

(No Model.)

2 Sheets—Sheet 1.

J. F. McELROY.
ELECTRIC HEATER.

No. 555,259.

Patented Feb. 25, 1896.

Fig. 1.

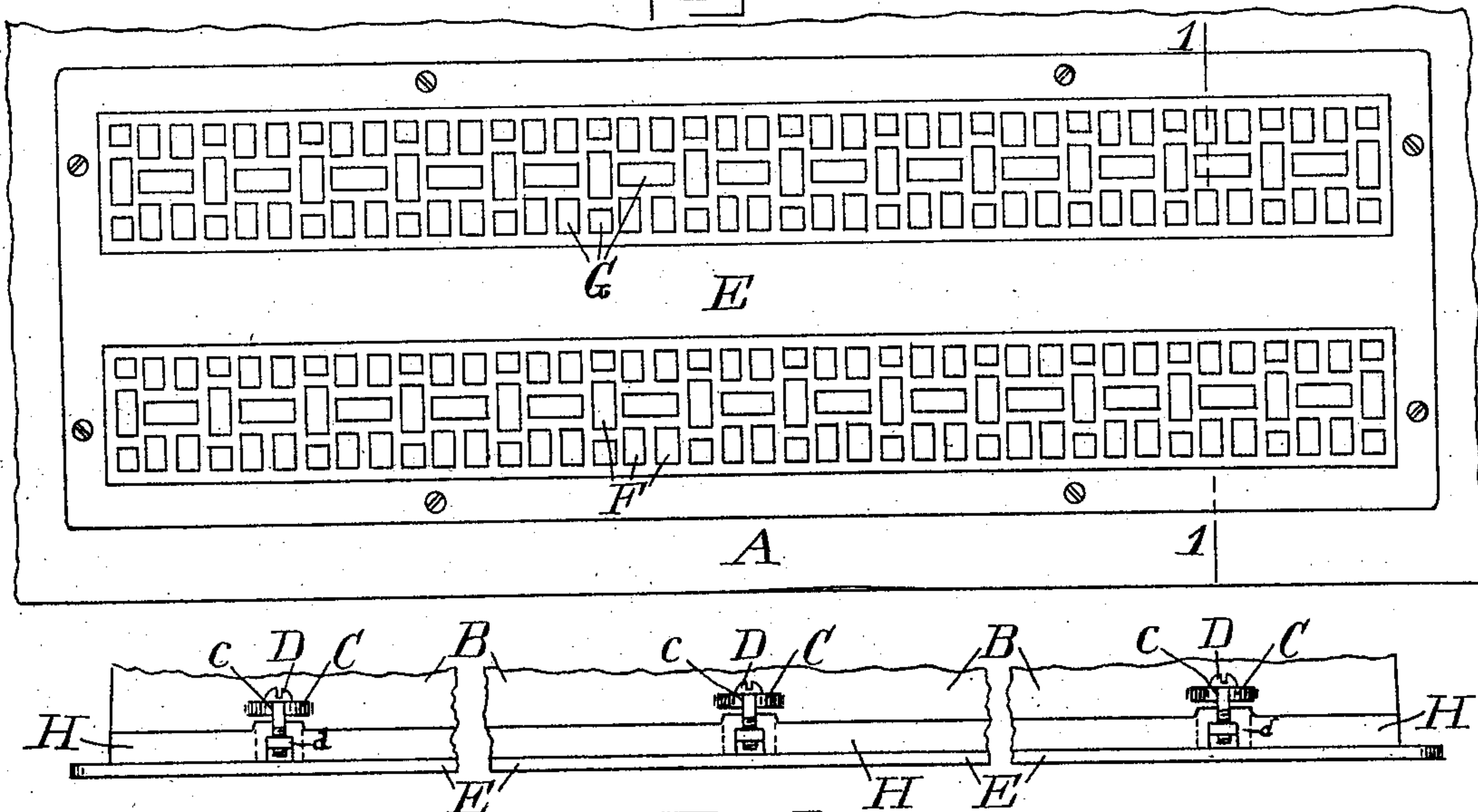
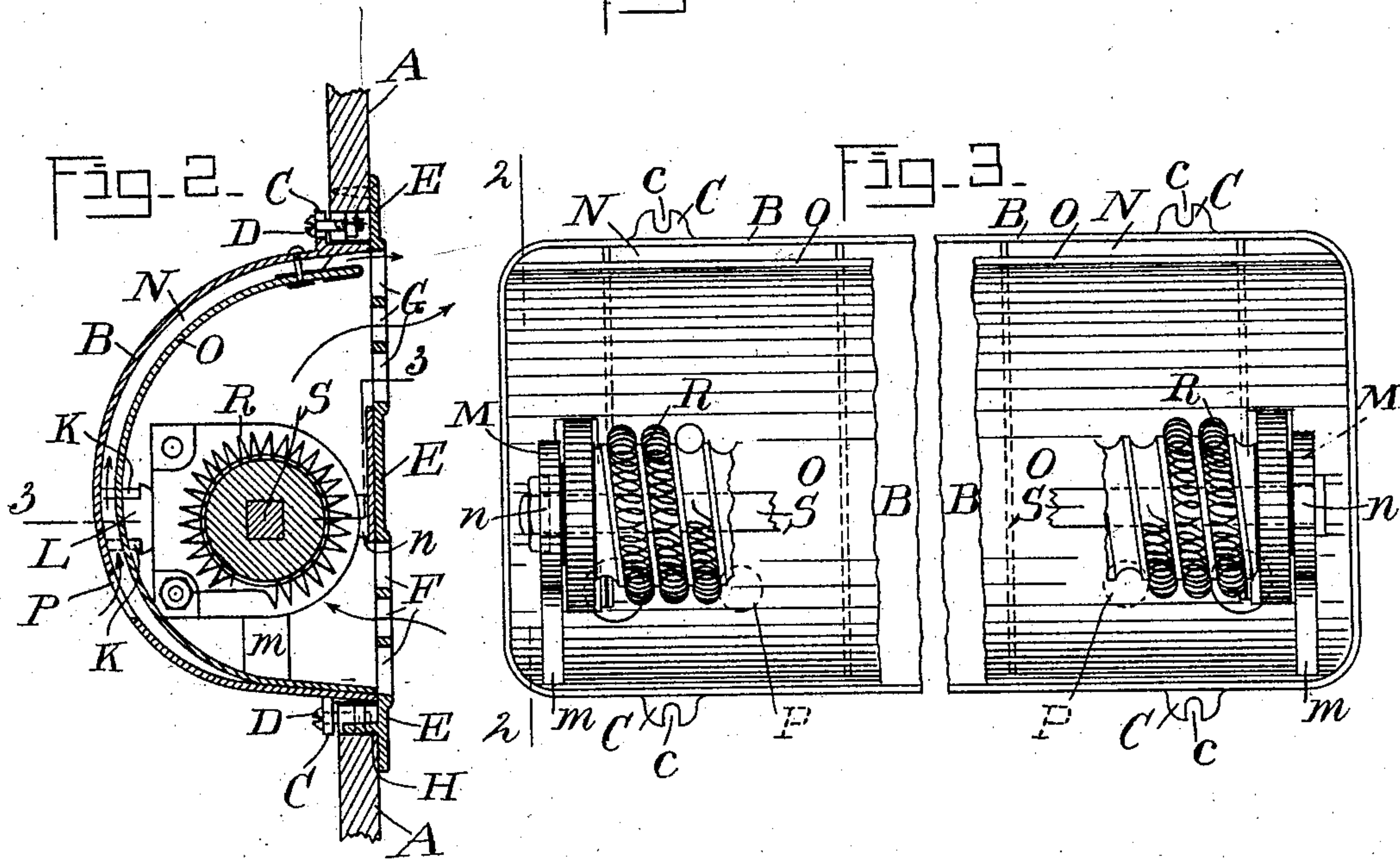


