

(No Model.)

R. MÜLLER.
STEAM BOILER AND FURNACE.

No. 483,260.

Patented Sept. 27, 1892.

Fig. 5.

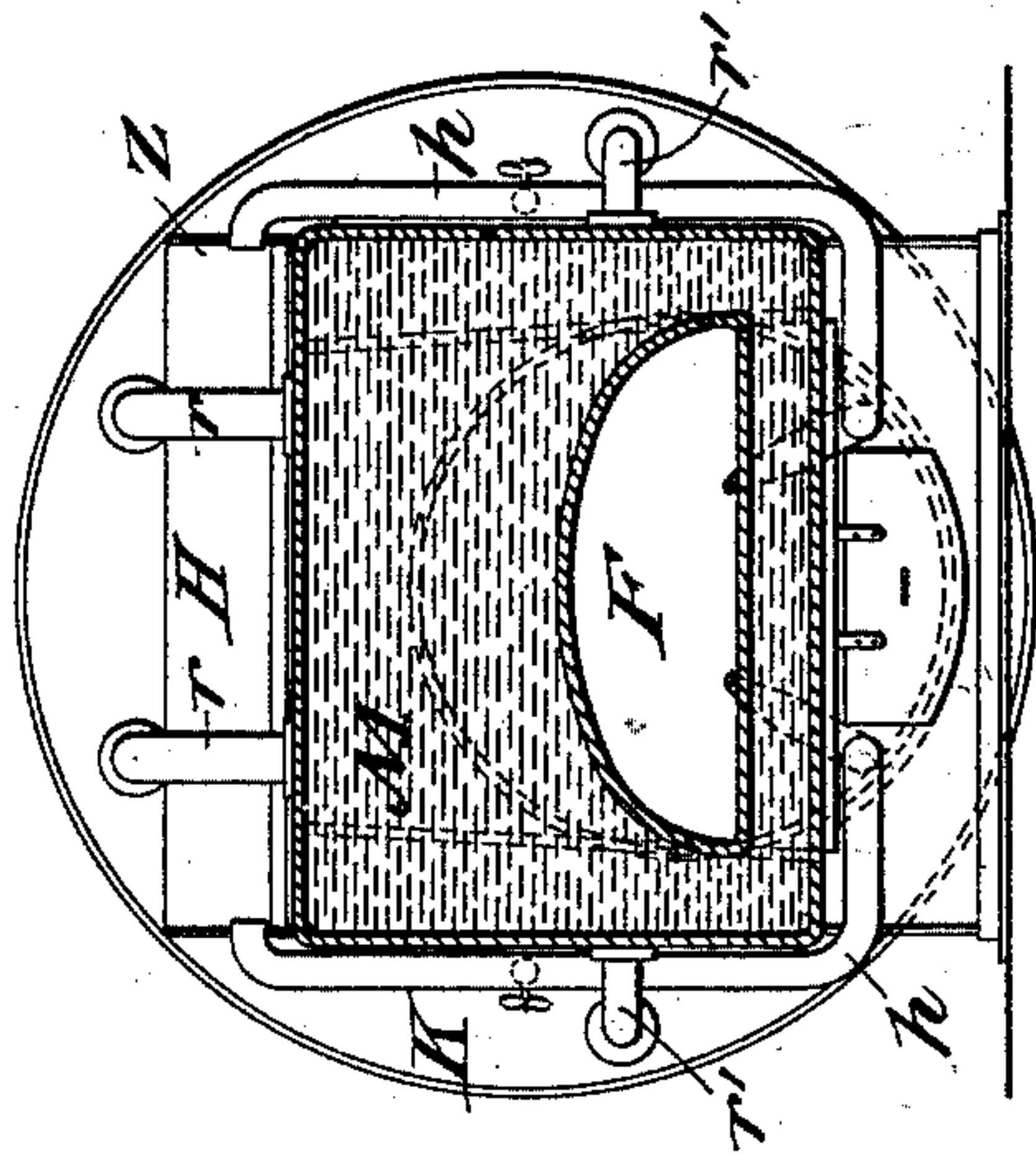


Fig. 4.

