

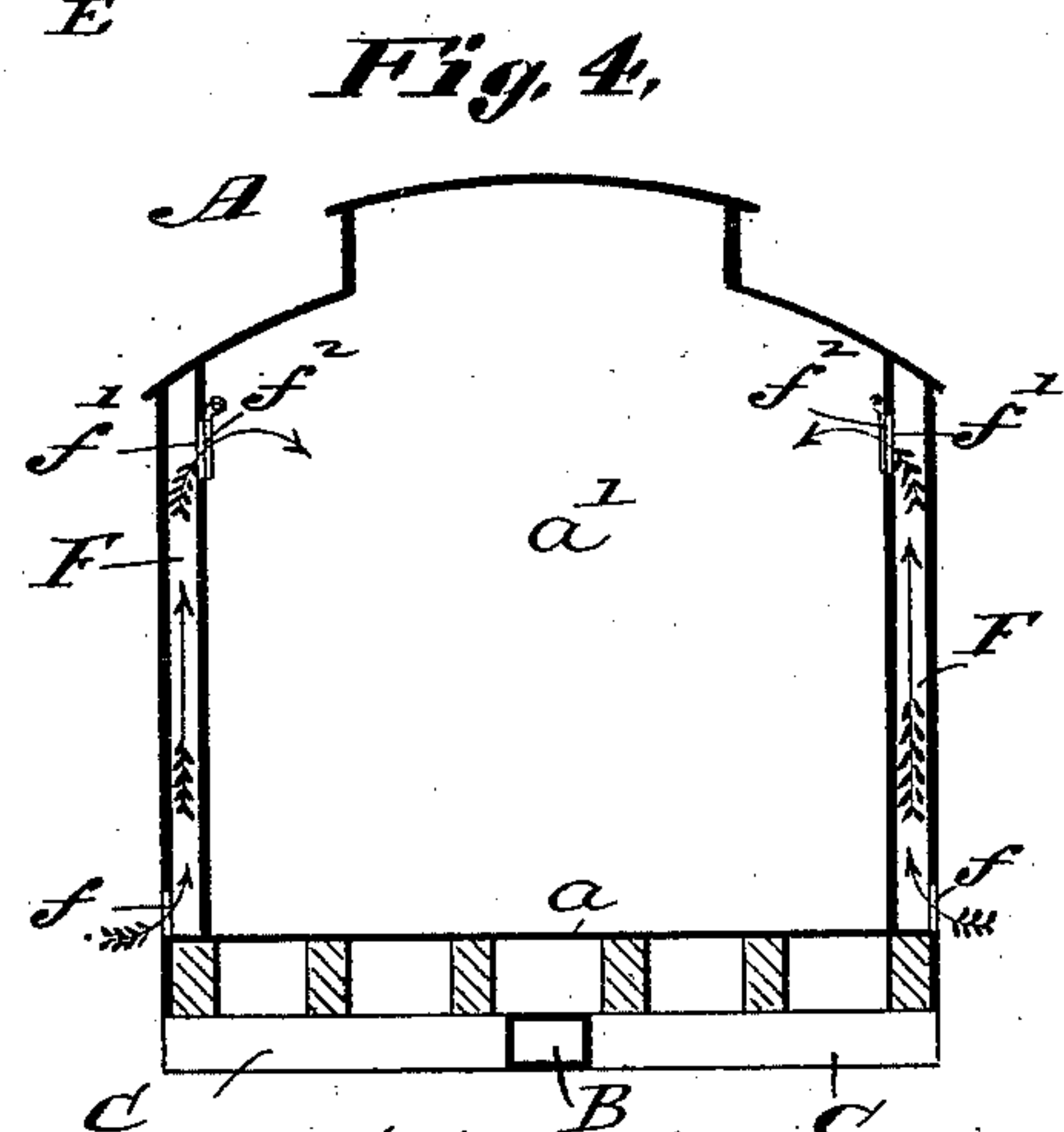
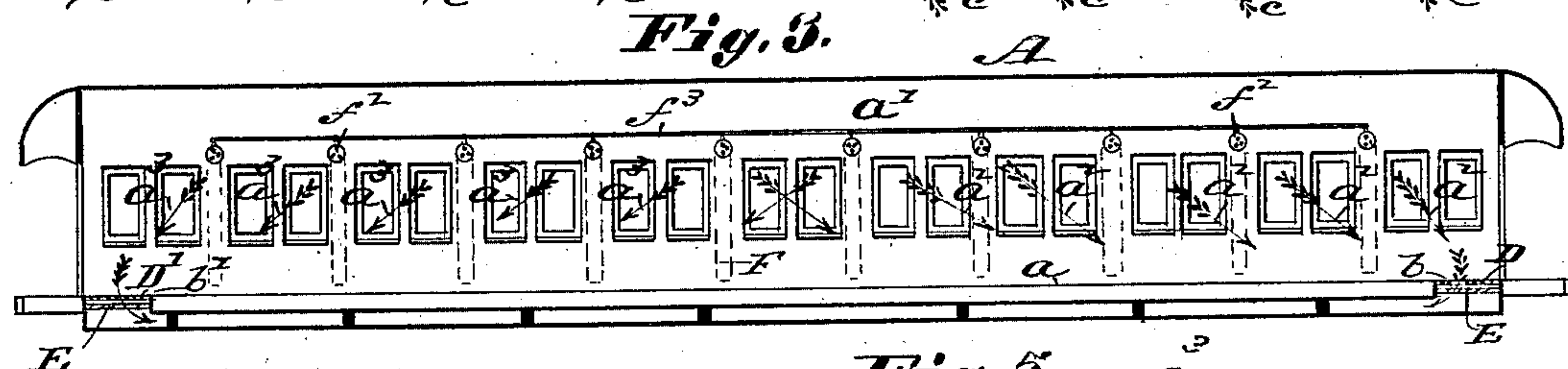
