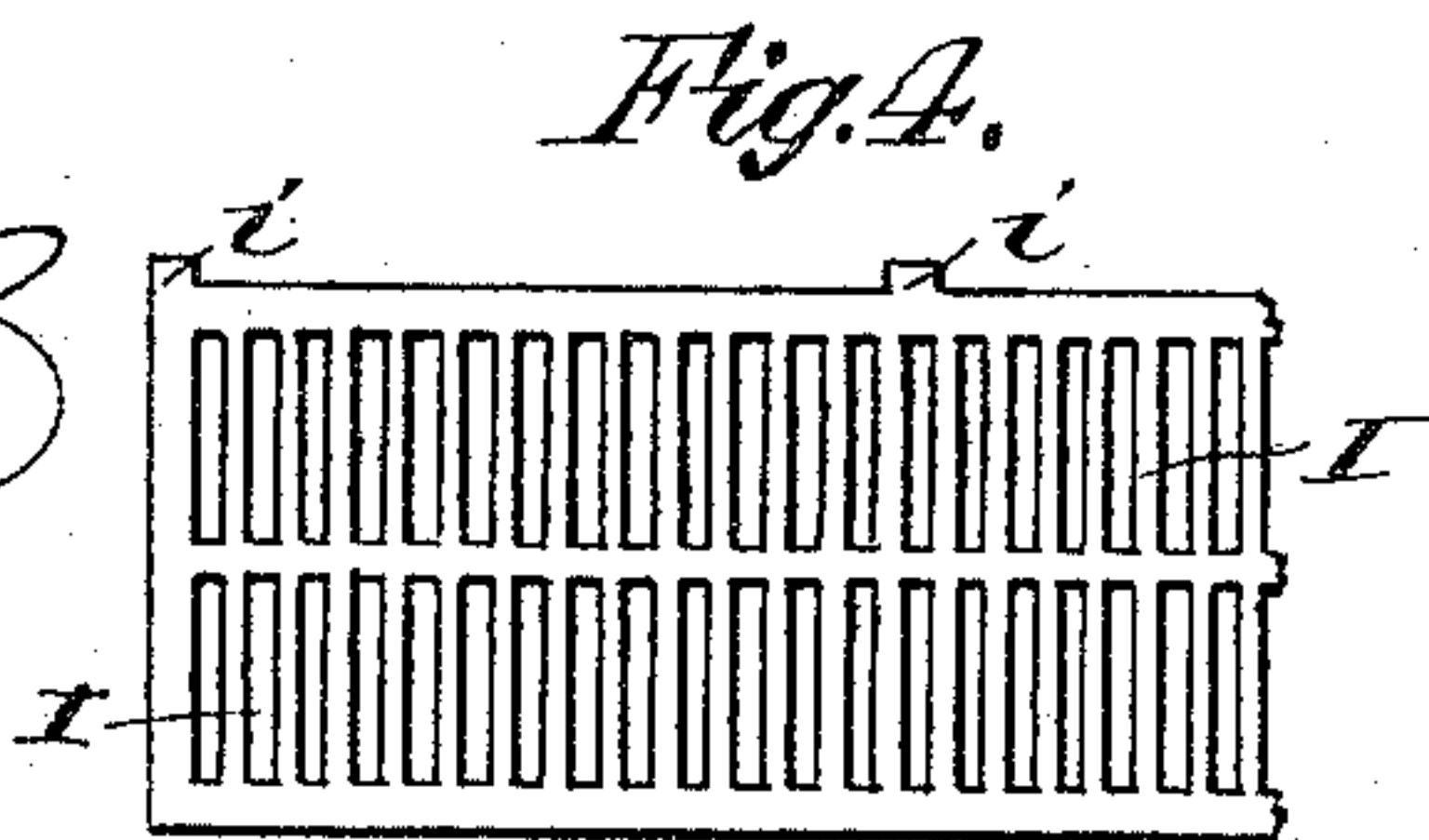