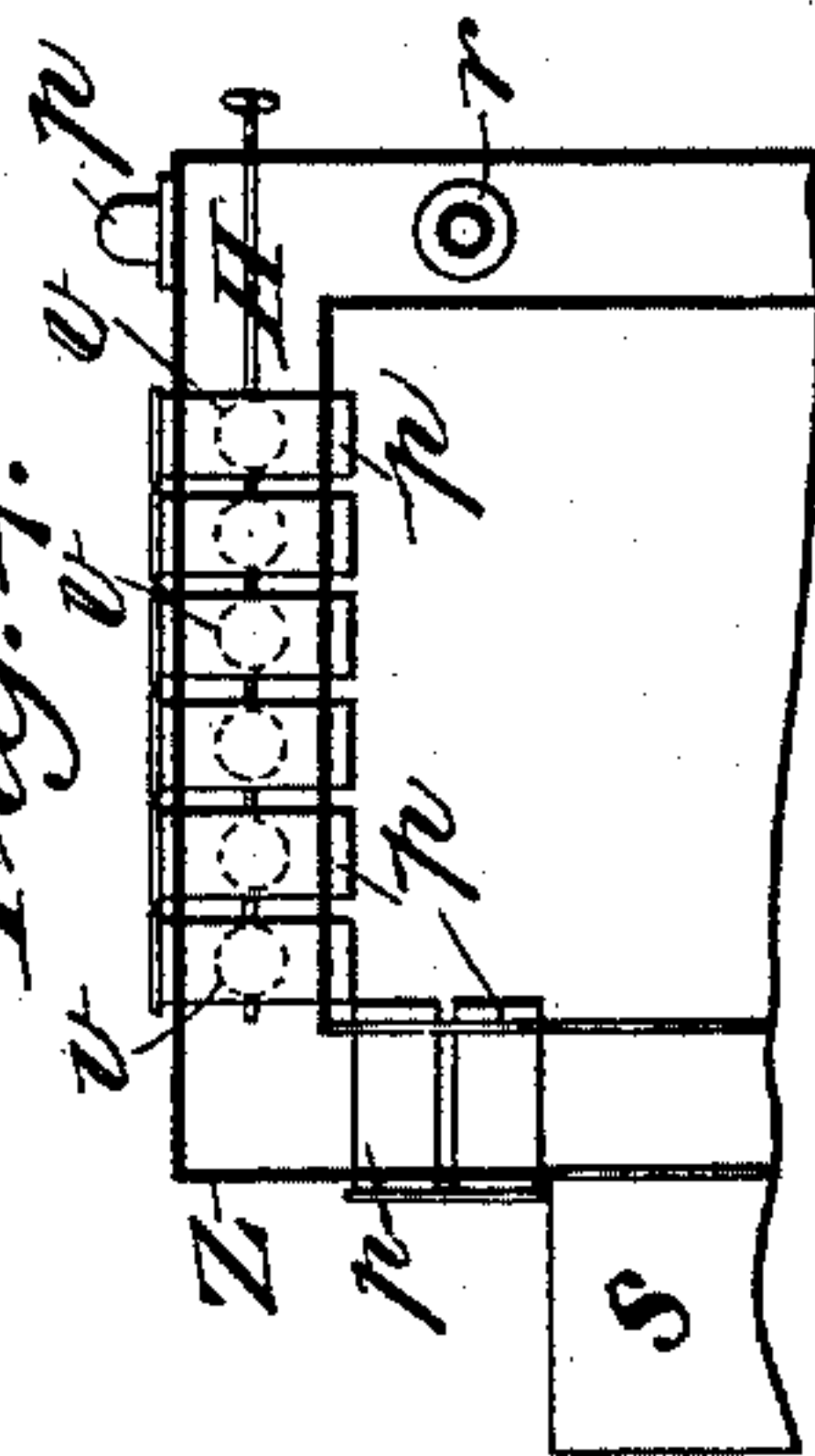


Fig. 2.

