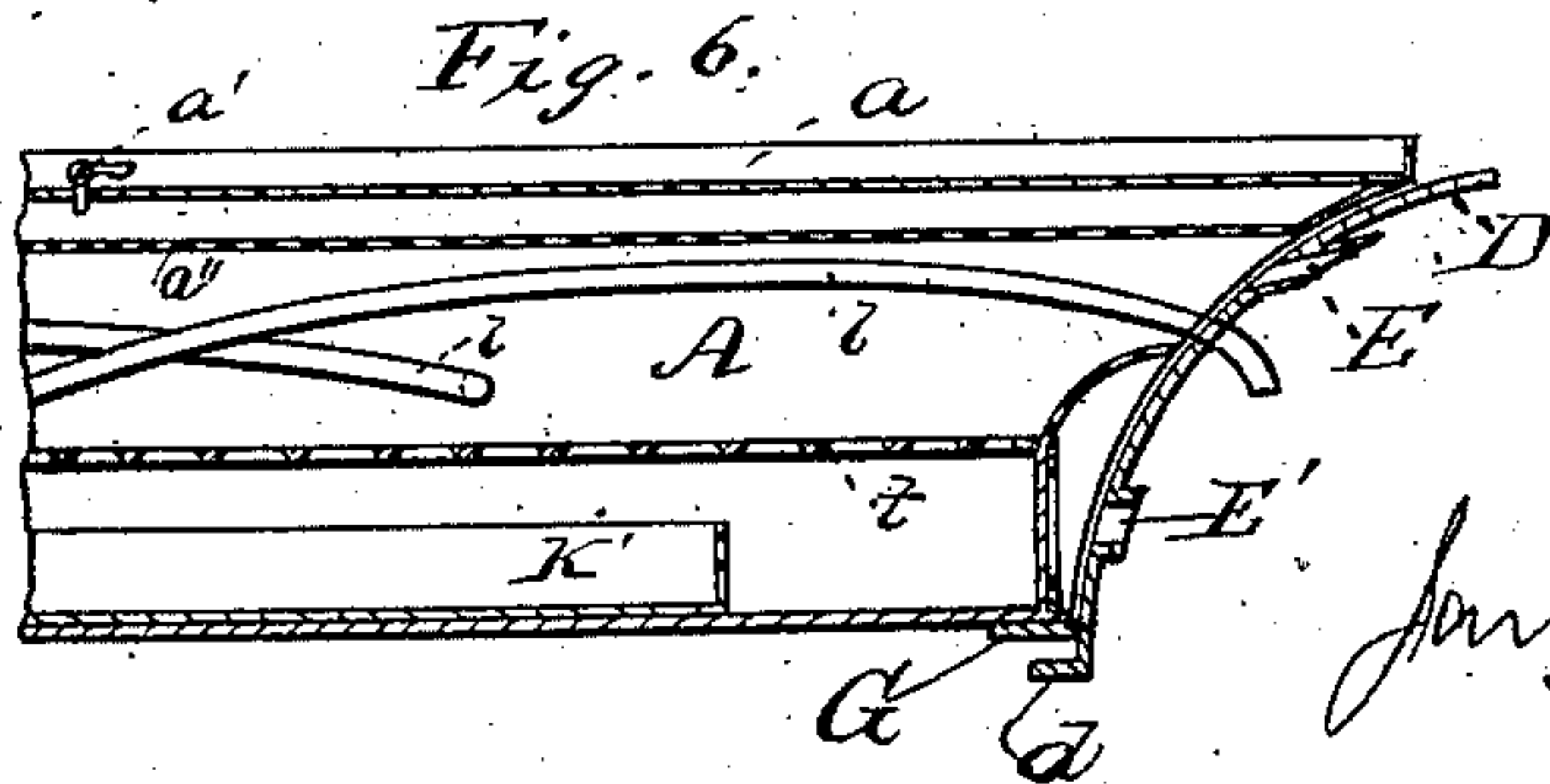