Fig. 6.



Witnesses =

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2 Sheets—Sheet 2.

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Fig. 7.

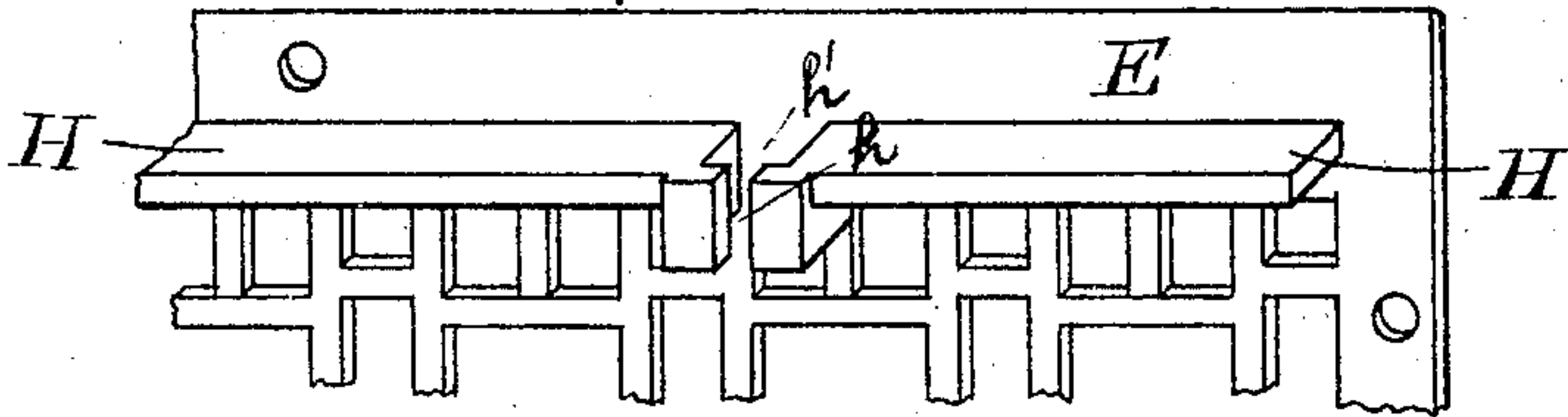


Fig. 4.