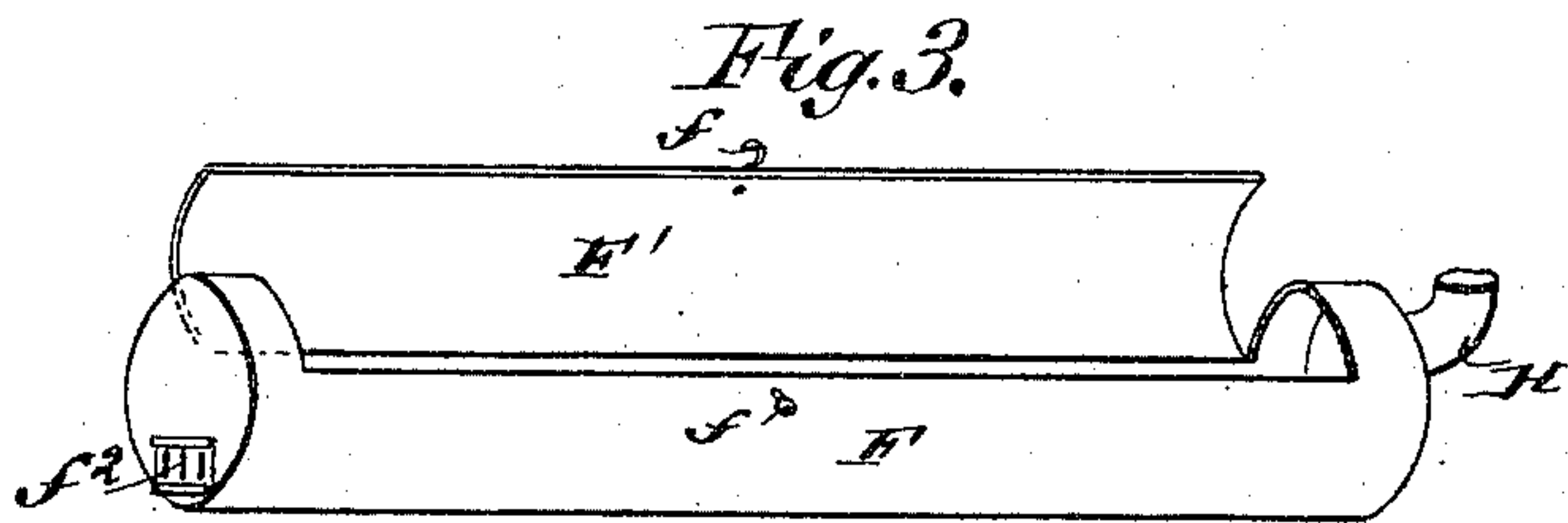
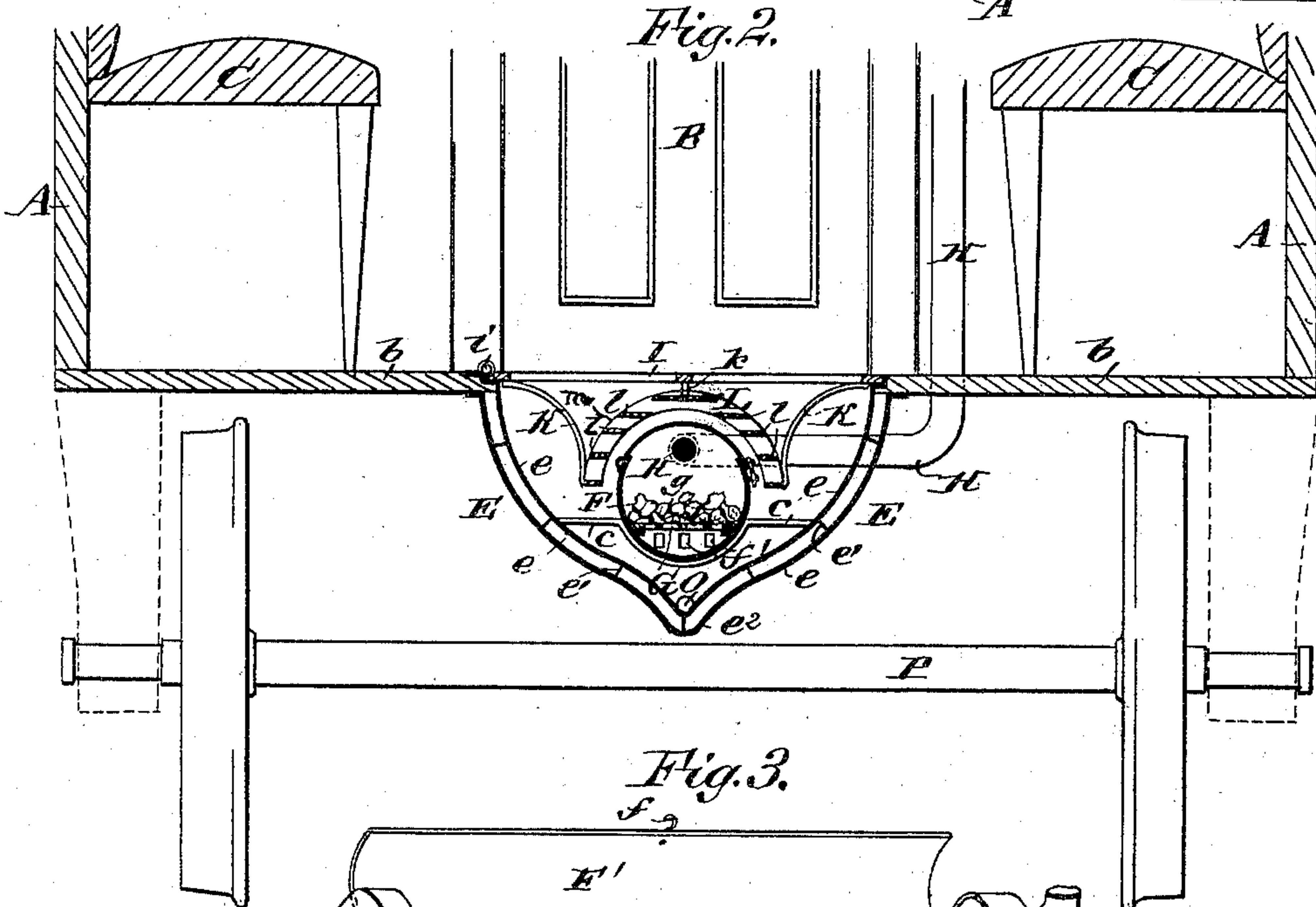
