

(No Model.)

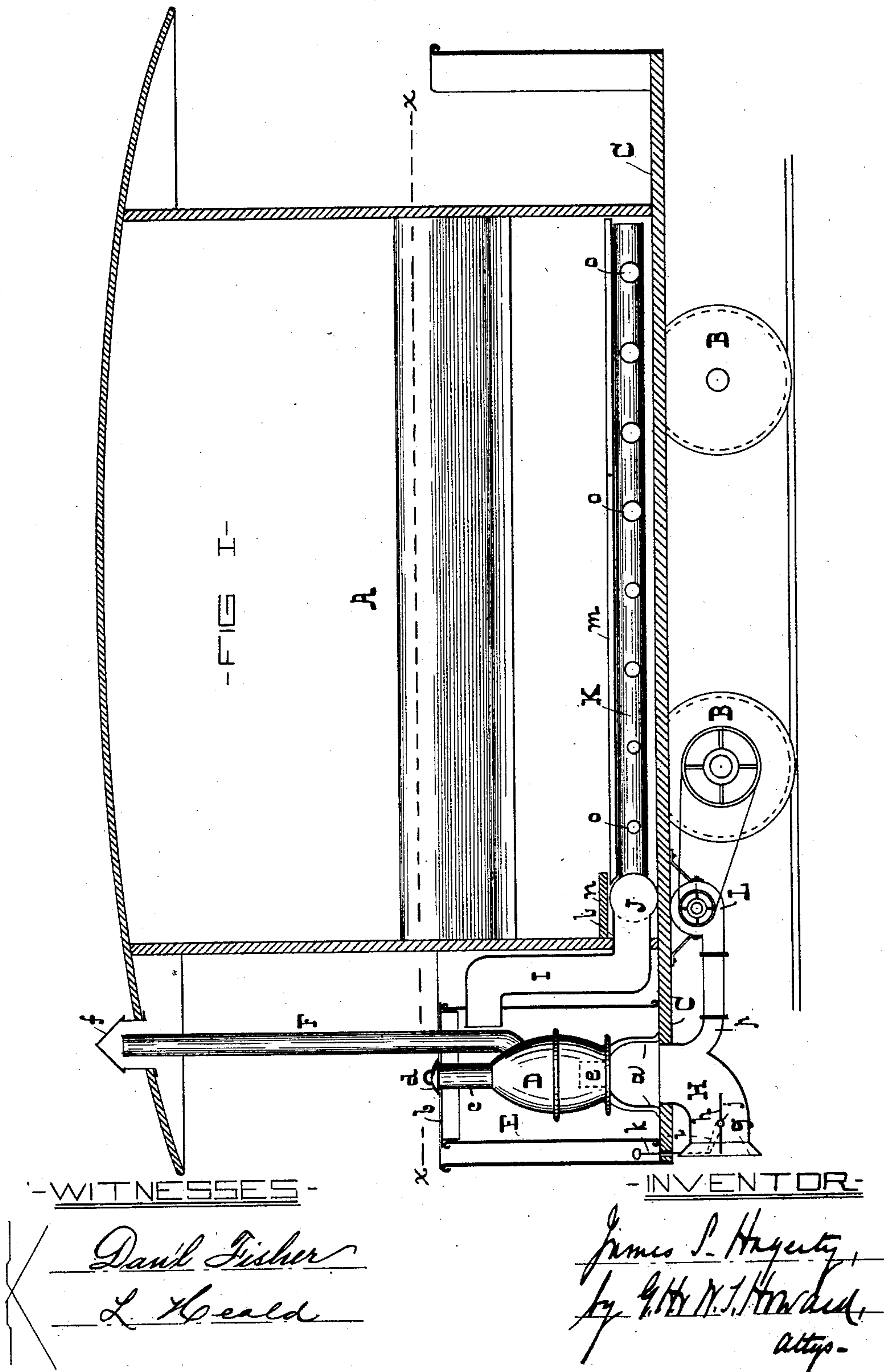
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J. S. HAGERTY.

CAR HEATER.

No. 362,214.

Patented May 3, 1887.



(No Model.)

