

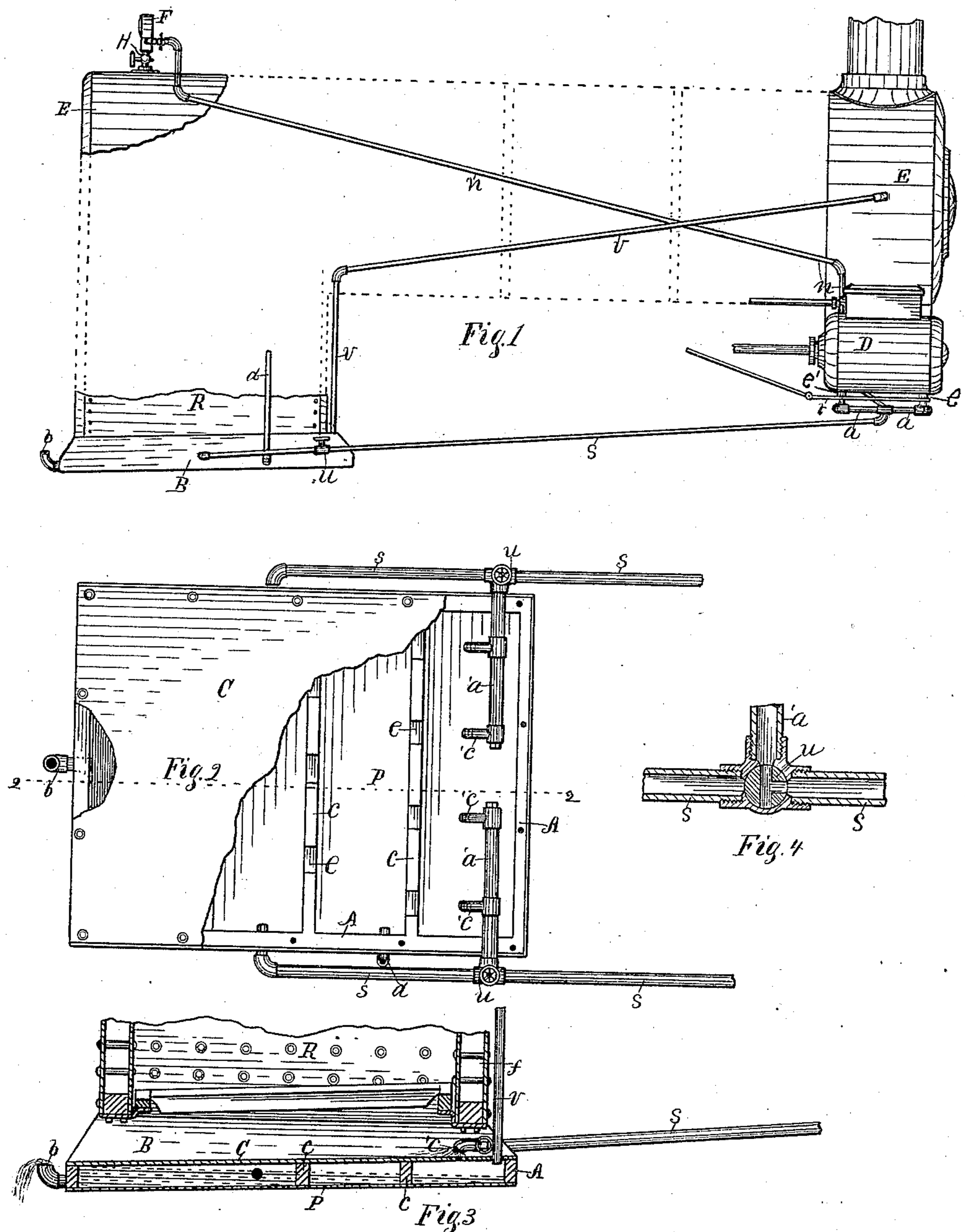
(No Model.)

2 Sheets—Sheet 1.

C. M. LAKE.  
LOCOMOTIVE ASH PAN.

No. 302,915.

Patented Aug. 5, 1884.



Attest.  
John C. Perkins.  
John H. Chase.

Inventor.  
Charles M. Lake.  
By Lucius C. West.  
Atty.

