

(No Model.)

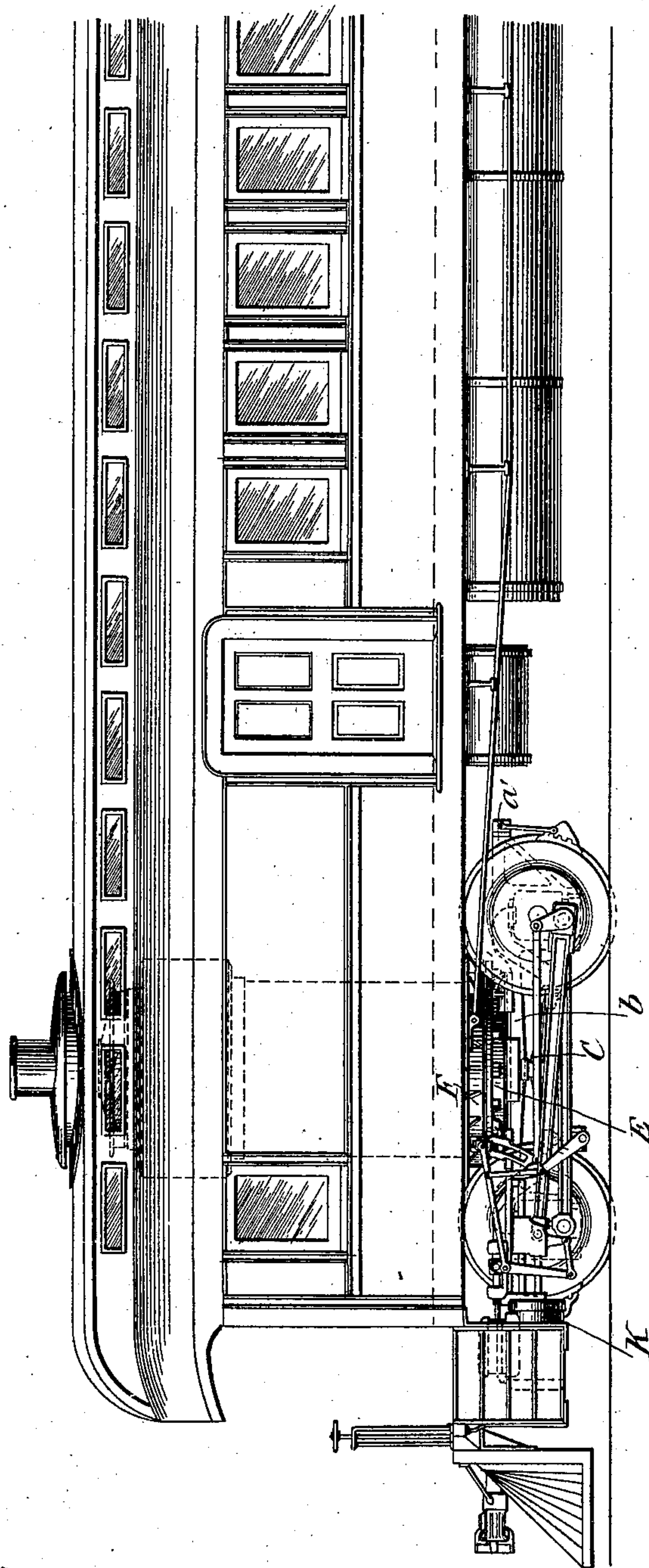
5 Sheets—Sheet 1.

A. J. PITKIN.
STEAM PROPELLED CAR.

No. 603,284.

Patented May 3, 1898.

Fig. 1.



Witnesses:
E. A. Baruch.
A. M. Perkins.

Inventor;
Albert J. Pitkin
By his Attorneys,
Paldon, Davidson & Wright.

(No Model.)