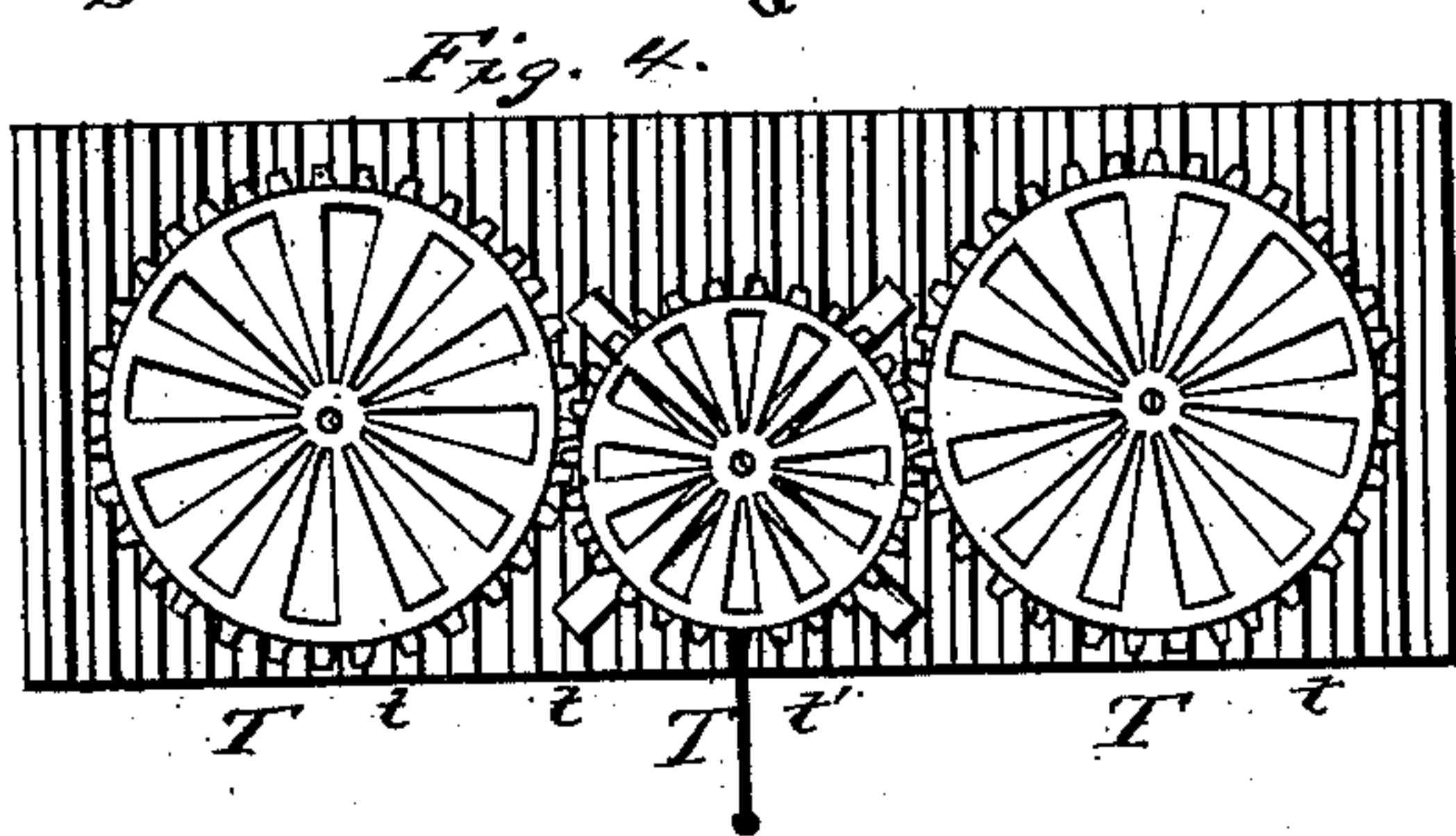
