

(No Model.)

2 Sheets—Sheet 1.

J. GORMLY.

RADIATOR.

No. 319,230.

Patented June 2, 1885.

Fig. 1.

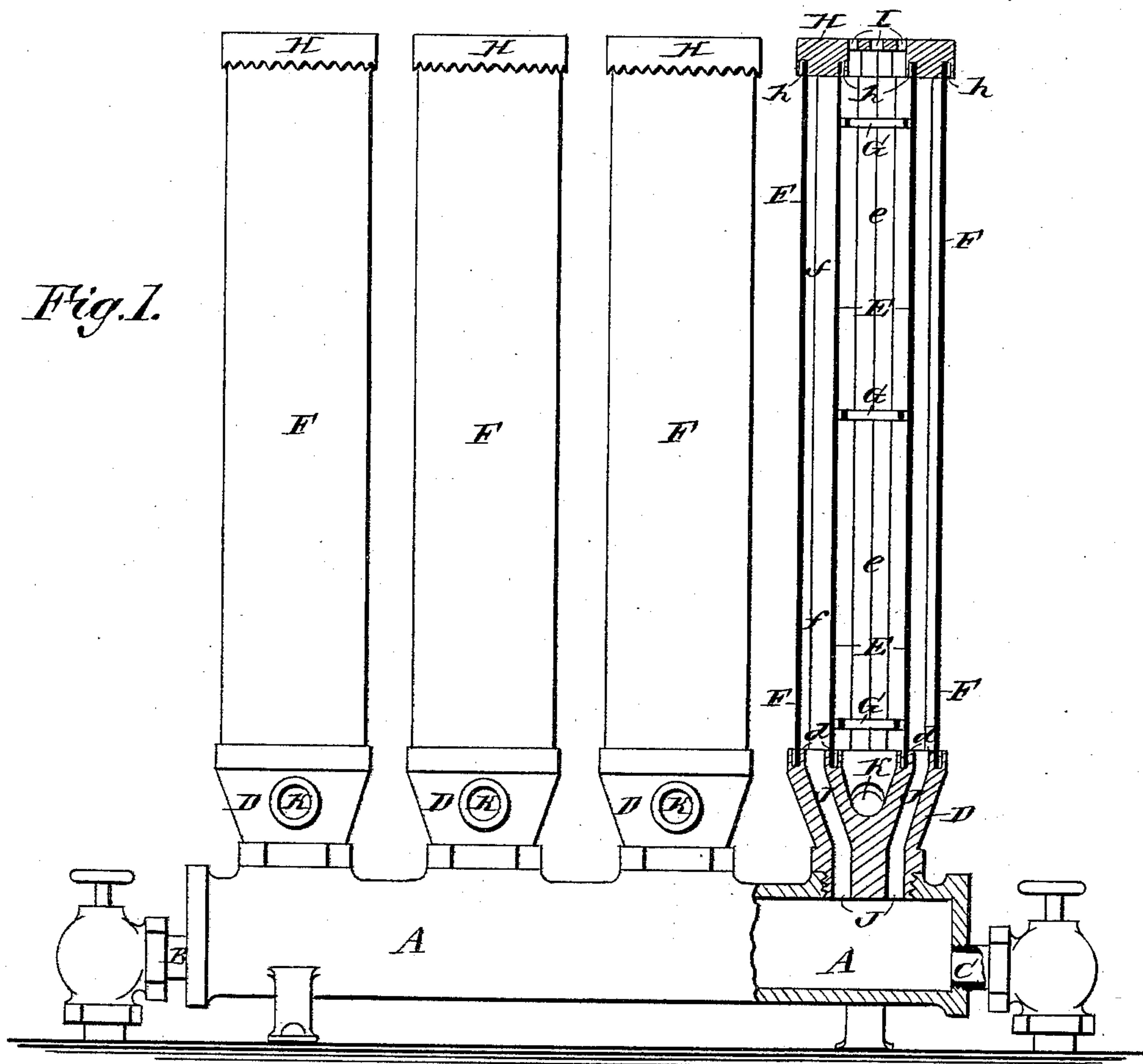
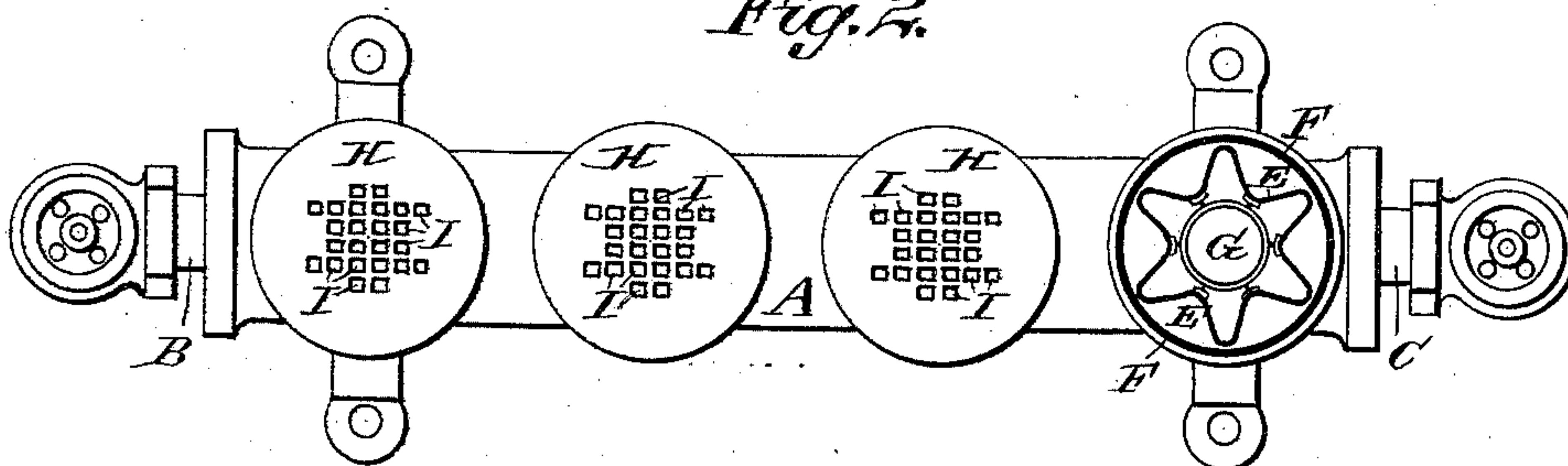