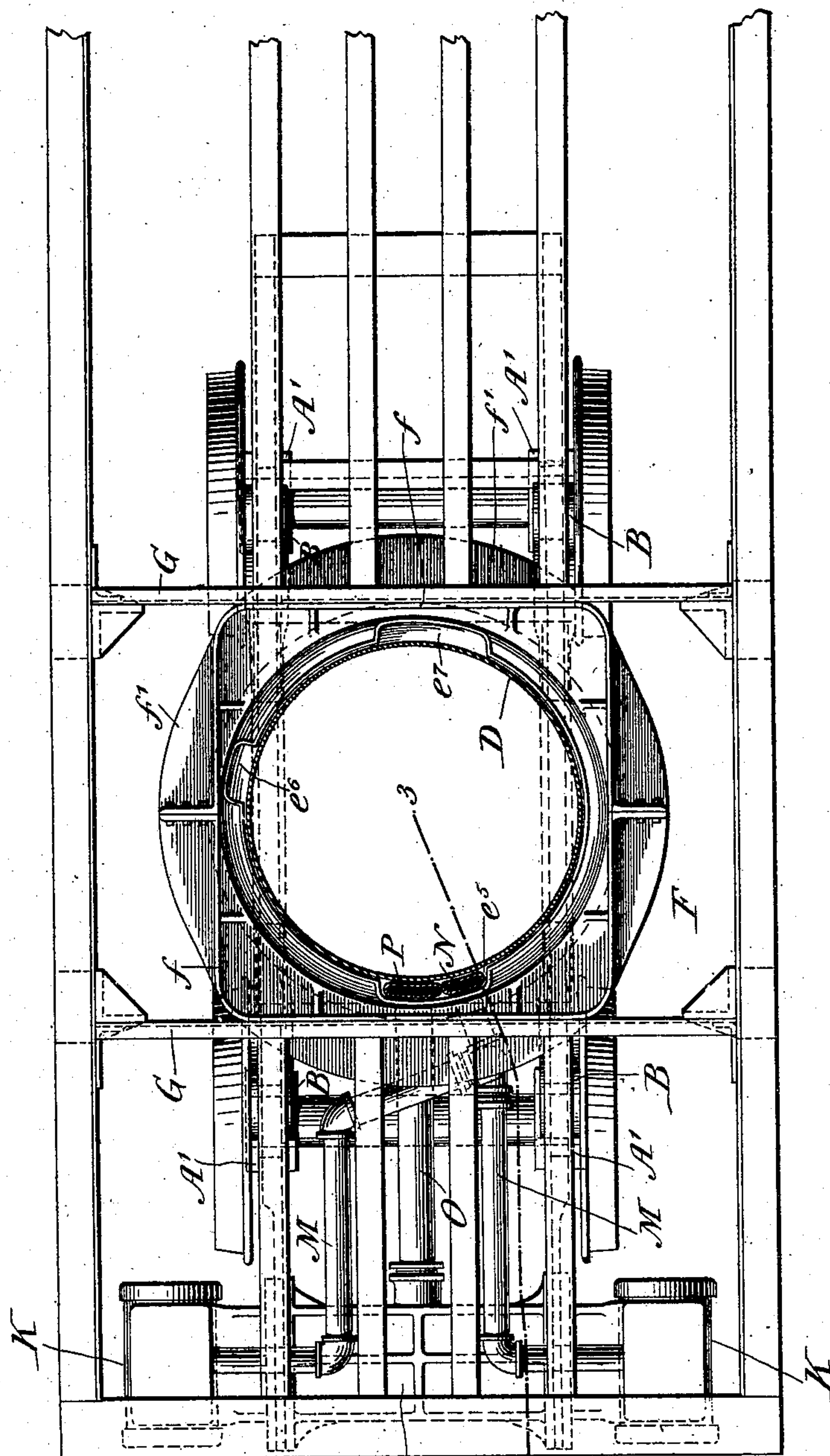
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Fig. 2.



