

(No Model.)

2 Sheets—Sheet 1.

J. MILLER & D. MAGER.

RADIATING DRUM FOR HOT AIR FURNACES.

No. 287,149.

Patented Oct. 23, 1883.

Fig. 1.

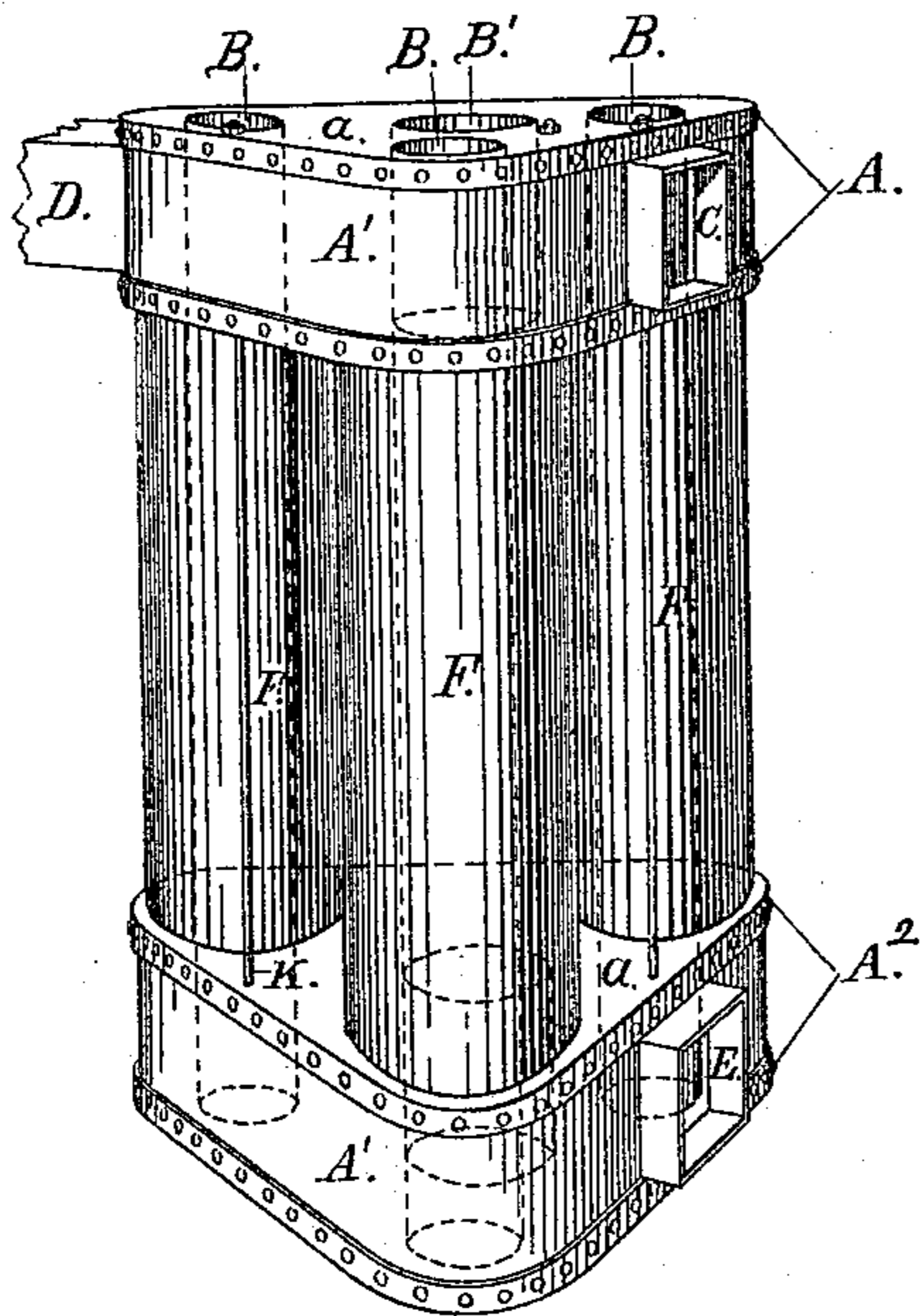


Fig. 2.