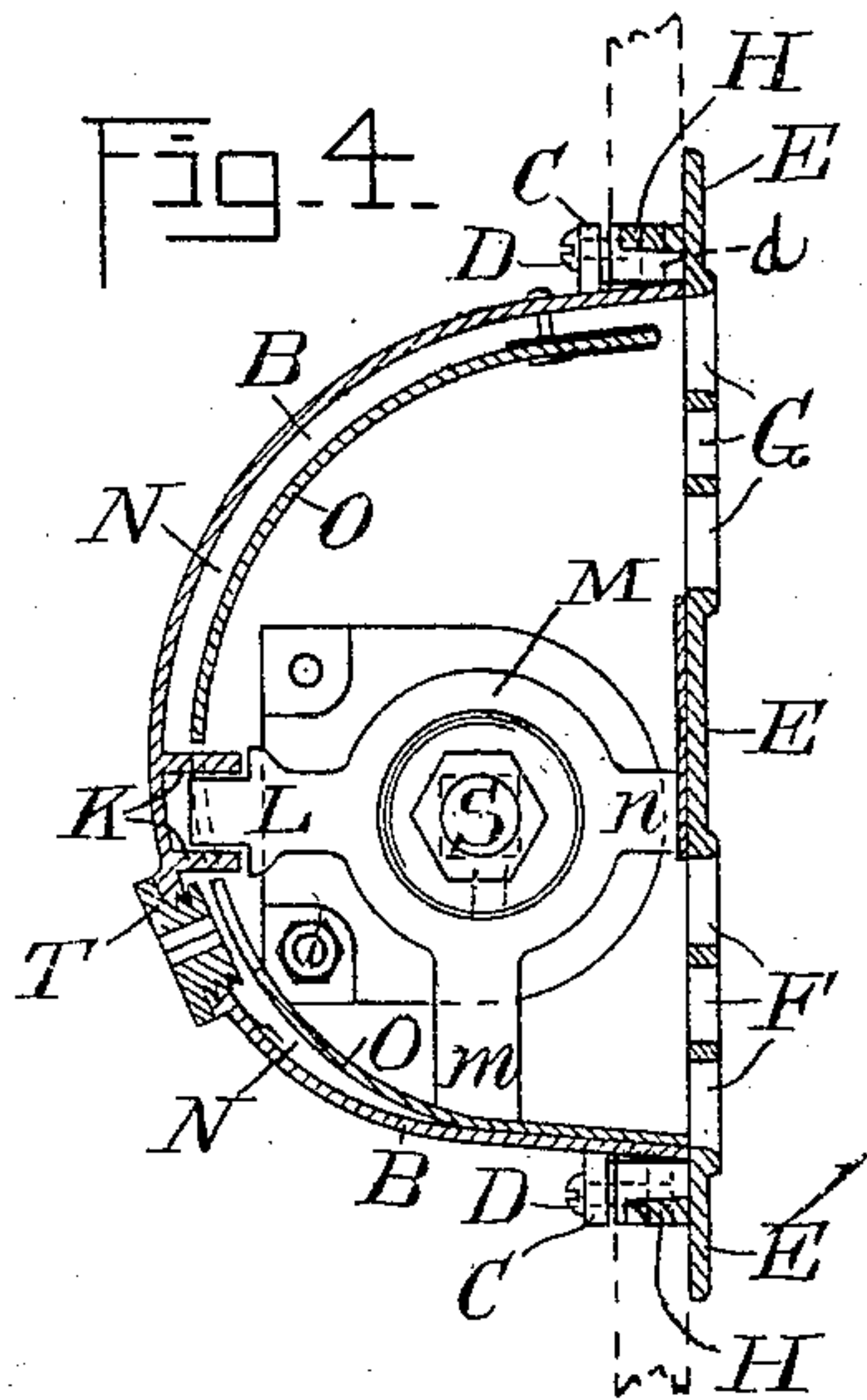


Fig. 5.