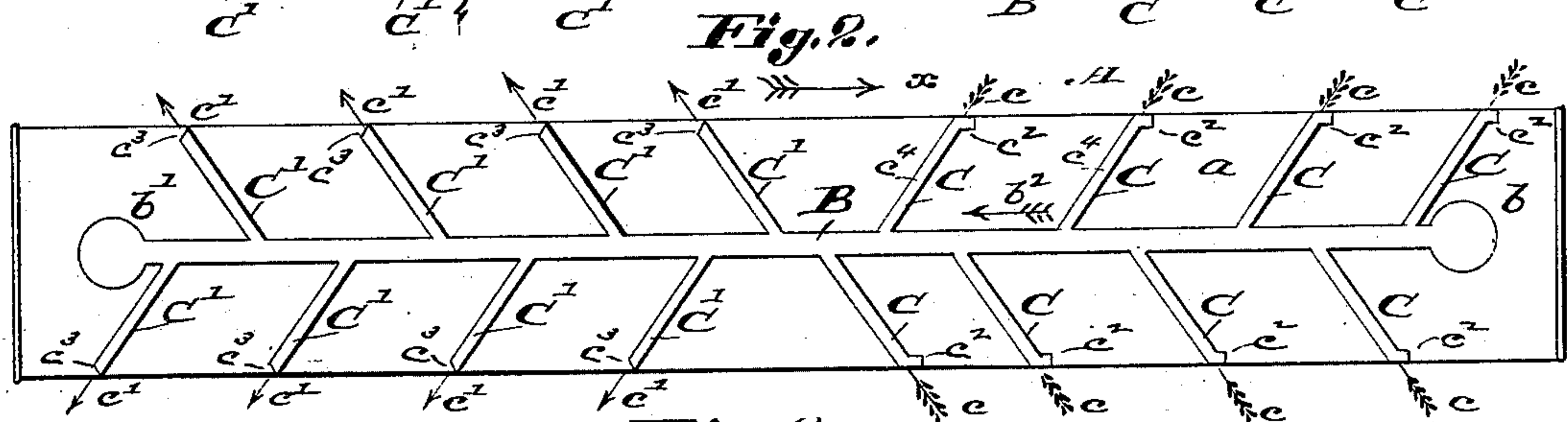
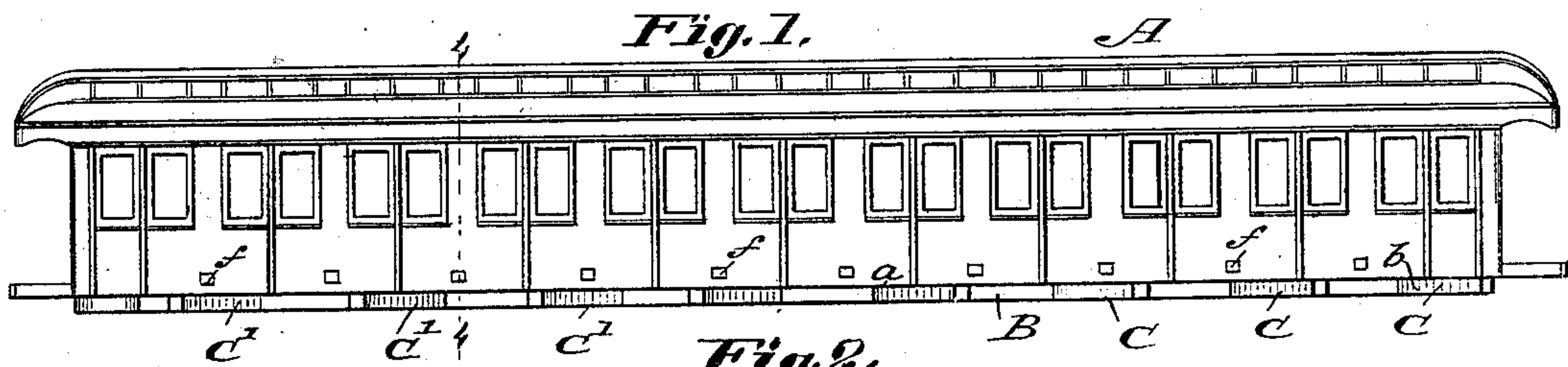
(No Model.)