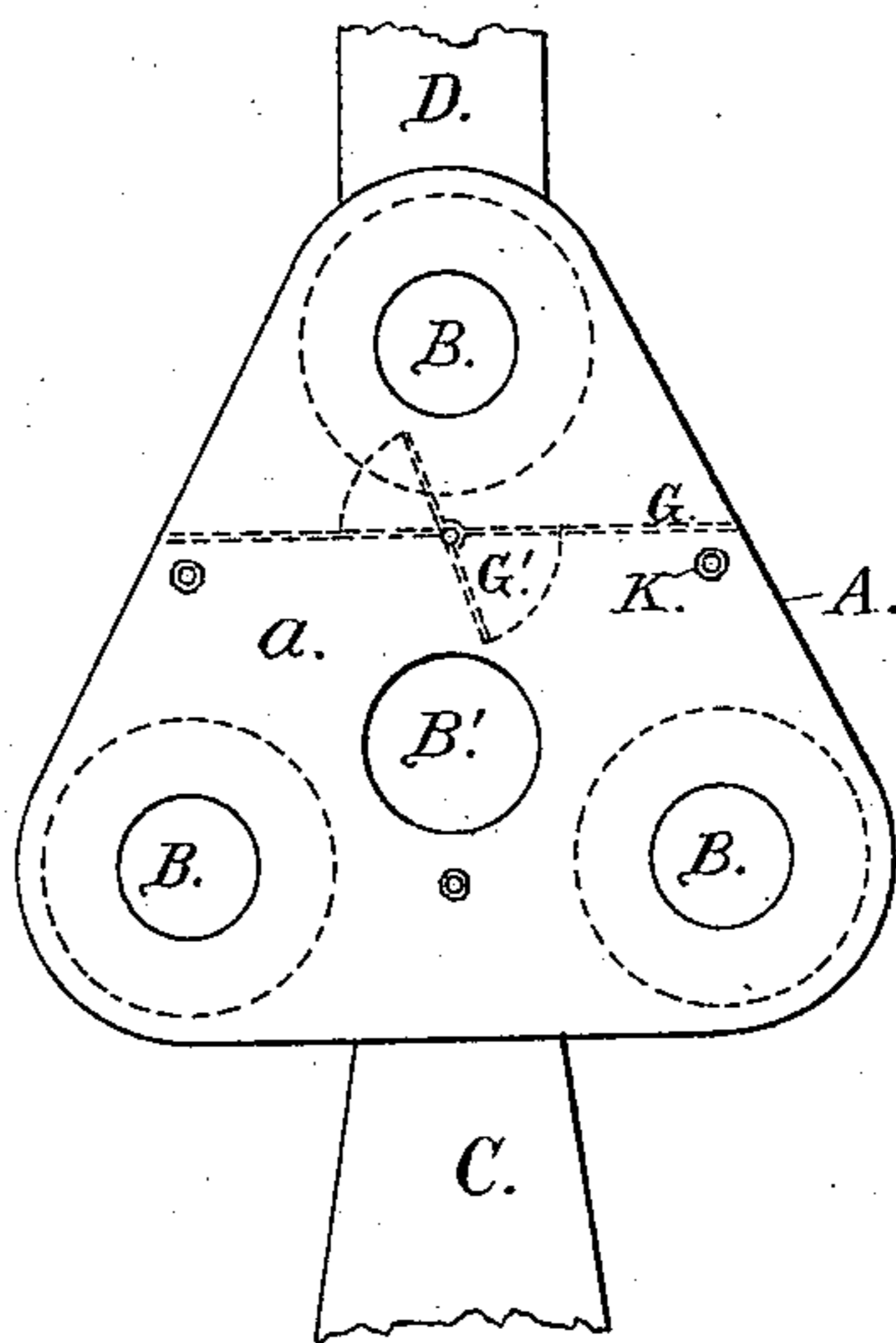


Fig. 3.

