

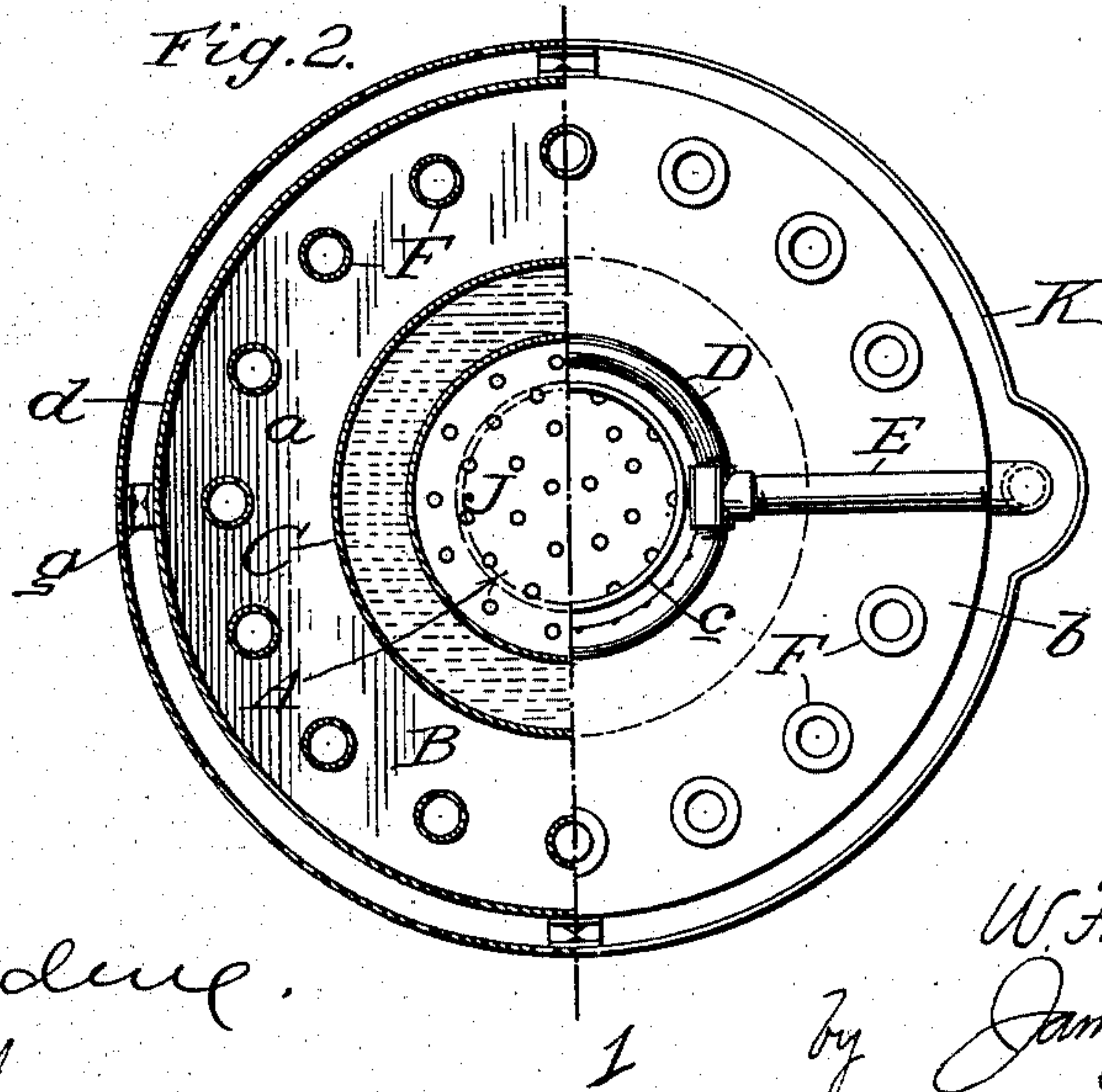
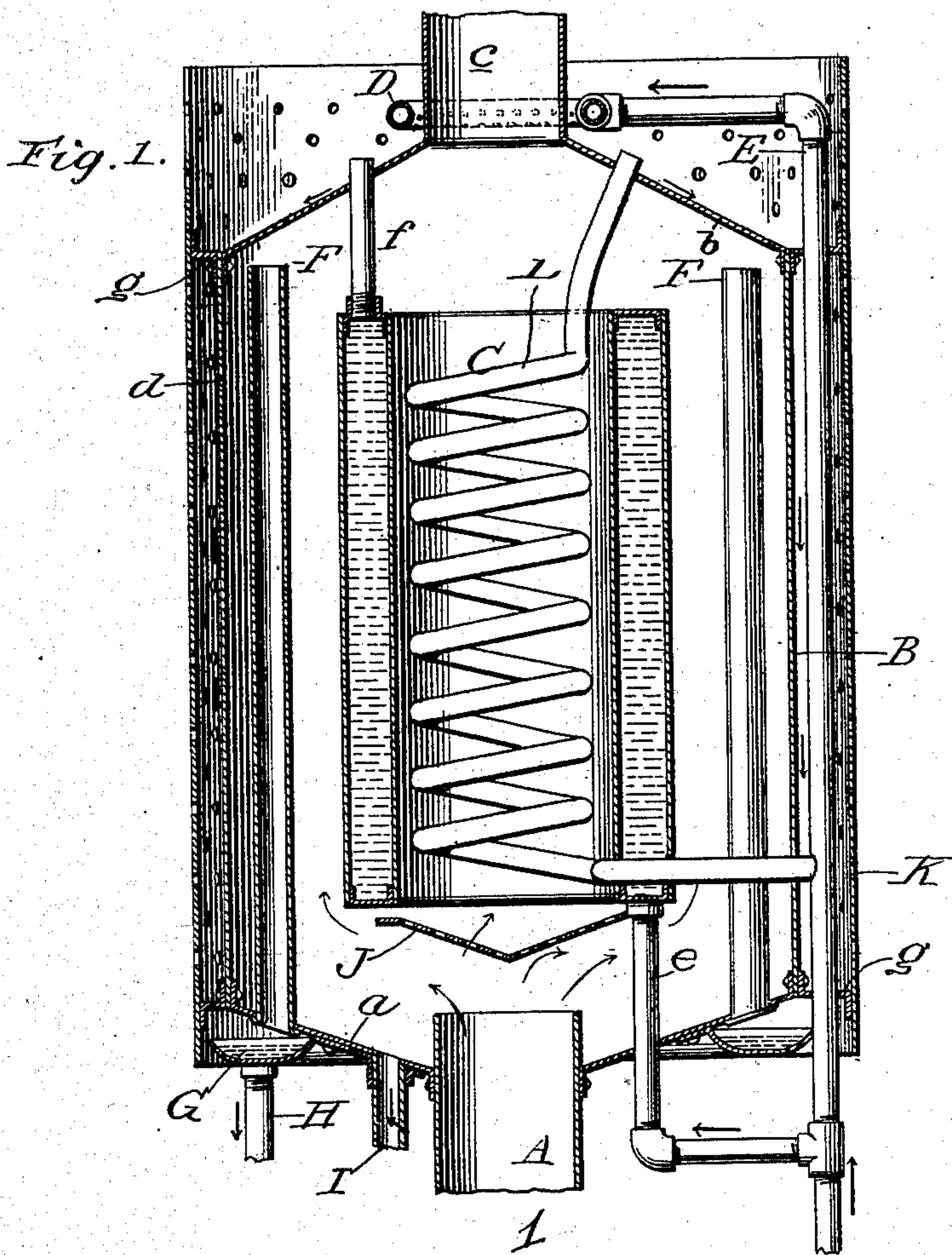
No. 749,549.

