

No. 687,179.

Patented Nov. 19, 1901.

J. DAMEY & W. H. CORK.  
HEATER.

(Application filed Mar. 6, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

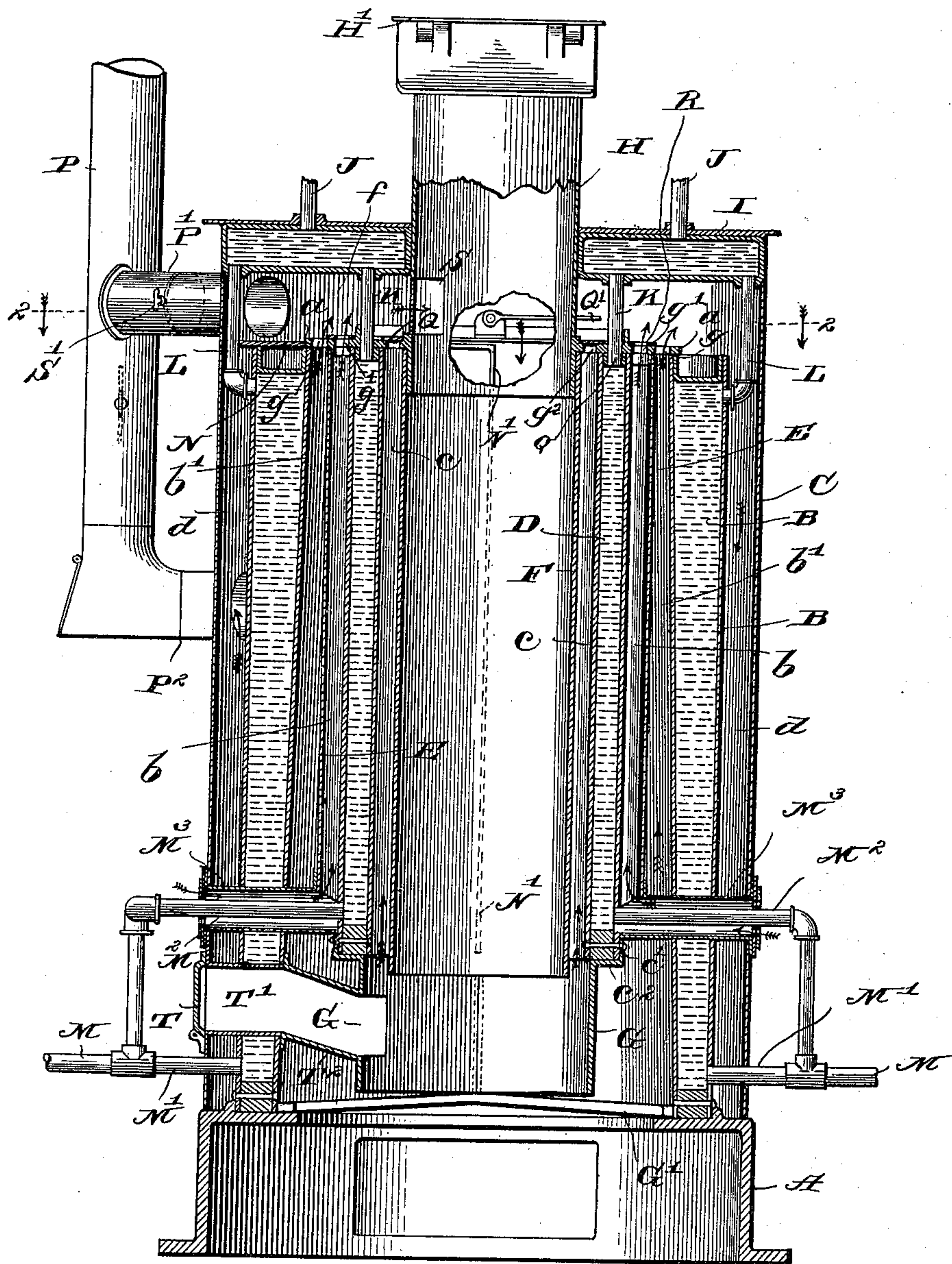
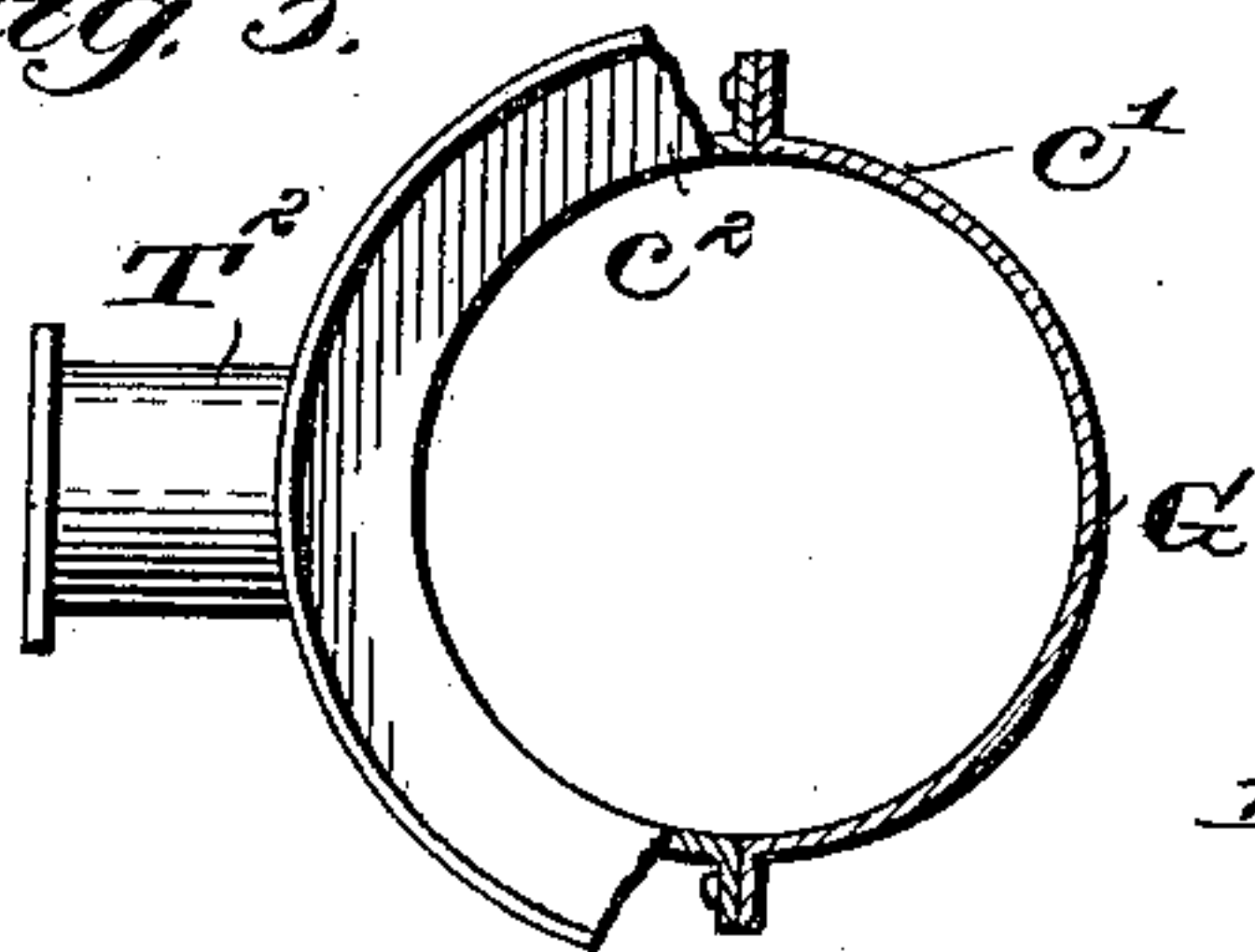


