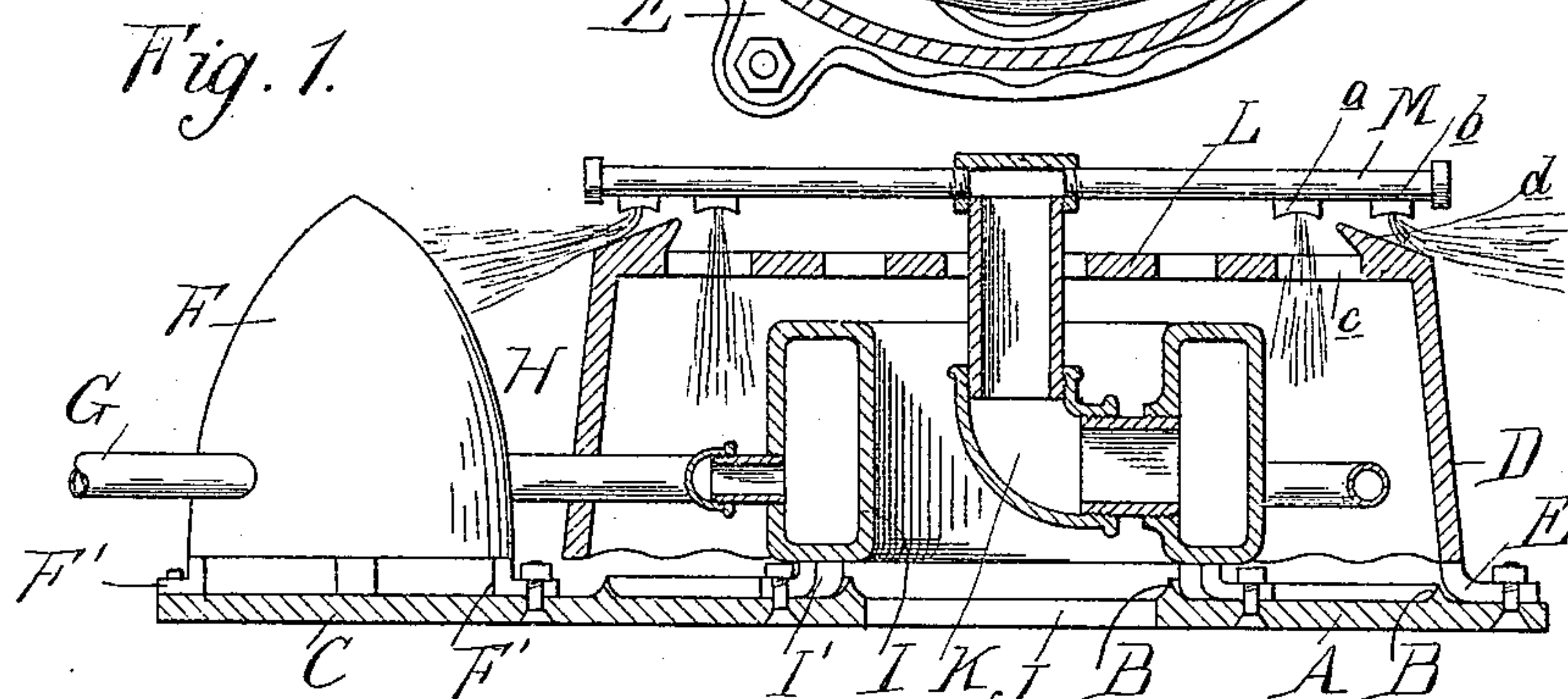
