

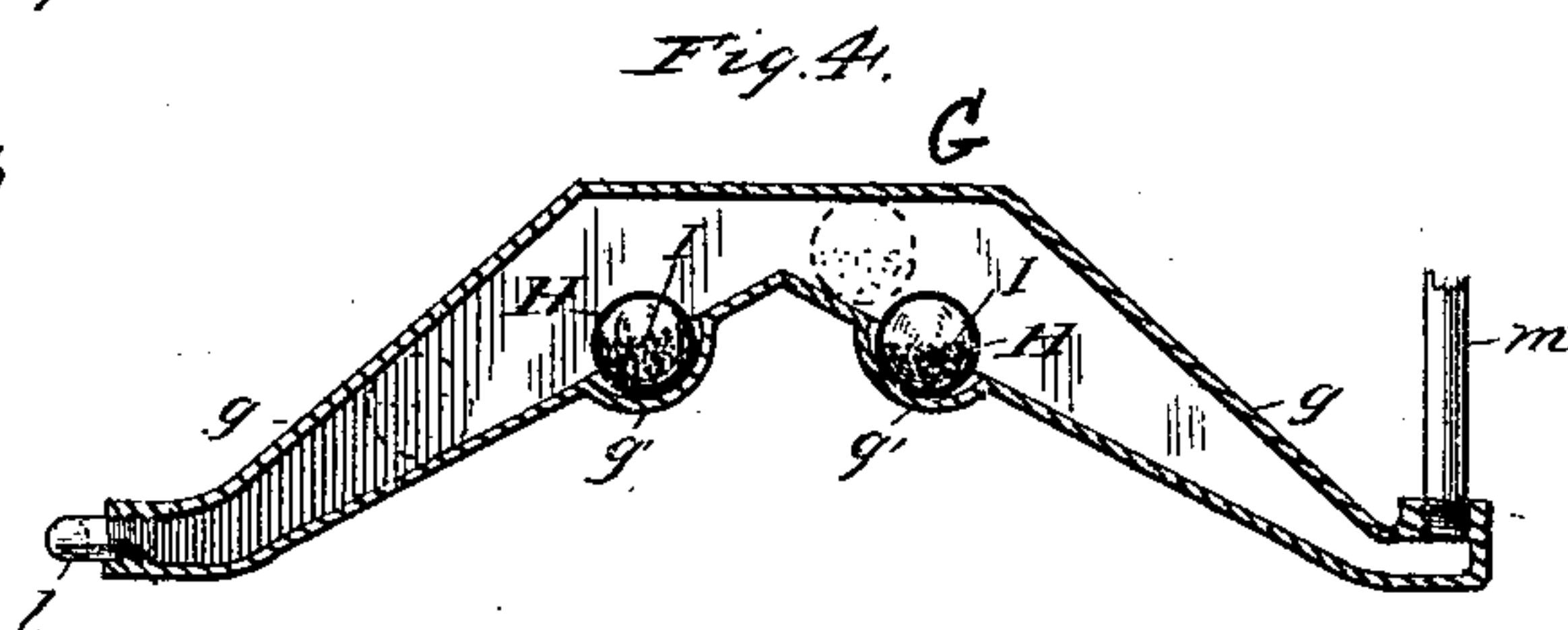