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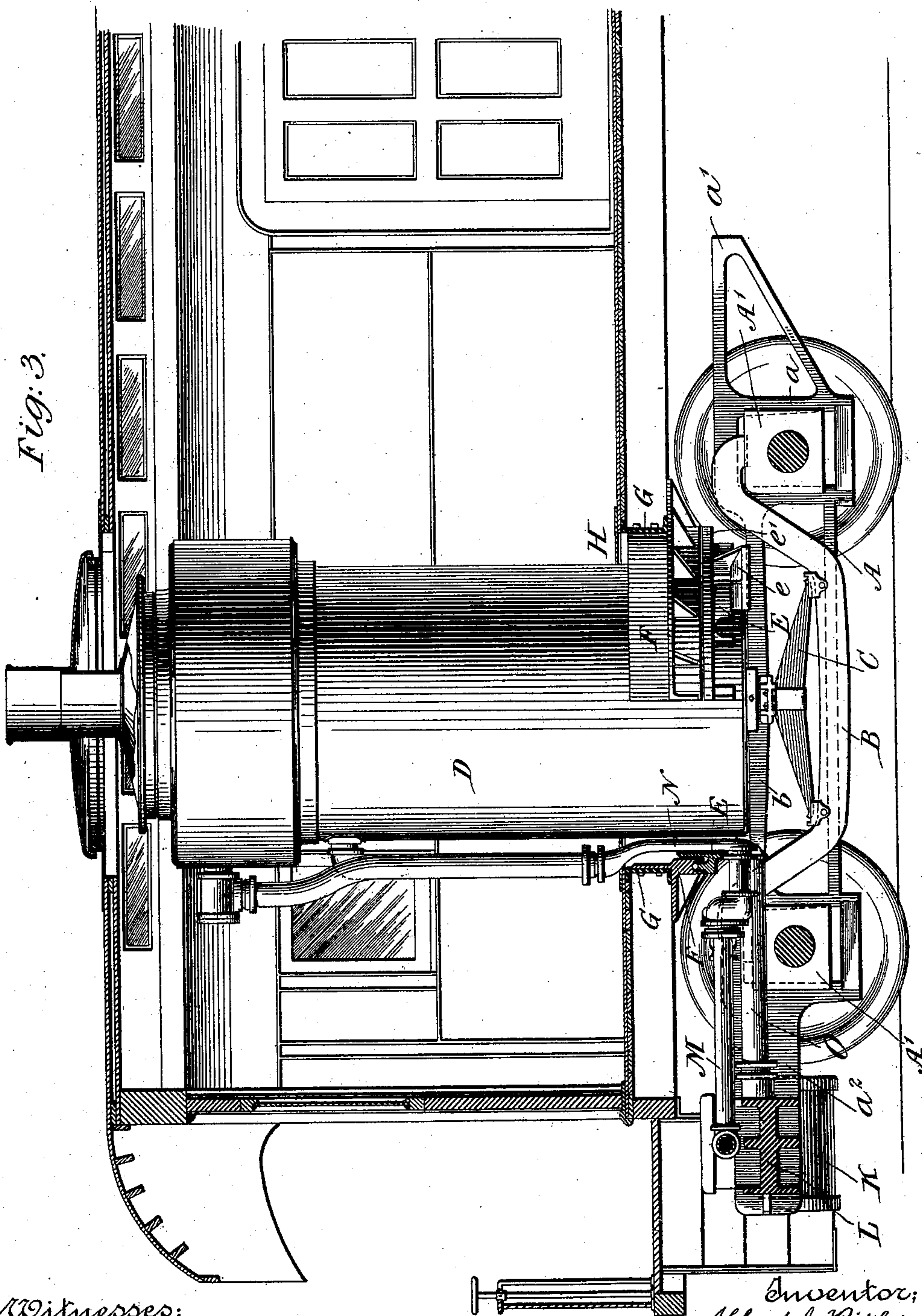
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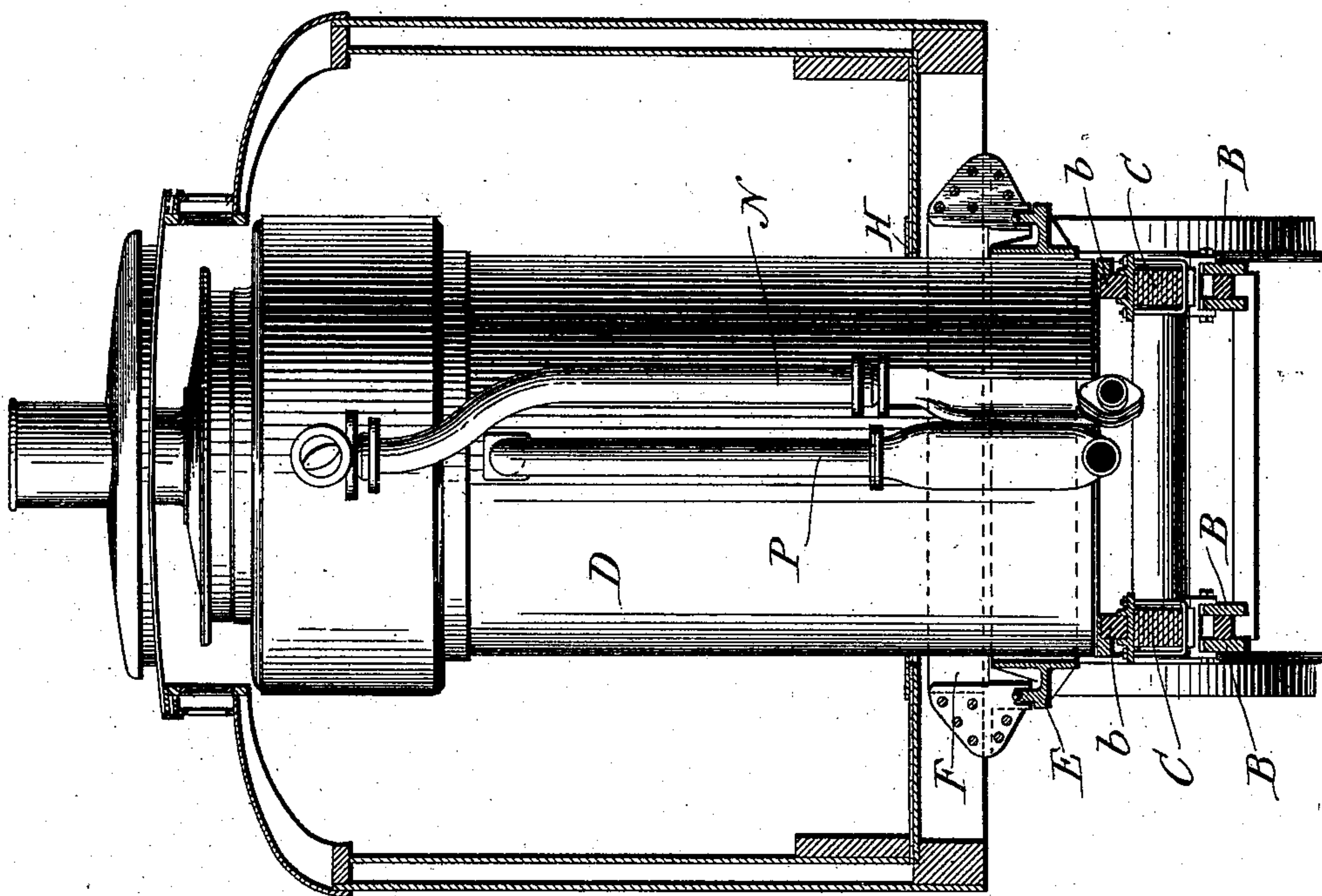