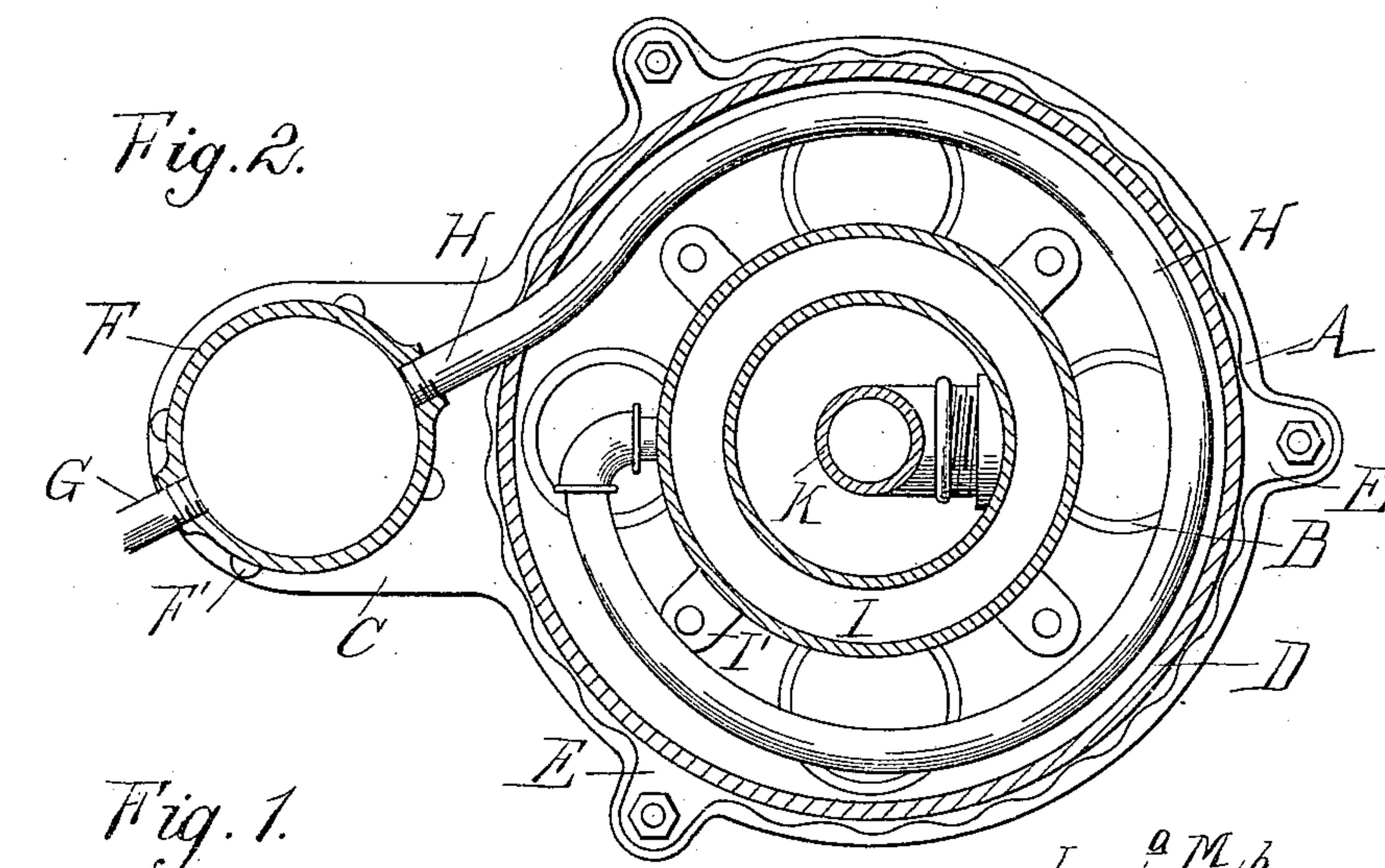