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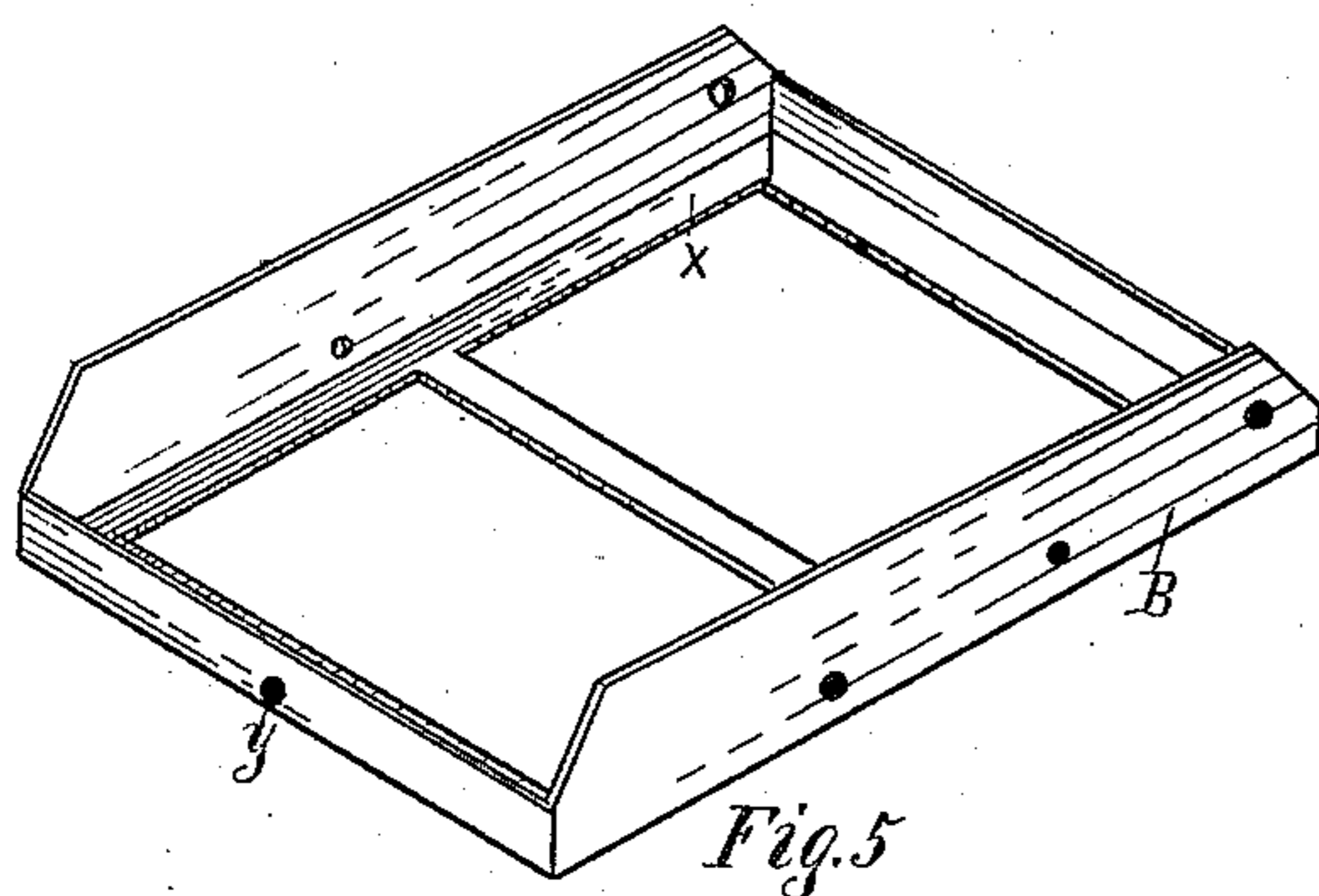