PATENTED JAN. 12, 1904.

W. F. FRICKE.
STEAM CONDENSER.

APPLICATION FILED OCT. 19, 1903.

NO MODEL.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM F. FRICKE, OF MOUNT STERLING, ILLINOIS.

STEAM-CONDENSER.

SPECIFICATION forming part of Letters Patent No. 749,549, dated January 12, 1904.

Application filed October 19, 1903. Serial No. 177,529. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. FRICKE, a citizen of the United States, residing at Mount Sterling, in the county of Brown and State of Illinois, have invented new and useful Improvements in Steam-Condensers, of which the following is a specification.

My invention pertains to steam-condensers or exhaust-heads, such as are designed more particularly for use at the tops of buildings; and it has for its object to provide a condenser which while simple and inexpensive in construction is possessed of a high degree of efficiency.

The invention will be fully understood from the following description and claims when taken in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a diametrical section of the condenser constituting the preferred embodiment of my invention, the same being taken on the line 1 1 of Fig. 2 and being shown with some of the air-tubes omitted, this latter with a view of avoiding confusion. Fig. 2 is a view, partly in plan and partly in horizontal section, of the condenser with the worm of pipe omitted.

Similar letters designate corresponding parts in both views of the drawings, referring to which—

A is a steam-supply pipe, preferably the exhaust-pipe of a steam-engine, and B is the shell of my novel condenser. The said shell is preferably of sheet metal and comprises a bottom wall *a*, inclined downwardly toward the center and connected to the pipe A, a top wall *b*, inclined downwardly in a direction away from the center and provided with a central vent-pipe *c*, and a side wall *d*, preferably circular, interposed between and connected to the bottom and top walls and serving in conjunction with the same to form a steam-chamber.

C is an upright tubular water-receptacle, of sheet metal or other suitable material, arranged in the chamber formed by the shell B and open at its lower and upper ends, so as to permit steam to pass through it. The said receptacle comprises inner and outer side walls and bottom and top walls, which are preferably circular in form, as illustrated. At its lower end

the receptacle is connected to a pipe *e*, which may lead from a pump or any suitable source of cold-water supply, while at the top of the receptacle a pipe *f* is provided, which extends through the top wall *b* of the shell B, so as to discharge water on said top wall.

