

No. 629,454.

Patented July 25, 1899.

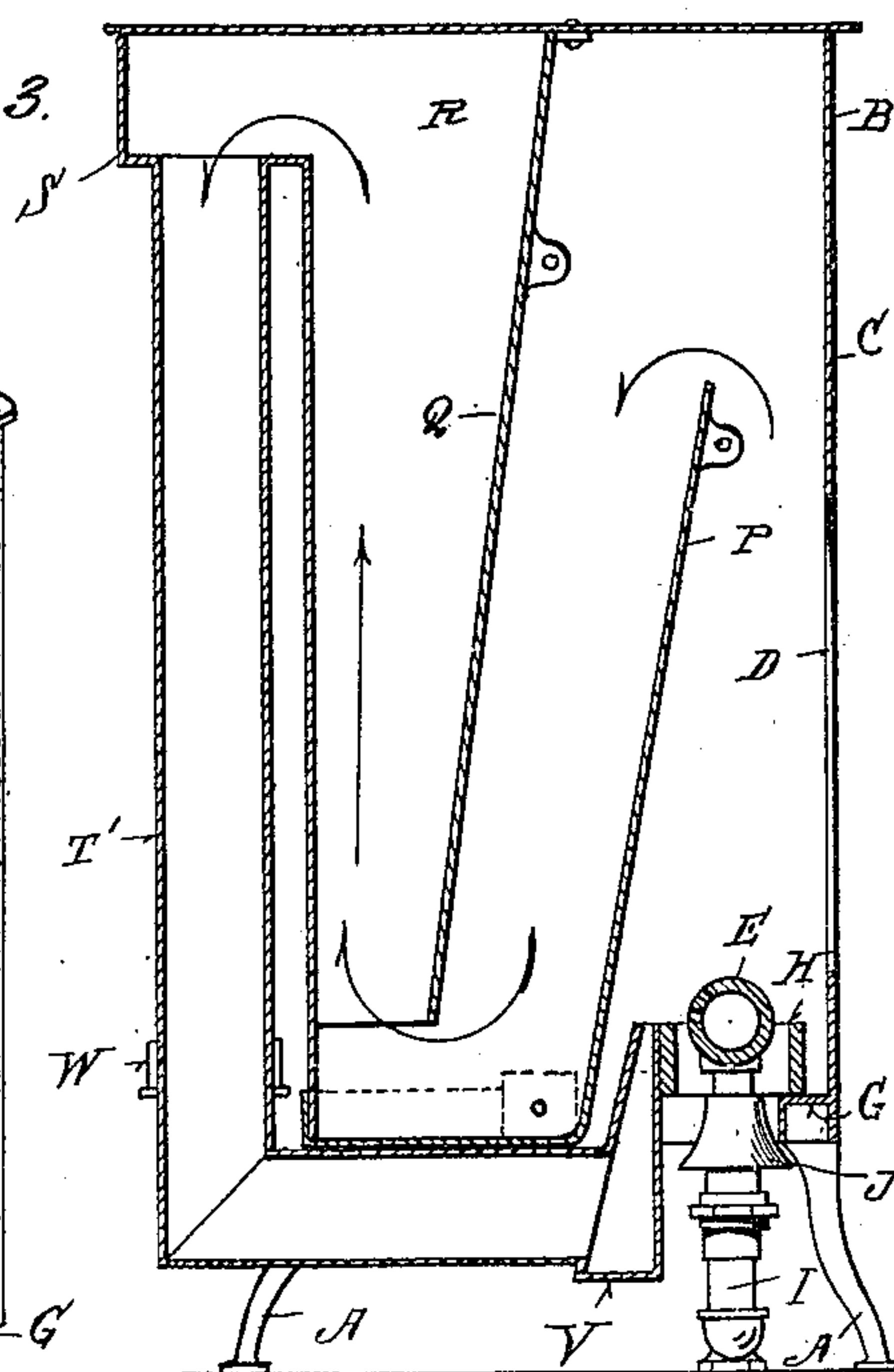