Fig. 2.



WITNESSES:

Atto. Beyer
C. Sedgwick

INVENTOR:

J. Gormly
BY *Munn & Co*
ATTORNEYS.

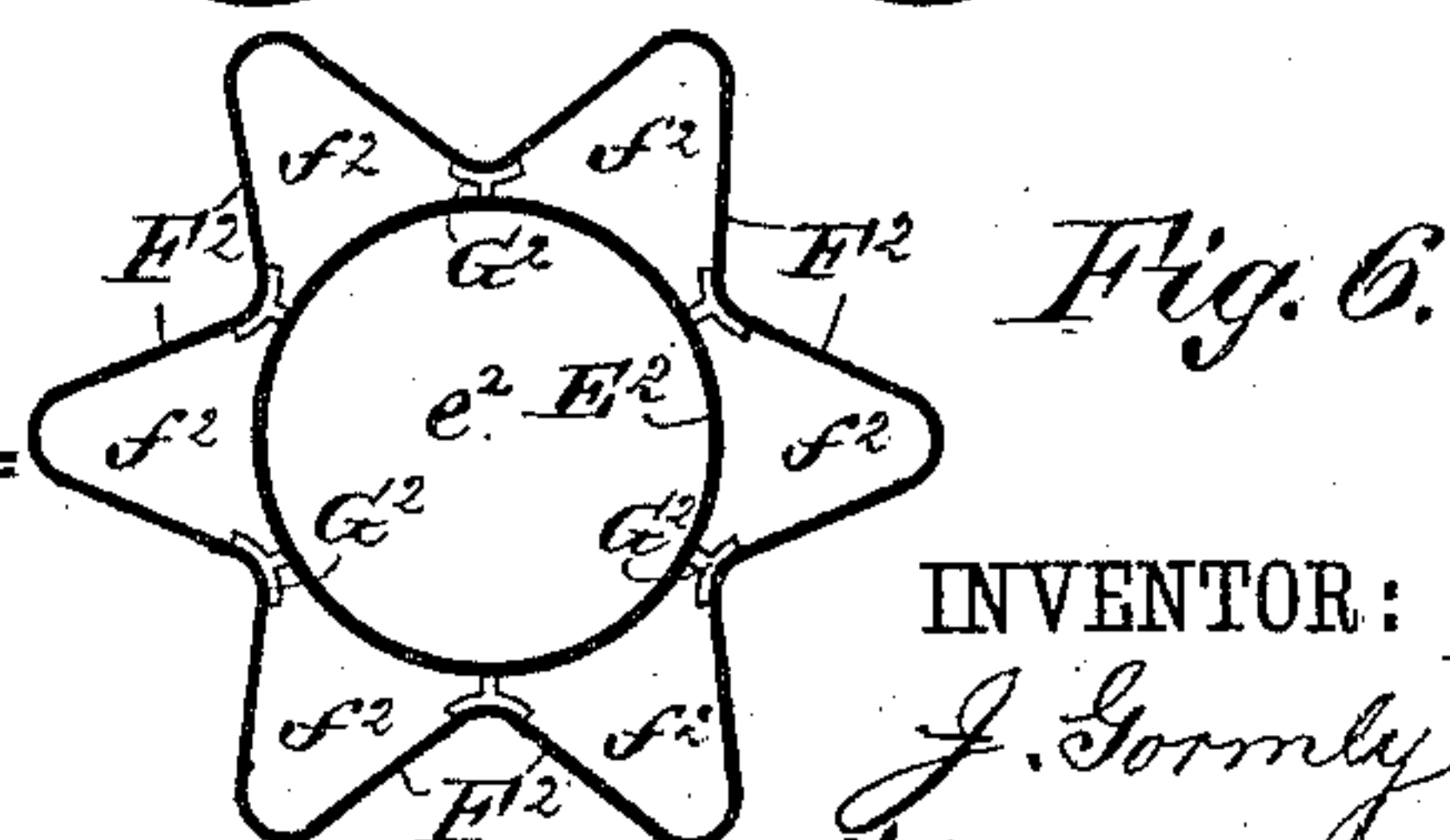
