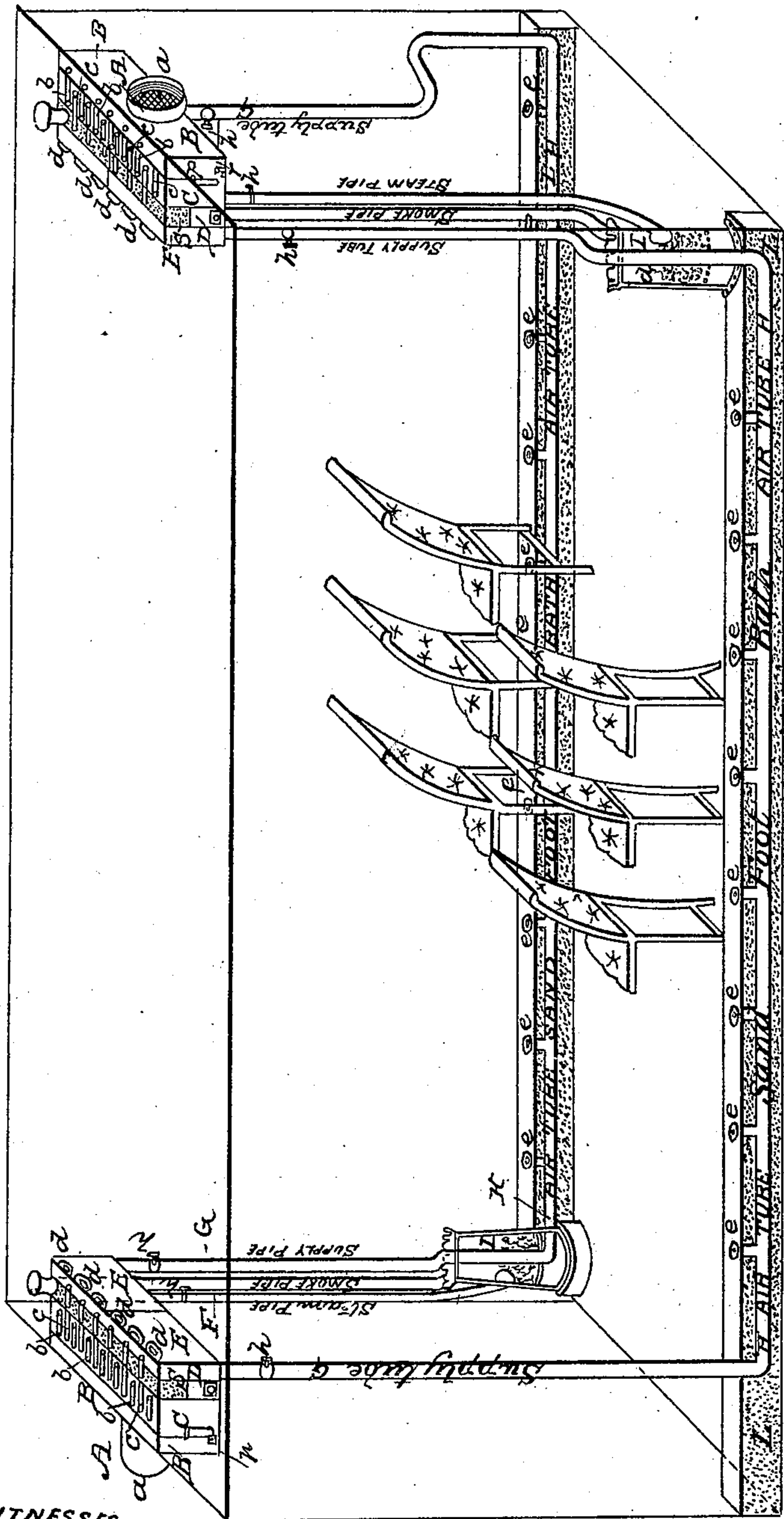


C. PEPPER.
Car Heater.

No. 20,021.

Patented April 20, 1858.