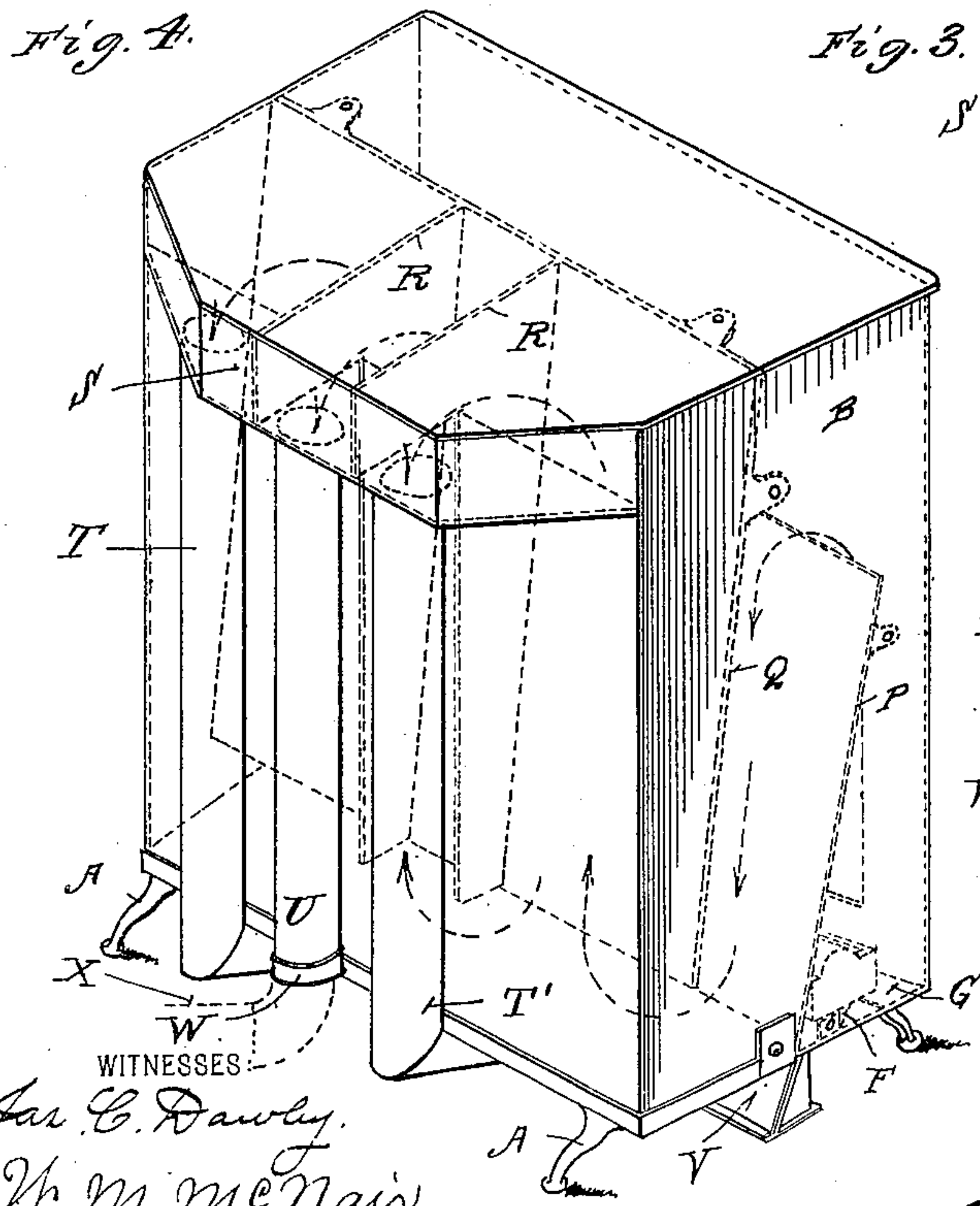
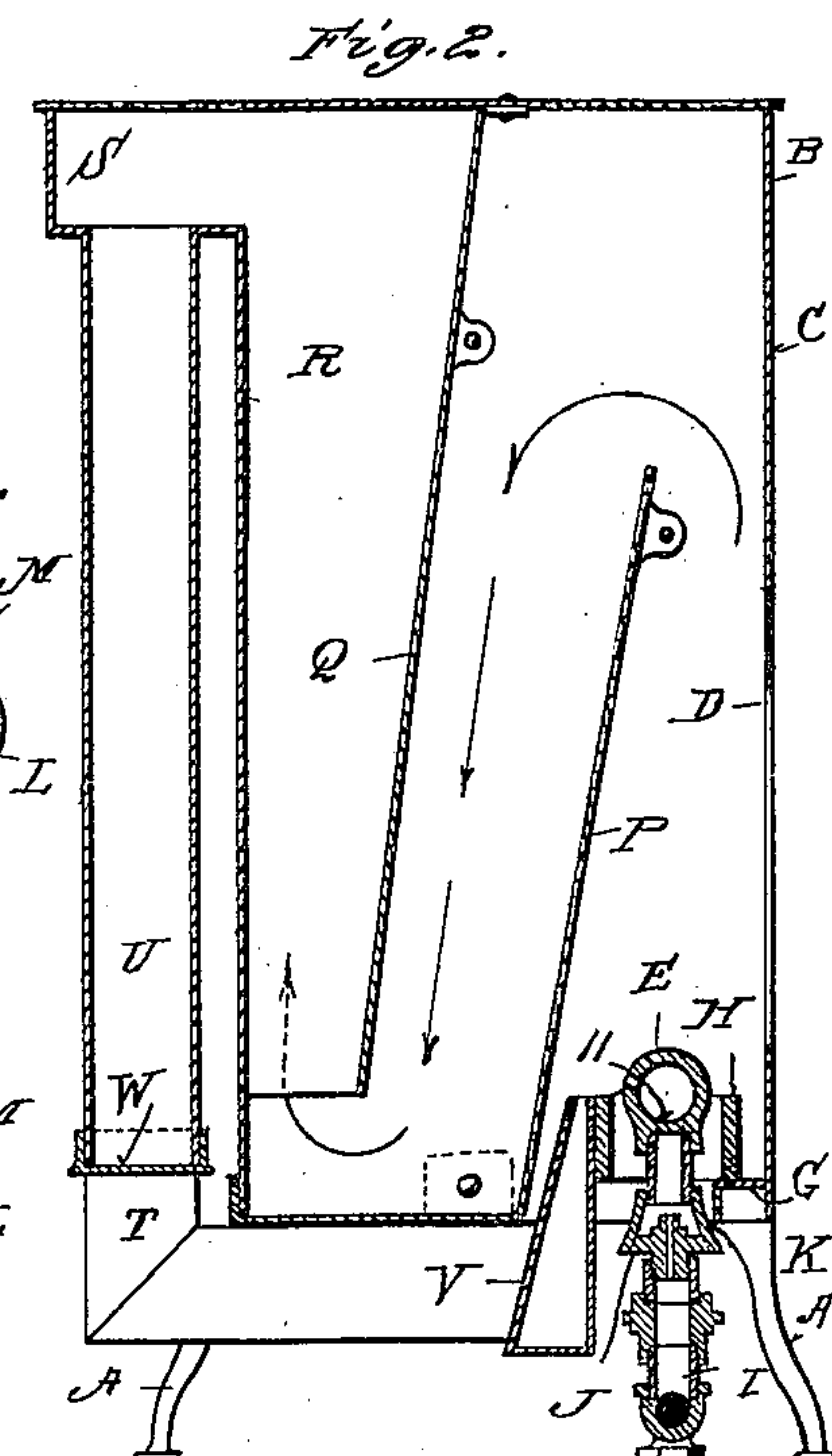