W. B. OUTTEN & W. E. JONES.

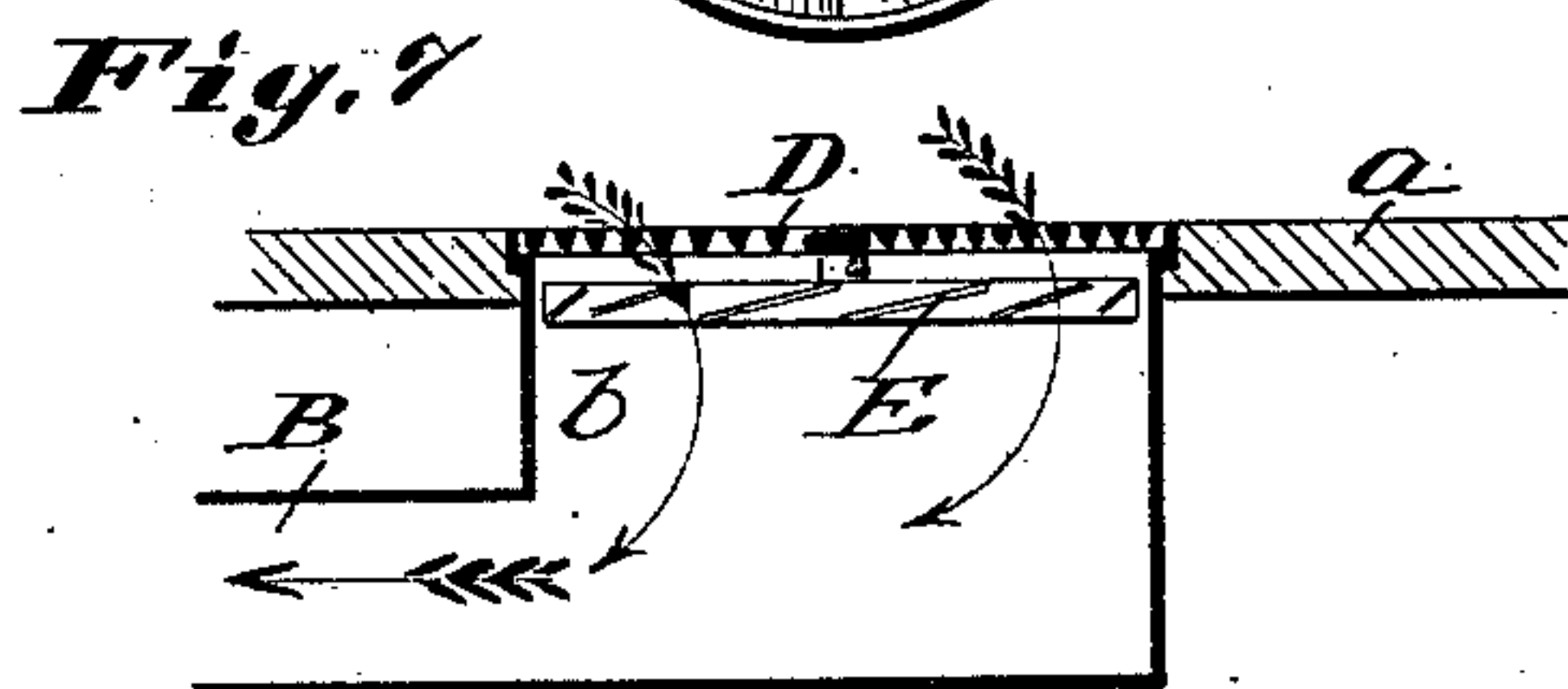