(No Model.)

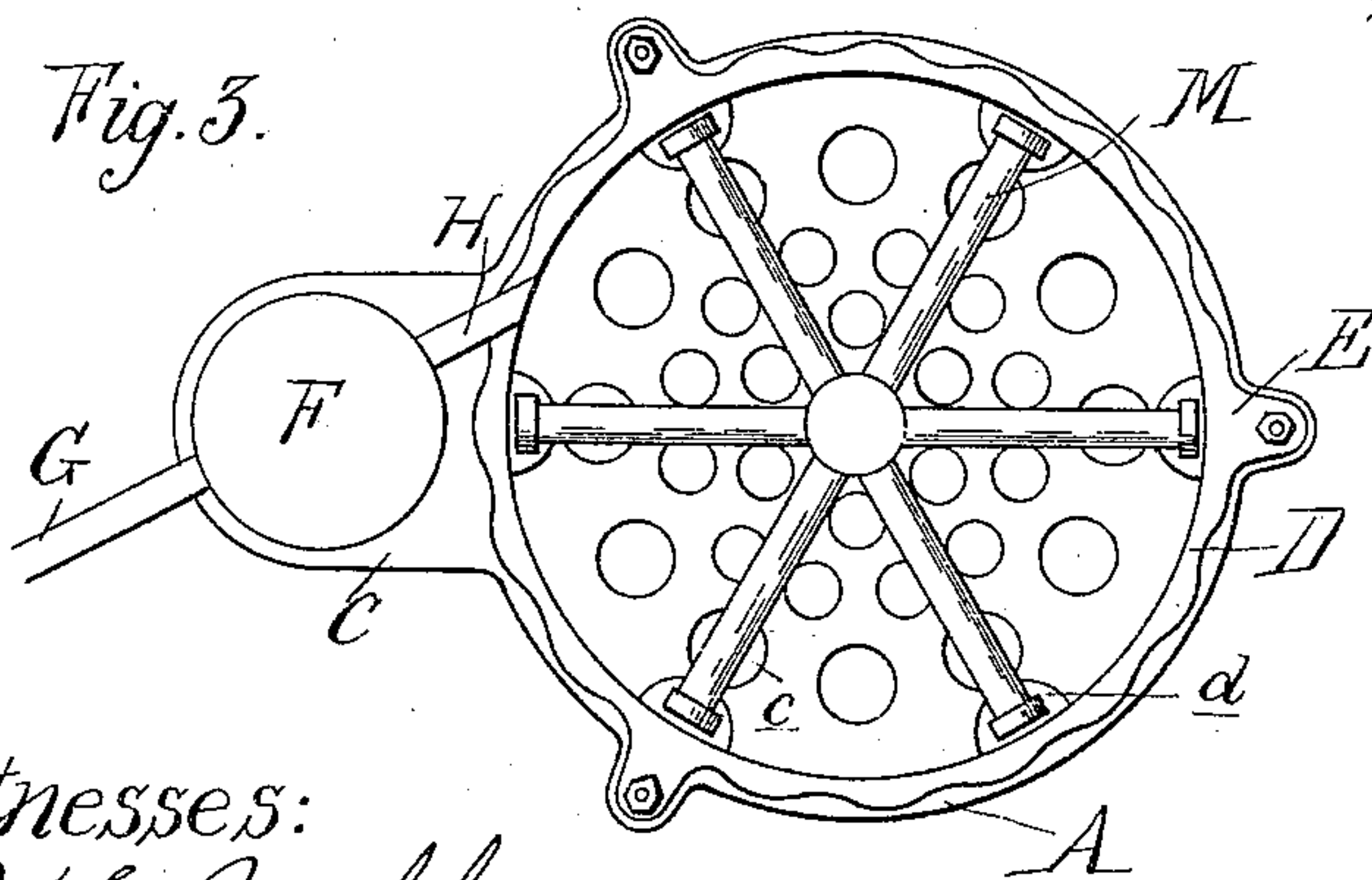
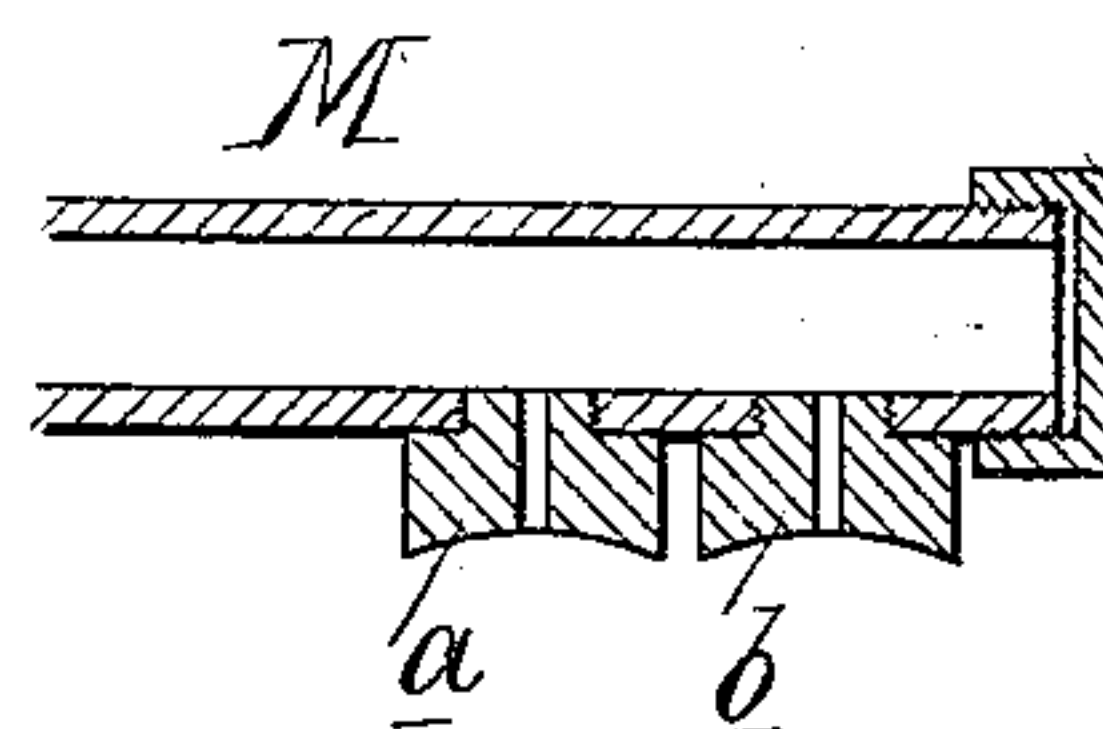
J. McGARRY.  
OIL BURNER.