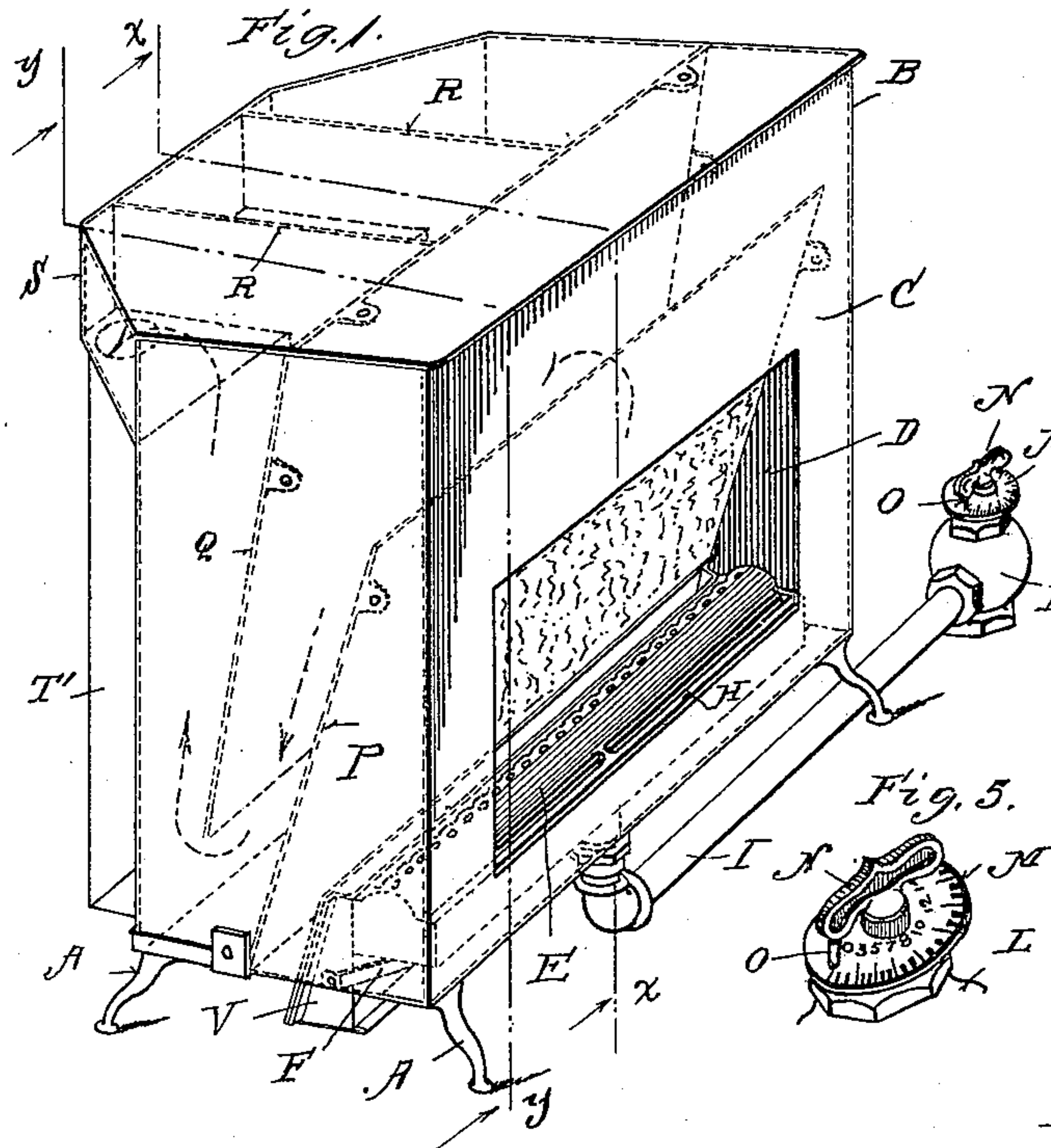
S. N., M. A. & G. E. MENTEL.