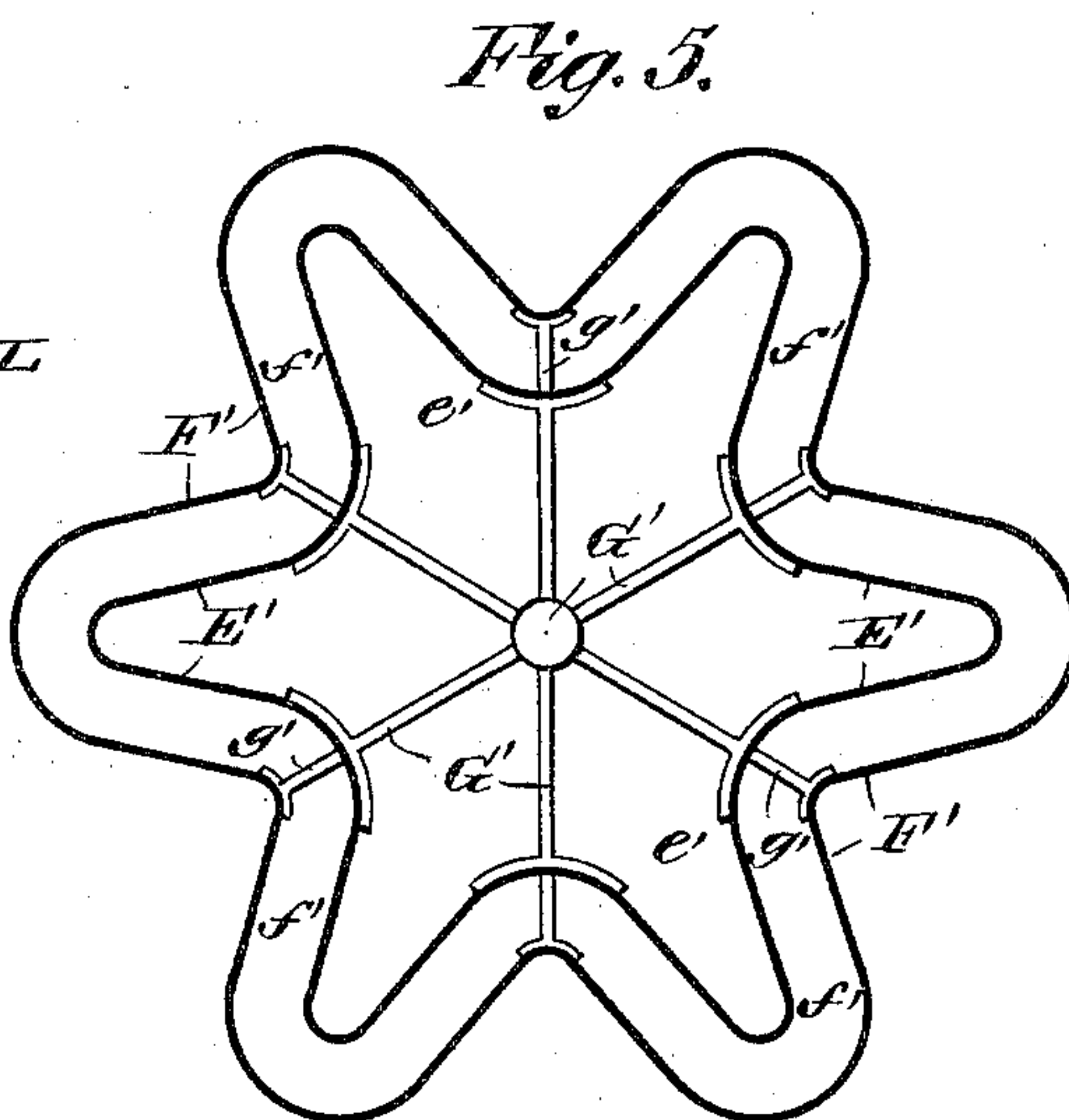
