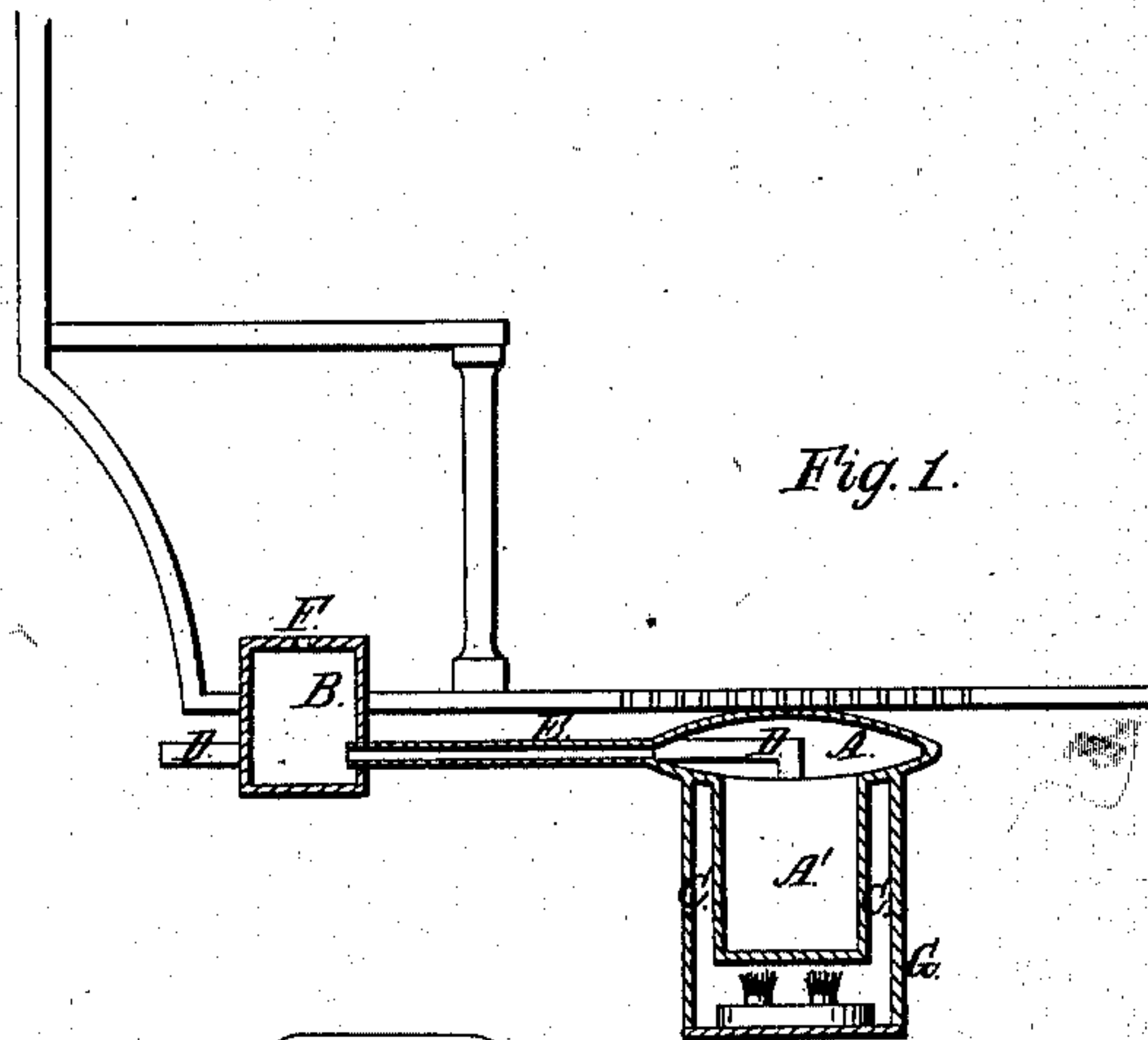