GAS STOVE OR HEATER.

(Application filed Jan. 12, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

*Jas. C. Dawley.
 W. M. McNair.*

INVENTOR S,
SIMON N. MENTEL,
MARY A. MENTEL AND
GEORGE E. MENTEL.

By H. A. Toulson,
their ATTORNEY.

No. 629,454.

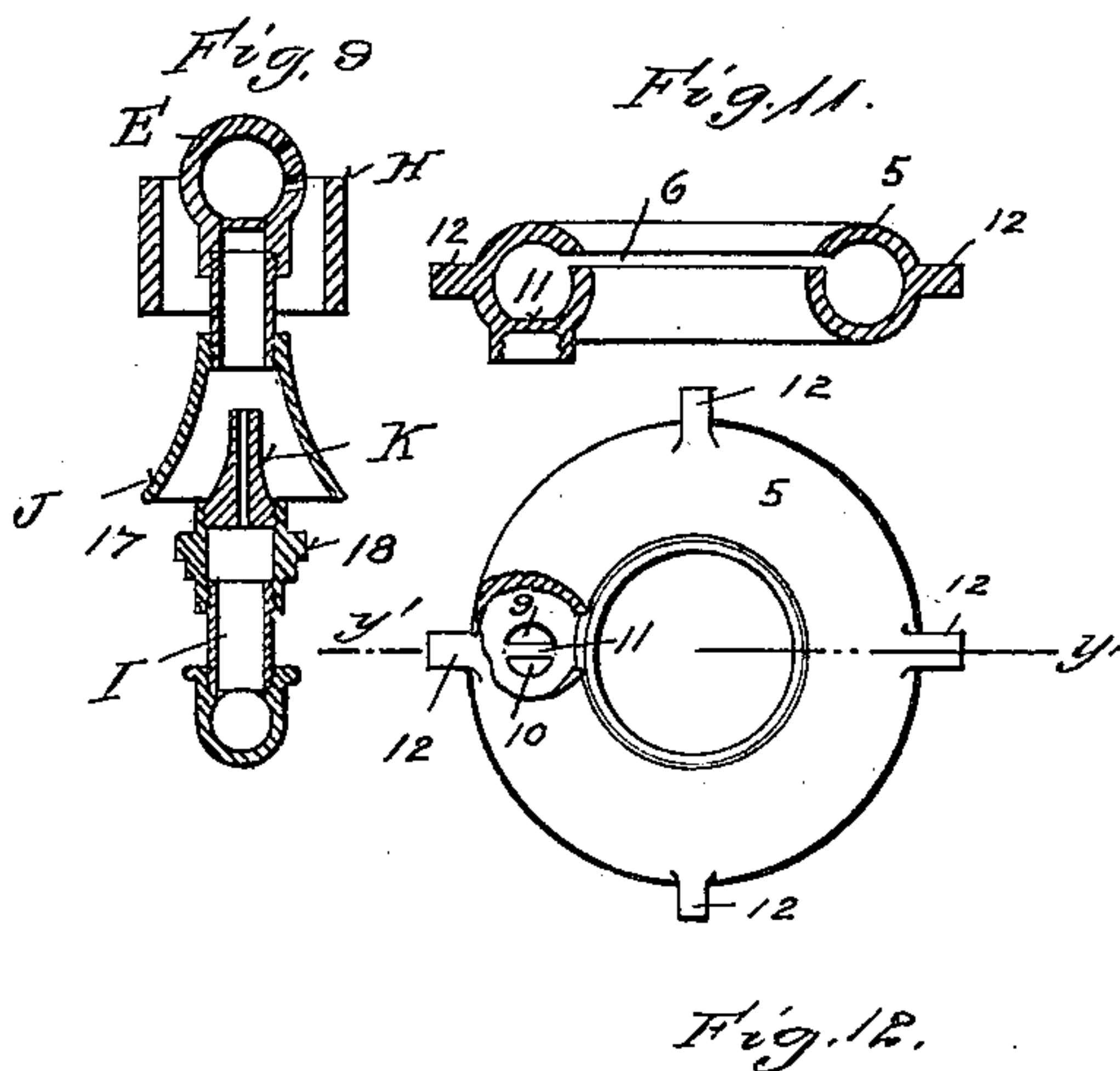