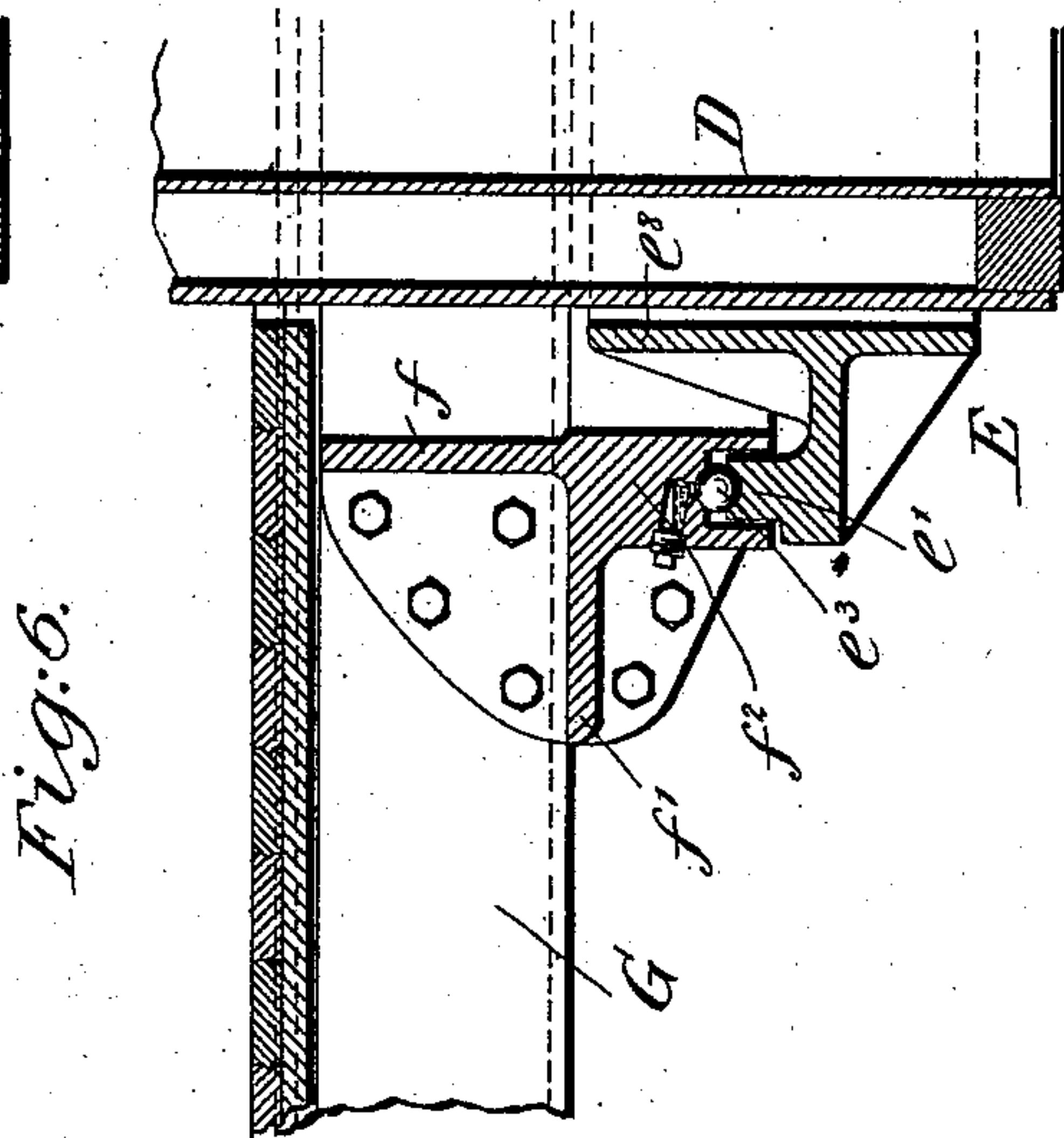
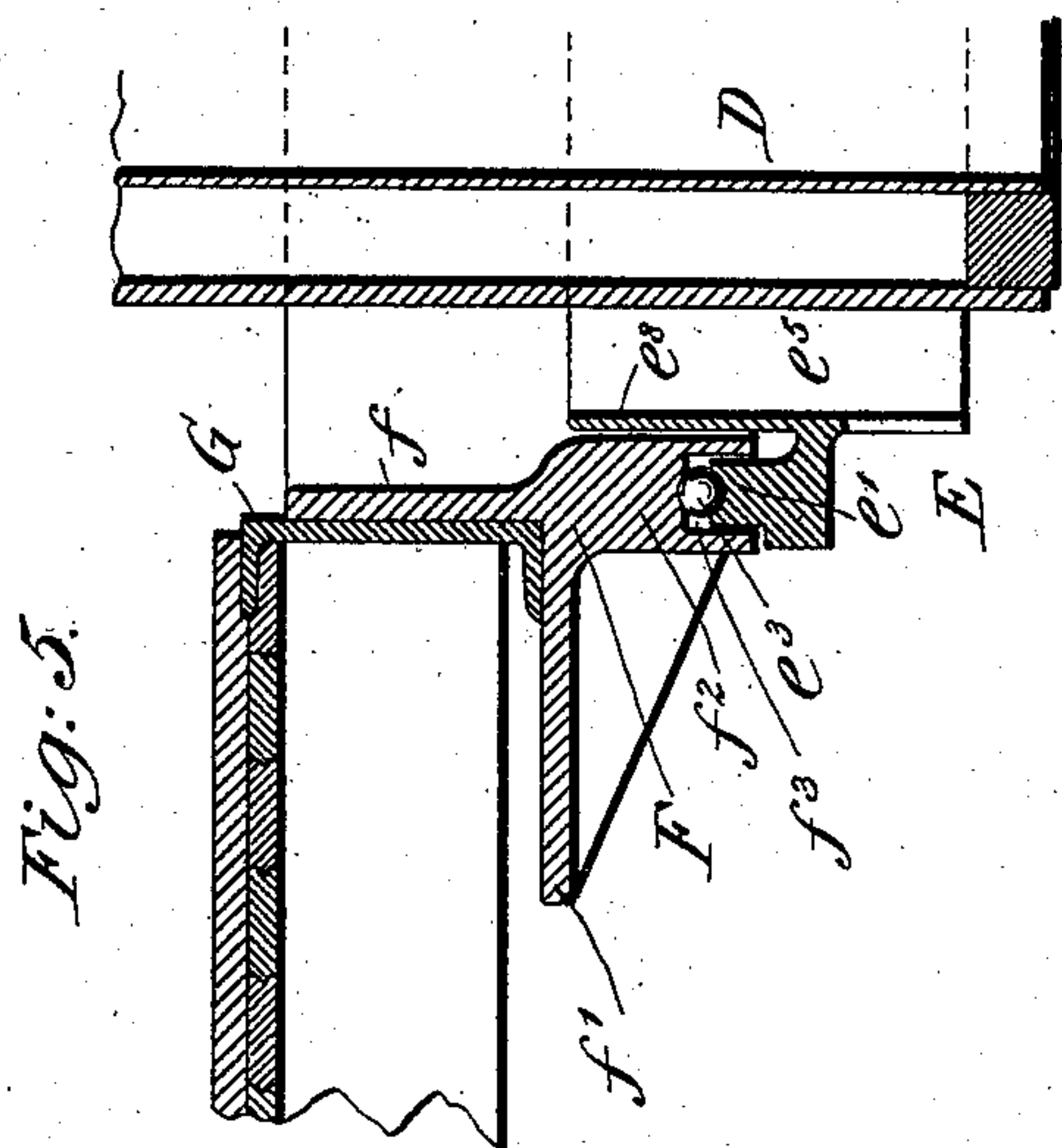
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STEAM PROPELLED CAR.