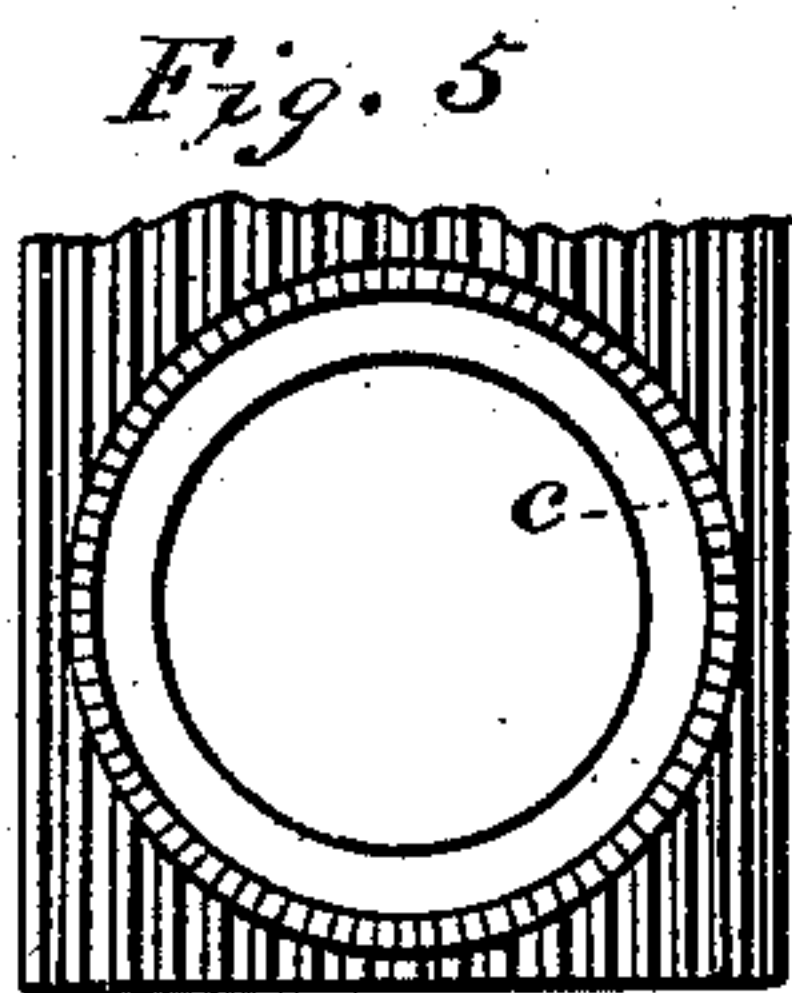
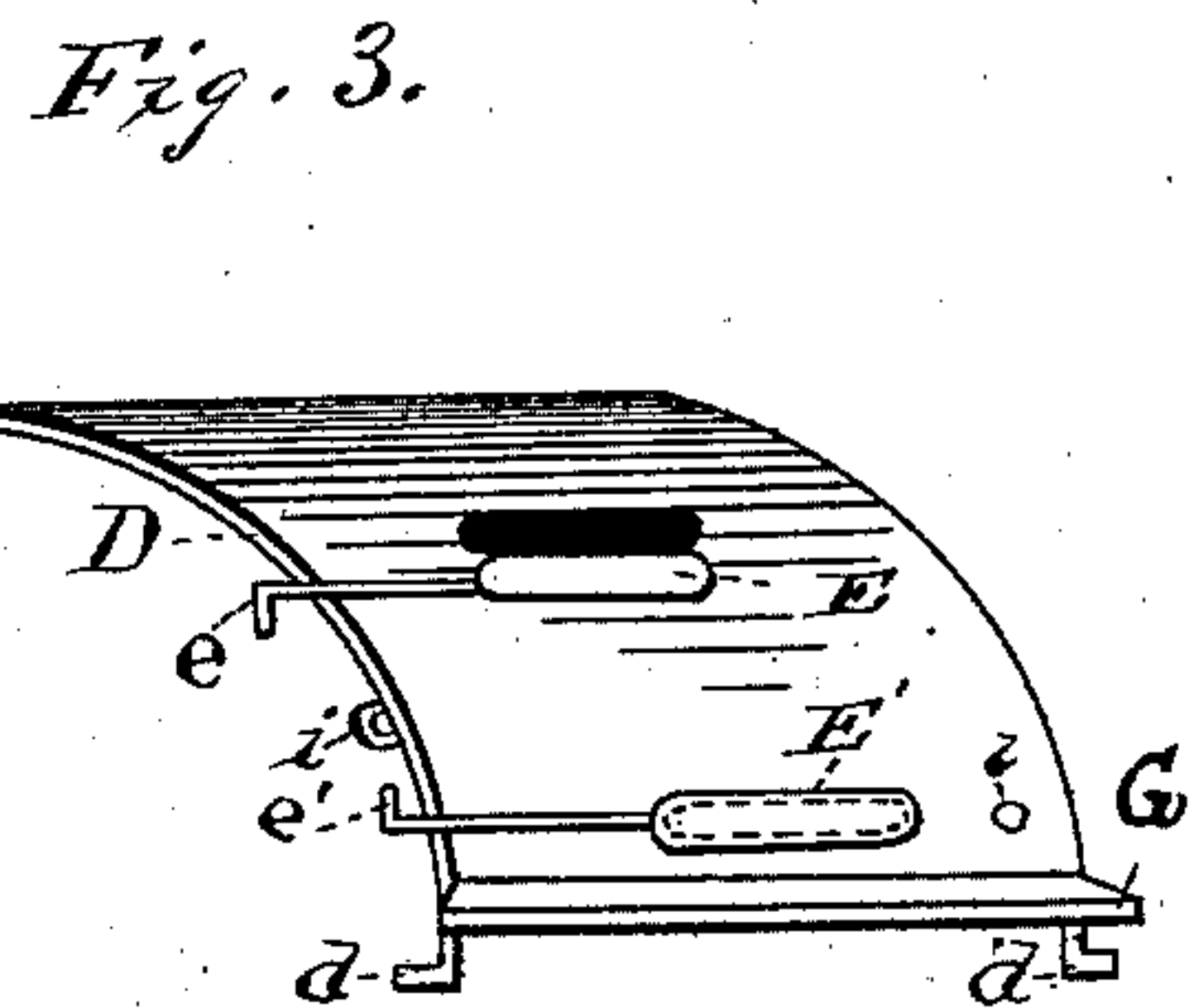