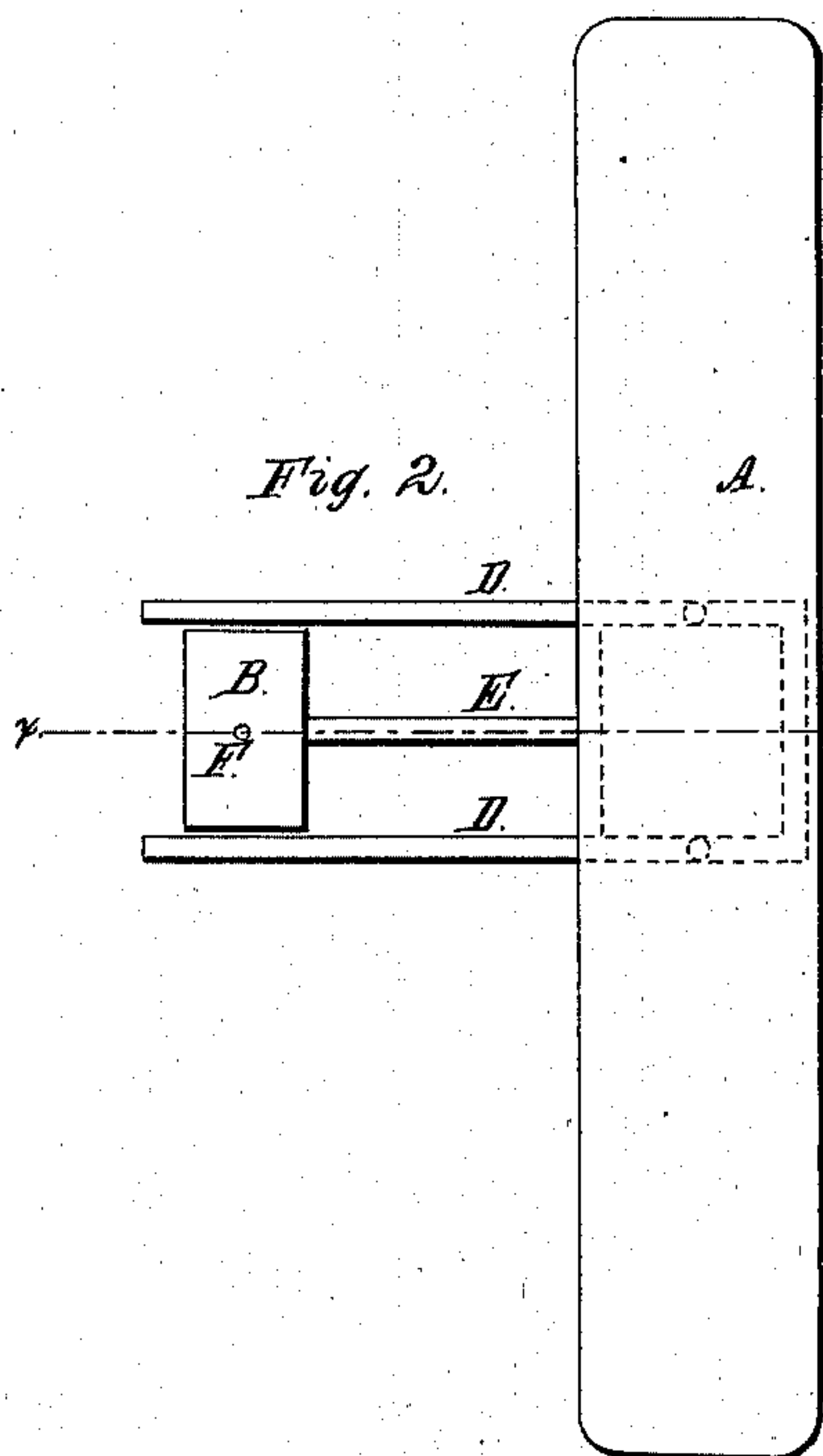