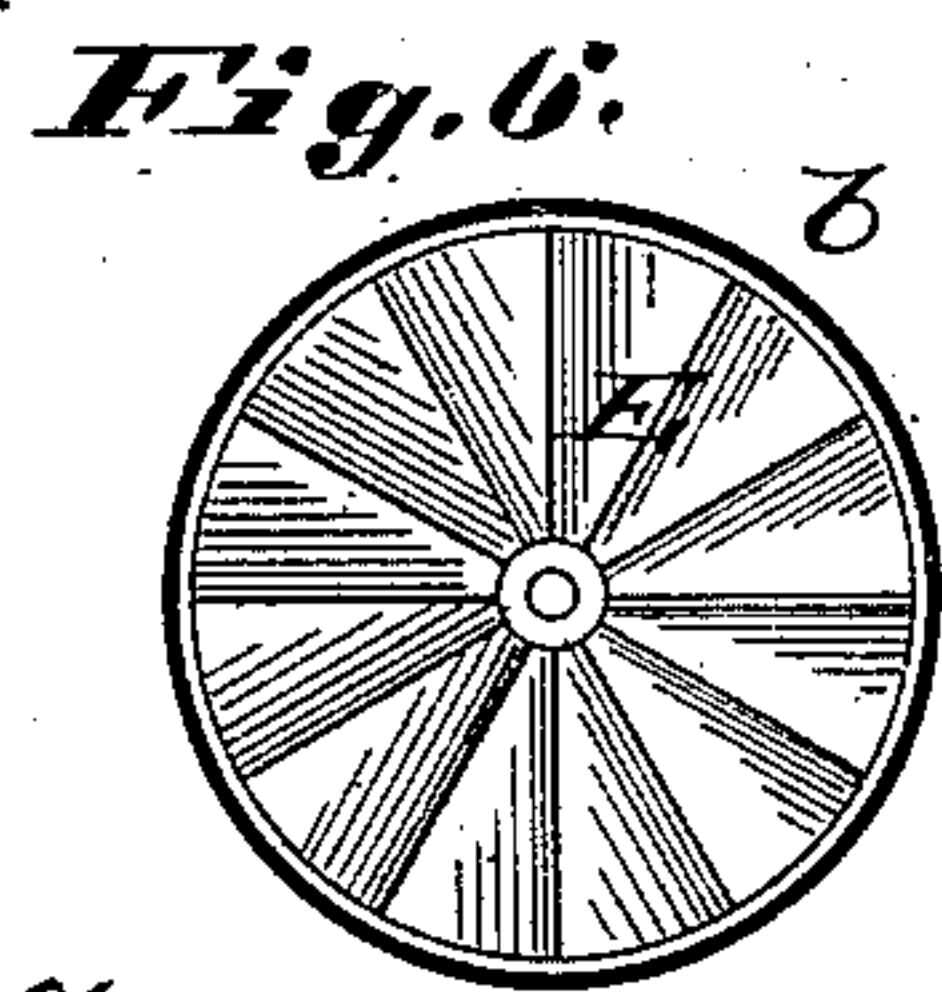
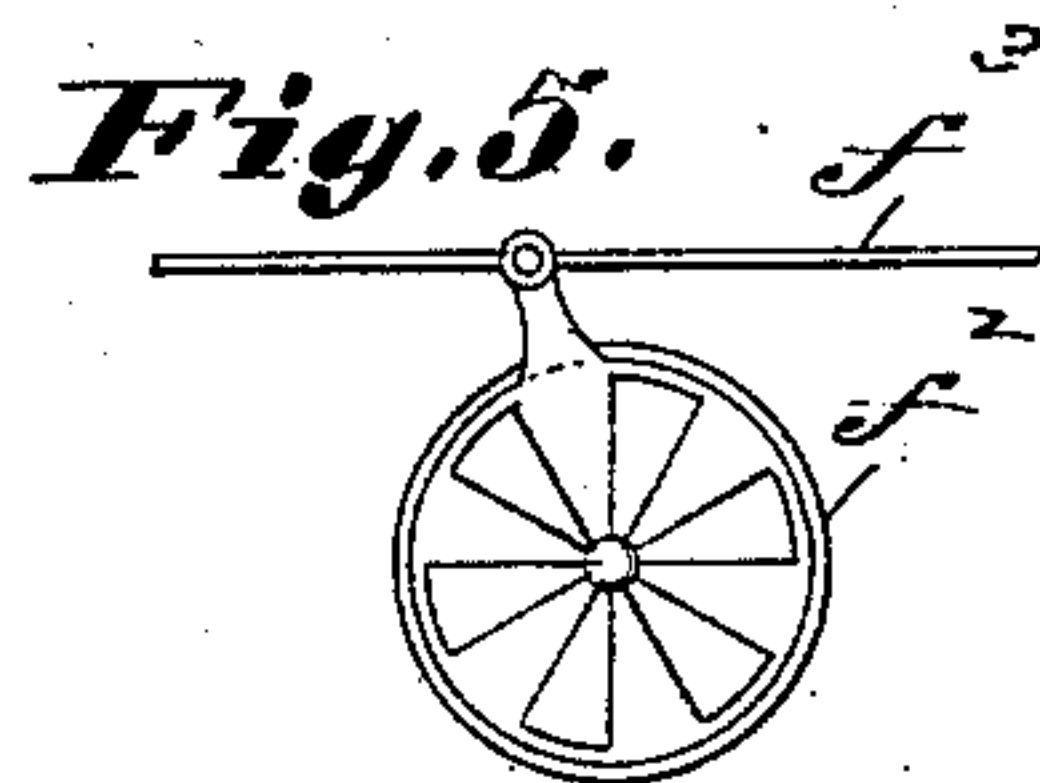
RAILWAY CAR VENTILATOR.