No. 603,284.

Patented May 3, 1898.



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Fig. 4.

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(No Model.)

5 Sheets—Sheet 5.

A. J. PITKIN.
STEAM PROPELLED CAR.

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Fig. 9.

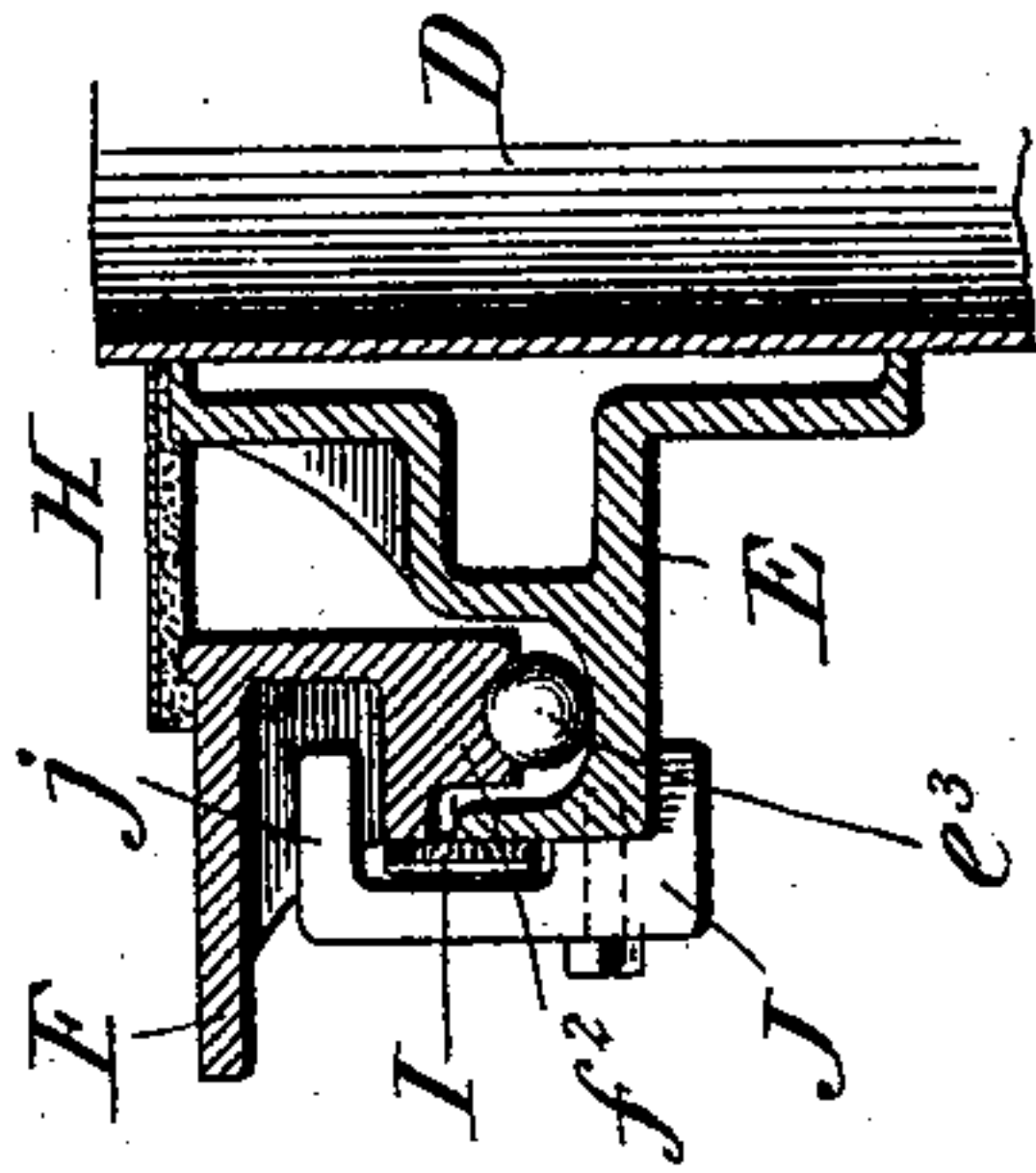


Fig. 7.