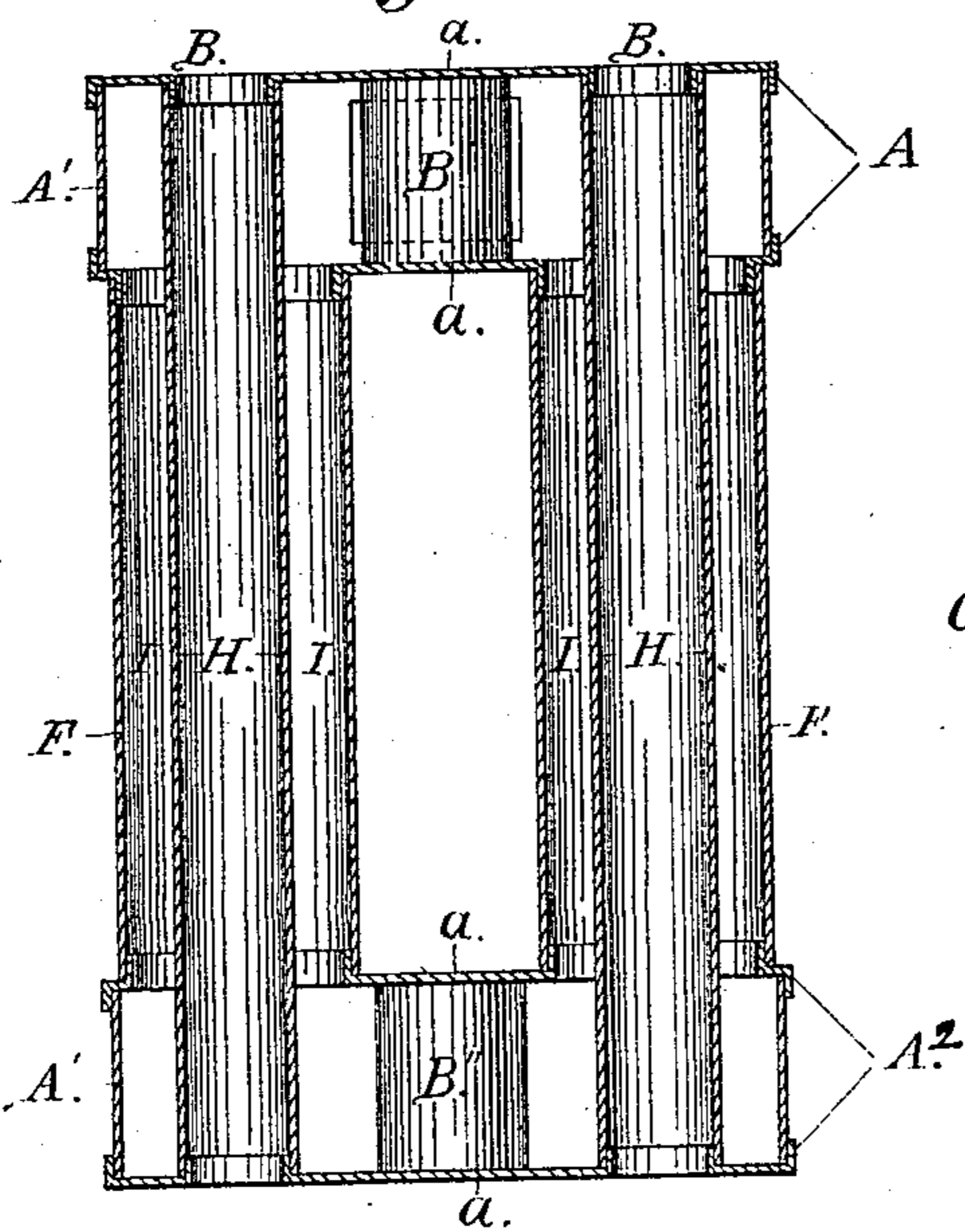
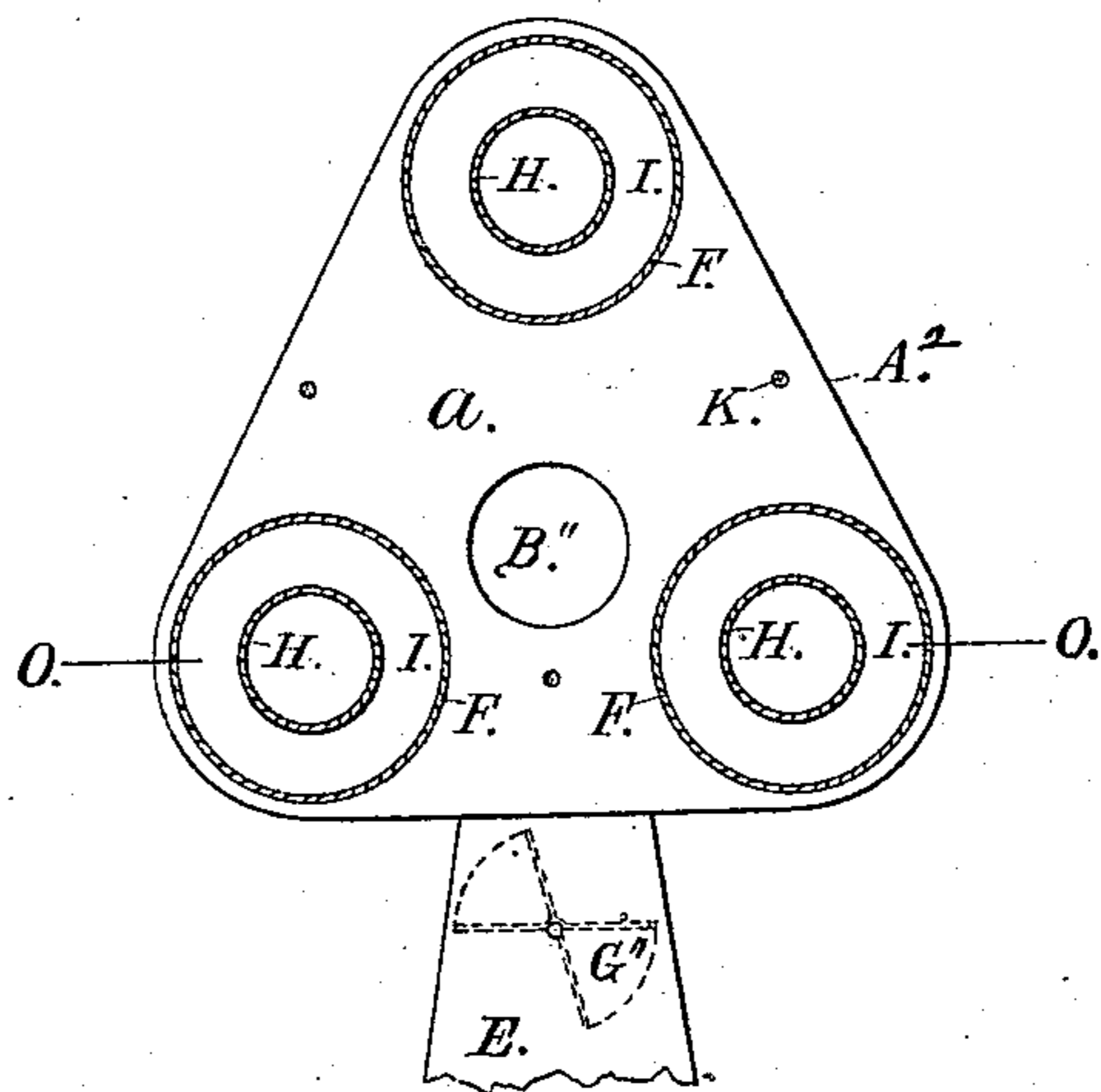