Fig. 1,



WITNESSES
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Fig. 3,

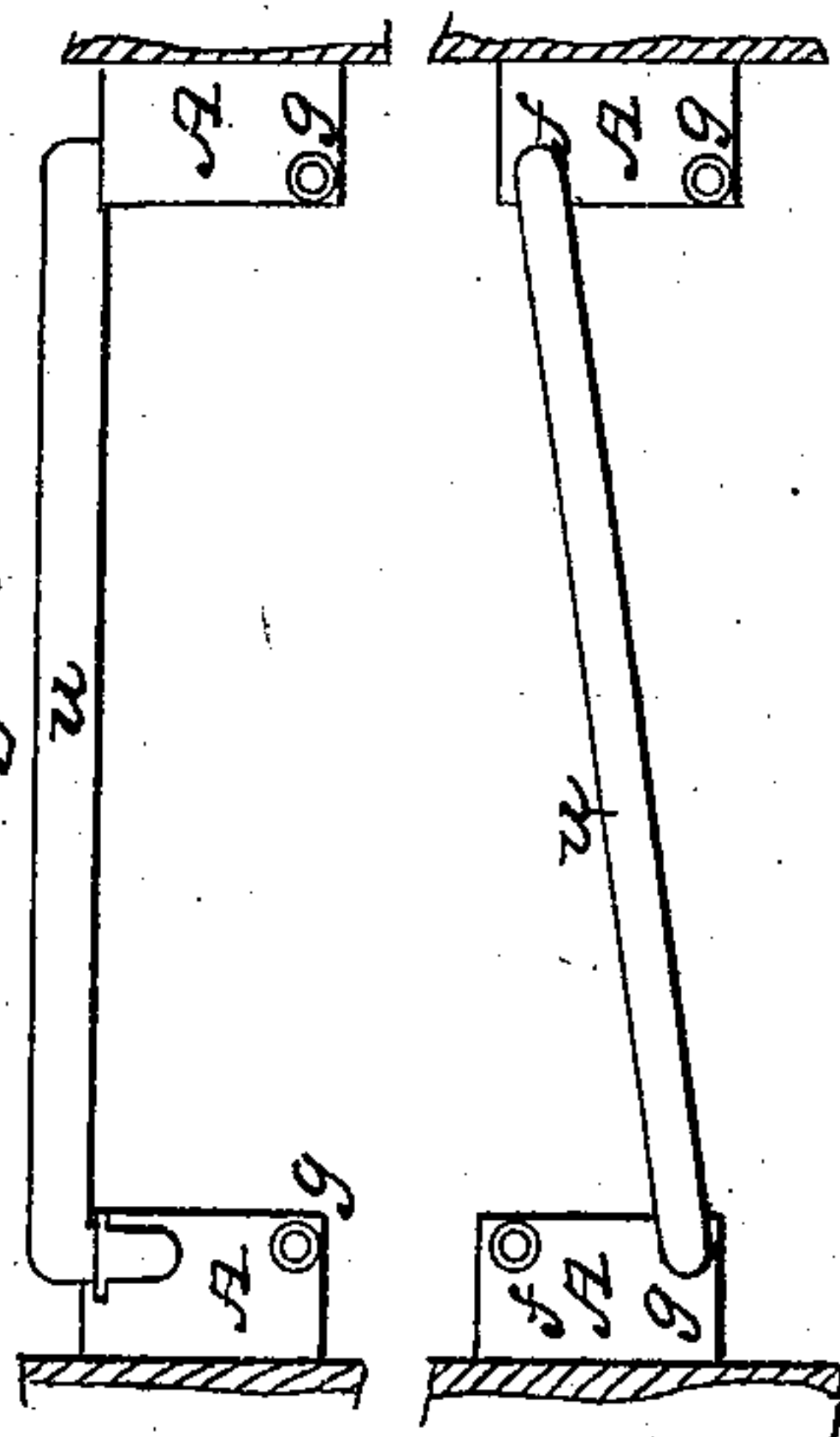
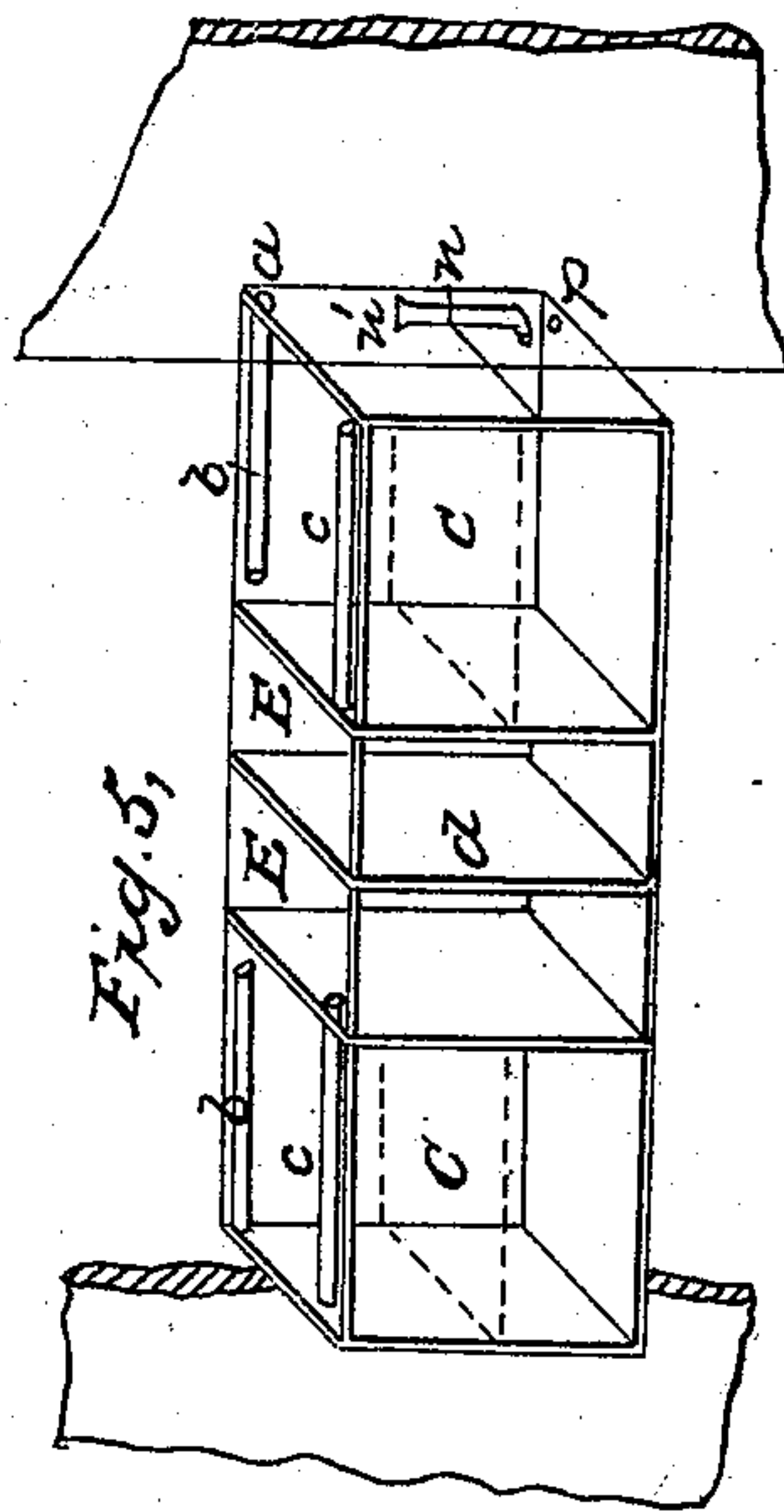