Fig. 5

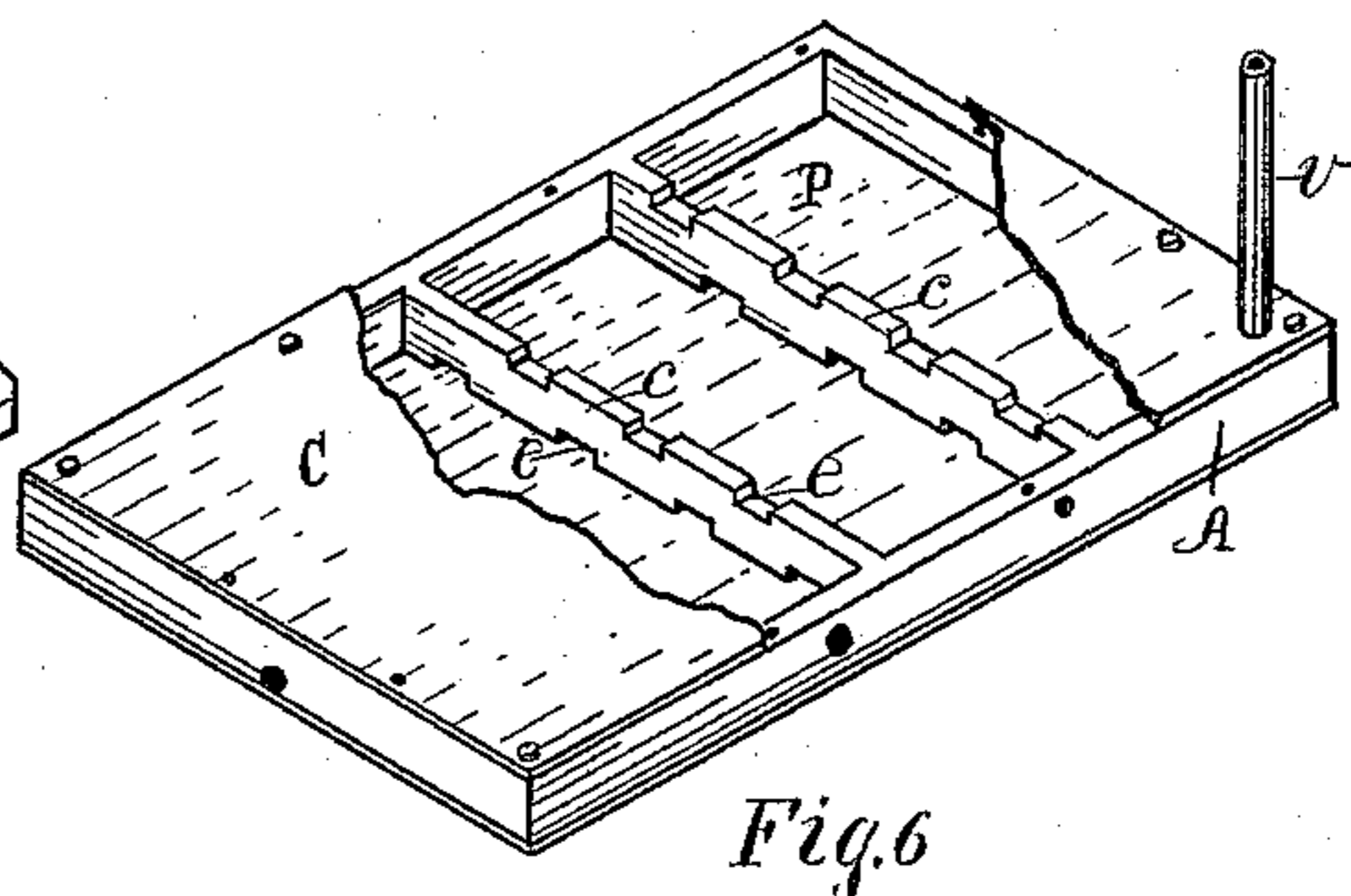


Fig. 6

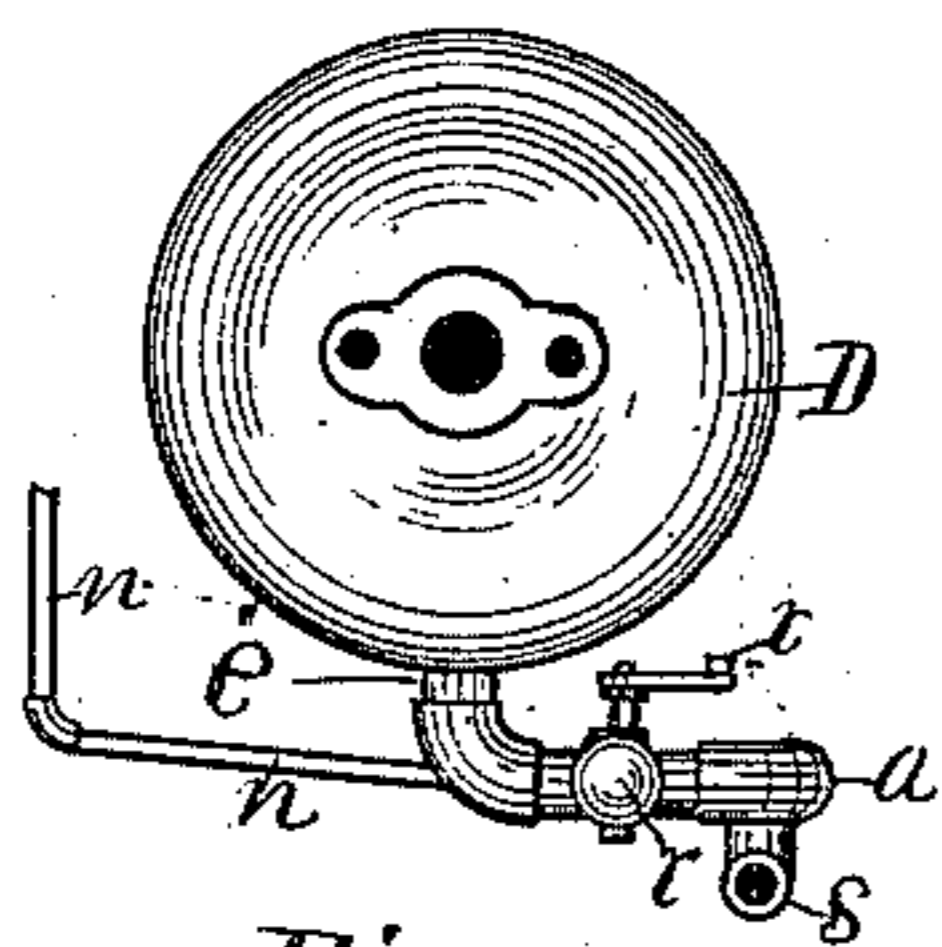


Fig. 7

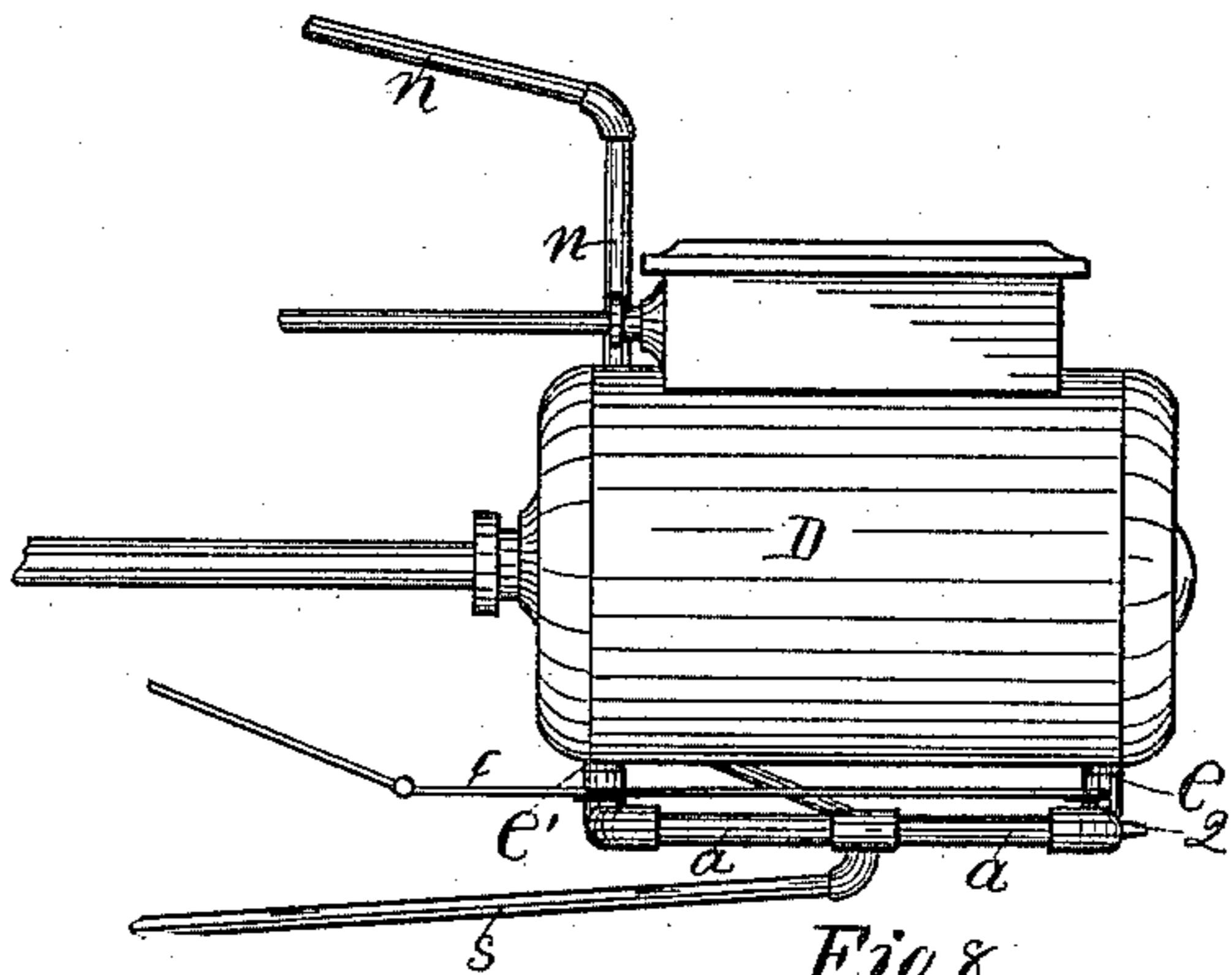


Fig. 8

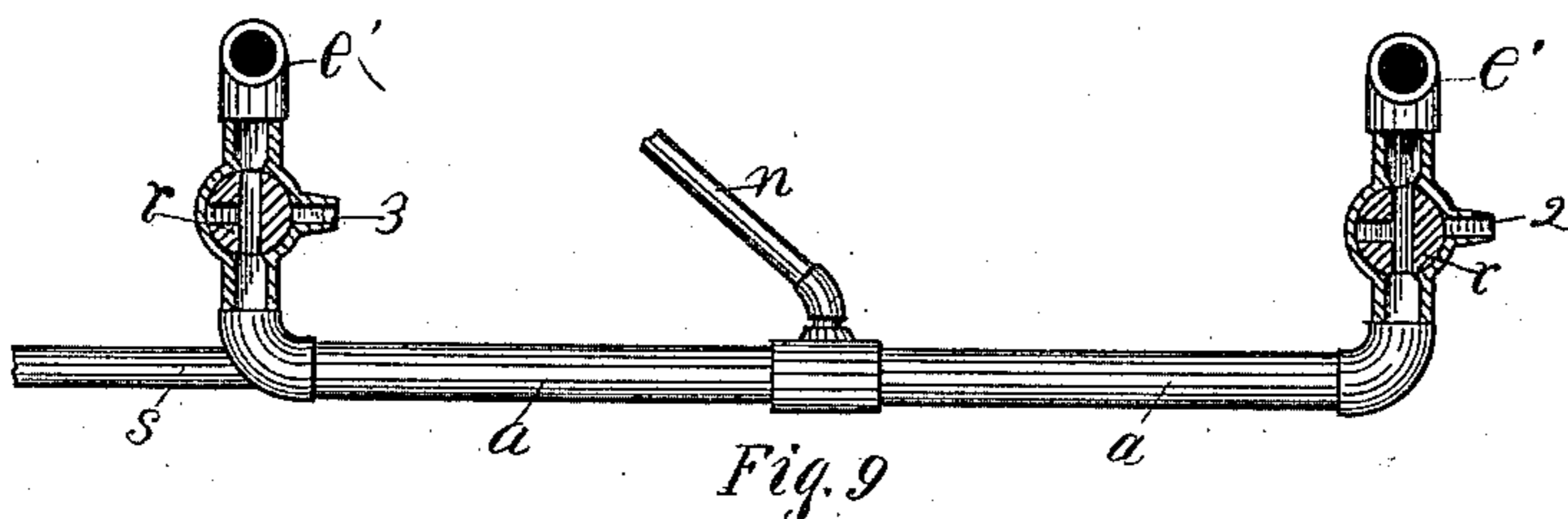


Fig. 9

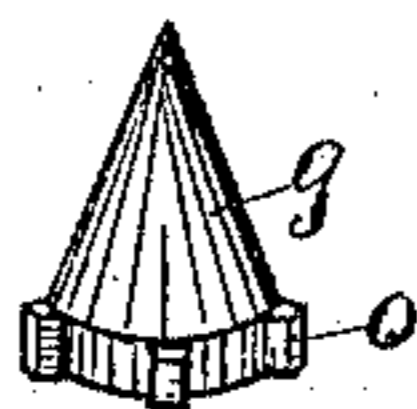


Fig. 11

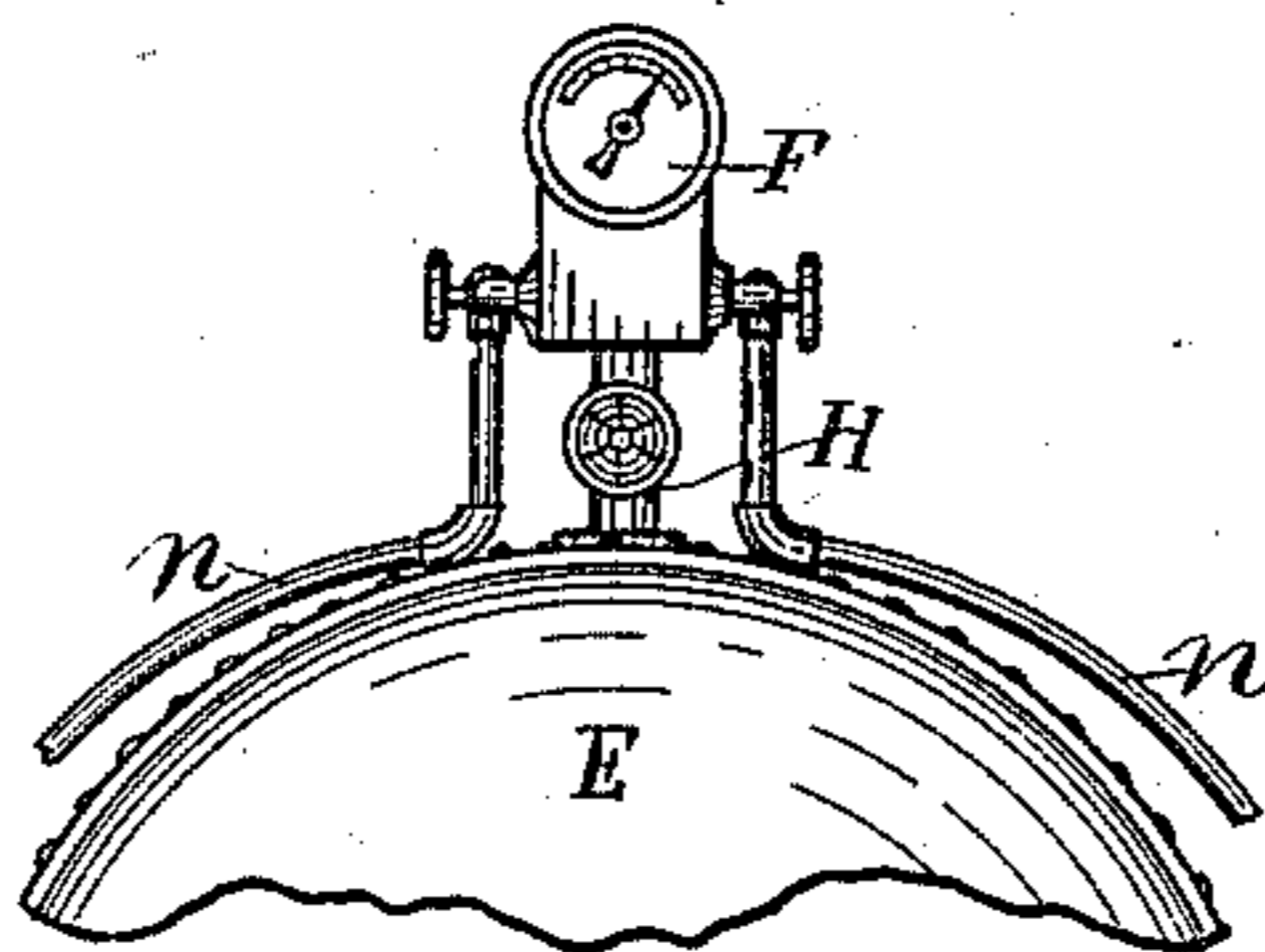


Fig. 10

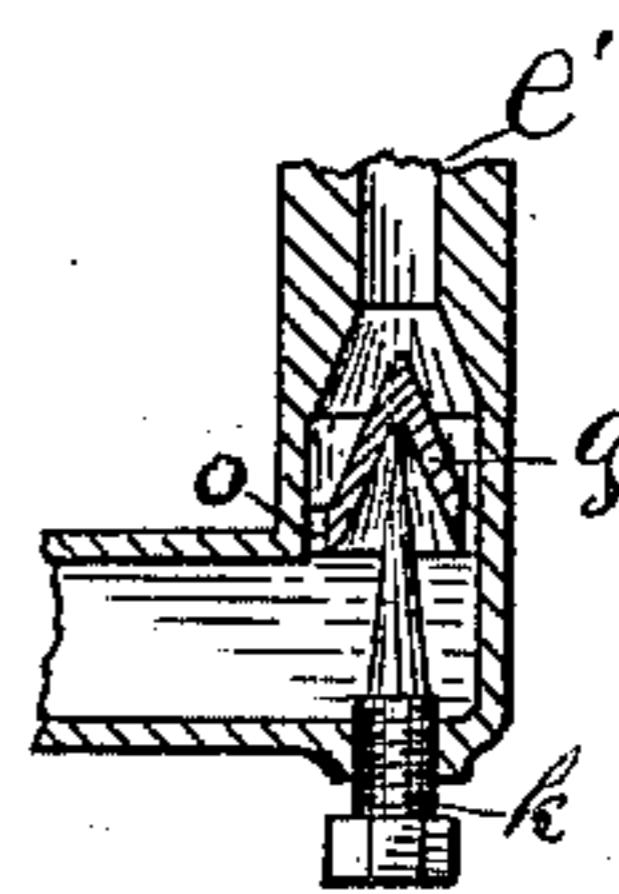


Fig. 12

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# UNITED STATES PATENT OFFICE.

CHARLES M. LAKE, OF JACKSON, MICHIGAN.

## LOCOMOTIVE ASH-PAN.

SPECIFICATION forming part of Letters Patent No. 302,915, dated August 5, 1884.