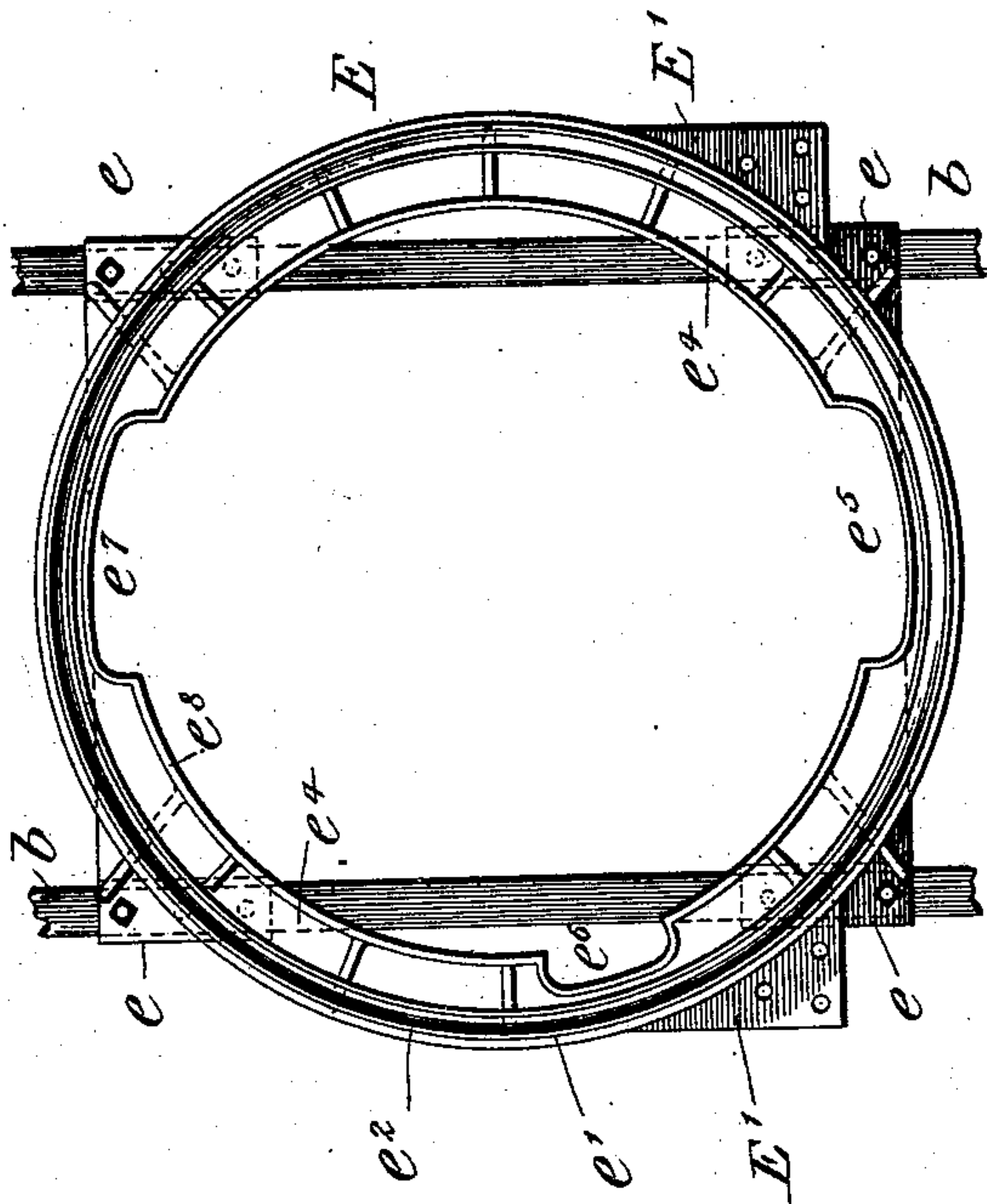
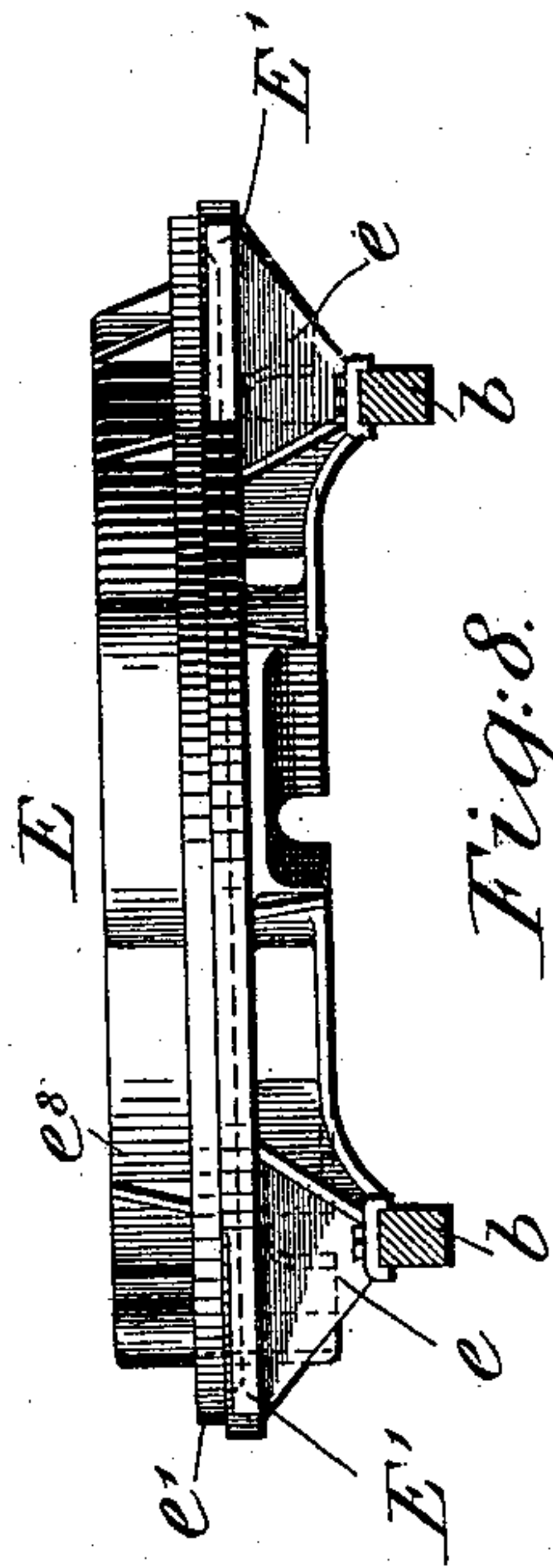