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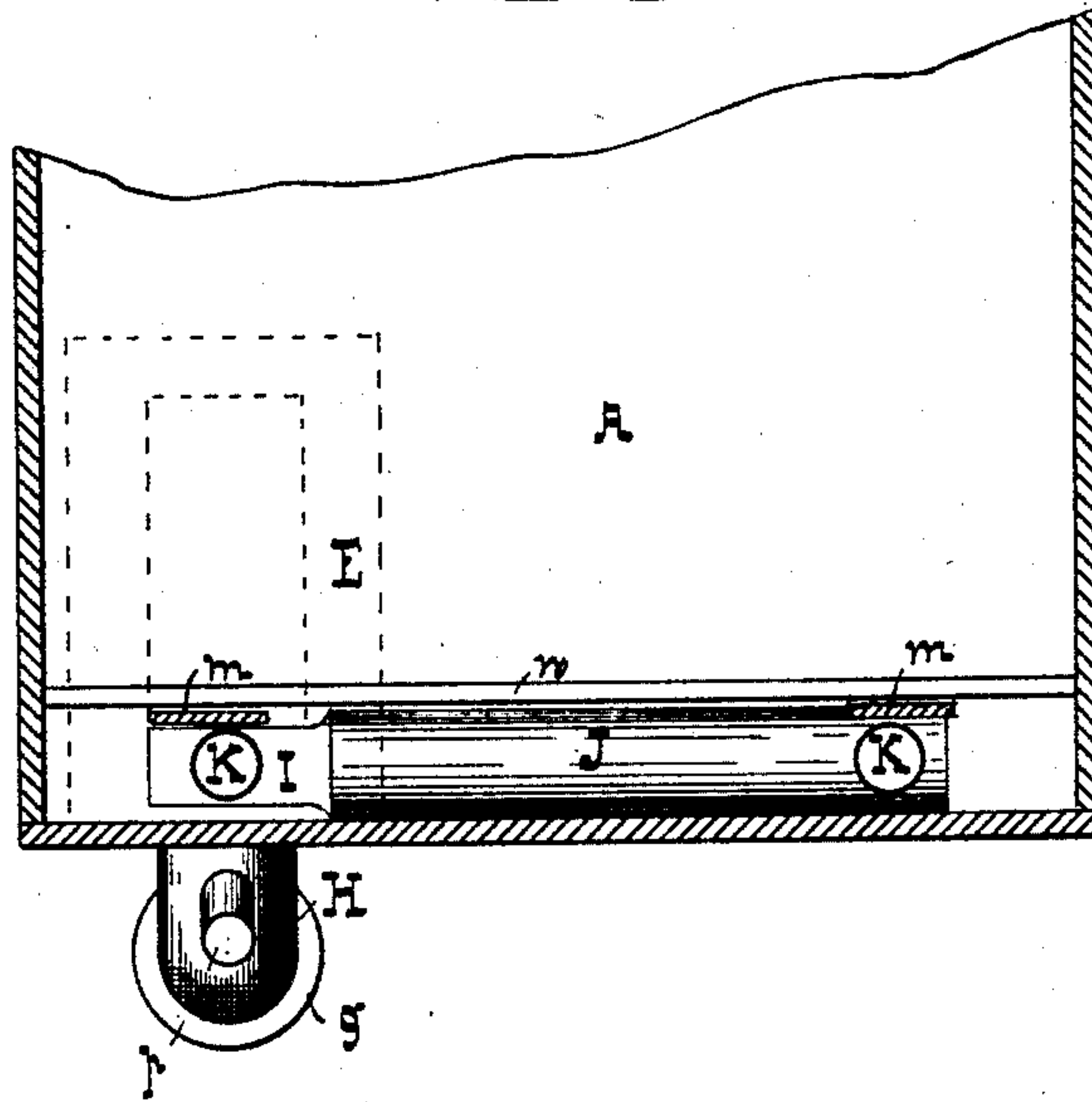
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- FIG II -



- WITNESSES -

*Dan'l Fisher*  
*L. Heald*

- INVENTOR -

*James S. Hagerty,*  
*by G. H. T. Howard,*  
*Atty.*

(No Model.)