No. 304,848.

Patented Sept. 9, 1884.



Attest;  
Charles Pickles  
Jno a Caldwell



Inventors;  
Warren B. Outten  
William E. Jones  
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# UNITED STATES PATENT OFFICE.

WARREN B. OUTTEN AND WILLIAM E. JONES, OF ST. LOUIS, MISSOURI.

## RAILWAY-CAR VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 304,848, dated September 9, 1884.

Application filed January 12, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, WARREN B. OUTTEN and WILLIAM E. JONES, residents of St. Louis, Missouri, have jointly made a new and useful  
5 Improvement in Railway-Car Ventilators, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

10 Figure 1 is a side elevation of a car in which the improvement is embodied; Fig. 2, a bottom view of the car; Fig. 3, a vertical longitudinal section of the car; Fig. 4, a vertical cross-section of the car; and Figs. 5, 6, 7, details, Fig. 5 being a side elevation showing  
15 one of the registers used in admitting the outer air into the interior of the car; Fig. 6, a plan of one of the ventilators in the floor of the car, and Fig. 7 a vertical longitudinal section showing one of the outlets from the car.

The same letters of reference denote the same parts.

This improvement consists, mainly, in a system of flues which are attached to or embodied  
25 in the car as follows: A main flue extends longitudinally in the car, and at its ends is connected with the interior of the car. Two series of branch flues are connected with the main flue. One series is at one end of the car  
30 and the other series at the other end of the car. These branch flues lead to or toward the sides of the car, and at their outer ends are open to admit and discharge air, as hereinafter described. These branch flues are inclined to the main flue, the branch passages at  
35 one end of the car being inclined in one direction and the branch passages at the other end of the car in the opposite direction, substantially as shown in Figs. 1, 2, 3, where A represents a railway car of the usual description,  
40 saving as modified by the present improvement.

B represents the main flue. It extends beneath the floor  $a$  of the car, and at its ends  $b$   $b'$   
45 it is connected with the interior  $a'$  of the car, so that the air from the interior of the car can pass into the flue.

C C represent the branch flues at one end of the car, and C' C' represent the branch flues  
50 at the other end of the car. All these flues at

one end connect with the main flue, and at the other end are open to the outer air, and, as shown more distinctly in Fig. 2, the flues C C and the flues C' C' incline in opposite direction. Suitable registers, D D', may be used to  
55 shut off the air from or to regulate its discharge into the flue B. Within the flue B, and at or toward each end thereof, a ventilator, E, is preferably inserted.

