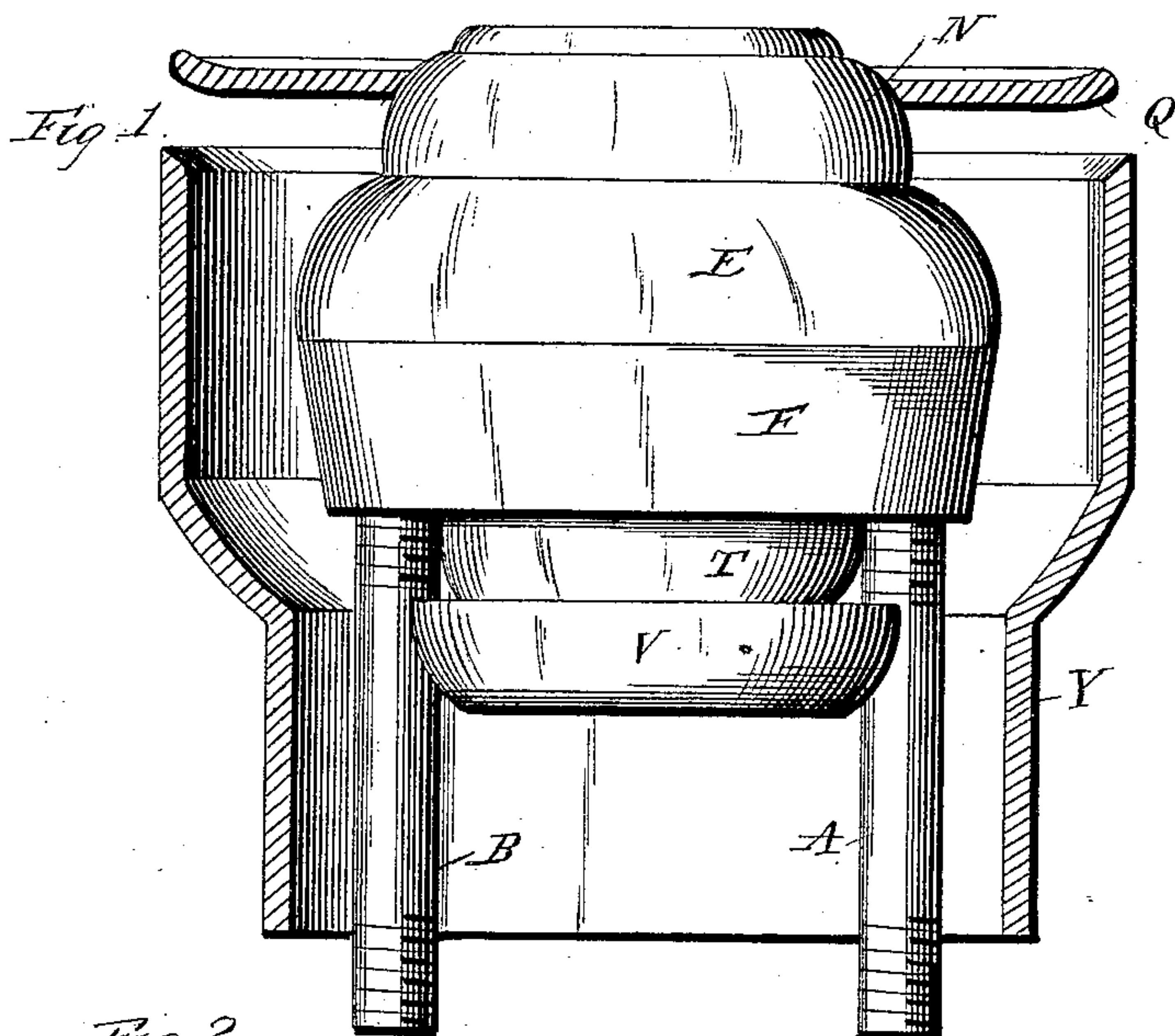
(No Model.)

M. D. MILLER.

RETORT VAPORIZER AND BURNER FOR OIL AND WATER.

No. 435,236.

Patented Aug. 26, 1890.



Witnesses
 Chas. Rueder
 Mary Vicker

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UNITED STATES PATENT OFFICE.

MARTIN D. MILLER, OF LEAVENWORTH, KANSAS.

RETORT VAPORIZER AND BURNER FOR OIL AND WATER.

SPECIFICATION forming part of Letters Patent No. 435,236, dated August 26, 1890.

Application filed November 30, 1889. Serial No. 332,136. (No model.)

To all whom it may concern:

Be it known that I, MARTIN D. MILLER, a citizen of the United States, residing at Leavenworth, in the county of Leavenworth and State of Kansas, have invented certain new and useful Improvements in Retort Vaporizers and Burners for Oil and Water; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in that class of vapor-burners in which the component parts or elements of the vapor are separately introduced into the burner and are so acted upon within the same as to form the desired combustible gas.

In my improved burner the oil and water are fed into the burner through separate pipes and admitted into different chambers to be vaporized, after which they are carried through independent passages to the outlet of the burner, where they are united and consumed.

By my improved construction I secure perfect combustion of the gases and overcome the tendency of the water-gas to extinguish the oil-gas, besides cheapening the cost of the burners of this character; and my invention consists in certain novel features of the device shown in the accompanying drawings, as will be hereinafter described and claimed.