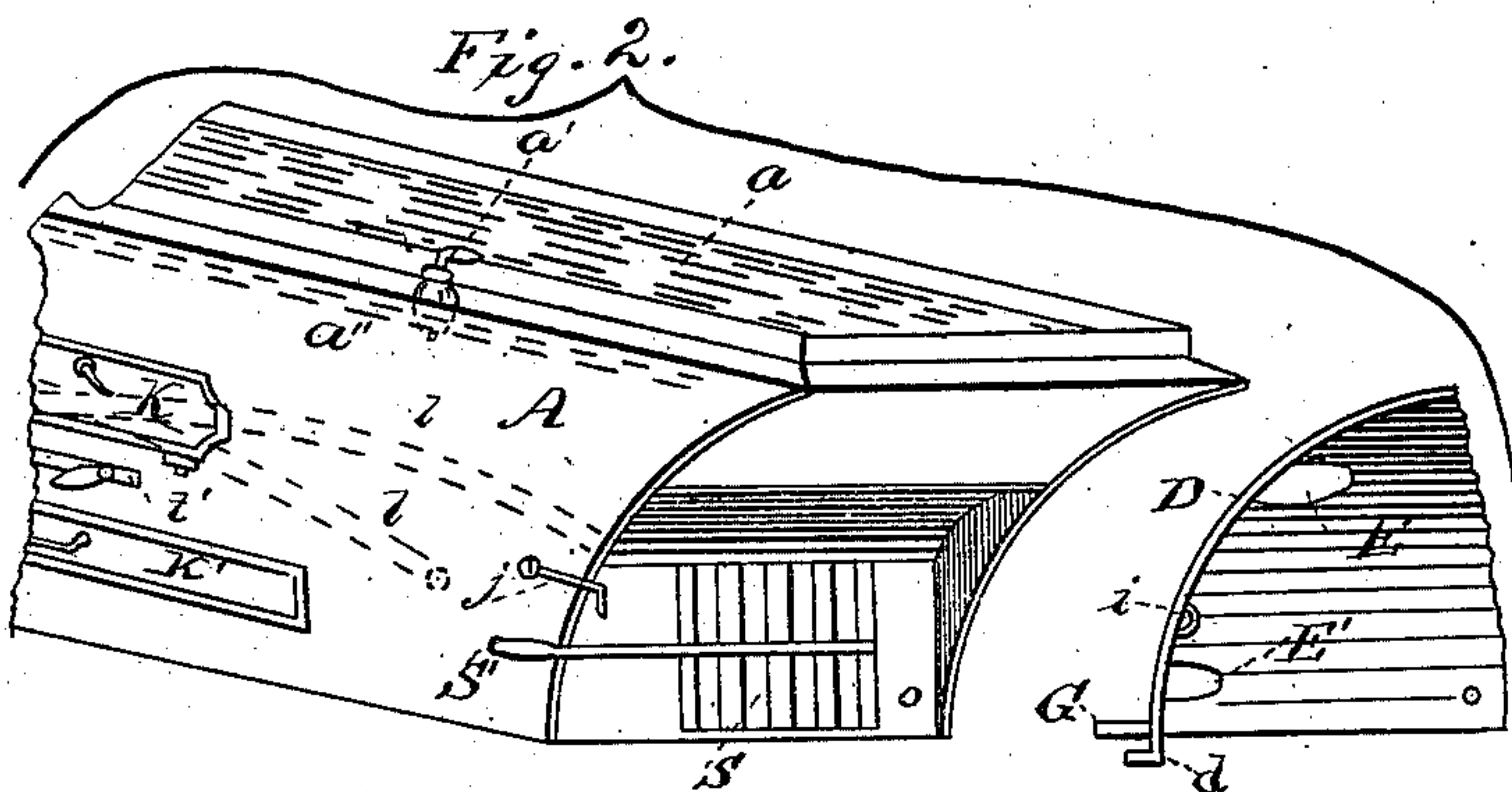