D is an annular spray-pipe, which surrounds the vent-pipe *c*, and has for its purpose to discharge a spray of cold water on the top wall *b* of shell B, and E is a pipe which connects the spray-pipe with the cold-water supply-pipe.

F F are cold-air supply or ventilating tubes, which extend from the bottom wall of shell B, to which they are connected, to a point adjacent to the top wall of the shell and are open at their lower and upper ends. These tubes enable the suction created in the shell or steam-chamber to draw atmospheric air into said chamber, with the result that the temperature in the chamber is kept down and the condensing efficiency of the device as a whole is increased.

G is an annular water-pan connected to the bottom wall of the shell B and arranged to receive the water that finds its way down the outside of the shell.

H is a pipe connected to the pan G and having for its purpose to conduct the water back to the pump or other source of supply.

I is a pipe leading from the bottom of the shell B and designed to conduct water of condensation to the point where it is desired to use or store the same, and J is a foraminous baffle plate or spreader, which is arranged between the steam-pipe A and the water-receptacle C and has for its purpose to deflect a portion of the steam to the outside of said receptacle.

In the practical operation of my novel condenser cold water is forced through the receptacle C and the spray-pipe D and passes from the same down over the top and the outer side of the shell B and into the pan G. The steam which enters the shell B through the pipe A passes upwardly through the tubular receptacle C and also between said receptacle and the side wall of the shell B and is in consequence subjected to the condensing action of the inner and outer walls of the receptacle and the side and top walls of the shell. In

virtue of this and the air supplied to the interior of the shell B through the tubes F it will be observed that a very large percentage of the steam supplied to the shell will be converted into water of condensation, which is an important desideratum.

When my novel condenser is to be used at the top of a building, I prefer to provide the same with a cylindrical guard K, of foraminous metal or other suitable material. This guard surrounds the shell B, spray-pipe D, and water-pan G and is connected to the shell through the medium of brackets g, as best shown in Fig. 2. The purpose of the guard is to prevent wind from blowing the water away from the shell, spray-pipe, and water-pan, and thus without preventing air from gaining ready access to the outer side of the shell.

When desirable, a worm of pipe L may be used in the tubular water-receptacle C with a view of maintaining a low temperature in the condenser and contributing to the condensing capacity thereof. This worm of pipe is connected at its lower end with the cold-water supply-pipe E, and its upper end is arranged to discharge water on the top of shell B.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear, and exact understanding of the same. I do not desire, however, to be understood as confining myself to such specific construction and relative arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of my invention as claimed.

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

1. In a steam-condenser, the combination of a shell having an inlet at its bottom and an outlet at its top for steam, and also having its top inclined downwardly from its center, a spray-pipe surrounding the steam-outlet of the shell, and adapted to be connected with a source of cold-water supply, an upright tubular water-receptacle arranged in the shell, above the steam-inlet, and adapted to be connected to a source of cold-water supply; said receptacle having bottom and top and inner and outer side walls, and being open at its lower and upper ends, and a pipe leading from the upper portion of said receptacle, and arranged to discharge on the top of the shell.

2. In a steam-condenser, the combination of

a shell having an inlet at its bottom and an outlet at its top for steam, and also having its top inclined downwardly from its center, a water-receptacle arranged in the shell, and adapted to be connected with a source of water-supply, a pipe leading from the upper portion of said receptacle, and arranged to discharge on the top of the shell, and a pan connected to the bottom of the shell, and arranged to receive water from the outer side thereof.

3. In a steam-condenser, the combination of a shell having an inlet and an outlet for steam, means for discharging water on the top of the shell, a pan connected to the bottom of the shell, and arranged to receive water from the outer side thereof, and a foraminated guard surrounding and connected to the shell.

4. In a steam-condenser, the combination of a shell having an inlet at its bottom and an outlet at its top for steam, and also having its top inclined downwardly from its center, a spray-pipe surrounding the steam-outlet of the shell, and adapted to be connected with a source of cold-water supply, and an upright tubular water-receptacle arranged in the shell, above the steam-inlet, and adapted to be connected to a source of cold-water supply; said receptacle having bottom and top and inner and outer side walls, and being open at its lower and upper ends, a pipe leading from the upper portion of said receptacle, and arranged to discharge on the top of the shell, a pan connected to the bottom of the shell, and arranged to receive water from the outer side thereof, a foraminated guard surrounding and connected to the shell, and air-inlet pipes grouped about the steam-inlet of the shell, and extending upwardly in the same.

5. In a steam-condenser, the combination of a shell having a steam-inlet at its bottom, and also having a vent, an upright, tubular water-receptacle arranged in the shell, above the steam-inlet, and open at its lower and upper ends; said receptacle having inner and outer side walls and top and bottom walls, and being adapted to be connected with a source of water-supply, and a worm of pipe disposed within the receptacle, and also adapted to be connected with a source of water-supply.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM F. FRICKE.

Witnesses:

H. A. TWOMBLY,
T. W. NEWBY.