In the drawings referred to, Figure 1 is a side elevation of my improved burner with the inclosing-cylinder in section. Fig. 2 is a vertical section of the same, and Fig. 3 is a sectional perspective view showing the several parts detached and in their proper relative positions.

Referring to the drawings by letter, A designates the oil-inlet pipe, and B the water-inlet pipe, which may lead from any suitable source of supply and have their upper ends communicating with the chambers or compartments CD, respectively. These chambers are formed by the castings E F, which are circular in their construction, and are provided with the internal partitions G and the central circular ribs H, as shown. The castings are placed together around the central air-tube I, so that their ribs and partitions coincide, as clearly

shown in the drawings, and I thus form the chambers C D, as well as the chamber J. The chamber C, which receives the oil, has its upper circular rib provided with an opening or perforation K, through which the oil passes into the chamber J, and the roof of the chamber D is provided with an opening or perforation L, through which the water passes to a shallow cup or pan M, formed in the upper side of the upper casting. A spreading plate or cup N is fitted on the upper end of the central air-tube and bears on the upper casting E, so as to cover the cup or pan M therein. A chamber O is thus provided, in which the water or steam collects, and from which it escapes through the small openings P, said openings being formed by shallow grooves cut in the edge of the cup or pan on the upper side of the casting. A diaphragm or cap Q is supported by the cup and directs the steam to the flame-opening, as will be hereinafter more fully referred to. The circular rib of the lower casting is V-shaped in cross-section, thereby forming a space or chamber R, and is provided with the openings S, which furnish communication between the chambers J R. The lower portion of the chamber R is closed by the plate T, having shallow grooves U in its upper edge to permit the oil-vapor to escape. A supporting-plate V is arranged below the plate T, and an asbestos filling W is arranged between the said plates T V. The plate V is screwed onto the central air-tube and acts in conjunction with the cup N to secure the several parts firmly together, as will be readily understood upon reference to the drawings. This plate V is further provided with the openings X to permit the initial heat or flame to pass readily to the asbestos and ignite the oil contained therein. A retaining-cylinder Y is arranged around the several parts just described and supported in any convenient manner, so as to direct the oil-vapor to the flame-opening. The water-supply pipe may, if so desired, be packed with asbestos, and I have so illustrated it.

The construction and arrangement of the several parts of my improved device being thus made known, the operation of the same will be readily understood. Oil is admitted through the pipe A into the chamber C and

passes from the said chamber to the chambers J R, and from the chamber R it escapes to the asbestos W, which it saturates. The oil is cut off after the several chambers just mentioned are filled, and an initial flame is then applied to the plate V, so as to ignite the oil in the asbestos and heat the plate T and the castings E F, thus heating the oil in the several chambers and causing the same to flow to the openings U and be consumed until vapor is generated in the chamber C. When the oil is exhausted from the chamber C, that fact will be indicated by a diminished flame, and the oil is then again turned on to maintain the supply. When the castings E F have been sufficiently heated to instantly convert water into steam, the water is admitted into the chamber D through the pipe B, as will be readily understood. The water will be converted into steam in the chamber, and it passes from said chamber into the chamber O, from which it escapes through the openings P and commingles with the burning oil-gas rising through the cylinder Y, thus producing a perfect combustion, so that there will be no waste of heat or fuel. The pressure with which the flames are ejected creates a draft, by which air will be drawn into the burner in sufficient quantities to produce a complete chemical combination. The necessary draft is further provided for by the central air-tube, as air rises through said tube and passes through the same directly to the center of the flame.

It will be observed that I have provided a very simple device in which the oil and water are separated from each other until they reach the proper point for ignition, thereby securing a more perfect combustion than has heretofore been done.

My device maintains a constant generation and consumption of gas, and the oil is converted into gas by its own heat while burning. The water, furthermore, is by the same heat superheated so that it will be injected into the flame of the oil-gas by its own pressure to pro-

duce a highly-combustible gas. It will be seen, also, that the supply-pipe of chamber D is tempered by the initial flame at W.

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

1. A vaporizer comprising the hollow sectional castings having internal partitions provided with transverse openings and fitted together, forming the communicating chambers C R, the said chamber R having vapor-exit openings, a fire-proof filling arranged below the chamber R, and the plate V, supporting said filling, as set forth.

2. The combination of the central air-tube, the castings mounted thereon and having the internal partitions G and the central circular ribs H, thereby forming the chambers C D J R, the chamber R, having vapor-exit openings, inlet-pipes for the chambers C D, the plate T below the castings and forming the bottom of the chamber R, the plate V, secured on the air-tube below the plate T, and the cup secured on the upper end of the air-tube and provided with vapor-exit openings, as set forth.

3. The combination of the central air-tube, the castings secured thereon and having internal partitions, forming the chambers C D J R, and provided with vapor-exit openings, the pipes A B, entering the bottom of the chambers C D, respectively, the plate T, forming the bottom of the chamber R, the plate V, secured on the air-tube below the plate T, the cup N on the upper end of the air-tube, the cap Q on the cup N, and the cylinder Y, surrounding the castings and the pipes A B, as set forth.

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

MARTIN D. MILLER.

Witnesses:

ALFRED B. SILL,
JOHN F. GURNETT.