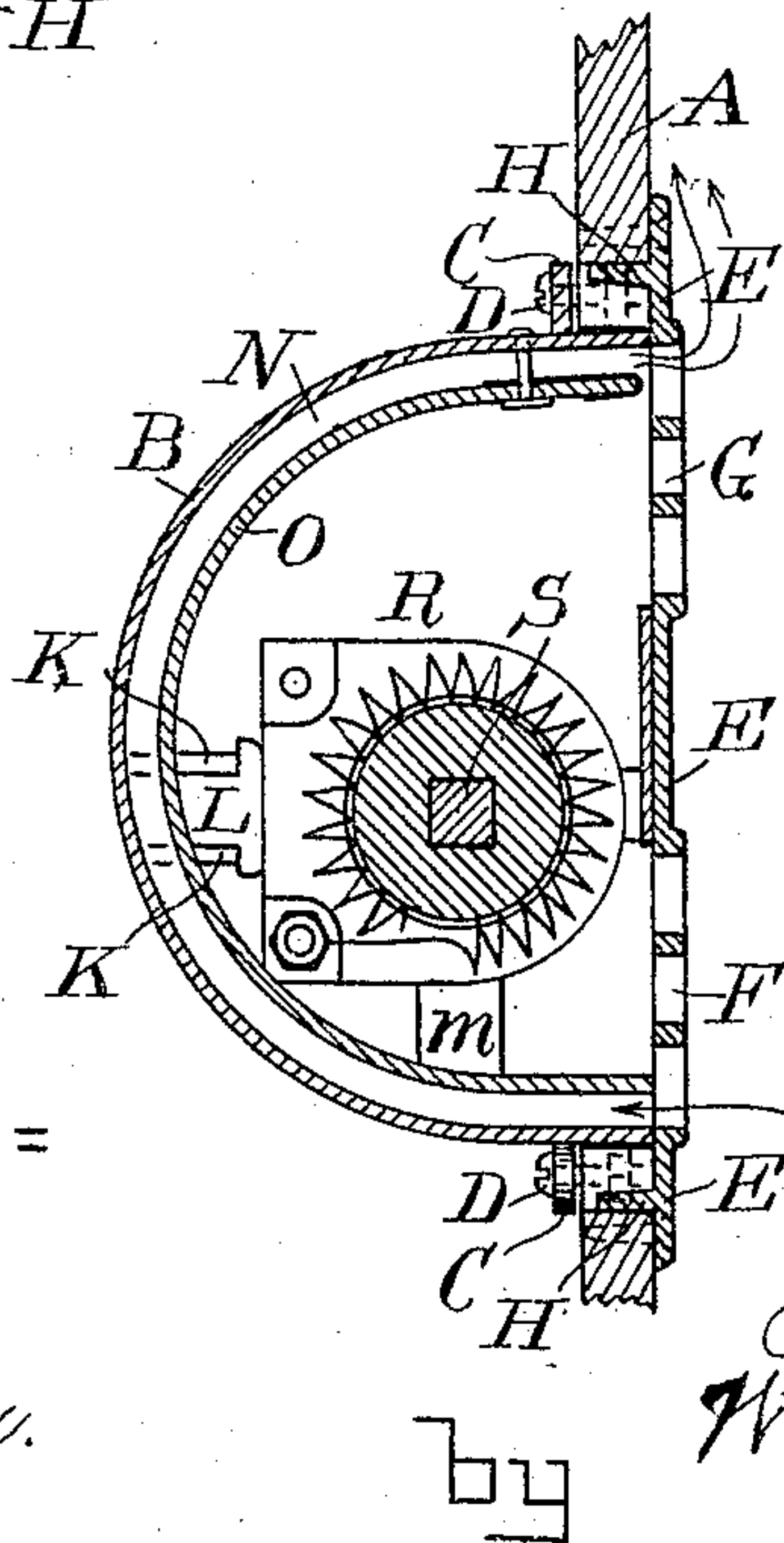
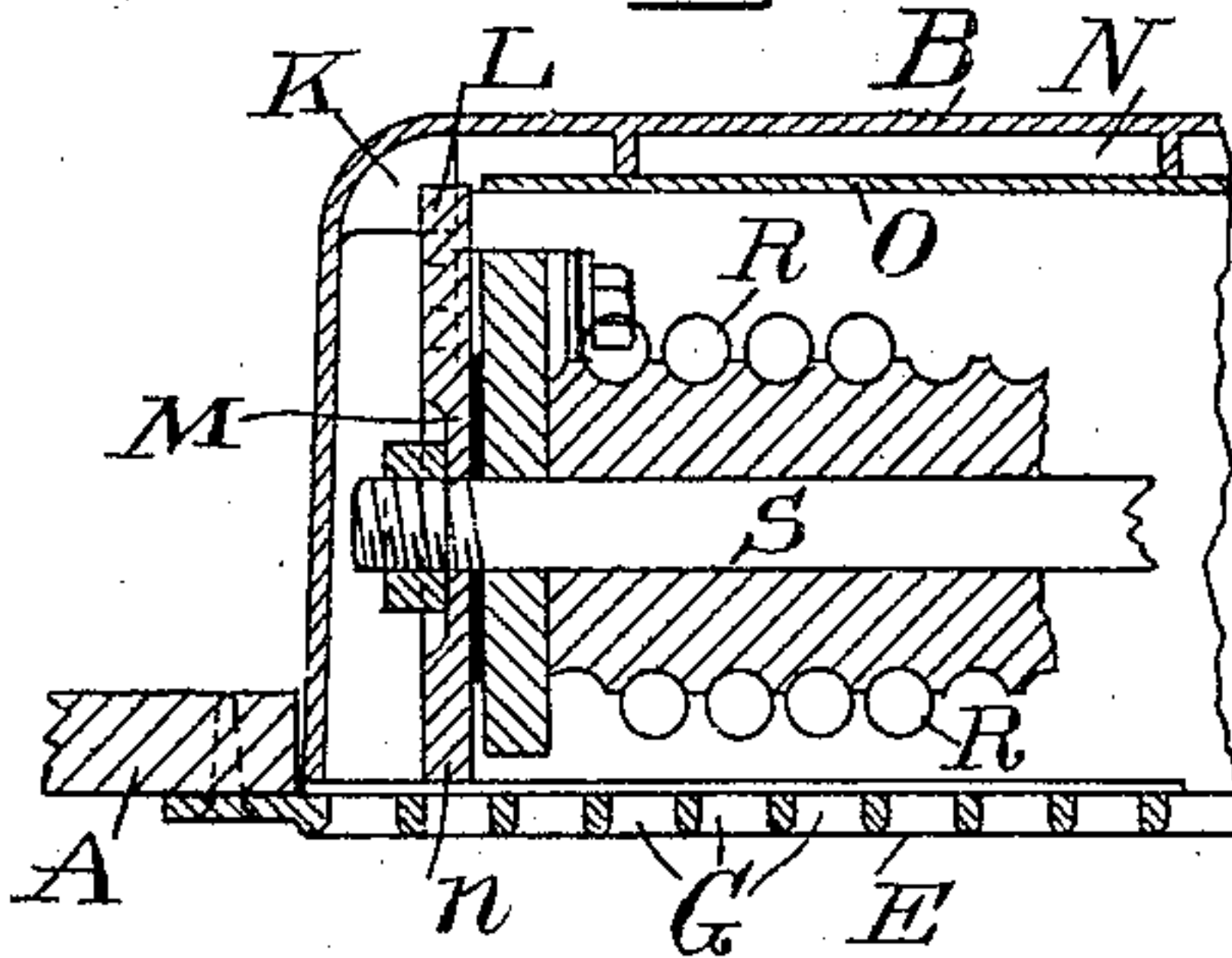


Fig. 8.