No. 547,022.

Patented Oct. 1, 1895.



*Fig. 4.*



Witnesses:

*O. F. Barthel.*  
*M. S. Murphy*

Inventor:

*James McGarry,*  
*By Thos. S. Inaguet & Co.*  
*Attorneys.*



# UNITED STATES PATENT OFFICE.

JAMES MCGARRY, OF BAY CITY, MICHIGAN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF FIVE-EIGHTHS TO WILLIAM KELLY, HARRY C. MOULTHROP, AND THOMAS E. WEBSTER, OF SAME PLACE.

## OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 547,022, dated October 1, 1895.

Application filed September 18, 1894. Serial No. 523,406. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES MCGARRY, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Oil-Burners, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to oil-burners; and its object is to provide a new and improved burner designed for use in steam-generators, furnaces, stoves, &c., the burner being simple and durable in construction and readily applied to said constructions, besides utilizing the oil with the best economy.

The invention consists in the construction of a burner in which the oil is adapted to be vaporized by the heat in the combustion-chamber, in which is an enlarged superheating-chamber from which gas is fed through pipes to the burner.

The invention further consists in the peculiar construction, arrangement, and combination of the various parts, all as more fully hereinafter described.

In the drawings, Figure 1 is a vertical central section through my improved device, showing the oil-heating chamber in elevation. Fig. 2 is a central horizontal section there-through. Fig. 3 is a top plan view of the burner. Fig. 4 is a detail section through one of the boiler-tubes.

A is the base-plate, preferably ring-shaped and provided with depressions or cups formed within the flanges B to be used in collecting the oil before starting the burner in operation. At one side this base is provided with an extension C. Upon the base, and preferably of substantially the same shape and size, is the casing D, forming the combustion-chamber. This casing is provided with legs E, which raises the lower edge of the casing from the top of the base and forming the means of securing the two together.