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

*To all whom it may concern:*

Be it known that I, CHARLES M. LAKE, a citizen of the United States, residing at Jackson, county of Jackson, State of Michigan, have invented a new and useful Improvement in Locomotive Ash-Pans, of which the following is a specification.

My invention consists in an improved apparatus to utilize the exhaust steam from the cylinder, in preventing the contents of the ash-pan from freezing, and in clearing the ash-pan of said contents. Other incidental objects will appear in the description and claims.

In the drawings forming a part of this specification, Figure 1 is a side elevation of a locomotive-boiler with apparatus attached, parts being broken away; Fig. 2, a top view of the ash-pan, parts being broken away; Fig. 3, a section of Fig. 2 on line 2 2 and a vertical broken section of the boiler-arch, with which the ash-pan is connected; Fig. 4, a broken detail of Figs. 1 and 2, in section, enlarged; Fig. 5, a perspective view of the skeleton-frame of the ash-pan; Fig. 6, a perspective of condenser-bottom to ash-pan, with parts broken away; Fig. 7, end view of Fig. 8; Fig. 8, side elevation of a cylinder enlarged, with connected parts broken away; Fig. 9, a top view of a portion in Figs. 1 and 8, enlarged; and Fig. 10 is an end view of the upper portion of the boiler in Fig. 1; Fig. 11, a check-valve, and Fig. 12 a section of pipe, showing its location and use.

The boiler is illustrated in Fig. 1 at E, portions being in dotted lines.

D is one of the cylinders, the other being on the opposite side, in the usual manner of locomotive-engines. The exhaust-ports *e' e'* of the cylinder D, on the under side thereof, are provided with pipes in which the stop-cocks *r r* are located. These stop-cock pipes extend laterally toward the trucks, (not here shown,) Figs. 7 and 9, and are connected by a pipe, *a*. The three-way stop-cocks or valves *r r* are connected by an operating-rod, *t*. The use of these cocks is explained in the description of the operation. In the ports *e' e'* may be located valves *g*, which will admit the passage of steam out of the ports and prevent its return, as shown in Figs. 11 and 12. A pipe, S, connects the pipe *a* with a steam-condenser, A, beneath the arch or fire-place R of the

boiler E. A heater-pipe, *n*, connects the pipe *a* of one cylinder with said pipe of the other cylinder on the opposite side, (not here shown,) by passing over the boiler E, Figs. 1 and 10.