Fig. 5,



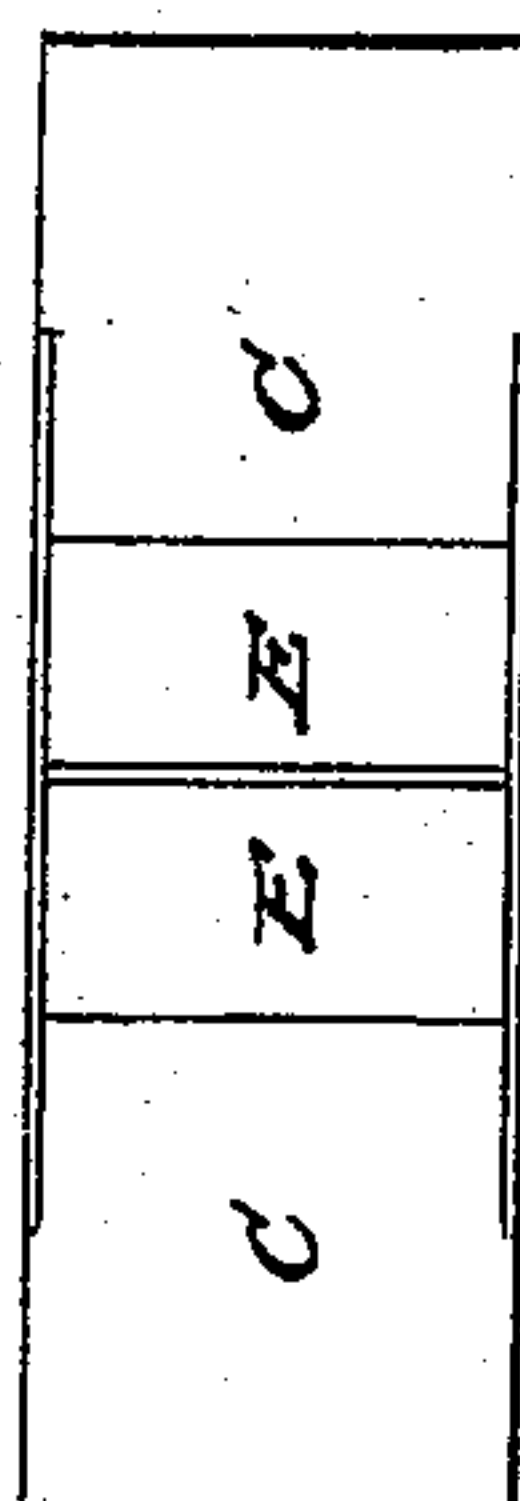
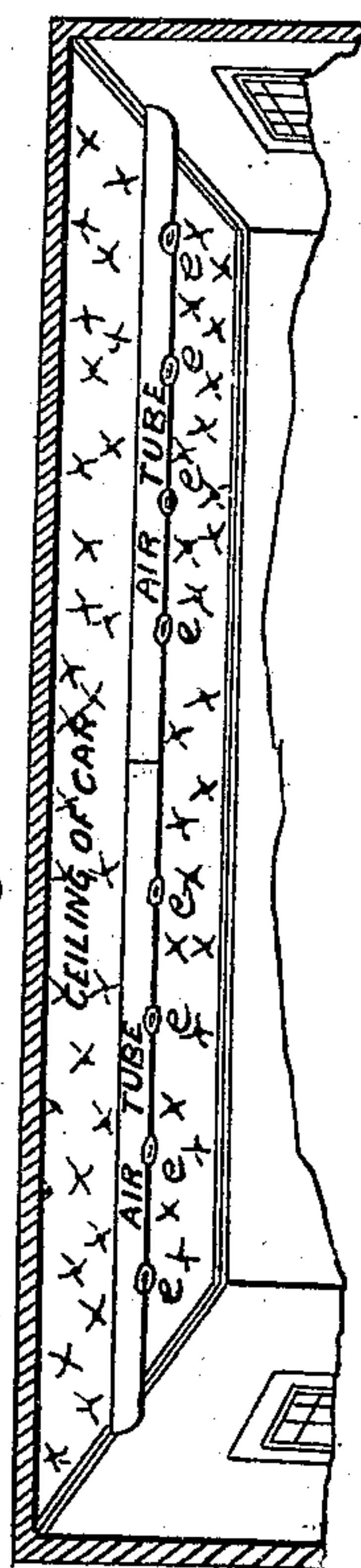