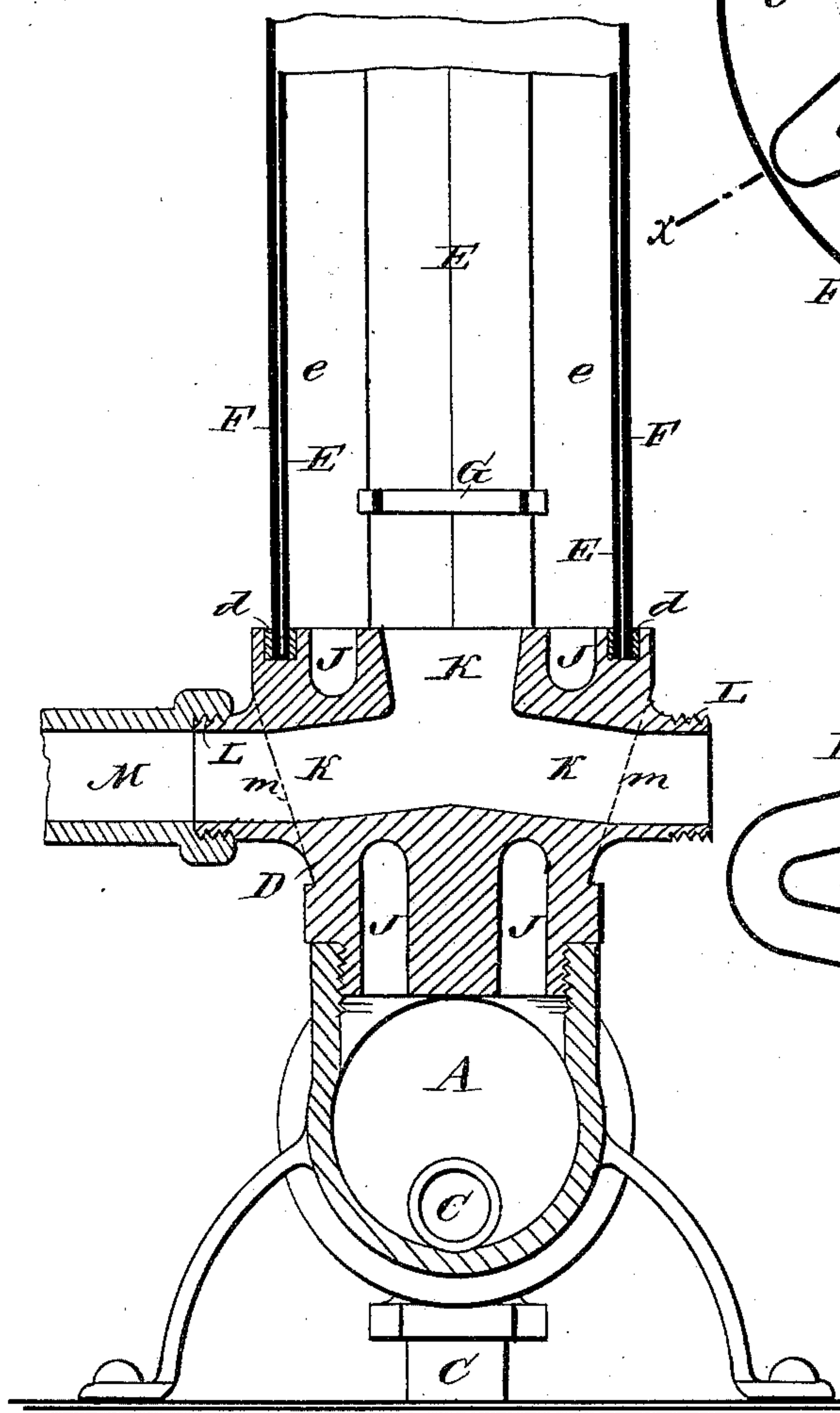
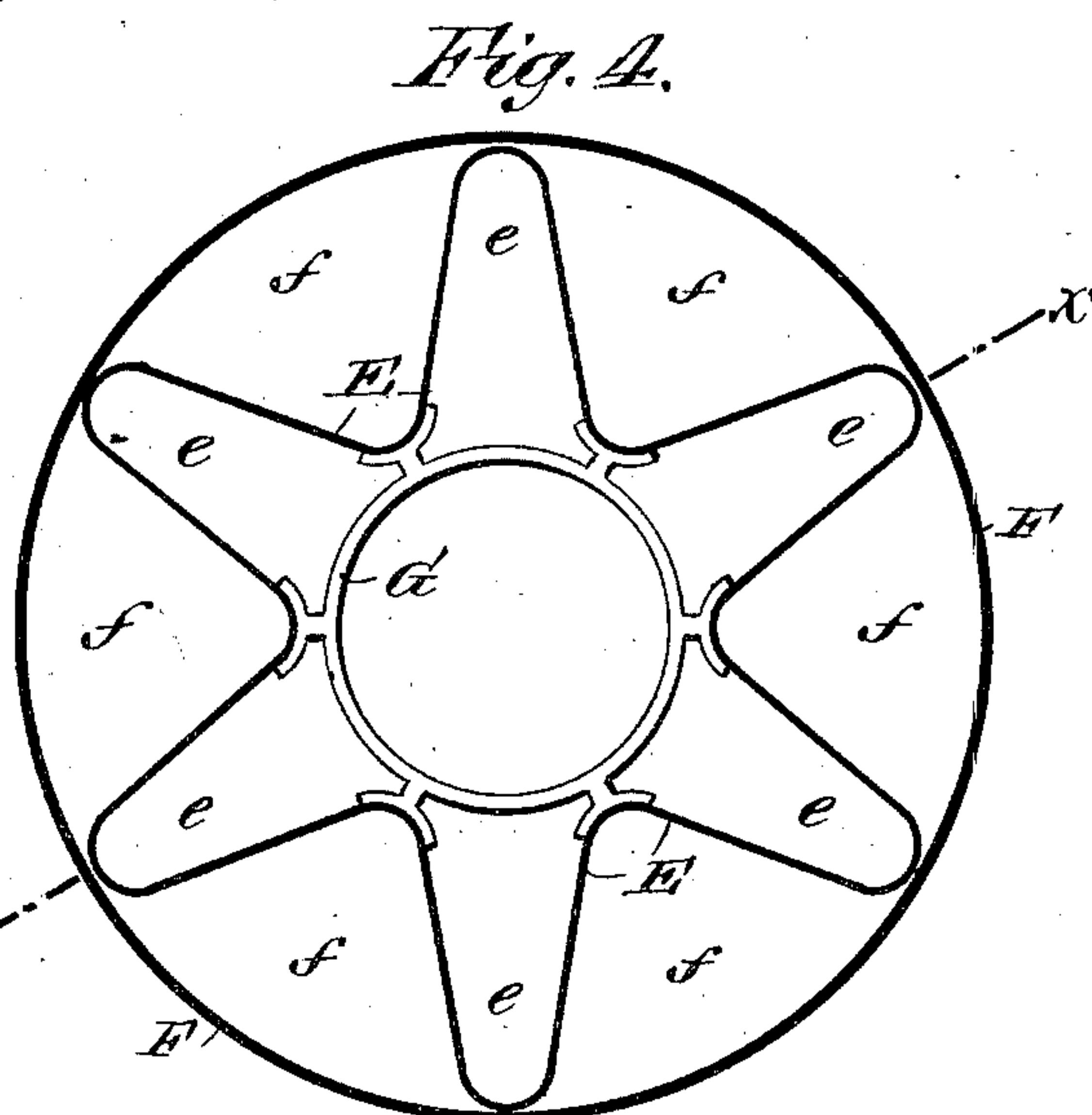