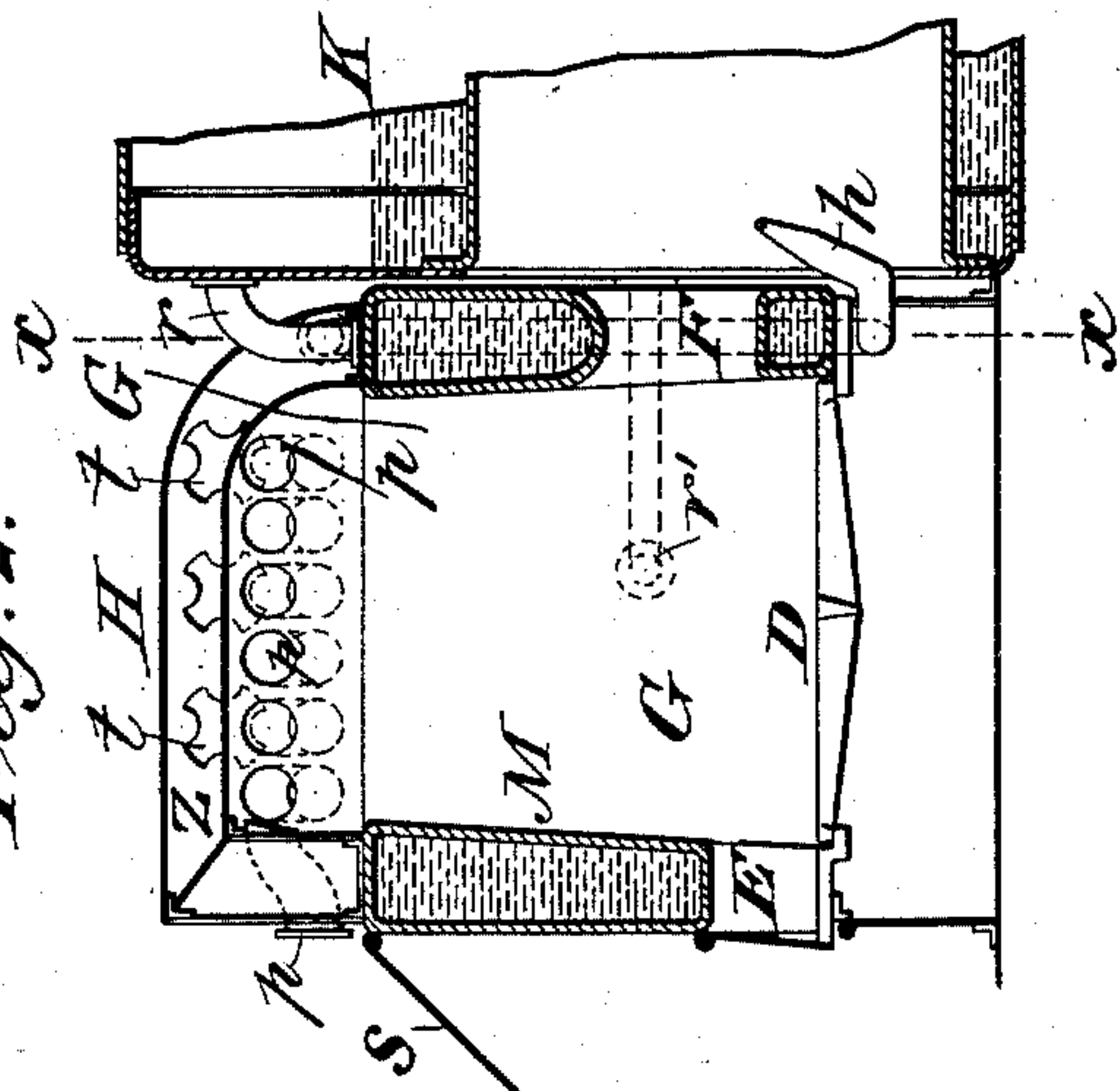


Fig. 3.