Fig. 5.



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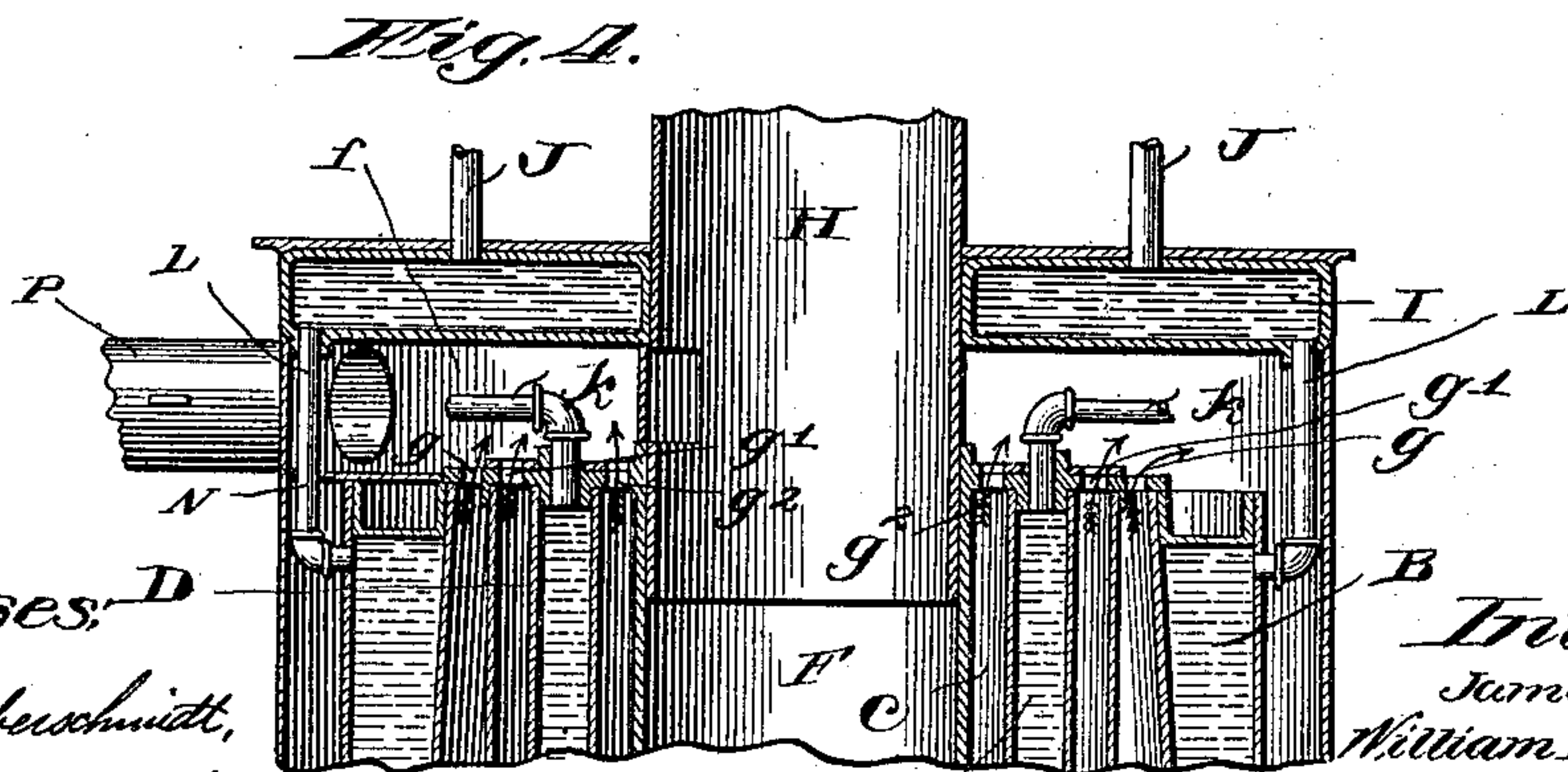
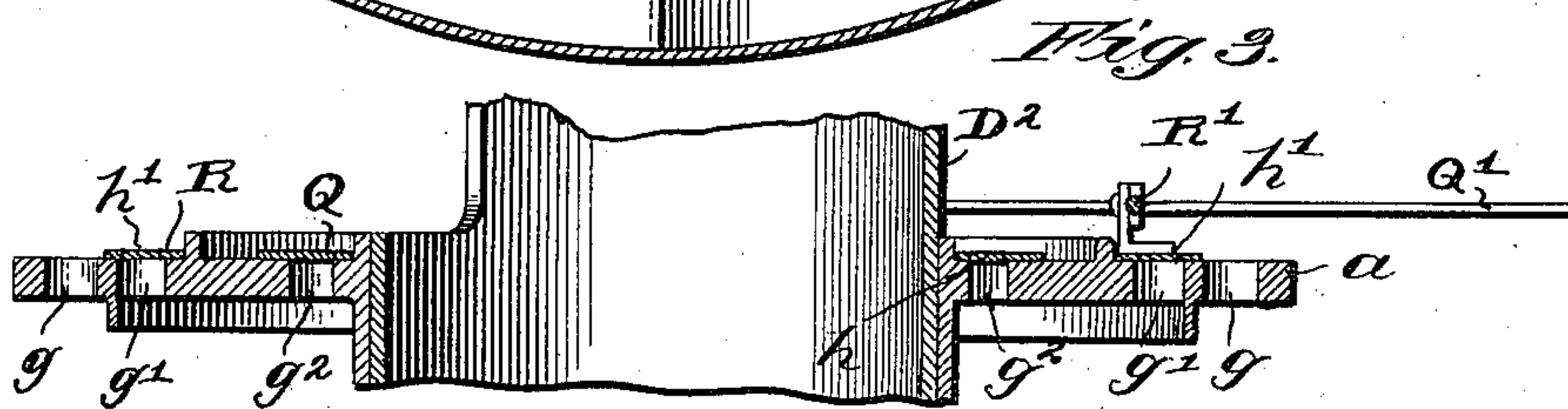