Fig. 4.



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Att'y.

(No Model.)

2 Sheets—Sheet 2.

J. MILLER & D. MAGER.

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Patented Oct. 23, 1883.

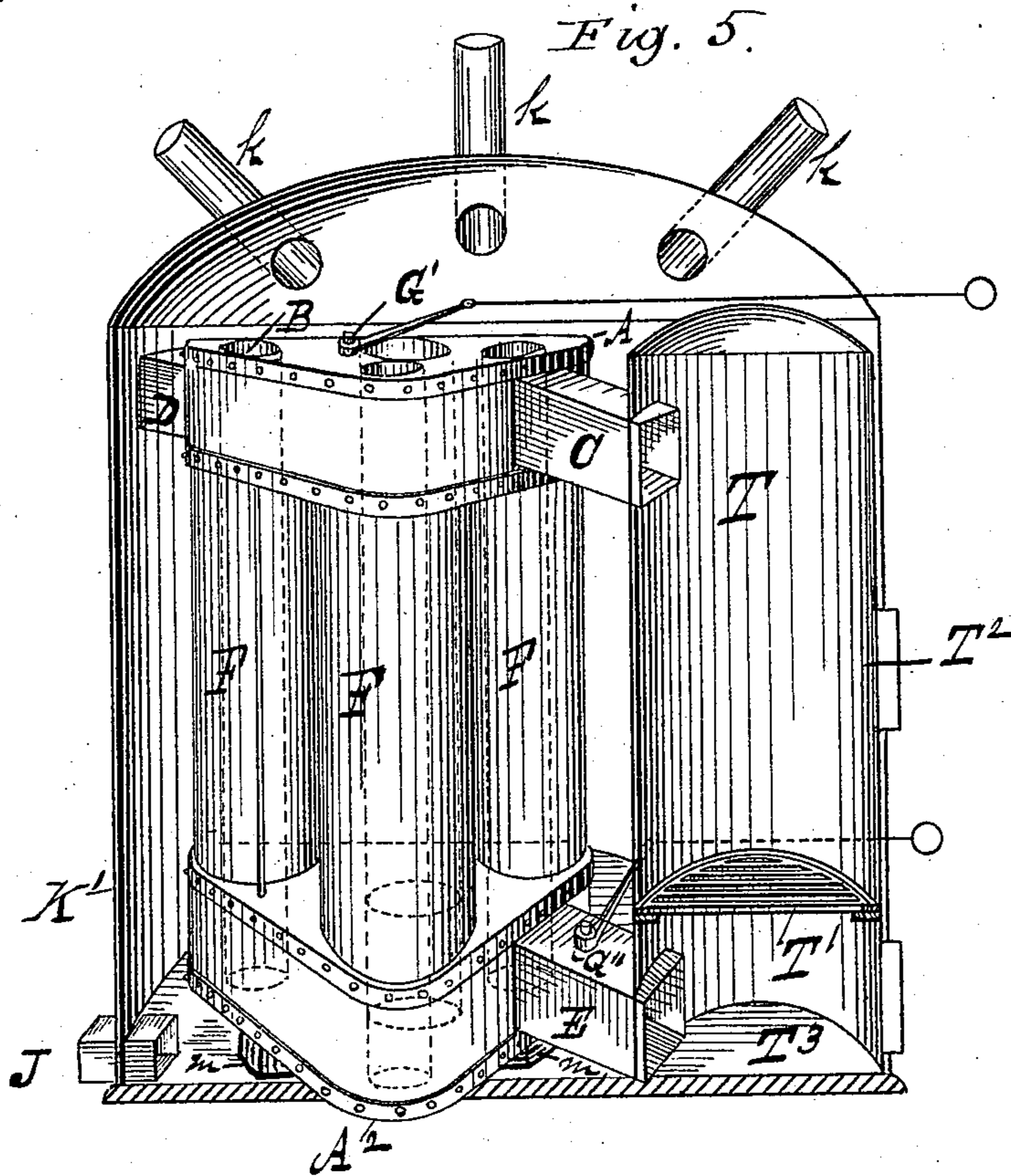
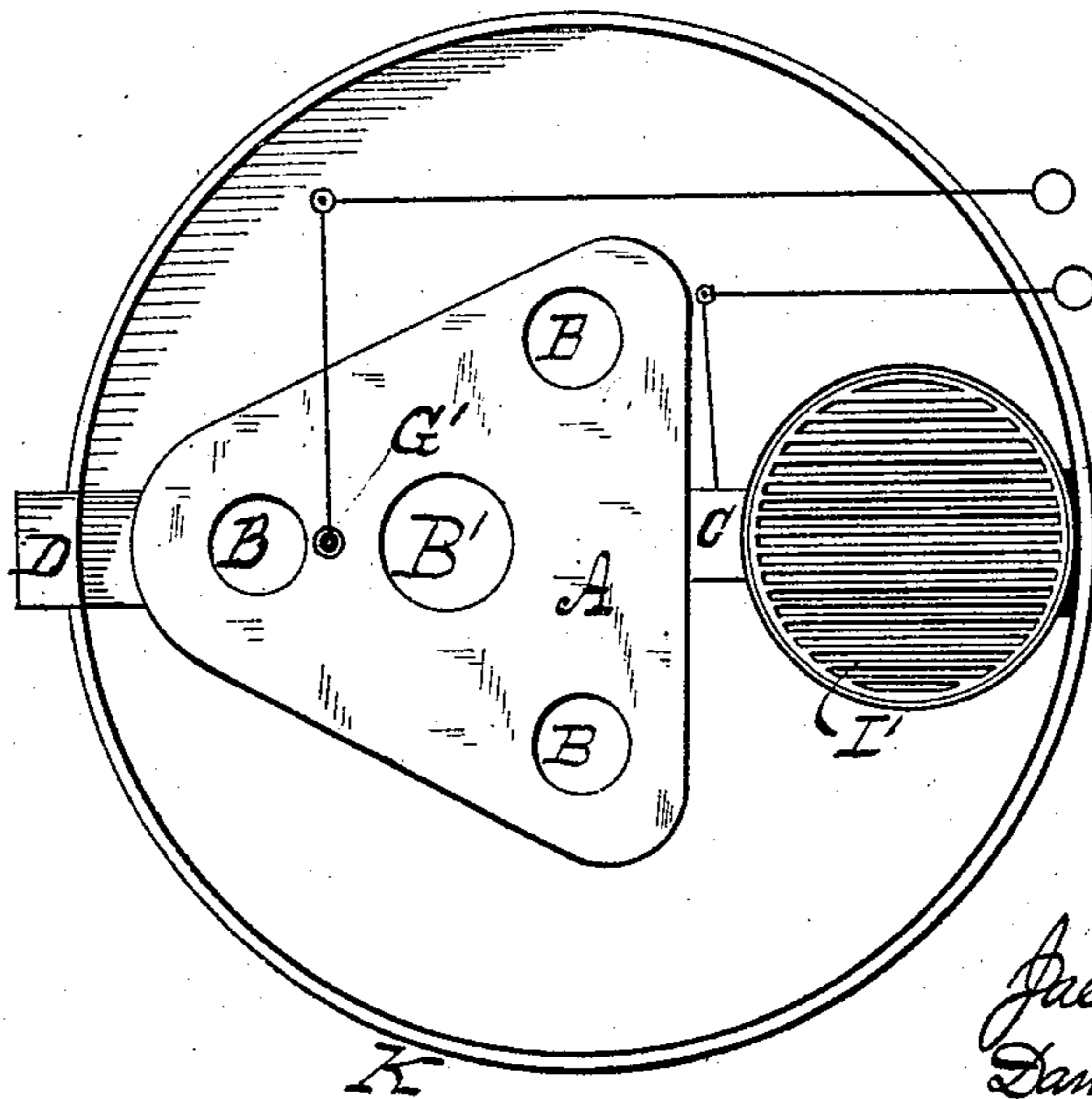