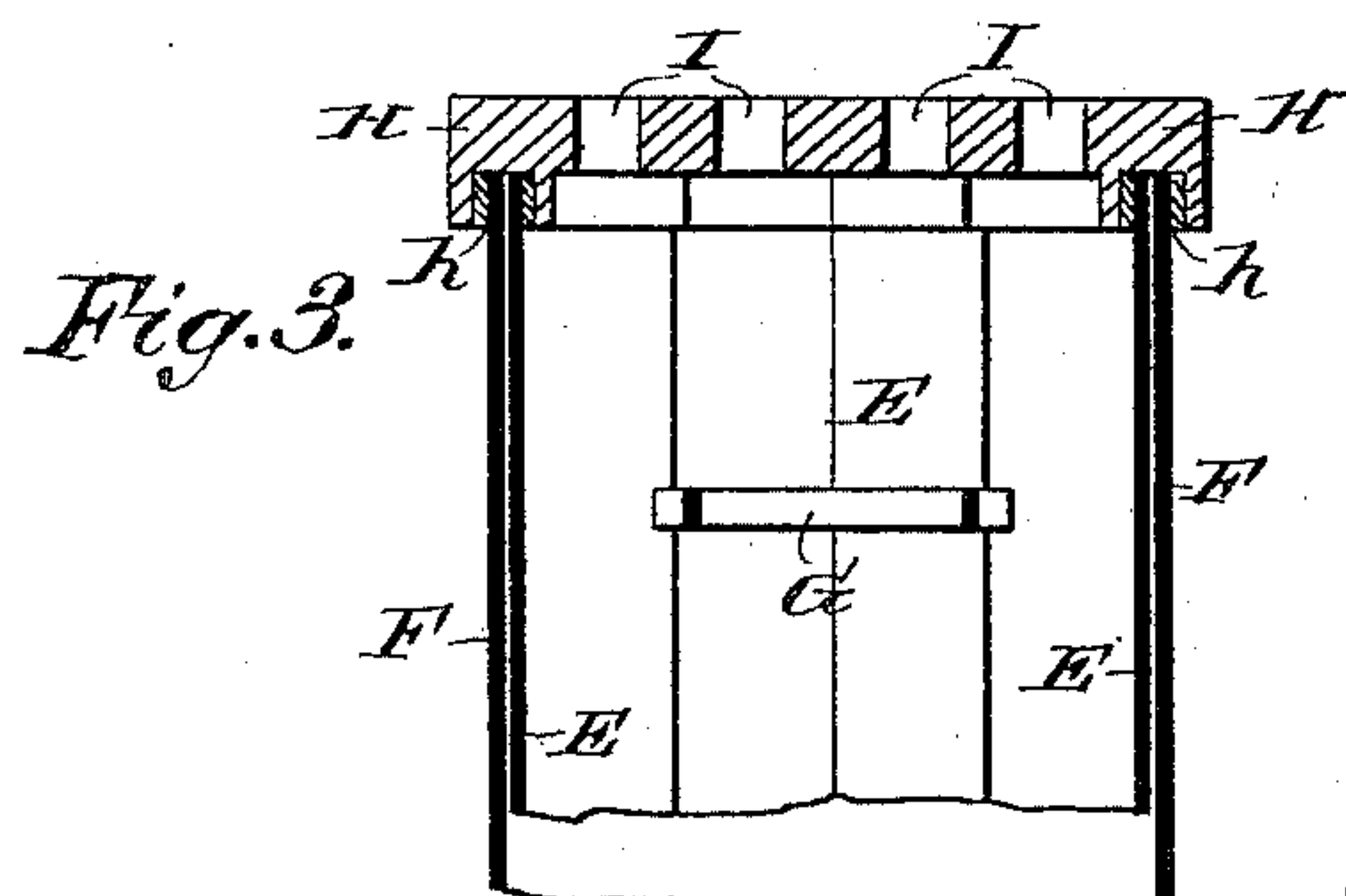
(No Model.)