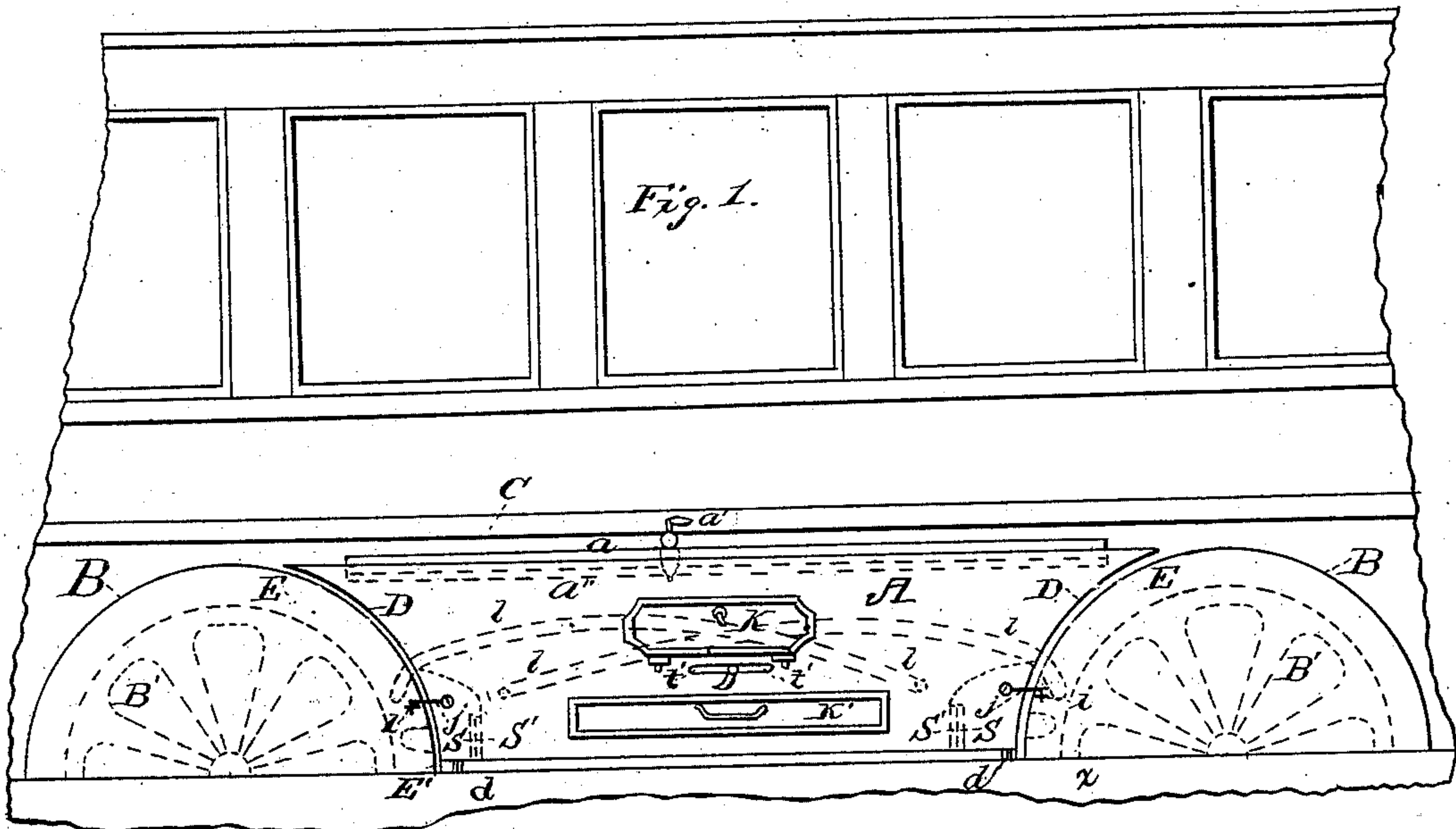