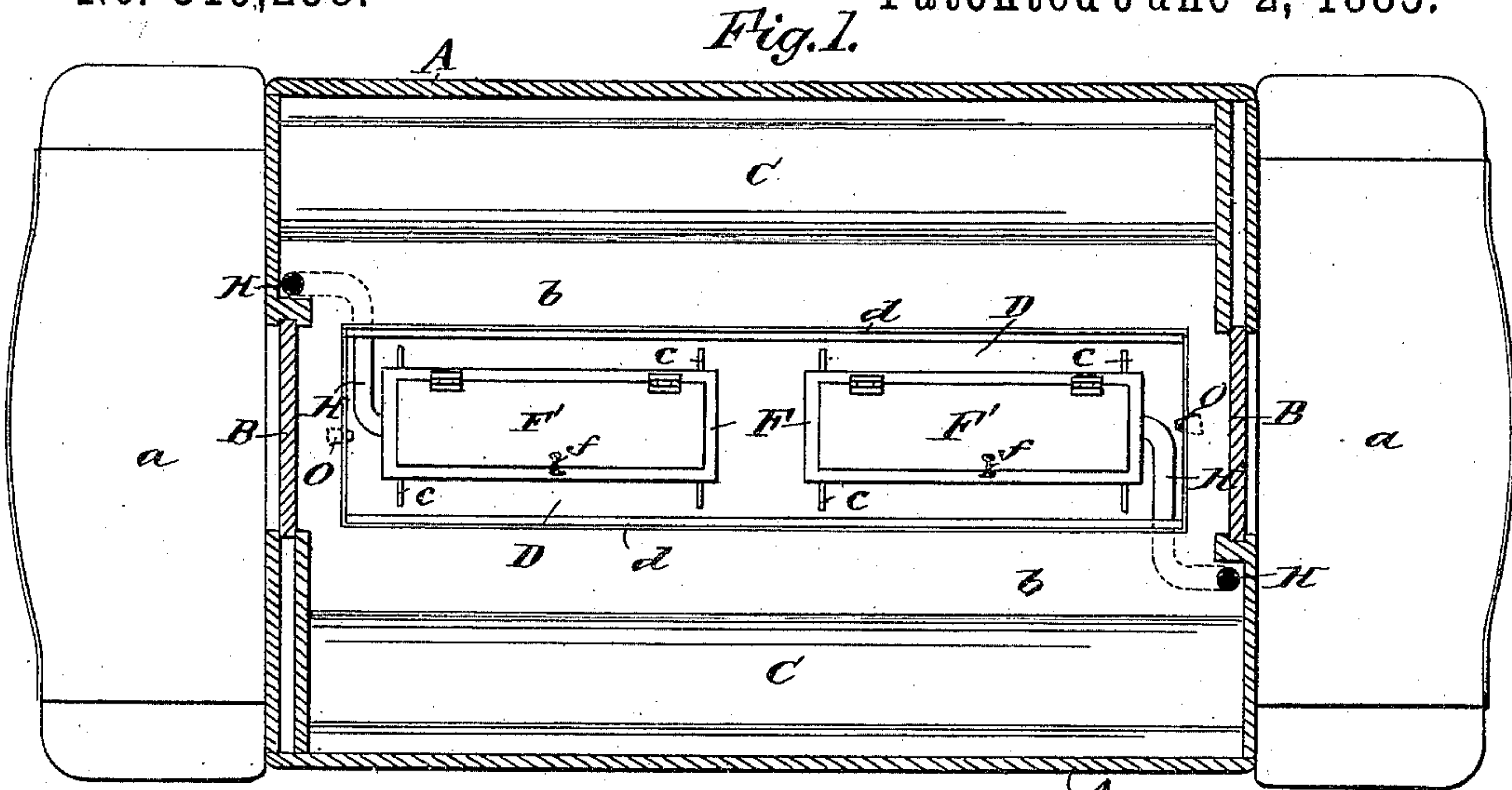