3 Sheets—Sheet 3.

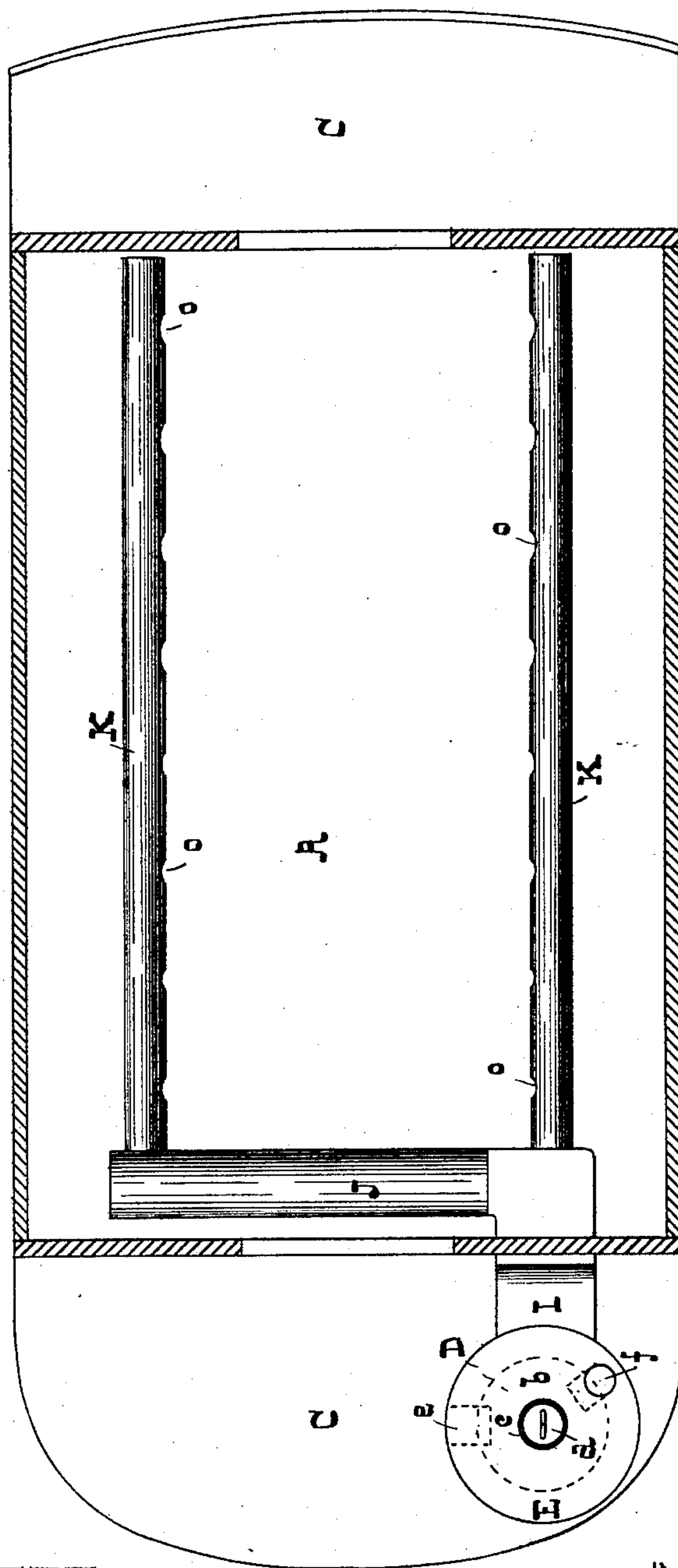
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- FIG III -



- WITNESSES -

*Dan'l Fisher*

*L. Heald*

- INVENTOR -

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# UNITED STATES PATENT OFFICE.

JAMES S. HAGERTY, OF BALTIMORE, MARYLAND.

## CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 362,214, dated May 3, 1887.

Application filed January 10, 1887. Serial No. 223,879. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES S. HAGERTY, of the city of Baltimore and State of Maryland, have invented certain Improvements in Street-  
5 Car Heaters, of which the following is a specification.

This invention relates to certain improvements in an apparatus for heating street-railway cars; and it consists in certain details of  
10 construction of the said apparatus, as will hereinafter fully appear.