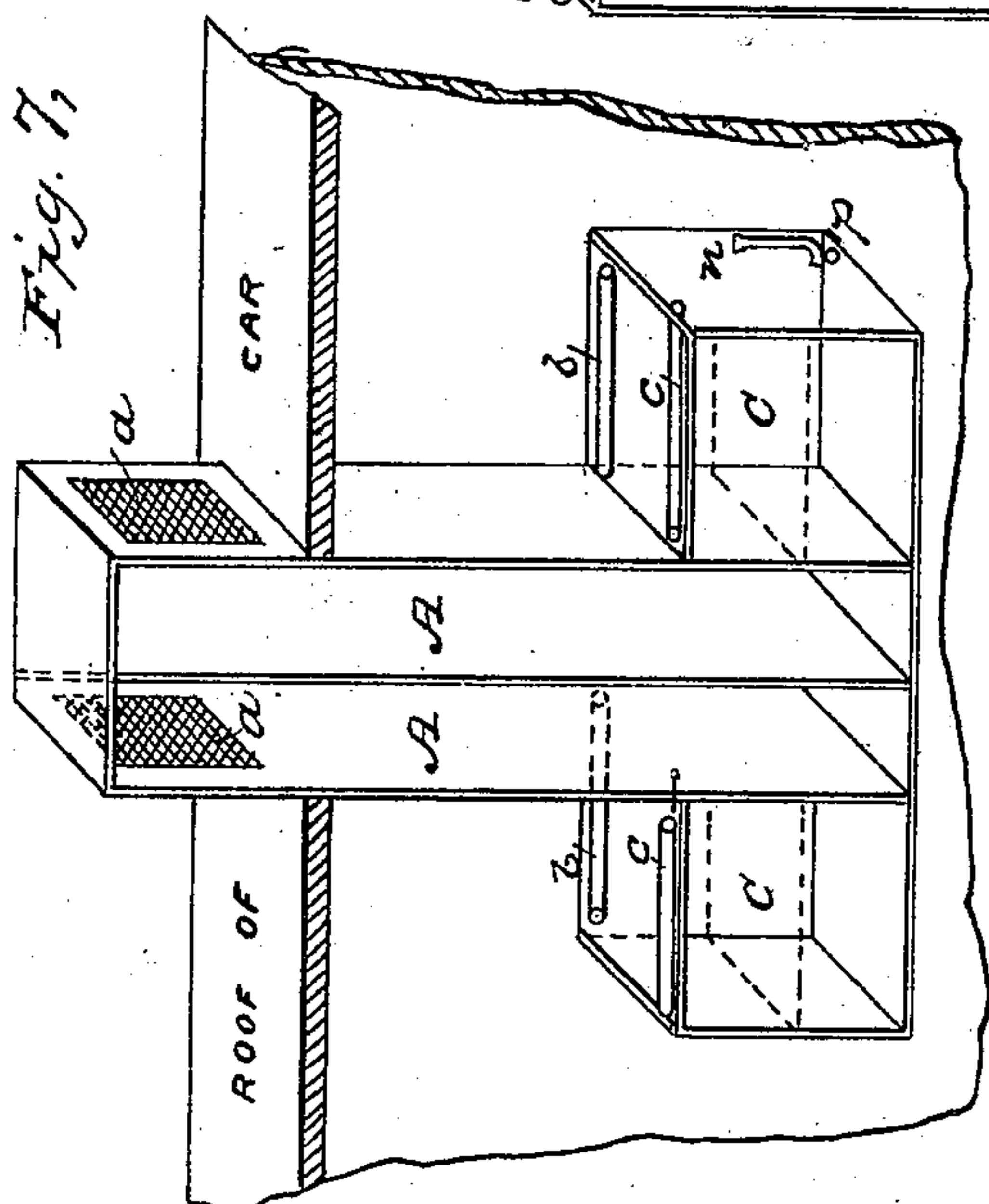
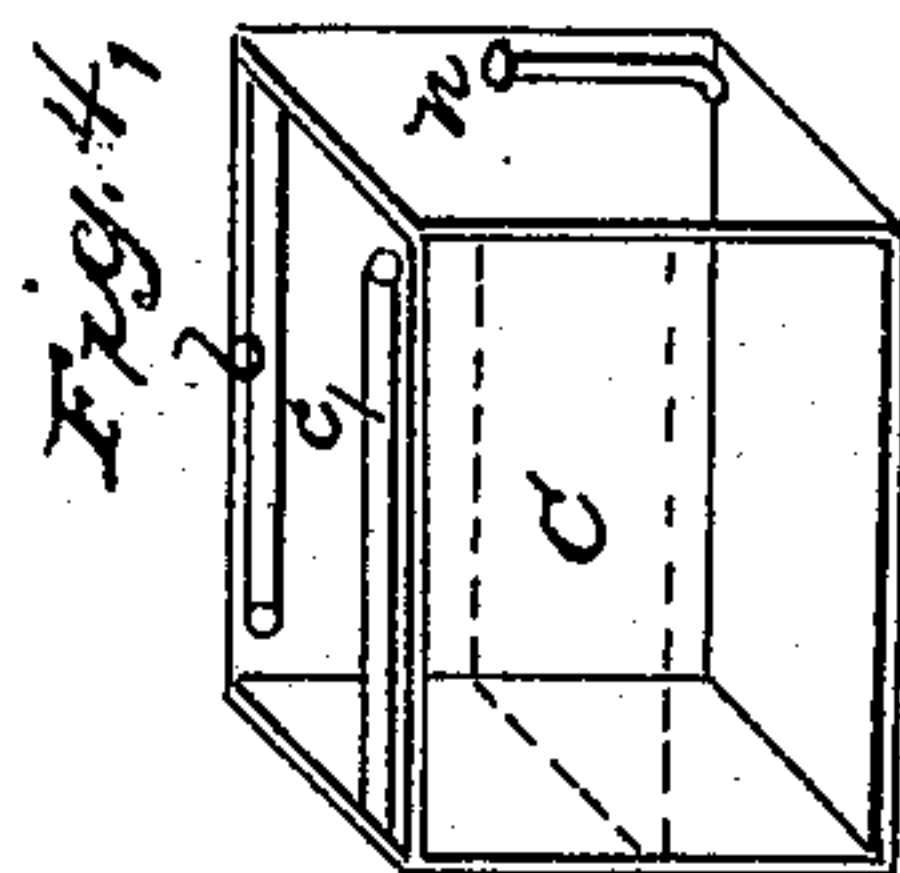