(No Model.)

J. F. GYLES.
STREET CAR HEATER.

No. 293,962.

Patented Feb. 19, 1884.



WITNESSES

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STREET-CAR HEATER.

SPECIFICATION forming part of Letters Patent No. 293,962, dated February 19, 1884.

Application filed June 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. GYLES, of Chicago, in the county of Cook and State of Illinois, have invented Improvements in Street-Car Heating-Stoves, of which the following is a specification.

In the accompanying drawings, which form part of this description, and in which like letters refer to like features in all the views, Figure 1 is a section of the car and the heating-stove in position for use; Fig. 2, a sectional elevation of the stove and detached end; Fig. 3, an elevation of the other end piece detached; Fig. 4, a plan of the fire-box bottom; Fig. 5, a section of the same, and Fig. 6 is a section of a portion of the apparatus.

The object of my invention is to render street-cars comfortable in cold weather by providing means whereby the same may be economically heated without sacrificing any of the seating capacity of the car; at the same time I dispense with an unsightly stove-pipe.

My invention is designed to maintain a regular and comfortable warmth within the cars by means which are easily regulated to meet sudden changes of weather.

My invention consists in the method of supporting combustion without the intervention of the usual chimney or smoke-pipe—that is to say, utilizing the currents caused by the rotating car-wheels to supply air to the car-heater and to withdraw the smoke from said heater.

The invention further consists in the means whereby I contemplate carrying out my said method, said means being specified by the claims hereto appended.

The heater A may be made of any suitable material and of dimensions adapting it for use in the various styles of cars. The end pieces, D D, are curved, or, more correctly speaking, made with a concavity to correspond with the shape of the wheel-caps B B, and are each of them provided with an upper and a lower oval port-tube, E E', and an air-tube, L, protruding on the concave side, as shown in Figs. 1 and 2, while on the convex side suitable hinged dampers are attached, with handles extending to the front, as at e e', Fig. 3, in order that either of the port-apertures may be closed or opened at will. Feet are also formed on