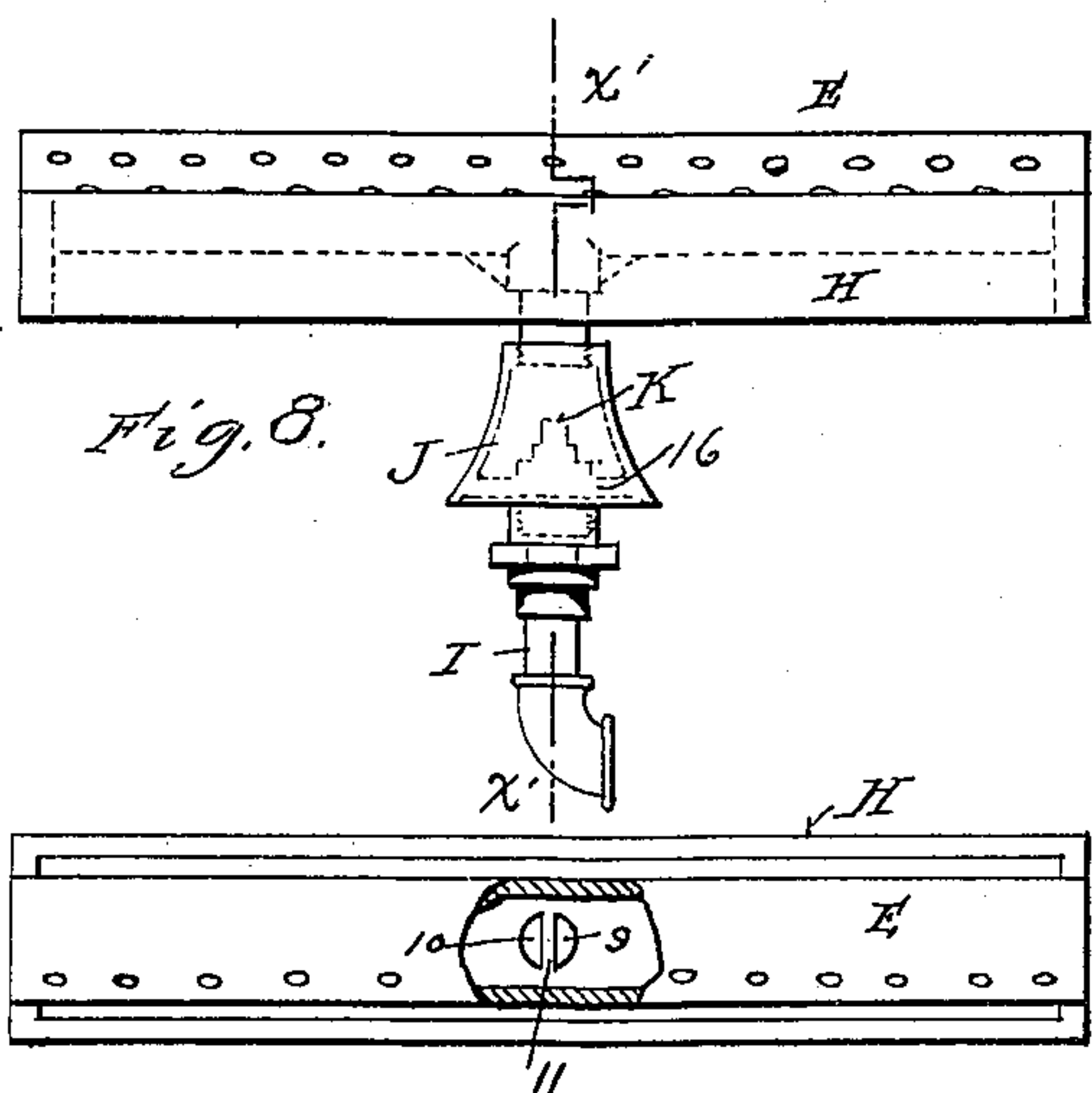
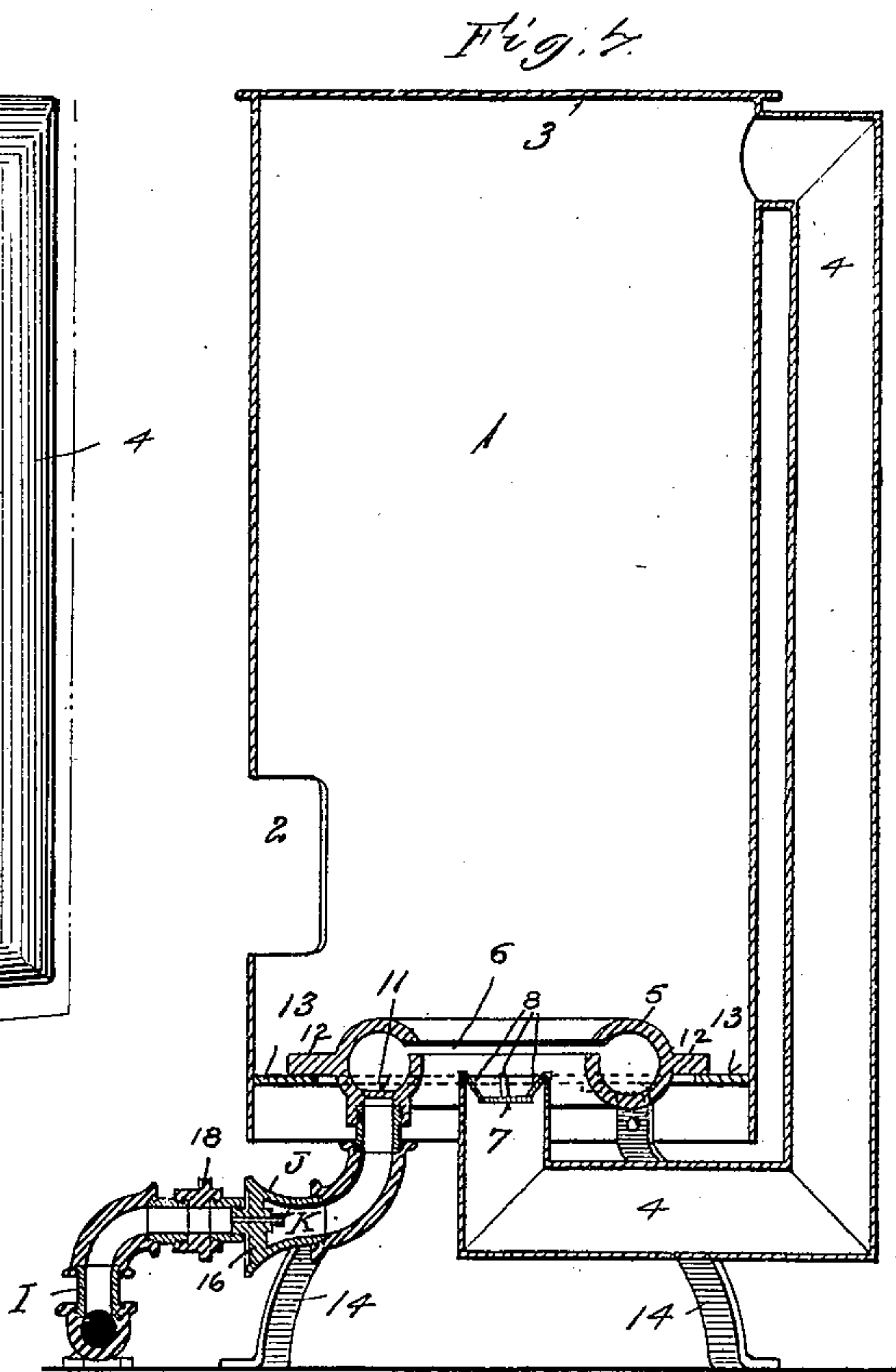
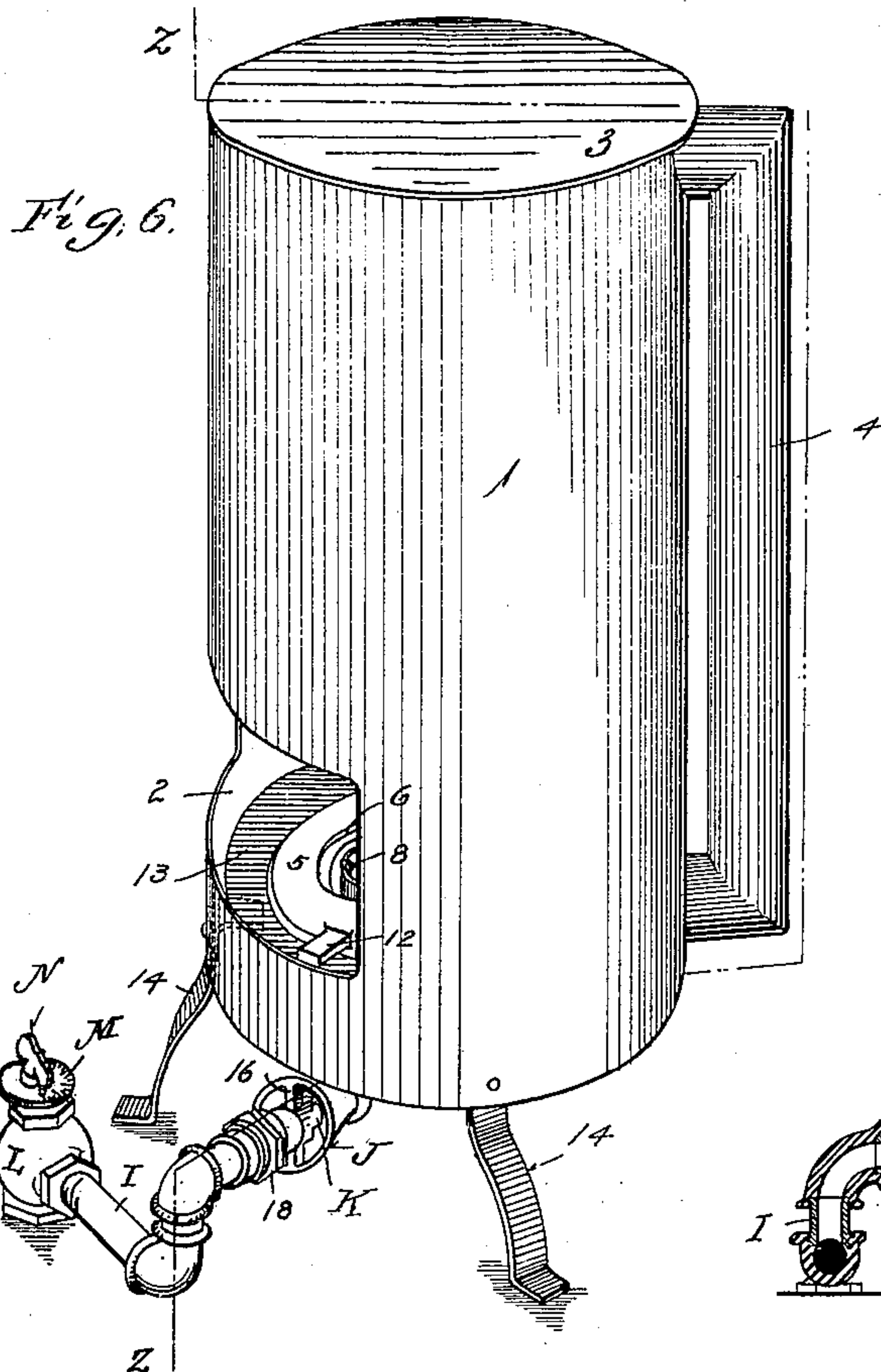
Patented July 25, 1899.