(No Model.)

F. S. HUNTER.
STREET CAR HEATER.

No. 319,258.

Patented June 2, 1885.



WITNESSES:

Wm. Beyer
C. Sedgwick

INVENTOR:

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UNITED STATES PATENT OFFICE.

FREEMAN S. HUNTER, OF FORT RITNER, INDIANA.

STREET-CAR HEATER.

SPECIFICATION forming part of Letters Patent No. 319,258, dated June 2, 1885.

Application filed December 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, FREEMAN S. HUNTER, of Fort Ritner, in the county of Lawrence and State of Indiana, have invented a new and Improved Street-Car Heater, of which the following is a full, clear, and exact description.

The object of my invention is to provide a simple, inexpensive, economical, and efficient heater for street-railway cars.

The invention consists in a car-heater constructed with heating-drums supported in a case held to the car-floor below an opening therein, and with a slatted guard held above the heating-drums to protect them from water or dirt which may fall through a grating fitted to the car-floor above the guard and drums, which latter have draft-openings at one end and connect at the other end with smoke-flues passing through the floor and roof of the car.

The invention consists, also, in particular constructions and combinations of parts of the heater, all as hereinafter fully described and claimed.

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

Figure 1 is a sectional plan view of an ordinary street-railway car with my improved heater applied, and with the grating and guards of the heater removed. Fig. 2 is an enlarged cross-sectional elevation of the lower part of the car and the heater with the grating and guards of the heater in place. Fig. 3 is a perspective view of one of the heating-drums, and Fig. 4 is a plan view of a portion of the grating-cover of the heater.

The letter A indicates the body of an ordinary street-car, which has the usual end plat-forms, *a a*, sliding doors B B, and longitudinally ranging side seats, C C.

Along the center of the floor *b* of the car I make an opening, D, which, as shown, extends for quite the whole length of the car-body, and below the opening D is fixed the lower case, E, of the heater, which I make with double side walls, *e e*, stayed by suitable bolts, *e'*, and converging to a central point or line, as at *e''*, said case also having close and double-walled ends fitted closely to the car-floor at the ends of the opening D, so that admission of air

through or around the case E to the interior of the car is prevented to avoid drafts, and any suitable non-conductor of heat may be packed between the walls *e e* of the case E to prevent radiation of heat from the drums F through the case to the outer air. The heating-drums F are supported in the case and above its bottom by the cross stays or brackets *c*, fixed to the case. The drawings represent two heating-drums, F F, supported in the case E, as I prefer to use two small drums, which may more easily be handled than a single long drum, and the two drums provide for better regulation of the heat with changing temperatures, as a fire may be made in either drum or in both drums, as may be required.