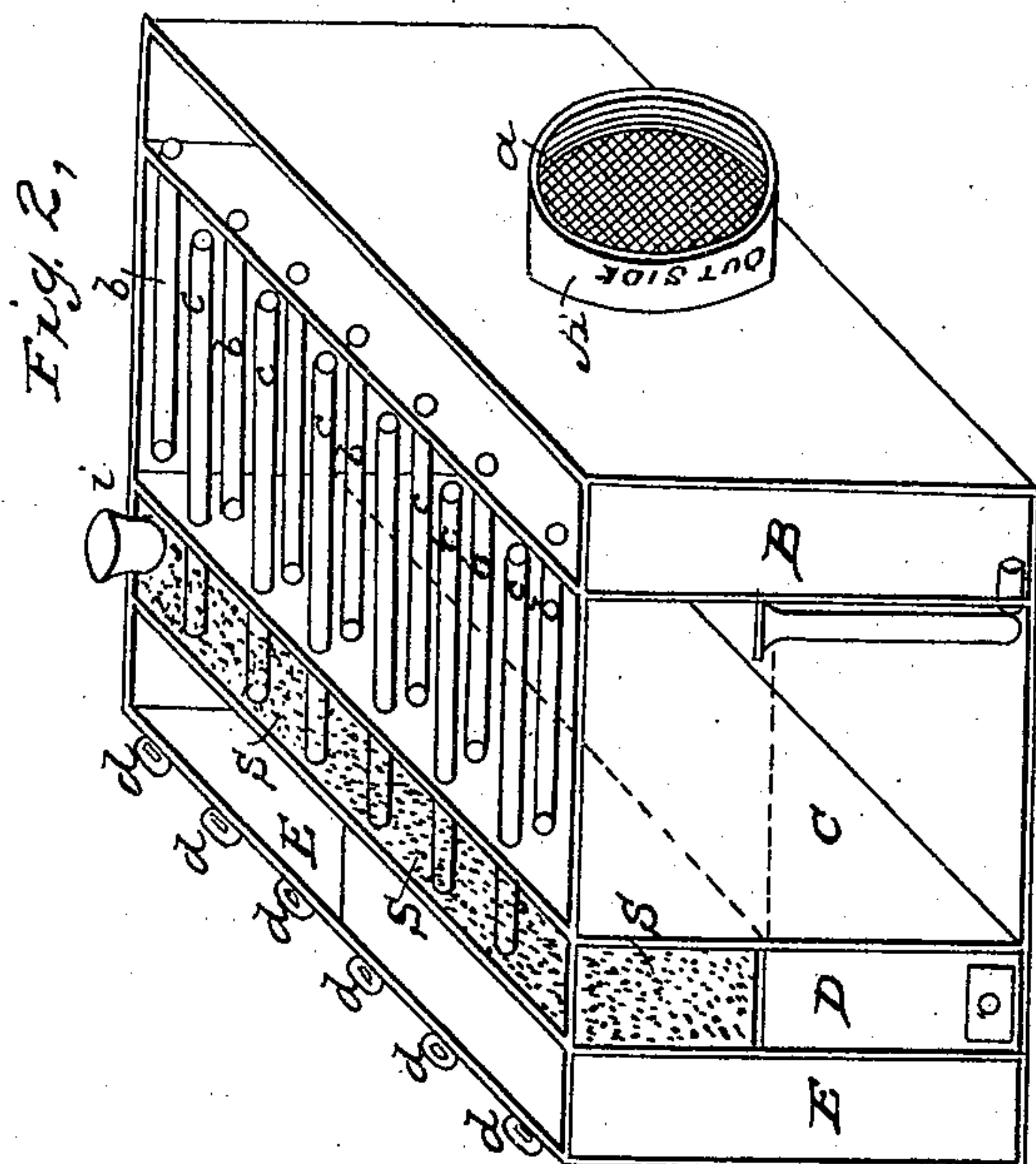
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C. PEPPER.