S. N., M. A. & G. E. MENTEL.
GAS STOVE OR HEATER.

(Application filed Jan. 12, 1898.)

2 Sheets—Sheet 2.

(No Model.)



WITNESSES:

Jas. C. Dawley.
W. M. McNaiv.

INVENTOR S.

SIMON N. MENTEL,
MARY A. MENTEL AND
GEORGE E. MENTEL.

By H. A. Toulmin,
their ATTORNEY.

UNITED STATES PATENT OFFICE.

SIMON N. MENTEL, MARY A. MENTEL, AND GEORGE E. MENTEL, OF
SPRINGFIELD, OHIO; SAID MARY A. MENTEL ASSIGNOR TO SAID
GEORGE E. MENTEL.

GAS STOVE OR HEATER.

SPECIFICATION forming part of Letters Patent No. 629,454, dated July 25, 1899.

Application filed January 12, 1898. Serial No. 666,473. (No model.)

To all whom it may concern:

Be it known that we, SIMON N. MENTEL, MARY A. MENTEL, and GEORGE E. MENTEL, citizens of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Gas Stoves or Heaters, of which the following is a specification, reference being had therein to the accompanying
10 drawings.

Our invention relates to certain new and useful improvements in gas or gasolene stoves or heaters.

The objects of our invention are to provide
15 an economical and cheaply-manufactured stove or heater in which gas—natural or artificial—or gasolene may be used without producing any odor resulting from incomplete combustion when not connected with a chimney-flue; and to that end our invention has
20 reference to means for providing a positive draft for the return of substantially all the products arising from or through the burner back to the burner in contact with the flame,
25 whereby the unconsumed combustible products may be properly consumed, thus obtaining complete combustion, and to provide an improved burner, whereby the combustible products are divided upon entering the burner
30 and a continuous supply of air envelops each side of said burner, thus supplying an abundance of oxygen, whereby the flame is augmented.

Our invention also has reference to details
35 of construction and arrangement hereinafter appearing, and particularly pointed out in the claims.

In the accompanying drawings, on which like reference letters and figures indicate corresponding parts, Figure 1 is a vertical side
40 and front perspective view of one form of our heater; Fig. 2, another sectional elevation on the line $x x$ of Fig. 1, showing the mixer and burner in section; Fig. 3, another sectional elevation on the line $y y$ of Fig. 1; Fig. 4, a rear
45 perspective view; Fig. 5, a detail view of the stop-cock and a scale for showing the amount of gas passing through said stop-cock; Fig. 6, a perspective view of another form of our

improved heater; Fig. 7, a sectional view of
50 the same on the line $z z$ of Fig. 6; Fig. 8, a front view of our improved burner and mixer; Fig. 9, a sectional view of the same on the line $x' x'$ of Fig. 8; Fig. 10, a plan view of our burner, partly in section, and showing the gas-
55 inlet openings; Fig. 11, a detail sectional view of the burner used in our second form on the line $y' y'$ of Fig. 12; Fig. 12, a plan view of the burner used in the second form with a portion broken away to show the gas-
60 inlet openings.

In our invention we have produced a heater or stove which may be placed in any desired position within a room and without the necessity of connecting it in any manner to a chimney pipe or flue and at the same time one
65 which will not produce any unpleasant odors.

The letter A represents suitable legs, upon which is mounted the heater proper, B, preferably formed of sheet-iron or other suitable
70 material for readily conducting the heat to the surrounding air. The front face C of our heater has a hole or opening D. Just below this hole or opening is located our improved burner E, which is supported upon brackets
75 F, as shown in dotted lines in Fig. 1, and the strip of sheet metal G, which is carried by the legs A. This burner is located within the frame H, with an air-space on each side between the burner and the sides of the frame.
80 Fresh air from the room passes up through these openings and constantly feeds the flame with the oxygen for proper combustion and which assists in increasing the intensity of
85 the flame, and consequently a larger proportion of the combustible products in the fuel are utilized; but in case all the combustible products are not sufficiently burned they will pass through the fire again, as will presently
90 appear.

A suitable pipe I conducts the gas or gasolene, whichever may be used, into the mixer J through the nozzle K, which is cast or otherwise secured to the mixer. A suitable stop-
95 cock L is connected to the pipe I and at its upper end carries a scale M. A key N, having a pointer O, may be turned to admit the amount of gas or gasolene desired, and such

amount is indicated on the scale by the pointer O. The figures on this scale indicate the number of cubic feet being consumed per hour.

5 We will now refer to the baffle-walls located within our apparatus, as clearly indicated in dotted lines in Fig. 1. A front baffle-wall P extends from the bottom of the outside shell or casing B forward and upward a short distance above the upper edge of the hole or opening D and is riveted to or in any other suitable manner connected with the outside shell or casing B. The front surface of this baffle-wall P may be covered with asbestos or
10 other suitable material for deflecting the heat through the opening D. The products of combustion are carried up over the end of said baffle-wall P and are deflected downward by the baffle-wall Q, and thence around its lower end and up between the partitions R in the space between the baffle-wall Q and the rear of the heater, as clearly shown in Figs. 2, 3, and 4. It will be seen that the upper end of the shell or casing of our stove has a rear extension S. Down-pipes T, T', and U connect with this extension S and open into spaces partitioned off by the partitions R. The pipes T and T' extend down beneath the shell or casing and enter an air-reservoir V,
15 preferably triangular in cross-section and having a narrow slit or opening along its upper edge. This air-reservoir is located next to the burner, so that the air in passing up out of the same will mingle with the flames from the burner, and hence any combustible products not heretofore consumed will be again acted upon by the flame. Should anything be left unburned at this time, it will again pass around, as before, and through the
20 fire a second time, and so on continuously, until not a vestige of combustible products is left.