Fig. 8.



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UNITED STATES PATENT OFFICE.

ALBERT J. PITKIN, OF SCHENECTADY, NEW YORK.

STEAM-PROPELLED CAR.

SPECIFICATION forming part of Letters Patent No. 603,284, dated May 3, 1898.

Application filed December 23, 1897. Serial No. 663,138. (No model.)

To all whom it may concern:

Be it known that I, ALBERT J. PITKIN, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Steam-Propelled Cars, of which the following is a specification.

My invention relates especially to that class of steam-propelled cars in which the engine is located at one end of the car-body, while the remainder of the car is occupied by passenger-seats. Such cars are usually of considerable length and in order to turn short curves have swiveled trucks. In some cases the boiler is mounted on the car-body, the steam-cylinders are mounted on the car-truck, and the steam-pipes which connect the boiler with the cylinders are made flexible or have loose joints to accommodate the necessary movement of the truck relatively to the body of the car. Such flexible connections and loose joints are very objectionable and detract to a large extent from the efficiency of the mechanism.

The primary object of my invention is to so mount the boiler and the engines and so connect them that stiff rigid pipes may be used and all danger of leakage avoided.

In carrying out my invention I employ a car-truck of suitable construction having side frames, as usual, and on these side frames I support a casting through which the boiler extends, the boiler being arranged to rest on the truck and to extend through the floor of the car. Around the opening through which the boiler extends is secured another casting that rests on balls or rollers arranged in an annular groove or race in the first-mentioned casting. The steam-cylinders are carried on the truck-frame, and live-steam and exhaust pipes, which are stiff and have rigid joints, extend through openings in the castings and in the floor of the car and connect the cylinders with the boiler and with the exhaust.

In the accompanying drawings, Figure 1 shows a side elevation of one end of a passenger-car with my improvements applied. Fig. 2 is a plan view showing particularly the arrangement of the cylinders on the truck-frame, the manner of connecting the castings thereto and to the car-body, and the steam-pipes leading from the cylinders to the boiler.

Fig. 3 is a view in longitudinal section on the line 3 3 of Fig. 2. Fig. 4 shows a transverse section through the front part of the car. Fig. 5 is a detail view, on an enlarged scale, showing particularly the connections between the two castings and the manner of connecting one of the castings with the car-body. Fig. 6 is a similar view taken at right angles to the view shown in Fig. 5. Fig. 7 is a plan view of the bottom casting, showing the manner in which it is supported on the car-truck. Fig. 8 shows a front elevation of the bottom casting. Fig. 9 is a detail view of a modified way of connecting and arranging the two castings.

The car-truck has side frames A, having pedestals a , fitting over the axle-boxes A' , and forwardly and rearwardly projecting portions a' a^2 . It will be observed that the axle-boxes are located inside the wheels, as are also the frames of the truck. In this way a more compact structure is afforded for supporting the boiler, &c. On each side of the truck a beam B is employed, which rests on the axle-boxes and supports a leaf-spring C, connected by suitable couplings with the upper beam b of the truck-frame. By this means the truck-frame A is spring-supported on the axle-boxes. The boiler D is upright and circular and rests on the beams b of the truck-frame. A circular casting E is formed with brackets e , which are secured to the top beams b of the truck-frame. This casting is formed with a flange e' , having a groove or race e^2 for balls or rollers e^3 . It is also formed with an inwardly-projecting flange e^4 , having an upwardly-projecting flanged portion e^8 , that fits closely around the boiler D, as indicated in Fig. 6. The flanges e^4 and e^8 are formed with an elongated opening or recess e^5 to accommodate the live-steam and exhaust pipes, and also with recesses e^6 e^7 to accommodate the air-brake pipes and grate-levers. The casting E is also formed with laterally-projecting brackets E' , to which may be secured portions of the valve-gear, as indicated in Fig. 1. An upper casting F, preferably made in two parts, as indicated in Fig. 2, is formed on its upper side with vertical flanges f , that are secured to cross-beams G, attached to the frame of the car-body. This casting has a wide horizontal flange f' and also a vertical

depending flange f^2 , formed with an annular recess f^3 on its under side, that fits over the flange e' , in which the balls or rollers e^3 are arranged, as clearly indicated in Fig. 5. By this arrangement the weight of the car-body is communicated through the castings F and E to the car-truck, and the truck, boiler, and lower casting E may turn relatively to the car-body. The opening in the floor of the car is circular, corresponding with the shape of the boiler, and suitable packing H may be employed to prevent dust, &c., from falling down through the boiler-opening in the floor.