Fig. 6.



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UNITED STATES PATENT OFFICE.

JACOB MILLER AND DANIEL MAGER, OF ALLENTOWN, PENNSYLVANIA.

RADIATING-DRUM FOR HOT-AIR FURNACES.

SPECIFICATION forming part of Letters Patent No. 287,149, dated October 23, 1883.

Application filed December 14, 1882. (No model.)

To all whom it may concern:

Be it known that we, JACOB MILLER and DANIEL MAGER, citizens of the United States, residing at Allentown, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Radiating-Drums for Hot-Air Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

The objects and advantages of our invention are an apparatus which is simple and serviceable in construction, possessed of the greatest possible radiating-surface, requiring the least possible space within or in addition to the remaining usual elements of any hot-air furnace to which it is applied, allowing, at will, either a direct draft in starting or an indirect draft in sustaining the fire, and facilities for access to the apparatus for cleaning purposes; and our invention consists in certain features, hereinafter described, and specifically set forth in the claims.

Figure 1 is a perspective, Fig. 2 a plan, Fig. 3 a vertical section on line *o o*, Fig. 4, and Fig. 4 a transverse section, of an apparatus constructed in accordance with our invention. Fig. 5 is a sectional view of the principal elements of a heating-furnace, with our radiating-drum arranged in connection with said elements. Fig. 6 is a plan of Fig. 5, the tops of the furnace and fire-box being removed.

Like letters refer to like parts in all the figures.