In the description of the said invention which follows, reference is made to the accompanying drawings, forming a part hereof, and  
15 in which—

Figure I is a longitudinal section of a street-car provided with my improved heating apparatus. Fig. II is a sectional plan of the same. Fig. III is a transverse section taken on the  
20 dotted line *x x*, Fig. I.

Similar letters of reference indicate similar parts in all the figures.

In the said drawings, A is the body of the car, and B B represent the wheels thereof.

25 C C are the platforms of the car, on the forward one of which is placed a stove, D. This stove is elevated above the platform C by means of suitable legs, *a a*, and it is surrounded by the heating-chamber E, which consists of a  
30 sheet-iron jacket having a removable top or lid, *b*. A pipe, *c*, extends from the top of the stove to the lid *b* for feeding purposes, and is provided with a cover, *d*, to prevent the ingress of air to the stove at that point. A  
35 lateral pipe, *e*, leads from the ash-pit of the stove to the exterior of the jacket E, whereby the ashes may be withdrawn. This pipe also serves to admit air to the fire in the stove to support combustion.

40 F is a stove-pipe, which extends from the upper part of the cylinder of the stove in an upward direction through the roof of the car, where it is fitted with a hood, *f*, for an obvious purpose.

45 H is a pipe affixed to the under side of the platform C, to conduct air to the heating-chamber E. This pipe has a flaring or funnel-shaped mouth-piece, *g*, and a damper, *h*, to regulate the volume of cold air admitted to the

said chamber. It is important that the volume of cold air admitted to the heating-chamber should be controllable, as described, as otherwise the temperature of the hot air delivered to the car could only be regulated by the heat of the fire in the stove. The damper  
55 is moved by means of a crank, *i*, on the damper-shaft *j*, and a handle, *k*, which extends through the platform of the car, as shown in Fig. 1.

I is the main hot-air-discharge pipe, which  
60 begins at the upper end of the hot-air chamber E and extends downward to the floor, where it enters the car through a suitable aperture, *l*, and is attached to the imperforate transverse pipe J, which reaches across the car.  
65 (See particularly Figs. II and III.)

K K are longitudinally-extending hot-air pipes leading from the ends of the transverse pipe J to the rear of the car. (See Figs. I and II.) These pipes are situated under the seats  
70 of the car, and protected on the upper side by means of the foot-boards *m*. The transverse pipe is also protected by a foot-board, *n*. (See Fig. I.)

The pipes K K are closed at their ends and  
75 provided with air-exit apertures *o*, through which hot air is ejected toward the center of the car. These holes increase in size from the front to the rear of the car, (see Fig. I,) in order that a nearly-uniform discharge of hot air  
80 takes place. To understand why this graduation in size of the discharge hot-air apertures is necessary, it must be borne in mind that the air loses heat by radiation in passing through the pipes K from the front to the rear of the  
85 car. Consequently a larger discharge is necessary at the latter point than at the former to bring the surrounding air to the same temperature.

It sometimes occurs that a natural draft of  
90 cold air through the pipe H to the heating-chamber E cannot be satisfactorily obtained, owing to the direction of the wind, and sometimes the pipe H is useless in a driving snow or rain storm. I therefore provide for such  
95 contingencies by fitting the pipe H with a branch pipe, *p*, which leads to a blower, L, driven from the axle of the car by means of pul-

leys and a belt, as shown in Fig. I. When a blower is used, the damper *h* is closed.

I claim as my invention—

5 The combination of a street-car, a stove thereon, a hot-air chamber that surrounds the stove, having a curved cold-air-induction pipe extending from its bottom and through the floor of the car underneath the stove, and a  
10 hot-air-eduction opening near its top, a hot-air pipe situated exteriorly of the said hot-air chamber, which leads from said eduction-open-

ing in a downward direction to the base of the said chamber, an imperforate transverse hot-air pipe connected to the lower end of the vertical one, and longitudinally-extending perforate pipes, closed at their ends, attached to the ends of the said transverse pipe, all combined and arranged substantially as set forth. 15

JAS. S. HAGERTY.

Witnesses:

WM. T. HOWARD,  
DANL. FISHER.