Car Heater.

No. 20,021.

Patented April 20, 1858.



WITNESSES
Nelson C. Sevel
Dan. McComb

INVENTOR
Calvin Pepper

UNITED STATES PATENT OFFICE.

CALVIN PEPPER, OF ALBANY, NEW YORK, ASSIGNOR TO NELSON R. SCOVEL, OF SAME PLACE.

METHOD OF VENTILATING RAILROAD-CARS.

Specification of Letters Patent No. 20,021, dated April 20, 1858.

To all whom it may concern:

Be it known that I, CALVIN PEPPER, of the city and county of Albany and State of New York, have invented, made, and applied to use certain new and useful Improvements in Ventilators for Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is a perspective view showing the outline of a railroad car and the manner of applying my ventilating apparatus and Fig. 2, is a perspective view of said ventilating apparatus in larger size. The other figures are separately referred to and similar marks of reference indicate corresponding parts.

The nature of my said invention consists in leading a current of air into the car in such a manner that cinders, dust or other solid particle contained in said current of air shall be deposited in a water receptacle which I term the pneumometer. In connection with said pneumometer I make use of an apparatus for heating and distributing the current of air in winter, and can also apply ice to refrigerate or cool the current of air passing into the car in summer; thus not only freeing the air from impurities, but also regulating its temperature. This manner of regulating the temperature, however, forms no part of the present invention.

In Fig. 7 the simple idea of my pneumometer is illustrated, in this a double trunk or casing A, projects above the roof of the car, having openings toward the forward and backward parts of the car, covered with wire gauze as at *a*. *b*, is a horizontal pipe open at both ends and passing air from the trunk A through the chamber C. This chamber C is air tight or nearly so although shown open in the drawing for illustration and contains water supplied from the pipe *n*, or in any other convenient manner, and an exhaust plug is provided as at *p* or any similar device by which the contents of the chamber *c* can be draw off and said chamber cleaned. The air passing into this chamber C, by the trunk A and pipe *b*, is deprived of its dust, cinders or other particles of solid material by passing over the sur-

face of the water (agitated by the motion of the car) and escapes into said car by the pipe *c*. The opposite ventilator will of course act to carry off foul air from the car by the exhaustion produced in the trunk A, by the velocity of the car, and the mouth of said trunk standing in the opposite direction to the motion of the car.