Two triangular castings or plates, *aa*, connected by a sheet-metal wall, *A'*, riveted to flanges cast on the plates, constitute the drums proper, *A A'*. The upper drum, *A*, is provided at *C* with an aperture adapted to be connected directly by a suitable pipe to the fire-box of the furnace, and at the apex of the triangular drum is an exit-pipe, *D*, intended to communicate with the draft, smoke flue, or chimney. Within this upper drum is a transverse partition, *G*, and damper *G'*. (See Fig. 2.) The upper plate of the upper drum and the lower plate of the lower drum, *A²*, are provided with circular openings *B B B*, each surrounded with inwardly-projecting collars, on which are fitted the pipes *H H H*, which extend from one of said plates to the

other. The lower plate of the upper drum and the upper plate of the lower drum are provided with larger circular openings and inwardly-projecting collars concentric with the openings *B B B*, and are connected by larger pipes *F F F*, which encircle the pipes *H H H* and form spaces *I*, as clearly shown in Fig. 3. Shorter pipes *B' B²* connect the upper and lower plates of each drum, and are open at both ends. A single aperture or pipe, *E*, is provided in the lower drum, and is designed to be connected to the ash-chamber of the furnace below the grate of the fire-box, to serve as a dust-flue, and to give access to the lower drum for cleaning purposes. A damper, *G''*, (see Fig. 4,) is provided, for the purpose hereinafter described. The parts are secured by usual tie-rods or bolts, *K K*, so that, when completed, the structure is simple, strong, and serviceable, readily set up or taken apart, and when embodied in a furnace in relative position to the usual elements—a fire-box, ash-pan, and a hot-air chamber, from which the heated air is conducted to different apartments, the cold air being supplied in a manner hereinafter described—the entire furnace is reduced in size, while its heating capacity is materially increased. The usual cold-air supply being at the base of the furnace, said air enters the pipes *H H* and passes through them, and also enters and passes through the short pipes *B' B²*, and circulates or passes around and between the pipes *F F F*, and becomes heated by the products of combustion from the fire-box passing (the damper *G'* being closed) into the upper drum, *A*, and down the said pipes *F*, through spaces *I I*, and into the lower drum, *A²*, and thence up the remaining pipe *F* at the apex of the drums, and thence through the exit-pipe *D* to the chimney, and thus heated rises into any usual suitable hot-air chamber in the upper part of the furnace.

By suitable usual connecting means extending through and outside of the walls of the furnace the dampers *G' G''* are operated. Whenever the grate is shaken, the damper *G''* is opened, in order that the dust may be prevented from escaping into the room, and, as described, when building or starting the fire, the damper *G'* is opened, to provide a direct draft.

We illustrate, Figs. 5 and 6, one arrange-

ment of our radiating-drum, with the usual principal elements of a heating-furnace, but do not wish to be understood as limiting ourselves to the exact arrangement and construction shown, as we do not claim such elements as of our invention, but intend to use and do claim our radiating-drum as constructed, with any desirable arrangement of the said principal well-known elements of a heating-furnace. In this instance, T represents the combustion-chamber immediately over the grate T', said chamber being provided with a door or fuel-supply opening, T². With the combustion-chamber T, the pipe C of our upper drum, A, communicates, while the lower drum, A², communicates by pipe E with the ash-pit T³. A cold-air pipe, J, is located at the base of the shell K' of the furnace, in the top of which are the usual distributing-pipes, k k k. The exit-flue D passes through the shell and communicates with any suitable chimney. Suitable valve-operating rods are provided, as shown.

The operation, as hereinbefore described, is so apparent that no further description thereof is necessary, except that by the use of any suitable means—as bricks *m*—the radiating-drum is supported above the floor, in order

that the cold air may in part enter the lower ends of the pipes H, B', and B''; or said drum may be supported solely by the pipes C, D, and E.

Having described our invention and its operation, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of two horizontal triangular drums, A A², having apertures B C D E, and the radiating-pipes H H H, F F F, and B' B'', substantially as shown and described.

2. The drum A, comprising the plates *a a*, the wall A', partition G, damper G', and pipes C and D, substantially as shown and described.

3. The combination, with the fire-box and ash-pit of a hot-air furnace, of the upper drum, A, having the partition G, damper G', and outlet D, the pipes H F and B' B'', and the lower drum having the pipe E and damper G'', substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

JACOB MILLER.

DANIEL MAGER.

Witnesses:

EDWARD H. RENINGER,

JACOB D. BURGER.