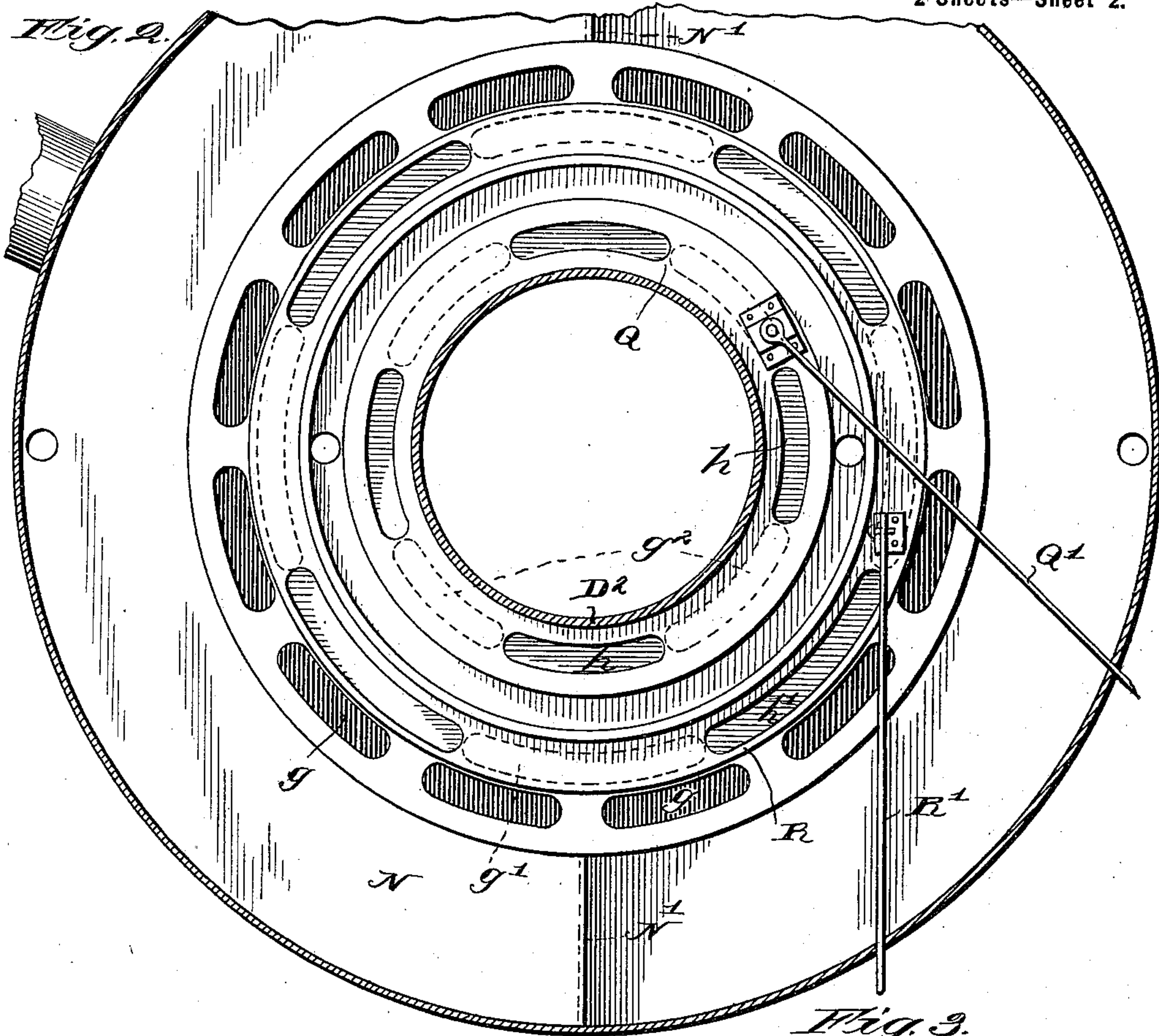
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(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