The action of the improvement as thus far  
60 described is as follows: Let the car be moving in the direction indicated by the arrow  $x$ , Fig. 2. The outer air will then enter the branch flues C C, as indicated by the arrows  $c$   $c$ , and from these branch flues C C the  
65 air will pass into the main flue B. After entering the flue B it will pass along that flue, as indicated by the arrow  $b^2$ , Fig. 2, and from the (then) rear end of the flue B the air will be discharged into the branch flues C' C', and from  
70 the passages C' C' the air-current is discharged into the outer air, as indicated by the arrow  $c'$   $c'$ , Fig. 2. The effect of this is to create a draft from the interior of the car into the flue B, as indicated by the arrows  $a^2$ , and this last,  
75 named body of air is drawn with the current entering through the flues C C into the flue C' C', and in that manner discharged from the interior of the car. The register D, when the car is moving in the direction named, is open  
80 and the register D' is closed. When the car is moving in the opposite direction to that named, the operation of the flues C C' is reversed—that is to say, the air then flows from the interior of the car, as indicated by the arrows  $a^3$   $a^3$ , Fig. 3, into and through the outlet  
85  $b'$  into the flue B, and the outer air passes into the branch flues C C' and thence into the flue B, and thence is discharged into the outer air through the branch flues C C. The car is  
90 then ventilated through the outlet  $b'$ , in which case the register D' is open and the register D is closed. Fresh air is supplied to the interior of the car through the passages F F. The inlets to these passages are at  $f$   $f$ , Figs. 1, 4, and  
95 the passages are preferably extended upward to deliver the air into the interior of the car at the upper part thereof, the inlets to the interior of the car being at  $f'$   $f'$ , and the admission of the air being controlled by means  
100



of the registers  $f^2 f^2$ , which, for convenience, are operated by the rod  $f^3$ . One of these rods extends along each side of the car, and by means of it all of the registers on the side of the car to which the rod belongs can be simultaneously operated. The branch flues C C', at their outer ends, should be suitably extended, and constructed to cause the outer air to readily enter those of the branch flues which are pointing in the direction of the movement of the car and the inner air to readily leave those of the branch flues which, for the time being, are pointing in the opposite direction to that in which the car is moving. To this end the flues may be shaped, as shown, for instance, at  $c^2 c^2$  or  $c^3 c^3$ . The construction  $c^2$  is in effect an elbow, and while it is desirable to have the portion  $c^4$  of the flue which is between the elbow and the flue B inclined substantially as shown in Fig. 2, it is not essential that it should be thus inclined, for the branch flues will in a measure operate when the portion  $c^4$  runs directly from the elbow to the main flue. We think it desirable, however, to incline the portions  $c^4 c^4$  to the main flue B at the angle shown in the drawings. The flow of the air from the interior of the car into the flue B is promoted by admitting the air through the flues F F into the interior of the car, and by means of the registers  $f^2 f^2$  the circulation of air through the interior of the car can be controlled.

We claim—

1. The combination, in a railway-car, of flues

B, C C, and C' C', said flue B extending longitudinally in the car and at its ends connecting with the interior of the car, and said flues C and C' connecting at one end with the flue B and at the other end opening to the outer air, and the flues C C and the flues C' C' being inclined in opposite directions, substantially as shown and described, and for the purpose set forth.

2. The combination, in a railway-car, of flues B, C C, and C' C' and the registers D D', said flue B extending longitudinally in the car and at its ends connecting with the interior of the car, and said flues C and C' connecting at one end with the flue B and at the other end opening to the outer air, and the flues C C and the flues C' C' being inclined in opposite directions, and said registers being adapted to open and close either end of said flue B, as desired, substantially as shown and described.

3. The combination, in a railway-car, of flues B, C C and C' C' and the inlet-flues F F, said flue B extending longitudinally in the car and at its ends connecting with the interior of the car, and said flues C and C' connecting at one end with the flue B and at the other end opening to the outer air, and the flues C C and the flues C' C' being inclined in opposite directions, substantially as shown and described.

Witness our hands.

W. B. OUTTEN.  
WM. E. JONES.

Witnesses:

C. D. MOODY,  
C. E. HUNT.