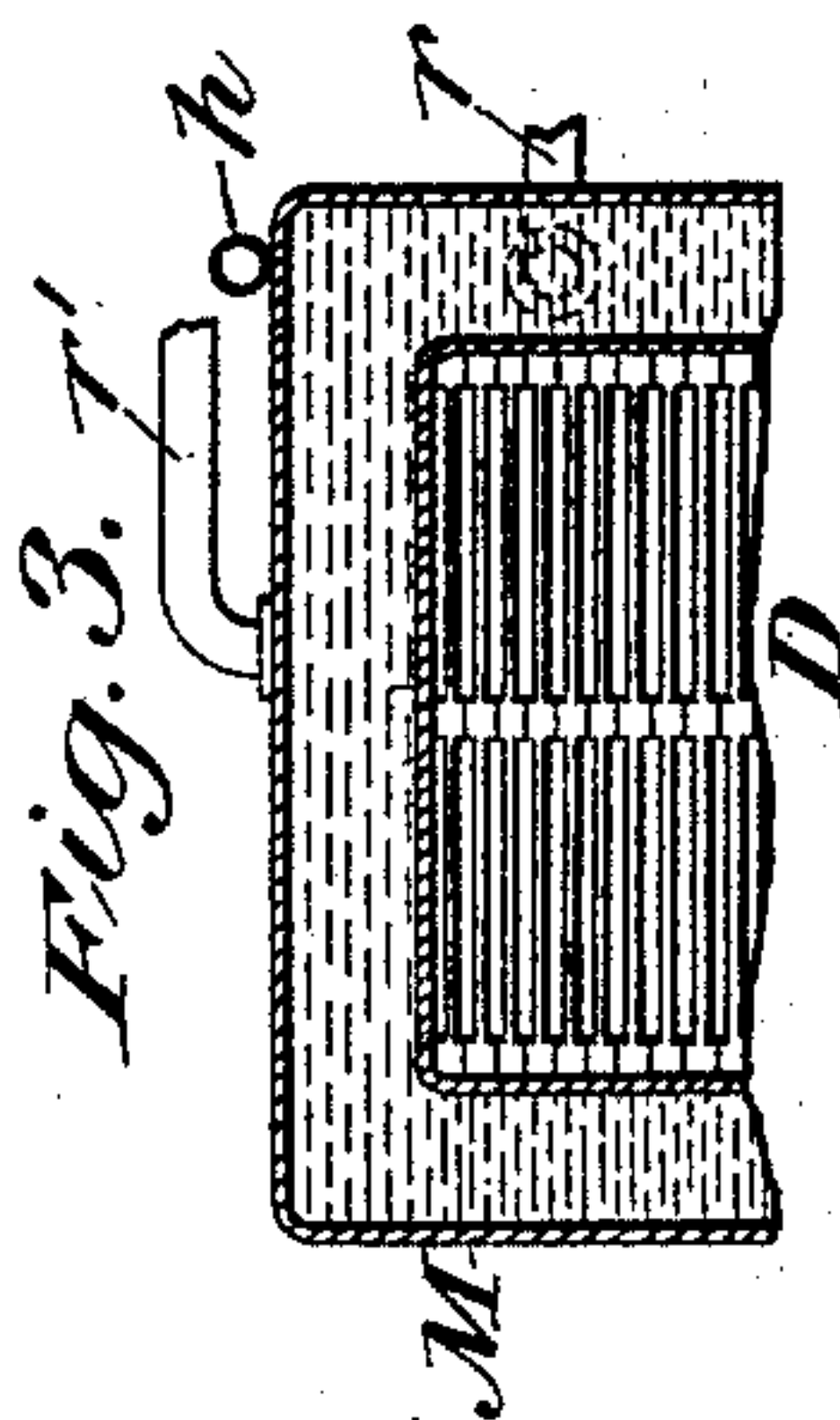
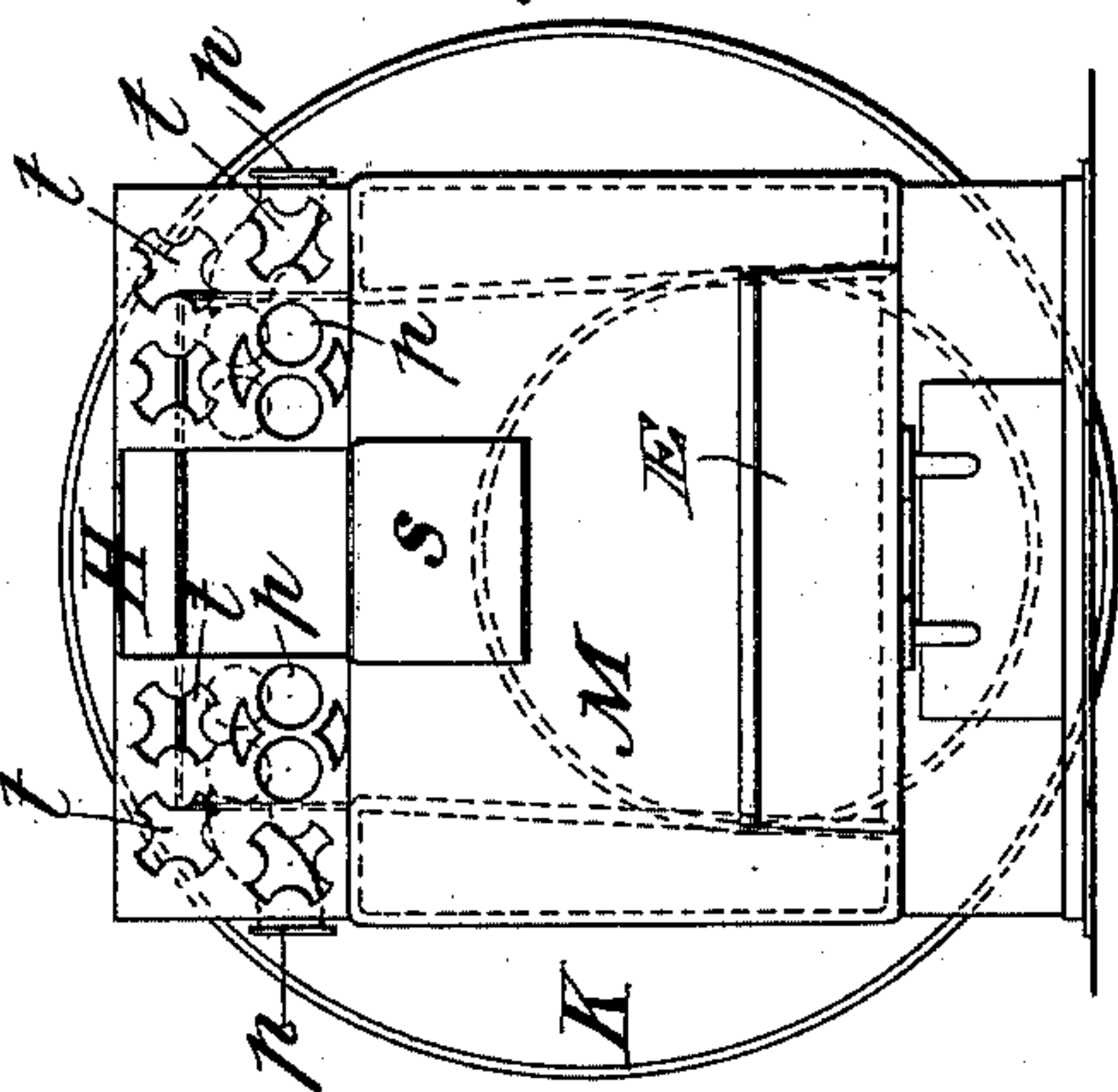