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UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK.

ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 555,259, dated February 25, 1896.

Application filed May 31, 1895. Serial No. 551,099. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing in the city and county of Albany, State of New York, have invented a new and useful Improvement in Electric Heaters, of which the following is a specification.

My invention relates to electric heaters; and its object is to produce an electric heater adapted to be placed under a car-seat and having its front plate flush with and attached to the car-seat riser, the casing of said heater being constructed in such a manner that there shall be a circulating-air space between the double walls thereof, all for the purpose hereinafter described.

In the accompanying drawings, Figure 1 illustrates a front elevation; Fig. 2, a cross-section along the line 1 1 on Fig. 1. Fig. 3 is a front elevation of the heater alone, with the front plate removed. Fig. 4 is a cross-section along the line 2 2 on Fig. 3, with the front plate attached. Fig. 5 is a longitudinal section along the line 3 3 on Fig. 2. Fig. 6 is a top view of the front plate, showing the means of attaching it to the heater. Fig. 7 is a detail view of the front plate, E; and Fig. 8 is a cross-section similar to that of Fig. 2, except that it illustrates a modification in construction.

Similar letters refer to similar parts throughout the several views.

In practice the riser A of a car-seat is cut out for the purpose of allowing the insertion from the front of the seat of the concavo-convex box B, which has a cross-section substantially corresponding with that shown in Figs. 2 and 8, and which is constructed substantially as hereinafter described. The front face, E, of the box B comes flush with the outside of the riser. The box is provided near its front face, arising from the outer surface of the convex outer wall and at both bottom and top, with the ears C C, which have openings c c to admit of the passage of the bolts D D. These are shown more particularly in Figs. 2, 3, 6 and 8, the ears C C when the box B is placed in position being in the rear of the face of the riser. The front plate, E, of the outer casing is provided with a series of open-

ings F and G near its lower and upper edges. These openings are shown in face in Fig. 1, and may be of any form, shape or design—artistic or otherwise. The face of the plate extends slightly above and below the front edge of the heater-box B and has inwardly-projecting ribs H which extend into the riser.

Through the ears C C on the box B, I place bolts D D having at their ends suitable nuts d d, the shanks of which bolts D fit within the openings h in the ribs H of the plate E, the nuts d d taking a position in the opening h' communicating with the opening h in the ribs H, as shown in Fig. 7. Thus the box B may be secured to the plate E both at the top and the bottom in the manner indicated by means of the bolts D D, and the whole apparatus may be placed in position, the plate E being secured to the riser A and all held securely and positively in position.

I have shown a form of supporting the heater which consists of attaching to the concave surface of the box B, near each end thereof, inwardly-projecting lugs K K, and forming between them a seat for the arm L of the bracket M, which carries the end of the spindle S, which supports the resistance-coil R R. The bracket M has arms m n, one resting upon the bottom of the heater and the other upon the front plate, E. As thus arranged the resistance-coil when it is placed on the spindle may be quickly and easily placed in position on the heater.

T is an insulating-plug placed in the box B, through which the connecting-wires may pass to the resistance-coil.