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## HEATER.

SPECIFICATION forming part of Letters Patent No. 687,179, dated November 19, 1901.

Application filed March 6, 1901. Serial No. 50,044. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES DAMEY and WILLIAM H. CORK, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Heater, of which the following is a specification.

Our invention relates particularly to heaters having connected therewith a hot-water-supply circuit and a steam or hot-water heating circuit.

Our primary object is to provide a heater of this nature of simple construction, of great heating capacity, and capable of economical operation at all seasons of the year.

Our invention is illustrated in its preferred form in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a heater embodying our improvements; Fig. 2, a transverse section taken as indicated at line 2 of Fig. 1; Fig. 3, an enlarged broken vertical section at the upper portion of the heater; Fig. 4, a similar section illustrating a modification of the connections of the hot-water chambers with the circuits, and Fig. 5 a broken detail view of a removable inner fire-pot employed.

A represents a base for the heater; B, an annular water-chamber of well-known general form supported thereon; C, an inclosing drum supported on said base and projecting above the top of said chamber; D, an inner annular water-chamber supported by a flange  $a$ , which rests upon the upper end of the chamber B; E, an inner drum dividing the space between the chambers B and D into annular spaces  $b$  and  $b'$ ; F, a fuel-magazine separated from the chamber D by a space  $c$ ; G, a removable inner fire-pot depending from the lower end of the chamber D to near the main grate  $G'$  and comprising separable sections  $c'$   $c^2$ ; H, an upward extension for the magazine F, the same being provided with a lid  $H'$ , whereat fuel may be introduced; I, a shallow water-chamber or steam-dome through which the extension H projects and which affords a top for the heater; J, outgoing pipes; K, pipe connections between the chambers D and I; L, pipe connections be-

tween the chambers B and I; M, return-pipes having branch pipes  $M'$  and  $M^2$  connected, respectively, with the outer and inner chambers;  $M^3$ , conduits for the pipes  $M^2$ ; N, a half-annular plate, which closes the upper end of the annular outer space  $d$  at one side of the furnace;  $N'$ , vertical partitions extending downward from the ends of the plate N and dividing the space  $d$  vertically; P, a smoke-stack provided with branch pipes  $P'$   $P^2$ , the former connecting with a space  $f$  above the plate N and the latter with the space  $d$  beneath said plate; Q, a damper for closing the upper end of the space  $c$ , the same being operated by a rod  $Q'$ ; R, a damper for the upper end of the flue  $b$ , the same being operated by a rod  $R'$ ; S, a damper, which may be moved to put the magazine F into communication with the space  $f$ ;  $S'$ , a damper for the branch pipe  $P'$ ; T, a fire-door;  $T'$ , a fuel-passage thereat, and  $T^2$  a removable chute for the inner fire-pot.

As shown, the plate or flange  $a$  is provided with flue-openings  $g$   $g'$   $g^2$ , and the dampers Q and R are provided with passages  $h$   $h'$ , respectively, which may be turned to register with the corresponding passages of the flange  $a$ .

In the modification shown in Fig. 4 the chambers B and I are connected; but the chamber D is not connected with the chamber I. Instead it is provided with outgoing pipes  $k$ , which may pass directly to a hot-water-supply circuit, while the pipes J may connect with the heating-circuit. Separate return-pipes would be provided in such case.

In operation when the heater is to be used as a return-flue heater or base-burner the dampers S  $S'$  are closed and the inner fire-pot G and chute  $T^2$  removed. The magazine F can then be charged with fuel, and the course of the products of combustion will be as indicated by the arrows in Fig. 1. Should too much heat be contributed to the chamber D, as when the heating and hot-water supply circuits are independent, the draft adjacent to said chamber may be regulated by the dampers Q and R. It will readily be seen that with the dampers S and  $S'$  closed any gases passing up through the flues  $b$   $b'$  on the side



of the heater adjacent to the smoke-stack will be caused by the plate K to pass down along the vertical partitions K' and finally to ascend to the branch pipe  $p^2$ . When it is desired to  
 5 reduce the capacity of the heater and to prevent so far as possible radiation into the room where the heater is located, as in the summer-time, the fire-pot G is put in place and the dampers S S' are opened to give a direct draft  
 10 through the magazine F and the flue-space c to the pipe P. The effect in such case would be to heat the chamber D, while the outer walls of the heater as a whole would remain cold. This would be the case particularly  
 15 where the circuit of the chamber D is independent of the circuit of the chamber B, as in Fig. 4. Of course the chamber D could be arranged to supply either the heating-circuit or the hot-water-supply circuit, or both,  
 20 and this without causing the circulation to pass through the chamber D.