Referring again to the pipe U, which connects with the space between the partitions R R, it will be seen that at its lower end we have applied a cap w. When it is desired to connect with an outside flue or chimney, this cap w is removed, and the chimney-pipe X (shown in dotted lines) is then attached.
25 However, it is not intended to connect this stove or heater with a chimney for ordinary use; but we have provided this means of attachment if for any reason it is found desirable to do so.

30 We will now refer to our second form of heater. This form embodies all of the essential elements contained in our first form, but is somewhat cheaper to construct and occupies less space than the other and is used principally for heating small rooms—such, for instance, as bath-rooms. In this form we simply use a drum 1 for our outer shell or casing, having a hole or opening 2. The upper end of the shell or drum is inclosed by a cap 3. A down-pipe 4 connects with this shell or drum near its upper end and passes thence down along the side of said drum and under-
35

neath the same and extends through the bottom of the drum, at the center thereof, and within a circular burner 5, which surrounds said pipe 4, and has an air-space between said burner and said pipe for the passage of air from the room. This circular burner 5 has an annular slit or opening 6, which opens into the interior space and which thus directs the flames toward the center of the burner. It will thus be seen that the heated air and the unburned combustible products will again come in contact with the flame as they escape from the pipe 4 in the same manner as heretofore described in connection with the first form. The air from the room is also fed to the flame in a similar manner as described in said first form, the only principal difference in the two forms being in the use of a circular burner having a continuous annular gas-opening. In order to more readily direct the products passing through the pipe 4 into the flame, we provide a deflector 7, which is suspended within the pipe 4 by means of arms 8, which radiate from said deflector and extend upward and are bent over the upper edge of the pipe in the form of hooks. This deflector causes the air to pass into the flame in a thin annular sheet, in which condition it more readily mixes with the flame, and hence more of the unconsumed products are added to the flame.

In both forms of burners at the point where the gas enters the burner proper we have provided a double opening 9 and 10, with a narrow bridge of metal 11 between them. This narrow bridge splits or divides the mixture to be burned, and part goes in one direction and part in the opposite direction, and consequently assists in producing an even flame throughout the length of the burner, and thus prevents warping and twisting of the burner, as frequently occurs where an irregular flame is produced. In the circular form of burner we have provided lugs or extensions 12, which project onto a ring 13, which ring is supported by the inturned upper ends of the legs 14. The burner is thus afforded a suitable support and may be readily removed when desired.

Any ordinary form of mixer may be employed. The one herein illustrated, as shown at J, is bell-shaped and has a bridge-piece 16, which has an extension K, with a hole or opening therein. This extension K acts as a nozzle, and air is drawn in all around the union 18, screwed onto the nozzle or extension K. This union is also screwed onto the gas or gasolene pipe I.

By the term "tortuous passage" as employed in the specification and claims is meant the passage through the heater in which the direction of the products of combustion is changed or varied, such passage being considered as commencing at or near the upper end of the baffle-wall P, as shown in Figs. 1 to 4, inclusive, and at the upper end of the pipe 4, as shown in Figs. 6 and 7.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a stove or heater, the combination
5 with a shell or casing having a gas or gasoline burner located therein, and one or more baffle-walls to form a tortuous passage, and also having cross-partitions for dividing said
10 passage into three spaces, two down-pipes communicating with two of said spaces and adapted to convey a portion of the products of combustion back to said burner, and a
15 third pipe communicating with said third space, and adapted to be connected with a chimney-flue, substantially as shown and described.

2. In a stove or heater, the combination with a shell or casing having a gas or gasoline burner located therein and an opening
20 extending above said burner communicating with the interior of said shell, of one or more baffle-walls also located therein and forming a tortuous passage for the products of combustion, such tortuous passage commencing
25 near where said products make their first turn, one or more down-pipes communicating with said tortuous passage and adapted to conduct all of said products of combustion within said tortuous passage to and through
30 the flame from said burner, substantially as shown and described.

3. In a stove or heater, the combination with a shell or casing having a gas or gasoline burner located therein, and an opening
35 communicating with the interior of said shell

of one or more baffle-walls also located therein and forming a tortuous passage for products of combustion, an air reservoir or receptacle having a narrow slit therein in close proximity to said burner, and one or more
40 down-pipes connecting said tortuous passage with said reservoir, the slotted opening in said reservoir adapted to discharge a thin sheet of the products passing through said heater into the flame from said burner. 45

4. In a stove or heater, the combination with a shell or casing having a downwardly-extending pipe communicating with the interior of the stove at its bottom, of a burner
located near the bottom of the stove and provided with a discharge-outlet at the side thereof, the discharge end of the pipe B being in
50 substantially the same plane as the discharge-outlet of the burner, there being also an open space at the bottom of the stove leading to
55 the burner for its fresh-air supply.

5. In a gas stove or heater, the combination with a frame structure H, of a gas or gasoline burner mounted therein and having
openings in the side thereof, and a bridge 11
60 for distributing incoming gases within the burner, substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

SIMON N. MENTEL.

MARY A. MENTEL.

GEORGE E. MENTEL.

Witnesses:

ALLAN A. FISH,

O. B. TROUT.