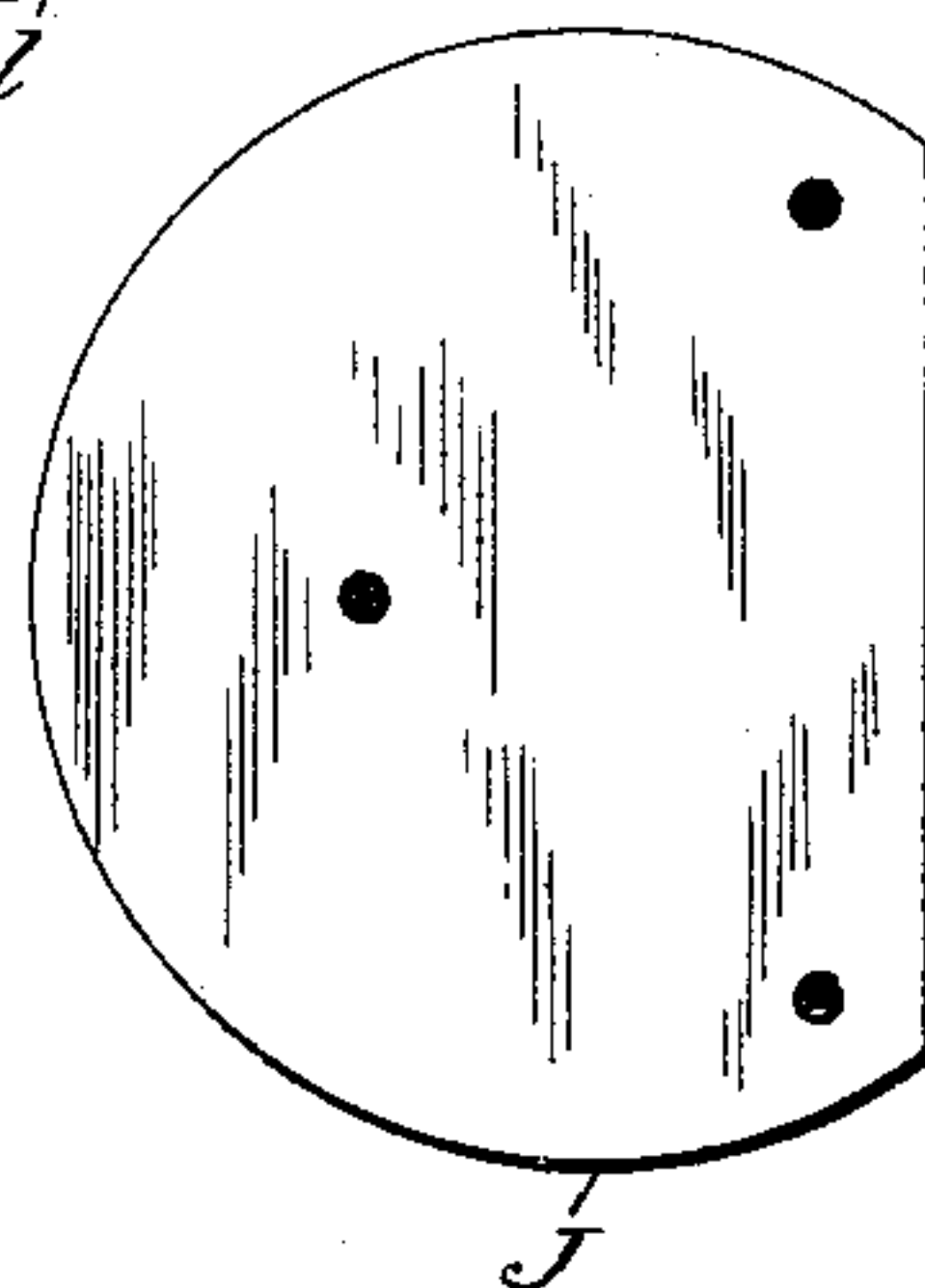
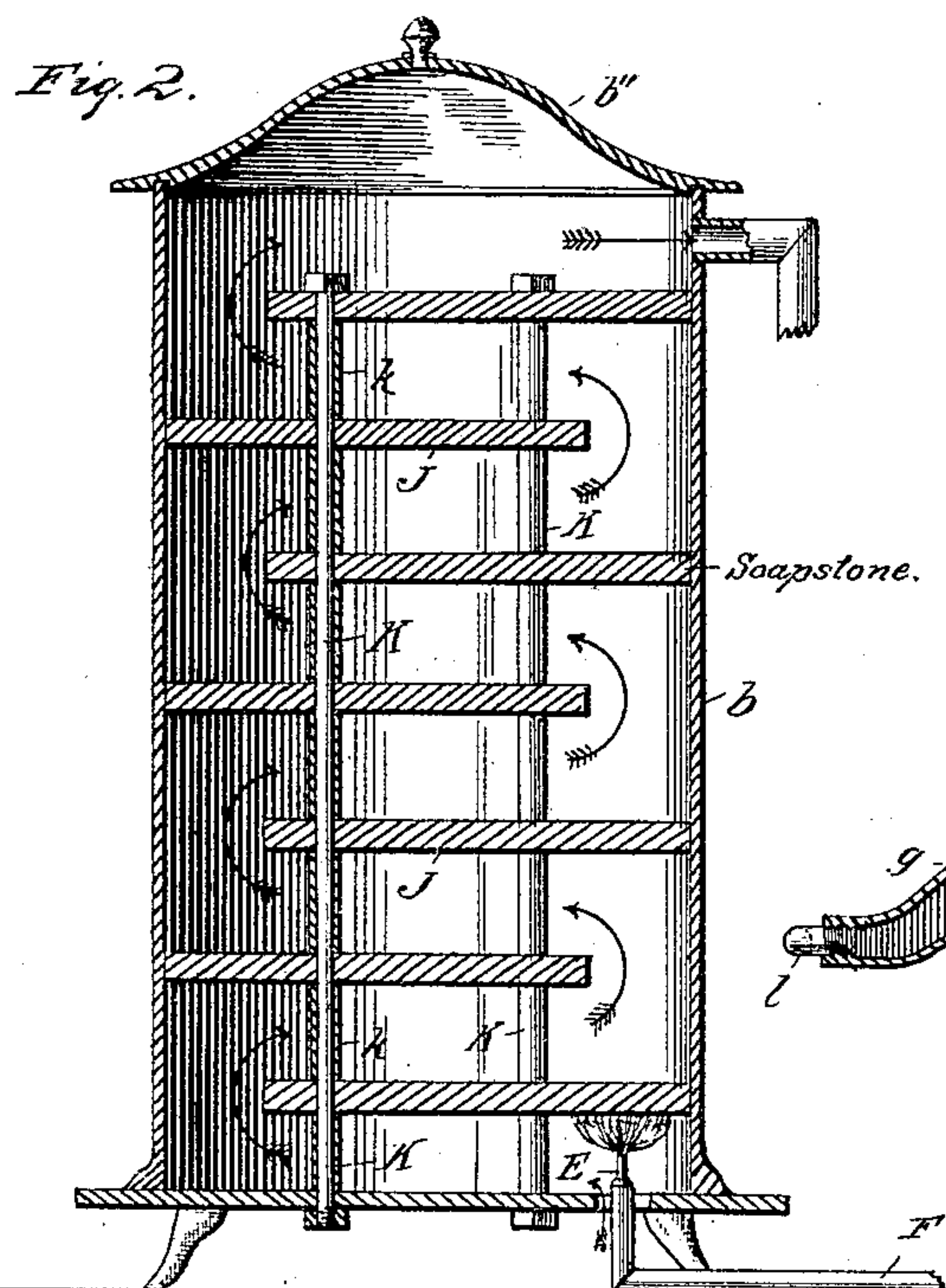