Fig. 1.



Witnesses:-
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RUDOLF MÜLLER, OF REIHERSTIEG, HAMBURG, GERMANY.

STEAM-BOILER AND FURNACE.

SPECIFICATION forming part of Letters Patent No. 483,260, dated September 27, 1892.

Application filed May 19, 1892. Serial No. 433,504. (No model.)

To all whom it may concern:

Be it known that I, RUDOLF MÜLLER, of Reiherstieg, Hamburg, in the Empire of Germany, have invented a new and useful Improvement in Steam-Boilers and Furnaces, of which the following is a specification.

The object of this invention is to utilize more fully the heat given out by the combustion in a boiler-furnace and to prevent the formation of smoke; and the improvement principally consists in combining with the boiler proper a second boiler or preliminary heater of special construction, hereinafter described and claimed, the steam and water spaces of which are in communication, respectively, with the steam and water spaces of the main boiler and which serves in its interior as a furnace-space or combustion-chamber.

In the drawings hereto annexed, Figure 1 is a front elevation of the main and preliminary boilers. Fig. 2 is a central longitudinal section of the preliminary boiler and part of the main boiler. Fig. 3 is a horizontal cross-section on a central line. Fig. 4 is a horizontal section through the hood or cover of the preliminary heater, and Fig. 5 is a section on line *xx* of Fig. 2.

The preliminary heater consists of a rectangular or cylindrical water-jacket M, composed simply of hollow upright walls, which in height extend only so far as the usual water-level lies in the main boiler K. The space within these hollow walls is completely filled with water and communicates with the water-space in the main boiler by pipes *r'*. The said space also communicates by pipe *r* with the steam-space of the said main boiler, this pipe leading from the highest part of the jacket M. This jacket M has no extension or water part under the hollow space G, which its interior forms, but is closed below by a grate D and is open above to be covered by a hood H, as hereinafter described.

E is a space left for a cleaning-door, and F

a passage for the fire-gases to pass to the tube or tubes of the main boiler. The interior space G of the preliminary heater is intended to be filled more or less with the fuel to be burned and while being burned. This fuel is supplied through an opening in the hood H, closed by the door *s*. The hood H is a double cover of sheet metal Z, with space between the two sheets. Through the sheet walls and through the space pass lengths of pipe *p*, open to the air outside the hood and communicating with the interior space G. In these pipes *p* are throttle-valves *v v*, as shown in Fig. 4.

t t t are openings in the outer sheet of the hood, which allow air to pass freely to the space between the sheets of the hood to prevent the latter from being too highly heated. The fuel, which should perfectly fill the whole space G, burns near the grate D and is warmed throughout toward the top, so that the feed-air, which enters by pipes *p* and passes down through the fuel, is warmed by the upper layers of fuel until it enters the combustion-zone. It is intended that fresh air from below should only enter during the commencement of the action of the furnace to assist the lighting up. A blast-pipe *h* may also be arranged, as shown, to draw or force air into the tube of the main boiler.

What I claim as my invention is—

The combination, with a boiler, of a water-jacket consisting of hollow upright walls which constitute the surrounding walls of a fire-box, a grate constituting the bottom of said fire-box, and a double hood situated above said water-jacket and constituting the top of said fire-box, the said double hood containing an air-space and having in it air-inlets to the fire-box above said water-jacket, substantially as set forth.

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Witnesses:

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