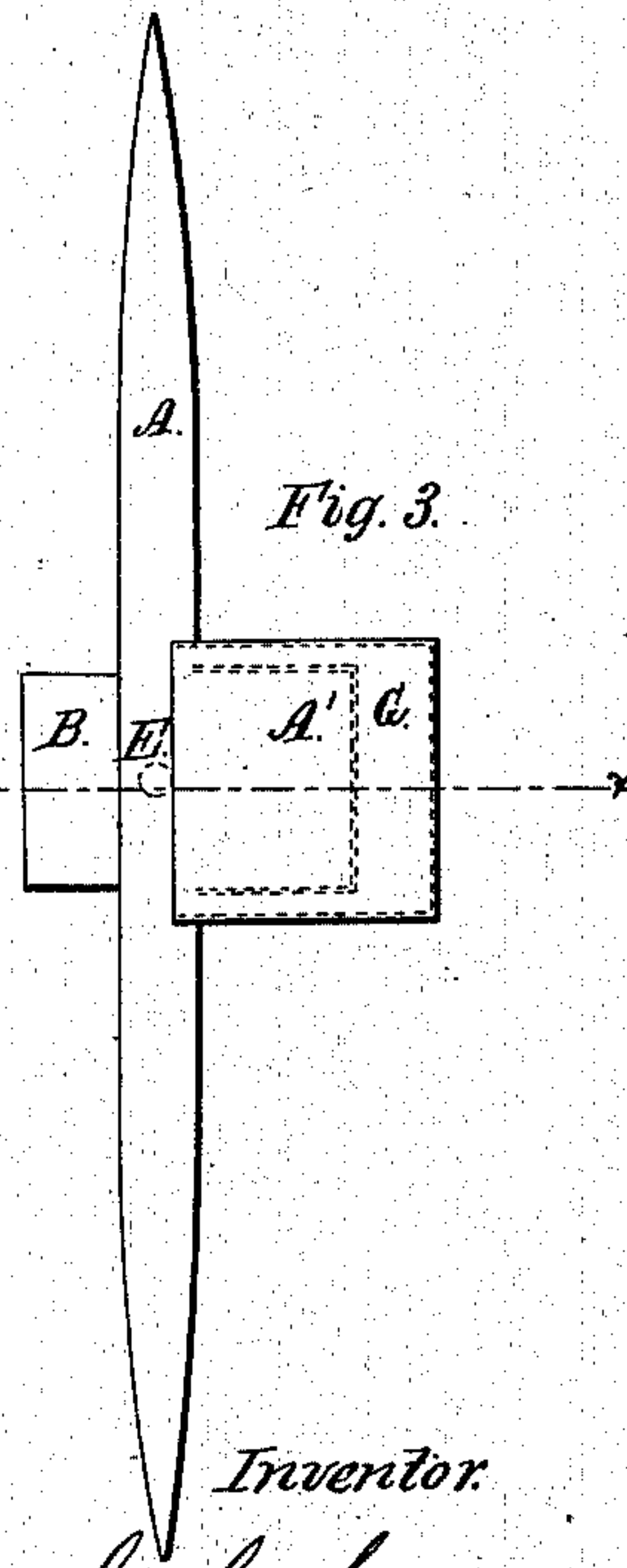
C. C. CONVERSE.  
 APPARATUS FOR HEATING CARS OR OTHER VEHICLES.  
 No. 62,254.                      Patented Feb. 19, 1867.