the end pieces, as at d d, and also suitable ledge-extensions above the same, as at G, upon which the heater is supported. The ends of the heater terminate in a curve, Fig. 2, corresponding to the convexity of the separable end pieces, D D. Suitable apertures are made in the wheel-caps B B to receive the protruding tube-ports E E' and air-tubes L, the extremities of which extend through the ends of the heater. The caps and flooring are protected by a covering of sheet-iron. The end pieces are first adjusted between the wheel-caps by entering the port-tubes E E' and air-tubes L into the apertures provided, as before stated, and then attaching the feet of the same to the flooring of the car with screws. The protruding ends of the air-tubes are cut and then rigidly attached to the apertured end pieces. After this the sliding of the heater upon the supporting-ledges G G into its place is readily accomplished, and with the hooks j j provided upon the former and the eyes i i upon the latter it is held in the position shown in Fig. 1. At the lower part of each end of the heater—in other words, at each end of the fire-box—are formed a suitable recess and vertical equidistant bars, as at S, Fig. 2, which are provided with a slide attached to a horizontal bar, as at S', for the purpose of closing or opening the same. Above the vertical bars S the recessed end of the fire-box terminates in a suitable curve, in order that it may meet and rest against the end piece, D, when attached thereto, at a point directly under the upper or outer port, E, and thereby intercept communication between the same and the lower or inlet port, E', the latter being in close proximity to the vertical bars S above described. As the same conditions are provided at each end of the heater, it will be easily understood that in order to have perfect combustion of the fuel the upper or smoke outlet tube (pointing in a slightly elevated manner in the direction which the car-wheels revolve) must remain open and the inlet-port tube thereunder remain closed, and, vice versa, the rear outlet-port tube must be closed while the inlet-port and vertical bars thereunder remain open; and should the draft entering the same be found too strong the slide S' can be readily used for controlling the same. After the fire

has been kindled in the heater and the coal properly ignited, if it should become desirable to diminish the temperature, it is only necessary to open both the outlet-ports E E and close the inlet or draft ports E' E' and vertical bar-slides S' S'. When it becomes necessary to increase the temperature, one of the outlet-port dampers (preferably the one at the rear end) should be closed, the inlet-port directly thereunder opened, as well as the vertical bar-slide S'; then shake out the ashes by the means shown at *t*, Fig. 4, as hereinafter described, replenish the coal, and empty the ash-drawer. The warmth will be more uniformly distributed around the flooring of the car by the tubes L L, provided and arranged diagonally across the fire-box, as indicated by dotted lines in Figs. 1 and 2, one end of which connects with the protruding air-tubes provided in the end pieces hereinbefore described, and the others are extended through the front part of the heater, between the door K and ash-drawer K', upon which other tubular attachments may be made and continued, as may be most expedient.

The oblong casting shown in Fig. 4, which forms the bottom of the fire-box, is first made with equidistant cross-bars supporting three recessed circular seats, as shown at *c*, Fig. 5. The center circle, however, is about one-half the size of the other two, and has diagonal cross-bars with an aperture for a screw-bolt. Three separate circular grates of suitable diameter, with projecting cogs *t t t* upon the upper surface of their outer rims, are then provided and adjusted into the recessed circular seats of the oblong casting above described, the center circle, T', being loosely held by a screw-bolt attached to the cross-bar under it, and provided with a handle, *t'*, extending in front of the heater, (above the ash-drawer,) which, when moved from side to side, causes the agitation of the other two circles, T T, by means of the cogs *t t t* working into each other, and thus displacing the ashes from the fire, which in consequence fall into the drawer K'. The grate-circles T T remain loose in their respective seats, as shown in Fig. 4, in order that the coal remaining over night may be the more readily removed in the morning before rekindling the fire, as by putting the hand through the door K and lifting the grates T T from their seats the coal will fall into the ash-drawer. When the grate has been properly adjusted and kindling and coal put into the fire-box, the hooks *j j* are detached from the eyes *i i*, so that the heater may be drawn out in order to reach the interstices in the vertical bars S S and ignite the fire, after which the heater is slid back on the supporting-extensions G G into its normal position, as shown in Fig. 1, the hooks *j j* being secured in the eyes *i i* to insure the heater remaining in place. The heater may be placed at either end of the car by suitably lengthening and depressing the outlet-port tubes E; but then, when the

horses are attached to the other end, (as where the car for the return trip is not turned around,) the heater would necessarily have to be removed to the upper end of the car, or two heaters used instead of one in the center. In one-horse cars, however, such a change on the return trip would not be necessary, as they are invariably turned around at the end of each trip.