2 Sheets—Sheet 2.

J. GORMLY.
RADIATOR.

No. 319,230.

Patented June 2, 1885.



WITNESSES:

Wm. Beyer
C. Bedgwick

INVENTOR:

J. Gormly

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ATTORNEYS:

UNITED STATES PATENT OFFICE.

JOHN GORMLY, OF PROVO CITY, UTAH TERRITORY.

RADIATOR.

SPECIFICATION forming part of Letters Patent No. 319,230, dated June 2, 1885.

Application filed December 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN GORMLY, of Provo City, in the county of Utah and Territory of Utah, have invented certain new and useful
5 Improvements in Radiators, of which the following is a full, clear, and exact description.

The object of my invention is to improve the construction of radiators for heating buildings, so as to produce a radiator which may
10 be made and set up at small expense, and will be quick and effective in action.

The invention consists in the particular constructions and combinations of parts of the radiator, all as hereinafter described and
15 claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

20 Figure 1 is a side elevation of a radiator constructed in accordance with my invention, and with one of the radiator-tubes and part of the base in section. Fig. 2 is a plan view with one of the radiator-tubes in horizontal section.

25 Fig. 3 is a transverse section of the base and tube connections, and with the tube in section on the line $x x$, Fig. 4. Fig. 4 is an enlarged sectional plan view through the sheet-metal radiator-tube, and Figs. 5 and 6 are sectional
30 plan views of modified constructions of sheet-metal radiator-tubes.

The letter A indicates the cast-metal hollow base of the radiator, which is tapped at opposite ends to receive the valved supply and return pipes B C, respectively, and at intervals
35 along its top the base A has screw-nipples, or is tapped to receive the ends of the tapering cast-metal connections D, which have grooves $d d$ in their upper edges, corresponding in shape to the cross-sectional form of the inner
40 and outer sheet-metal pipes, E F, respectively, which form the main parts of each radiator-tube, and are soldered or otherwise made fast in the grooves $d d$ of connections D. I prefer

45 to make the inner air-circulating pipe, E, in the corrugated or stellate cross-sectional form, (represented in Figs. 2, 4, and 5,) and to make the outer pipe, F, in cylindrical form, as shown in Figs. 2 and 4. The corrugated form
50 of the inner pipe, E, presents a large heat-radiating surface to the air passing through the interior space, e , of the pipe, and also presents

a correspondingly large surface to be heated by the steam, hot water, or other heating agent which circulates in the space f , between the
55 corrugated wall of the pipe E and the cylindrical wall of the outer pipe, F.

Within the pipe E, I fasten, at suitable points, to the bases of the corrugations of the pipe the braces G, preferably three in number, and which prevent collapse or distention
60 of the pipe.