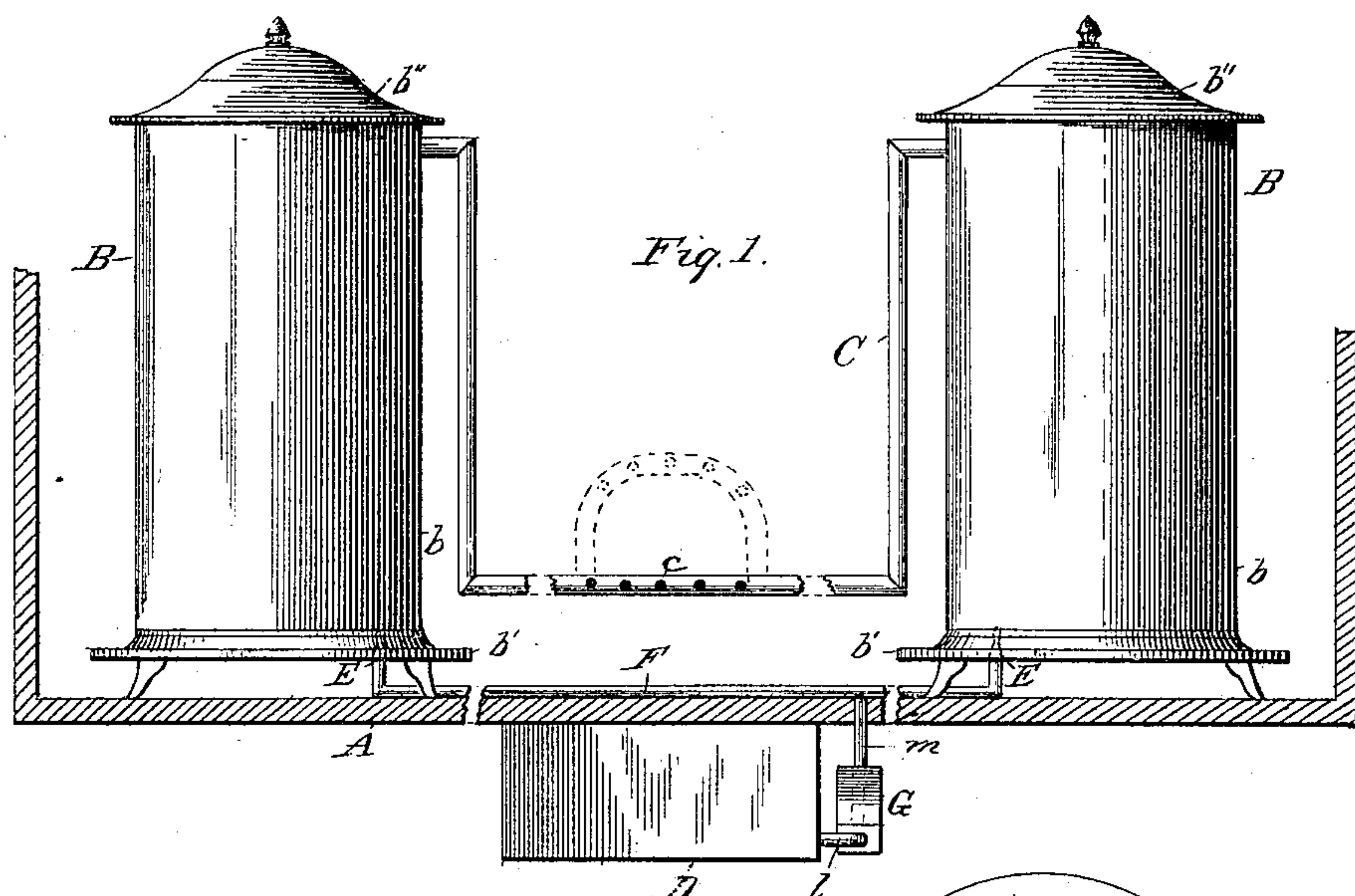
(No Model.)