Fig. 4 is a representation of a single pneumometer which may be located in any desired part of the car and receive its supply from a trunk passing to the outside of the car at either the roof ends, sides, or bottom.

Fig. 5, represents a double pneumometer which might be placed on the sides of the car or between two cars, passing the current of air from the chambers E through the pipes *c* and *b*, and chamber C, into the car.

In Figs. 1 and 2 my pneumometer is shown as constructed with a range of pipes instead of only two, so as to afford a larger area for the ventilating current. In these figures *a* is a screen at the end of the car or in any convenient position from which air passes into the chamber B, and thence through the pipes *b*, *b*, the air is purified in the chamber C, and passed off by the pipes *c*, *c*, into a chamber E, from which the air is admitted by a slide or register *d* in to the car in the desired amount. The pipes *c*, before reaching the chamber E pass through a space D, intervening between the water chamber C, and air chamber E. In winter time, or when the air admitted is to be heated before coming into the car, I make use of a stove I, see Fig. 1, with the smoke tube F ascending to the space D, and the heat passes through said space D, beneath the sand box, through which the pipes *c*, *c*, before mentioned pass. The water in the space C is thus heated, from the space D, and the air passing through the pipes *c*, in the sand box is by the heat of the sand raised to a moderate temperature and the heat is also conducted to the chamber E, to aid in heating the air therein. *t*, is the escape smoke pipe from the space D. Two stoves may be provided one at each end, but the one at the forward end of the car can only be used to advantage, because the pneumometer at the rear end of the car only acts to pass away the foul or vitiated air from the car. To heat the water in the chamber C, to a higher

temperature particularly in cold weather; a pipe may connect with said chamber from a hollow ball or water back in the stove I, through which the water can be made to
 5 circulate, or steam to pass into the chamber C, from a gradual supply of water to said hollow ball or water back. Vertical supply tubes G, may pass from the chamber E, to
 10 horizontal tubes H running along the sides of the car near the floor, and having openings *e, e*, adjacent to each seat so as to supply fresh air at the different parts of the car. By causing said tubes G to pass
 15 through the stove or stoves I, as shown the air will be heated to warm as well as ventilate the car, and by inclosing the horizontal pipes H in a casing containing sand, I form a "foot bath" as I term it, because
 20 the warm air passing through said tubes H, heats the sand surrounding the same and will warm the feet when placed on the box; and the sand retaining the heat will serve to render the temperature of the air supplied into the car more uniform, and less
 25 subject to fluctuations as the fire is made stronger or burns out.

In Fig. 3, a device is shown that may be used but forms no part of my invention. A large pneunometer may be placed in the
 30 baggage car or at the engine and hot or cold air passed through the same, and

through pipes located in the ceiling and floor in which suitable registers may be placed, and the said pipes at the ends of the car may be connected by the rigid or
 35 flexible pipes *u*, from the stationary pipes *g* or ferrules *f* in the vessel A, connected to the aforesaid supply pipes within the car.

Fig. 6, shows one of these pipes *d*, with air openings *e, e*, inside the ceiling of the
 40 car, and said air tube may connect throughout the train and with one pneunometer or be connected to separate pneunometers in the car itself.

It will be apparent that ice might be
 45 used both in the chamber C, and space D, to cool the air in summer if desired.

What I claim as my invention and desire to secure by Letters Patent is—

The manner herein specified of purifying
 50 the air as it enters the car, by passing the same through the pneunometer, composed of the tubes *b* and *c*, in the water chamber C, for the purposes, and substantially as
 55 specified.

In witness whereof I have hereunto set my signature this thirtieth day of June 1857.

CALVIN PEPPER.

Witnesses:

H. P. NUGENT,
 A. B. VOORHEES.