Upon the extension C of the base is supported the preliminary heating-chamber F, raised above the base by means of suitable legs F' and secured thereto by any desired

means, such as by bolts. This chamber near its lower end is provided with an oil-inlet pipe G and connected to any suitable source of oil-supply. From the opposite side, and preferably at or near the same height, is connected one end of the gas-generating coil H, which passes through an aperture in the lower edge of the casing D and extends around the interior of that casing near the inner wall thereof. This generating-coil at its opposite end is secured into the ring-shaped gas-superheating chamber I, which is supported centrally on the base and raised a slight distance therefrom by means of legs I'. The base is centrally apertured, as shown at J, and the opening within this gas-generating chamber is arranged over the opening in the base. From the inner wall of this ring, at a point opposite the connection of the generating-coil, I connect the gas-supply pipe K, which extends vertically through the opening within the superheating-chamber and through a central aperture in the top L of the combustion chamber or casing. At its top it is provided with the radial burner-pipes M, which are provided, preferably, with two series of jets *a* and *b*. The jets *a* are arranged above the apertures *c* in the top of the combustion-chamber, while the jets *b* are arranged above the inclined deflector-plates *d* on the edge of the combustion-chamber.

The parts being thus constructed their operation is as follows: The device may be set into the furnace of a steam-generator, hot-water heater, or hot-air heater and connected with a suitable tank for supplying the oil, which is provided with the usual controlling-valve. This valve is opened to allow the oil to flow in the desired quantity into the preliminary heating-chamber F. In starting the oil in the cups in the upper face of the base is lighted and will quickly generate gas from the oil flowing into the gas-generating coil H, which gas will pass into the chamber I and be superheated therein, from which it will pass through the pipe K into the burner-tubes M and out through the jets *a* *b*, being ignited by the flames below. The fire will continue



burning as long as the oil is supplied into the chamber F. In the further operation of the device the oil will be heated by the flames in the combustion-chamber F and will pass  
 5 therefrom in this heated condition through the coil H, in which it will be quickly vaporized, and from thence it will pass into the superheating-chamber I, where a suitable body of gas or vapor will be maintained at all times  
 10 in a highly-superheated condition, which will cause it to be fed through the vertical pipe K to the burner. The air for combustion will be supplied through the apertures in the top of the combustion-chamber and through  
 15 the central aperture J in the base.

I have found that by employing a large superheating-chamber I, I not only obtain the best results in vaporizing the gas and feeding it to the burners at a high temperature,  
 20 but also insure a perfectly-steady volume, which I find is difficult, if not impossible, to obtain without such chamber. The combustion-chamber will be filled with flame from the jet *a*, while flame from the jet *b* will be  
 25 deflected laterally against the walls of the furnace in which it is placed, or, if desired, fire-brick may be arranged to receive the impact of this flame to be heated thereby.

I have found that with a burner constructed  
 30 as described oil cannot be fed through under ordinary circumstances, as the heat is so intense as to vaporize all oil fed into the generating-coil and the superheating-chamber.

It will be observed that I arrange the inlet  
 35 and outlet from the chamber F in such relation to the generating-coil as to enable me to make that coil with a single piece of pipe, if desired, and without any angles in the pipe

except where it enters the superheating-chamber. 40

What I claim as my invention is—

1. In an oil burner, the combination with a casing having marginal inclined deflecting surfaces, an oil heating chamber outside the casing, in line with a deflecting surface, a generating coil in the casing, a superheating chamber in the casing into which the coil leads, a burner above the casing, having a connection with the superheating chamber, and formed with jet openings directed into  
 45 the casing, and outer jet openings directed onto the deflecting surfaces outside the casing, substantially as described. 50

2. In an oil burner, the combination with the casing having a series of inclined deflecting surfaces at its outer edge, an oil supply pipe, a heating chamber outside of the casing and into which the pipe leads, a pipe leading from the base of the chamber, entering the casing at an incline and formed into a coil  
 55 within the casing, a central circular superheating chamber within the casing and into which the coil leads, a pipe leading from the chamber and extending centrally through the top of the casing, and radial burner arms having a plurality of jet openings in their under  
 60 sides, the inner jet openings being directed through the casing and the outer jet openings onto the deflecting surfaces outside of the casing, substantially as described. 65

In testimony whereof I affix my signature in presence of two witnesses. 70

JAMES MCGARRY.

Witnesses:

T. E. WEBSTER,  
 JOE MCGARRY.