A. PUTNAM, Jr.

CAR HEATER.

No. 370,085.

Patented Sept. 20, 1887.



Witnesses
E. H. Bond
E. H. Bond

Inventor
Abel Putnam Jr
By his Attorney *J. W. Robertson*

UNITED STATES PATENT OFFICE.

ABEL PUTNAM, JR., OF SARATOGA SPRINGS, NEW YORK.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 370,085, dated September 20, 1887.

Application filed February 9, 1887. Serial No. 227,019. (No model.)

To all whom it may concern:

Be it known that I, ABEL PUTNAM, Jr., a citizen of the United States, residing at Saratoga Springs, in the county of Saratoga and State of New York, have invented a certain new and useful Improvement in Car-Heaters, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 represents a central vertical longitudinal section of a railroad-car, showing my improvement applied to heating cars; Fig. 2, a central vertical section of the heater on a larger scale. Fig. 3 is a detail showing a plan of one of the plates used in my heater, and Fig. 4 is a central vertical longitudinal section of an automatic cut-off designed to be used in heating cars.

My improvement relates more particularly to that class of gas heaters used for heating railroad-cars, but may also be used in other places where heat is desired; and the invention consists in the peculiar arrangement, construction, and combinations of parts, herein-after more particularly described, and then pointed out in the claims.

Referring now to the details of the drawings, which show what I at present consider the preferable mode of carrying out my invention, A represents the floor of a railroad-car, and B B, heaters at each end of the car, provided with a pipe, C, preferably running from one heater to the other, and having a central perforated section, *c*. (In some cases I make the central section in the form shown in dotted lines.)