The most economical adaptation of my invention is to place the heater, as hereinbefore stated, between the wheel-caps on either side of the car, as shown in Fig. 1 of the annexed drawings. The fire-box is protected by a suitable lining of burned clay, or it may be protected with a lining of any other suitable material; and, as a matter of precaution, a suitable oblong recess is formed in the top of the heater about one inch deep, as at *a*, Figs. 1 and 2, which is intended for holding water, and is provided with a suitable valved tube, *a'*, and a perforated receptacle, *a''*, under the same, immediately above the fire, the said receptacle or distributor being a diaphragm which extends across the combustion-chamber, as shown in dotted lines, Figs. 1 and 2. The grates having been agitated and the ashes displaced, in manner before stated, and the ash-drawer emptied, preferably before the car goes into the barn, the water is allowed to pass through the tube by pressing the lever *a'*, by which the valve is opened. The water percolates through the punctured receptacle upon the fire, thereby gently extinguishing the same and preventing injury to the cast-iron or the possibility of an accident from fire after the car has been put away.

The several castings which, when put together, form the heater are made and attached to each other in a manner similar to that in which the parts of stoves are manufactured and assembled.

Having described my invention, what I claim as new is—

1. In heating street-cars, the method of supporting combustion without the intervention of the usual chimney or smoke-pipe, which consists in utilizing the currents caused by the rotating car-wheels to supply air to the car-heater and to withdraw the smoke from said heater, substantially as herein explained.

2. In combination with the wheels and wheel-caps of a street-car, a car-heater provided with suitably-controlled induction and education end ports connecting with said caps, substantially as and for the purpose set forth.

3. In combination with the wheels and apertured semicircular wheel-caps of a street-car, a car-heater provided with concaved ends, carrying suitably-controlled inlet and outlet ports, and connecting with said caps, substantially as and for the purpose set forth.

4. In combination with the wheels and wheel-caps of a street-car, a heater-body or combustion-chamber provided with the vertical bars S and means for controlling the inter-

stices formed thereby, separable end pieces, D, provided with controllable inlet and outlet ports, and suitable means for locking the combustion-chamber and end pieces together, substantially as herein set forth.

5 5. In a car-heater, the combustion-chamber, combined with the separable end pieces, D, provided with suitably-controlled inlet and outlet ports, and means whereby the combustion-chamber and end pieces are secured together, substantially as set forth.

10 6. In a car-heater, the combustion-chamber, combined with the separable end pieces, D D, having inlet and outlet ports, ledges G G, and legs \bar{d} \bar{d} , substantially as herein set forth.

15 7. In a car-heater, the combustion-chamber provided with concaved end walls, combined with the separable convexed end pieces, having suitably-controlled inlet and outlet ports, and means whereby the combustion-chamber and end pieces are secured together, substantially as herein set forth.

20 8. In a car-heater, the combustion-chamber provided with the vertical bars S and means for controlling the interstices formed thereby, combined with the end pieces, D, provided with suitably-controlled inlet and outlet ports, substantially as and for the purpose set forth.

9. In a car-heater, the combustion-chamber provided with the vertical bars S and slide-bars S', combined with the end pieces, D, having inlet and outlet ports E E', dampers e e' , and supporting-ledges G, substantially as herein set forth. 30

10. In a car-heater, the combustion-chamber provided with the vertical bars S, means for controlling the interstices formed thereby, and the diagonal tubes l l , combined with the end pieces, D, having suitably-controlled inlet and outlet ports, substantially as set forth. 35 40

11. In a car-heater, the combustion-chamber provided at its top with the open water-receptacle a , combined with means whereby the water may be gently sprinkled on the fire, substantially as and for the purpose set forth. 45

12. In a car-heater, the combustion-chamber provided with the water-receptacle a , combined with the valved tube a' and the perforated distributor a'' , substantially as and for the purpose set forth.

JAMES F. GYLES.

Witnesses:

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JOHN P. WILSON.