I prefer the form of casting shown in Figs. 5 and 6, but may employ castings formed like those illustrated in Fig. 9. The lower casting E is adapted to be secured to the truck, while the upper casting F is adapted to be secured to the car-body.

Packing H is employed to prevent dust from falling down through the opening in the floor of the car-body, and packing I is also employed around the joint between the two castings to exclude dust. In this way the anti-friction-bearings are kept clean. In order to prevent the castings from separating should the car give an unusual lurch, I employ clips J, bolted to the lower casting and provided with arms or fingers j , extending into openings in the upper casting, the arrangement being such that a certain amount of play between the two castings is permitted, but their entire separation is prevented.

Steam-cylinders K are mounted on a frame L, secured to the front end of the truck-frame. Live-steam pipes M extend from the cylinders and are coupled to a single live-steam pipe N, that extends vertically through the opening e^5 in the lower casting up through the circular opening in the floor of the car and connects with the upper end of the boiler. The exhaust-pipe O is connected with the two cylinders and also with a vertical pipe P, extending through the opening e^5 in the lower casting and passing vertically upward alongside of the boiler and connected with the exhaust at the upper end thereof. The pipes N and P are flattened in those parts that extend through the opening e^5 and through the floor of the car. The steam-pipes are rigid, and there are no loose joints. When the truck and boiler move relatively to the car-body, the pipes also move relatively to the body, the opening e^5 being of sufficient size to permit the required movement. By mounting the engines on the truck a direct connection to the driving-wheels may be obtained, whereas if the engines were mounted on the car-body it would be necessary to have complicated gearing, which would be very undesirable.

I claim as my invention—

1. The combination of the car-body, a truck, a boiler extending through the floor of the car-body resting on and supported directly by the truck, and having its axis coincident

with the axis about which the truck turns, an annular casting concentric with the boiler surrounding it and secured to the car-body, an annular casting resting on and supported by the truck and sustaining the weight of the car-body, and having its axis coincident with the axis of the boiler, ball or roller bearings interposed between the two castings, a steam-engine mounted on the truck outside the car-body and rigid steam-pipes formed with flattened portions extending through an elongated opening in the lower casting and connecting the engine with the boiler and with the exhaust.

2. The combination of the car-body, the car-truck, a steam-boiler, an annular casting resting on the truck, another annular casting surrounding the boiler and secured to the car-body, ball or roller bearings interposed between the two castings and clips (such as J) permitting the castings to have a slight vertical movement relatively to each other but which prevent their separation.

3. The combination of a car-body, the car-truck, the boiler, a lower casting having an annular grooved flange containing balls or rollers and laterally-projecting brackets which rest on the frame of the truck, and an upper casting having a downwardly-projecting flange resting on the balls or rollers and secured to the car-body.

4. The combination of the truck-frame, the axle-boxes, the beams resting on the axle-boxes, springs secured to the beams and connected with the truck-frames, a boiler resting on the frames, a lower annular casting also resting on the truck-frames, an upper annular casting connected with the car-body, ball or roller bearings interposed between the two castings, steam-cylinders supported on the truck-frames, a steam-pipe extending through a vertical opening in the lower casting and connected with the boiler and with the steam-cylinders, and valve-gearing supported by the truck-frame.

5. The lower casting herein described, formed with a vertical annular portion adapted to surround a cylindrical boiler, and with a laterally-projecting flange having a vertical flanged portion formed with a ball-groove, said lateral flange being formed with elongated openings for steam-pipes, &c., substantially as described.

6. The herein-described lower casting formed with a circular opening to accommodate a cylindrical boiler, an annular ball-groove, an opening to accommodate a steam-pipe, and laterally-projecting brackets adapted to be connected with the truck-frame.

7. The combination of the truck-frame, the car-body, the boiler extending through the car-body, the upper casting secured to the car-body, the lower casting secured to the truck-frame, a steam-cylinder supported by the truck-frame, and a steam-pipe connected with the cylinder and with the boiler, said steam-

pipe having a flattened portion extending through an elongated opening in the lower casting.

8. The combination of the wheels, axles, and
5 axle-boxes of the side frames of the truck, the
spring-supporting beams resting on the axle-
boxes, spring carried by said beams and con-
nected with the side frames of the truck, a
cylindrical boiler resting on the side frames
10 of the truck, a circular casting also resting
on the side frames, another casting secured
to the car-body and resting on the first-men-
tioned casting, steam-cylinders carried by the
truck outside the car-body, valve-gearing sup-
15 ported by the lower casting, and a rigid steam-
pipe connected with the cylinders and the
boiler, and passing through an opening in the
lower casting.

9. The combination of the car-body, the car-
wheels, their axles, the axle-boxes arranged 20
between the wheels, the spring-supporting
beams resting on the axle-boxes, springs car-
ried by said beams and connected with the
side frames of the truck, a cylindrical boiler
resting on the side frames of the truck, a cir- 25
cular casting also resting on the side frames,
another casting secured to the car-body and
resting on the first-mentioned casting, and
steam-cylinders carried by the truck outside
the car-body. 30

In testimony whereof I have hereunto sub-
scribed my name.

ALBERT J. PITKIN.

Witnesses:

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W. T. HUNTER.