Beneath the car I place a strong reservoir, D, of boiler-iron, designed to contain ordinary burning-gas, which is to be forced into the same under a heavy pressure, and is supplied to the burners E E by the pipe F. At a point connecting the pipe F and reservoir D is an automatic cut-off device, G, (shown more particularly in Fig. 4,) consisting of a casing arranged crosswise of the car, having tapering ends *g*, which casing has receptacles *g'* for rubber balls H, filled with shot I, the use of which will be hereinafter explained. The cut-off is connected with the reservoir by means of a pipe, *l*, and with the horizontal pipe F by a pipe, *m*.

The heaters may of course be made of any

preferable form or material; but I prefer such as shown in detail in Fig. 2, in which *b* represents the external casing, *b'* the base, and *b''* the cap. Inside these cylinders are several plates or partitions, J, of the shape shown in Fig. 3, preferably of soapstone, which are held in position by rods K, passing through them and through thimbles *k*, (or short pieces of pipe,) placed between the plates, as shown in Fig. 3. By the peculiar arrangement of these plates the hot air and products of combustion rising from the burners are compelled to take a circuitous course, as indicated by the arrows, and thus these plates become thoroughly heated, so that should the gas become low or be exhausted they would still give out heat, which would pass out into the car by radiation through the sides of the casing, and by heating the air which would still pass through the heaters and pipes. The burners E pass through holes made in the bases of the heaters, which holes should be of sufficient size to admit air for the support of combustion, and also to supply the air to be heated by the plates J.

The operation is as follows: Before the cars are open for use the gas-burners should be lighted and the cars would be gradually heated from the burning of the gas and the heat radiated from the casing, and also from the air which would enter the heater, and after extracting heat from the plates J as it passed over them would pass into the car in a heated condition through the perforations in the central section of the pipes. It is intended to supply the reservoir D with sufficient gas to keep up the burners E E lighted until a station is reached, where it can be again filled; but this is not actually necessary, because, as before explained, sufficient heat will be absorbed by the plates to give off heat for a considerable period after the gas is exhausted.

When the car is in its normal position, the receptacles *g'* hold the balls in the position shown in full lines; but should the car be upset, as in case of an accident, the balls will roll out of the receptacle and roll down into the position shown in dotted lines, if the car falls over so as to make the left-hand side of the cut-off device the lowest. If, however, the car falls in the other direction, the balls would of course assume the opposite position. If

the car did not fall over, but was simply stopped by a collision, the shock would throw the balls out of the receptacles, and they would roll down into the lowest or small part of the casing. Thus it will be seen that in case of a serious accident of any sort the balls would roll down into the smallest part of the casing, and thus cut off the supply of gas, which of course would extinguish the burners, and all danger of fire from the heating apparatus would be prevented.

Although other forms of heaters may be used with my cut-off apparatus, I deem the peculiar construction of the heater shown as important, inasmuch as by securing the partitions and base together in the manner shown the casing can be readily removed for the purpose of cleaning the partitions without disturbing the other parts of the heater, and as readily replaced.

Having thus described one plan of carrying out my invention, but without limiting myself to the exact construction shown, what I claim as new is—

1. The combination, in a car-heating apparatus, of a gas reservoir and a burner with a cut-off, G, set between the two, provided with a passage through which the gas passes on its way to the burner, a ball of larger diameter

than said passage, and a receptacle for the ball constructed to retain it above the smallest part of said passage when the car is running in its normal position, substantially as described.

2. The combination, in a heater, of the base *b'*, the partitions J, cut-off on opposite sides, rods K, and thimbles *k*, all connected together, as shown, and the casing *b*, constructed to be removed without disturbing the other parts, substantially as described.

3. The combination, in a car-heating apparatus, of a gas receiver and burner, with a cut-off chamber between them provided with two balls and receptacles for the same adapted to hold them in a certain position when the car is in its normal position, and having a passage for the gas through the chamber, said passage being reduced at three places to a smaller diameter than the balls, whereby a double cut-off is formed, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 7th day of February, 1887.

ABEL PUTNAM, JR.

Witnesses:

E. H. BOND,
THOMAS ERNEST.