To the top of the radiator-tubes I fit caps H, which have grooves $h h$, into which the upper ends of the pipes E F are tightly
65 soldered or brazed, or otherwise suitably fastened, and the caps have openings I, through which the heated air rising from the pipe E may escape to the room. Passages J in the connection D open into the space f , and into
70 the base A, to admit the steam or heating agent to each of the radiator-tubes, and passages K in the connection D communicate with the interior air-space, e , so that the air to be heated within the pipe E may pass freely
75 through said passages K to the space e , either from the room in which the radiator is placed or from pipes M, screwed to nipples L, and leading to the outer air at any convenient points. Fresh-air pipes M may connect with
80 passages K at one or both sides of the radiator, and when the pipes M are not desired the nipples L may be dispensed with, as indicated by the dotted lines at $m m$ in Fig. 3. It is evident that the thin metal of the pipes E
85 F will very quickly be heated by the steam or hot water entering the space f between the pipes from the base A, and that the air surrounding the outer pipe, F, and the air passing through openings K to the interior of the
90 pipe E will quickly be heated and discharged into the room and the air of the room will have a freer circulation, and when the air-pipes M are used the apartment will be supplied with pure warmed air, conducive to the
95 most perfect ventilation.

I propose to make all parts of the radiator-tubes and their base-connections interchangeable, so that radiators having any desired
100 number of tubes may be built upon their bases with facility, and so that repairs and renewals may be made quickly and cheaply at any time. The pipes E F may be made of a single sheet of metal bent to shape, and riveted, sol-

dered, brazed, or otherwise fastened at the joint.

Among the advantages of my radiator may be named its cheapness, lightness to haul and erect, a saving of time in its erection, the large heat-radiating surface in a small space, and the tubes present a smooth outside surface on which dust will not easily settle, and which may receive either plain or elaborate decoration, and they heat an apartment more quickly than the cast or wrought metal radiators, and because of the thinness of the tubes the circulation of heated air is quickened to an extent which allows the heating of apartments with less area of the tubes than is required in ordinary radiators.

I do not limit myself to the cross-sectional form of the pipes E F, as represented in Figs. 2 and 4, as an inner corrugated pipe, E', and an outer corrugated pipe, F', forming the air-space e' and sinuous space f' , for the steam or hot water, may be used with correspondingly-arranged connections to the base, and a head piece or cap, and with central braces, G', and braces g' between the two pipes, as shown in Fig. 5; or the radiator-tube may consist of a cylindrical inner pipe E², and a corrugated or stellate outer pipe, F², suitably braced to each other at G², and providing an inner air-space, e^2 , and outer steam or hot-water space, f^2 , as represented in Fig. 6; but the construction shown in Figs. 1, 2, 3, and 4, and hereinbefore particularly described, is preferred.

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

1. The combination, in a radiator, of the hollow base A and one or more heat-radiating tubes, consisting of a connection, D, hav-

ing independent passages J K, sheet-metal pipes E F, providing an air-space, e , and a space, f , for the heating agent, and a cap or head plate, H, closing the space f , and having openings I, substantially as herein set forth.

2. The combination, in a radiator, of the hollow base A and one or more heat-radiating tubes, consisting of a connection, D, having independent passages J K, an inner sheet-metal pipe, E, having a corrugated or stellate cross-sectional form, an outer sheet-metal pipe, F, and a cap, H, closing the top of pipe F, and having openings I, substantially as herein set forth.

3. A radiator-tube consisting of a cast-metal base-connection, D, having passages J K, inner corrugated sheet-metal air-pipe, E, outer sheet-metal pipe, F, and a cap, H, having openings I, substantially as herein set forth.

4. A radiator-tube consisting of a cast-metal base-connection, D, having passages J K, inner corrugated sheet-metal air-pipe, E, outer sheet-metal pipe, F, a cap, H, having openings I, and the braces G within the pipe E, substantially as herein set forth.

5. A radiator-tube constructed with an inner sheet-metal air-circulation pipe, and an outer sheet-metal pipe for the heating agent, a cast-metal base-connection, D, having independent passages J K, and a cap, H, having openings I, and said parts D H having grooves $d h$, respectively, to receive the ends of the sheet-metal pipes, substantially as herein set forth.

JOHN GORMLY.

Witnesses:

FRANK RUMEL,
WILLIS SPAFFORD.