Many heaters are now in operation which are provided with the base A and the water-chamber B, but no provision is made therein  
 25 for attaining the economical results attributable to our invention. Such heaters can be converted into an improved heater of greatly-increased capacity by means of our invention. The interior parts are supported,  
 30 as stated, by the flange a, which merely rests upon the top of the chamber B. The drum C and other outer parts can be connected readily.

Changes in details of construction within  
 35 the spirit of our invention may be made. Hence no limitation is to be understood from the foregoing detailed description, except as shall appear from the appended claims.

What we claim as new, and desire to secure  
 40 by Letters Patent, is—

1. In a heater, the combination of a base, an annular water-chamber supported thereon, a drum inclosing said chamber and extending some distance above the same, a central magazine provided with an upward extension having a damper thereat, an annular water-chamber separated from said magazine and said first-named water-chamber by annular spaces, a smoke-stack having a branch connection  
 45 with the top of the heater and another branch connection at a lower plane, and a damper for the upper branch connection, substantially as described.

2. In a heater, having an annular water-chamber, an annular flue adjacent thereto and a separate flue, a damper controlling the products of combustion through said first-named flue, whereby the degree of heat contributed to said water-chamber may be regulated, substantially as described.  
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3. In a heater, having an annular water-chamber and an annular flue adjacent thereto, an annular damper near the upper end of said flue and rotatable about a vertical axis,  
 65 whereby the passage of the products of combustion from said flue may be controlled and

the heat contributed to said water-chamber regulated, substantially as described.

4. In a heater, the combination of a base, a casing supported thereon, a grate at said  
 70 base, a central fuel-magazine, an annular water-chamber outside said magazine and separated therefrom by an annular flue, a removable inner fire-pot connected with said water-chamber, a smoke-stack, passages and  
 75 dampers, whereby the heater may be employed as one of large capacity, or as one of reduced capacity, substantially as and for the purpose set forth.

5. In a heater, the combination of a base, 80 an annular water-chamber supported thereon, a grate at said base, a drum outside said water-chamber and forming therewith a return-flue, an inner annular water-chamber having its lower end located some distance above  
 85 said grate, a top for the outer drum, a central fuel-magazine within said inner water-chamber, an extension for said magazine projecting through said top, a damper for said extension, a half-annular plate closing the  
 90 open end of the outer flue at one side of the heater, a smoke-stack at the adjacent side of the heater having branch connections communicating with the heater, one above and one below said last-named plate, dampers at  
 95 the magazine extension and the upper branch connection of the smoke-stack, and means for confining the fire to the inner heating device at will, substantially as and for the purpose set forth.  
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6. In a heater, the combination of a base, a grate at said base, an annular water-chamber supported on the base, an inclosing drum supported on the base and projecting above  
 105 said annular heater, a top for said drum, an inner annular heater supported at a distance below said top and extending to near the grate, a central fuel-magazine extending to near said grate and having an upward extension projecting through said top, a smoke-stack  
 110 having branch connections, one near the top of the heater and the other some distance below, a damper at the magazine extension, a damper at the upper branch smoke-stack connection, and a removable fire-pot connected with said inner water-chamber, substantially as and for the purpose set forth.  
 115

7. In a heater, the combination of a base, a grate at said base, an annular water-chamber supported on the base, an inclosing drum  
 120 supported on the base and projecting above said annular heater, a top for said drum, an inner annular heater supported at a distance below said top and extending to near the grate, a central fuel-magazine extending to  
 125 near said grate and having an upward extension projecting through said top, a smoke-stack having branch connections, one near the top of the heater and the other some distance below, a damper at the magazine extension, a damper at the upper branch smoke-stack connection, an annular water-chamber  
 130



at the heater-top and connections between said first-named water-chamber and said last-named water-chamber, substantially as described.

- 5 8. In a heater, a central fuel-magazine in combination with an annular water-chamber with a flue between the same and said magazine, an inclosing casing with a flue outside of and adjacent to said water-chamber and

annular dampers at the upper ends of said 10 flues, substantially as and for the purpose set forth.

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In presence of—

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