The skeleton ash-pan frame B is provided with a detachable bottom, A, said bottom being the condenser heretofore mentioned, Figs. 5 and 6. This condenser consists of a frame and an upper and lower inclosure, C P, bolted to said frame. In Fig. 6 the upper inclosure, C, is broken away, showing central supports, *cc*. These supports are provided with notches *ee*, to admit the passage of steam and water all through the condenser. The steam-pipe S passes through the side wall of the skeleton-frame B and enters the condenser, one on each side from each cylinder, as shown in Fig. 2. Pipes *a' a'* are connected with the pipe S, and extend laterally therefrom over the front end of the condenser A. These pipes *a' a'* are provided with ports *e'*, for admitting steam into the ash-pan and blowing the contents therefrom. This is done by turning the three-way cocks *u*, Fig. 4, in a manner to shut the steam from entering the condenser and admitting it into the pipes *a'*, as in said figure. Draft-pipes *vv* are connected with the corners of the condenser and extend to the rear of the boiler-flues, and enter below the smoke-stack in the usual manner. The condenser is provided with a discharge-pipe, *b*, which is extended upward, terminating at a proper height to govern the desired amount of water in the condenser.

The pipe *d* is designed to connect with the exhaust-pipes of a steam-propelled engine which operates the brakes, in order to convey the exhaust-steam from said engine into the condenser. Thus all the exhaust-steam from the entire locomotive construction is conveyed to the same condenser. This engine and exhaust-pipes which are to connect with pipe *d* are not here shown, said pipe *d* being extended upward and broken away.

When the three-way cocks *r r* are set, as in Fig. 9, the exhaust-steam from each end of the cylinder D is conveyed to the condenser A, where it is converted into water which keeps hot and prevents the contents of the ash-pan resting on the plate C from freezing in cold weather. It prevents visible exhaust-steam, and the steam may be used to free the

ash-pan of its contents, which two latter-named functions are useful, even in warm weather. By turning the stop-cocks in the proper position the exhaust-steam may be blown out of ports 3 2, Fig. 9.

Near the front of the boiler, on top, is an indicator, F, connected with the boiler E by heater-pipe H. With this pipe and indicator are connected the branch heater-pipes *n*, here-  
 5 in before referred to. The pipes H and *n* are provided with stop-cocks, as in Figs. 10 and 1. By this means steam may be circulated from the boiler through the pipes *n*, H, and S, into the condenser when the exhaust-ports of  
 15 the cylinders are closed by the stop-cocks *r r*, to prevent danger of freezing up. By means of the indicator the engineer can tell from the oscillation of the hand that the exhaust-ports *e' e'* are open, as a greater circulation of steam  
 20 passes through the pipes *n n* when said stop-cocks *r r* are turned to open the ports *e' e'*.

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

1. The combination, with a cylinder and a  
 25 pipe connecting the ports, provided with the three-way cocks and check-valves, of a condenser located beneath the ash-pan, and a connecting-pipe adapted to convey the exhaust-steam to said condenser, substantially as set  
 30 forth.

2. The combination, with a cylinder having the connecting-pipe between the ports and provided with the three-way stop-cocks, of

the ash-pan frame, and detachable condenser-bottom, and pipe adapted to convey the ex-  
 35 haust-steam to said condenser, substantially as set forth.

3. The combination, with an ash-pan and condenser in the relation shown, of a cylinder  
 40 or cylinders provided with pipes connecting the cylinder exhaust-ports with the condenser, said pipes provided at the cylinder-ports with three-way cocks and check-valves, and provided at the ash-pan with lateral branches for  
 45 blowing out said pan, having at the juncture of said pipe and lateral branches three-way cocks, whereby steam may be let into the branches or the condenser, substantially as set forth.

4. The combination, with the cylinders, an  
 50 indicator, a pipe connecting said indicator with the boiler, and heater-pipes connecting the indicator with the exhaust-ports of the cylinders, of an ash-pan and condenser and  
 55 pipes connecting the exhaust-ports with said condenser, said exhaust-ports provided with suitable stop-cocks and check-valves, all substantially as set forth.

In testimony of the foregoing I have hereunto  
 60 subscribed my name in the presence of two witnesses.

CHARLES M. LAKE.

Witnesses:

JOHN H. CHASE,

CLARK F. JOHNSON.