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

*Witnesses.*

*Jos. F. Southern  
 Thomas Ritchard*

*Inventor.*

*C. C. Converse  
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# United States Patent Office.

CHARLES C. CONVERSE. OF BROOKLYN, NEW YORK.

*Letters Patent No. 62,254, dated February 19, 1867.*

## APPARATUS FOR HEATING CARS AND OTHER VEHICLES.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, C. C. CONVERSE, of the city of Brooklyn, in the county of Kings, and State of New York, have invented a new and useful improvement in Heating and Warming Cars and other Vehicles; and I do hereby declare that the following is a full and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a cross-section of an apparatus which illustrates my improvement, the plane of section being seen at *xx*, figs. 2 and 3.

Figure 2 is a plan view.

Figure 3 is a side view, the observer being supposed to stand on the right-hand side of fig. 1.

This invention consists in an improved mode of warming or heating railroad cars and other vehicles, in which I use hot or warm water as the medium for imparting warmth and heat. The invention is useful and suitable among other uses for warming or heating small or street cars, and in fig. 1 I have shown a portion of a street car in red outline, in order to illustrate how the invention may be applied and used therein.

The letter A designates a boiler or receptacle for water, which is placed and arranged in any suitable or convenient place in a car or other vehicle. It can be placed beneath the seat on either side in cars whose seats are placed along the sides, as in ordinary street-railroad cars, or there may be a separate boiler or water receptacle under each seat, in which latter case the receptacles may be connected to each other by water and steam pipes, and may have a common condensing chamber. In ordinary road or highway vehicles the water receptacle or receptacles may be placed either under the floor or under one or more seats. In this illustration I have constructed and arranged the boiler or water receptacle so as to be placed under the floor of a car (the outline in red being that of a car which has its seats arranged parallel with and against the sides) along the middle of its width. The said boiler or receptacle may extend the whole length of a car, or from axle to axle, according to circumstances, the length and disposition or arrangement of the boiler being varied to suit variations in size and construction of the car or vehicle in which it is used. The said boiler on its under side has a depression or well, A', one or more, which is surrounded by a furnace, G, in which are placed lamps or gas-burners, or other devices for procuring heat by burning oil or gas or other fuel. The sides of the well and of the furnace are separated by a space, C, seen in the sectional view. The letters D D designate chimneys or flues for conducting away the products of combustion; said flues ascend from the top of the furnace (see fig. 1) at opposite ends of the well A', and pass through the boiler either in direct or circuitous courses, as may be preferred by the maker, thence going through the sides of the boiler to any proper place outside of the car, where they can discharge such products of combustion. They may be made to terminate in the wheel-boxes, or in any one of them, in which case the activity of the draught through the flues will be promoted. From any convenient place in the boiler proceeds a steam pipe, E, which discharges into a steam-condensing chamber, B, whose position may be under one of the seats of the car or vehicle, or elsewhere. Such chamber may be formed in the sides of the car or vehicle by making such sides hollow or double, and such an arrangement will economize space, and also promote the warming of the car or vehicle. If the chamber B is made independent of the frame or body of the car or vehicle, as is here shown, there may be one or more on each side of a car, under the seats or elsewhere, so as to accomplish the greatest possible distribution of heat. The office of the steam-condensing chamber B is to relieve the boiler of steam generated within it so as to keep the pressure at a low degree, and to condense such steam, and to extend and increase the heating and radiating surface of the apparatus. The water of condensation can be returned to the boiler through the pipe E, and the supply of water be thereby economized and the labor of attendance be consequently lessened. The condensing chamber B has a safety-valve opening, F, in its top, which may be covered with fine wire gauze, or be fitted with an ordinary valve or a weighted safety-valve, as may be found advisable. The air required to support combustion in the furnace G is obtained by perforating the sides or bottom of the furnace. When the boiler or water receptacle is beneath the floor of a car or vehicle, such floor may have perforations or a grating in it to allow the heated air to ascend into the car or vehicle, or come in contact with any covering placed over the grating, by warming



which covering the feet of the passengers will be protected from cold. The boiler is to be provided with the usual or necessary pipe openings, and pipes and faucets for supplying and discharging water; but I have not shown or described them, because their construction is within the skill of those acquainted with the art to which this invention belongs.

In operating the apparatus I supply sufficient water to fill the well A' and cover the bottom of the boiler to a suitable depth. When the water in the well becomes heated, a circulation ensues in the whole volume of water in the boiler, and this circulation is assisted by the agitation that follows or arises from the movements of the car or vehicle, so that the whole boiler will be warmed by means of a comparatively small quantity of hot water, it being desirable to accomplish the warming of the car or vehicle with a small quantity of water, so as to avoid the addition of much weight to such car or vehicle. The steam and vapor that rise from the water escape into the steam-condensing chamber, where they are condensed, that chamber being purposely placed out of the way of the direct action of the heat from the furnace. The chimneys or flues may be provided with dampers, if found desirable. The boiler and other parts of the apparatus may be varied in shape and in the mode of arrangement to suit the shape and other circumstances of the car or vehicle. In order to avoid injury to the boiler, and also to avoid sudden shocks to the car or vehicle by sudden starting or stopping, I make the lines of the boiler curved in all directions, and cause its ends to diminish and flatten, as shown in the drawing.

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

1. Heating cars and vehicles by heat derived from hot water, substantially as described.
2. I also claim the boiler A, constructed substantially as described, with a well, A', extending downwards from its bottom into an enclosing furnace
3. I also claim the combination of boiler A, furnace G, steam-condensing chamber B, and pipe E, arranged substantially as shown, for heating cars and vehicles by means of hot water.
4. I also claim the use of a boiler or water receptacle in heating cars and vehicles, whose ends are flattened substantially as shown.

The above specification signed by me this 5th day of November, 1866.

CHARLES CROZAT CONVERSE.

Witnesses:

J. VAN SANTVOORD,  
GEORGE WESTINGHOUSE, Jr.