As seen best in Figs. 2 and 3, the drums F consist of elongated cases made, preferably, in cylindrical general form, and having a part or section, F', hinged to the main body of the drum to form a cover, which may be opened to place the fuel *g* into the drum and upon a loose grate, G, supported near the bottom of the drum on cleats or flanges fixed to the drum, and any suitable hook and pin or other fastening, as at *f*, may be provided to hold the cover F' closed. Draft-openings *f'* are provided at one end of the heating-drum with an apertured draft-regulating slide, *f''*, over them, and a pipe or flue, H, leads from its other end, and, preferably, is turned to one side, so it may pass upward through the car at a point alongside of the car-door, as in Fig. 1, and extend to and above the car-roof, to carry off the gaseous products of combustion from the fuel in the drum; and I propose to use comparatively smokeless fuel—such as charcoal or coke—to avoid excessive discharge of smoke or gases into the car or public highway. I form rabbets *d d* at the opposite side edges of the floor-opening D, in which the grating-cover I of the heater-case E may be supported with its upper surface flush with the car-floor. The grating I may be made in one or more sections, as desired, and I hinge the grating, as at *i*, to the floor, so it may readily be swung back for access to the heating-drums F when required for renewing the fuel or making adjustments or repairs.

To the under side of the grating I, I attach,

by means of suitable side braces or arms, K, and it may be the center braces, *k*, also, the shield or guard L, which consists of a series of plates or slats, *l*, connected to ribs or frame-bars *m*, and at suitable distances apart vertically to allow free rise of the heat from the drums through the slat-guard and grating to the interior of the car; and the slats *l* of the guard L are arranged edgewise relatively to each other, so that any water passing through the grating I onto the upper slats *l* will be caught by the lower slats and conducted to the casing E, at the sides of the heating-drums, whereby the drums will be protected from the water or dirt dropping from the feet, clothing, or umbrellas of the passengers, and disagreeable odors from the heating apparatus are prevented. The drip-water may be emptied from the casing E at any time by drawing the plugs O from their holes in the ends or bottoms of the casing, or by opening any suitable valves similarly located.

By connecting the guard L with the grating I the guard will be swung upward on the hinges *i* with the grating.

As shown in Fig. 2, there is ample room between the car-floor *b* and its axles P to receive the casing E, which, with the heating drums, is entirely below the floor of the car, so that no room is taken up in the car by the heating apparatus, except for the smoke-flues H, which require very little space.

It will be seen that my improved heater may easily be applied to old cars by simply cutting a hole through the floor at D and attaching the casing E, having drums F, and the grating and guard I L, and fitting the pipes H to the drums through the car roof and floor,

and with said heater the car may be warmed quickly, comfortably, and economically.

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

1. A car-heater constructed with a casing, E, held below an opening in the car-floor, heating-drums F, supported in the casing and above its bottom, and said drums having draft-apertures at one end and connected at the other end with a flue, H, leading to the car-roof, a slat-guard, L, held above the drums F, and a grating, I, set in the floor-opening above the guard L, substantially as herein set forth.

2. In a car-heater, the combination, with the casing E and heating-drums F, supported therein, of a guard, L, consisting of spaced slats *l*, connected to frame-bars *m* by arms K and supported above the drums, and a grating, I, held above the guard L, substantially as herein set forth.

3. In a car-heater, the combination, with the casing E and heating-drums F, of the slat-guard L, connected to the grating I, and said grating being hinged to the car-floor, substantially as herein set forth.

4. In a car-heater, the casing E, supported from the car-floor and below an opening therein, and constructed with double walls *ee*, converging downward, and provided with outlets closed by plugs or valves O, and brackets *c* on which to support the heating-drums F clear of its bottom, substantially as herein set forth.

FREEMAN S. HUNTER.

Witnesses:

EDWARD CONDE,
THOMAS T. HUGHES.