The back of the heater is constructed of two walls, the inner one, O, being located at a slight distance from the outer one, and is constructed of a heat-resisting and non-conducting material, preferably asbestos. This leaves an air-space N between the two walls. This air-space opens at the top, as is shown in Figs. 2 and 8, by which the air can pass from within the space out through the openings in the plate E. In Fig. 2 suitable openings or ports P P are shown arranged through the back of the box B near the lower portion thereof, allowing the air to enter the air-space N from within or under the seat, and between

the seat-riser or outer wall of the car. In Fig. 8, as a modification, the ports P P are omitted, the walls are entirely separate, and the space N is continued from the bottom of the outer casing through the semicircle to the top of the outer casing. In this case, the air occupying the space N is drawn in through the lower part of the opening F in the plate E from the interior or body of the car, circulates through the space, and it is discharged through the upper part of the opening G, as is shown by the arrows at the top of the seat-casing. In either form, at this point, a peculiar action takes place, in which resides very much of the novelty of my invention. In cars the risers are usually of native wood varnished. The heat from the air circulating around the resistance-coil and passing out through the upper portion of the plate E being quite warm and sometimes hot would, were it not for the construction shown herein, and as hereinafter explained, arise along the upper face of the riser, blistering the varnish and soon destroying it. It is a principle of pneumatics that with a flow of air through an aperture, if there be wall-surface or a surface of any kind extending around and above the aperture, the current will flow along the surface between it and the body of air outside of the surface. This principle, applied to the heater as described, would result in the heated air arising from the openings of the plate E, closely following the riser above the aperture, and form a heated film between the riser and the body of air located in the car.

My invention has for its object not only the prevention of the ill effects hereinbefore stated of such heated film of air acting upon the varnish by the interposition of a cooler film of air by reason of the operation of the same law between the heated film of air and the riser simultaneously with the retention of heat within the box and the prevention of the radiation out through the walls of the rear of the box. This I accomplish by constructing the rear portion of the box with the air-space N, in which air can circulate, which air arising, as shown in Fig. 8, from the openings leading into this space, follows the direction of the arrow, and obeys the law of pneumatics hereinbefore stated in passing between the riser A and the heated body of air coming from the interior of the heater, but from openings farther removed or lower down than those from which the cooler film emerges.

It will also be observed that the mode of operation will be such that the outer casing, B, of the rear portion of the box would always remain cool. The inner wall being a non-conductor of heat, it would keep the air within the space N relatively cool, and yet warm it sufficiently to produce the circulation described, protecting the riser from the ill effects of the hotter air coming from the interior of the casing. Another effect would

follow, that the warm air is forced outwardly into the body of air within the car. It therefore commingles more rapidly with it and is more evenly distributed, and at the same time more fully distributed than it would be in case it was allowed to pass along the outer surface of the riser by virtue of the law referred to. It will be observed, therefore, that I accomplish several objects by an exceedingly simple and convenient arrangement and construction.

It is also obvious that the box, including the heater, can be readily attached and detached from the car.

I do not limit myself to the exact construction of the parts herein minutely described. The mechanism attaching the front plate, E, to the box B may be changed without altering the invention. The exact location of the entry of the air into the space N is not in itself material in the broad sense, nor is it necessary that the mode of attachment of the spindle carrying the resistance-coil shown should be adopted.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an electric heater, the combination of a casing containing a resistance adapted to be heated by a current of electricity, a partition placed in the rear and upper portion of said casing, whereby an air-space is formed between said partition and the back and top of said casing through which air can circulate, said casing containing air-ports, permitting air to enter said air-space at its lower portion, and to emerge from said air-space at its upper portion, substantially as and for the purpose set forth.

2. In an electric heater, a concavo-convex box carrying a resistance, a non-conducting partition partially surrounding said resistance and forming an air-space in the rear and upper portion of said box, a face-plate adapted to be attached to the riser of the car-seat, and having a series of perforations therein, the upper edge of said interior partition being so adjusted that the air-space formed at the back of the casing communicates with the perforations in the top of said plate, while the air from the heating-chamber proper is discharged through lower perforations in the front of said plate, substantially as and for the purpose set forth.

3. In an electric heater, the combination of a face-plate adapted to be attached to the riser of the car-seat, and being provided at its upper and lower portions with a multiplicity of perforations, a casing connecting substantially air-tight with the upper and lower portions of said face-plate extending beyond the perforations, an interior partition forming an air-space between it and the casing and having its upper and lower edges contiguous to the extreme upper and lower openings in the face-plate in such manner that the air entering the lower perforations in the face-plate is

divided, the lowest portion entering the air-space between the casing and partition, the upper portion entering the heating-space, and the air is discharged from the casing through
5 the extreme upper portion of the perforations, and the heated air from within said air-space is discharged from the lower portion of the

upper perforations, and an electric heater located between said partition and said face-plate, substantially as described.

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Witnesses:

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