

No. 740,402.

PATENTED OCT. 6, 1903.

E. O. DANIELS.
GAS BURNER.

APPLICATION FILED APR. 13, 1903.

NO MODEL.

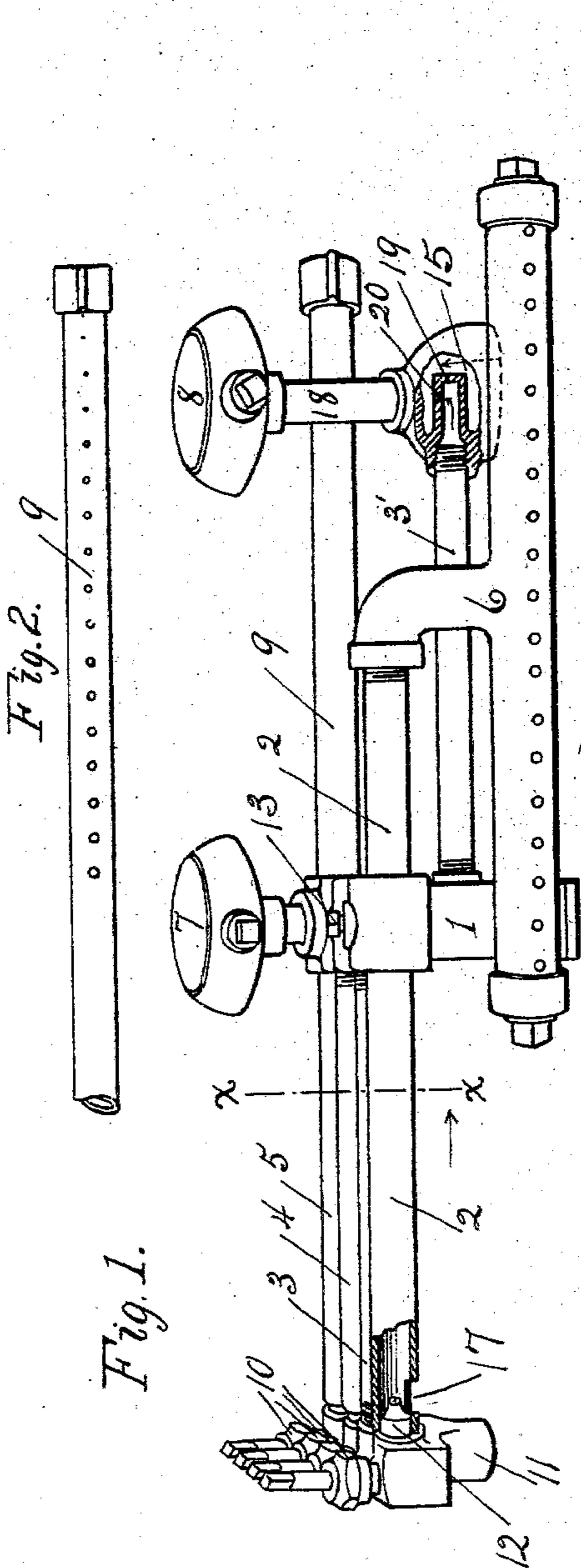


Fig. 1.

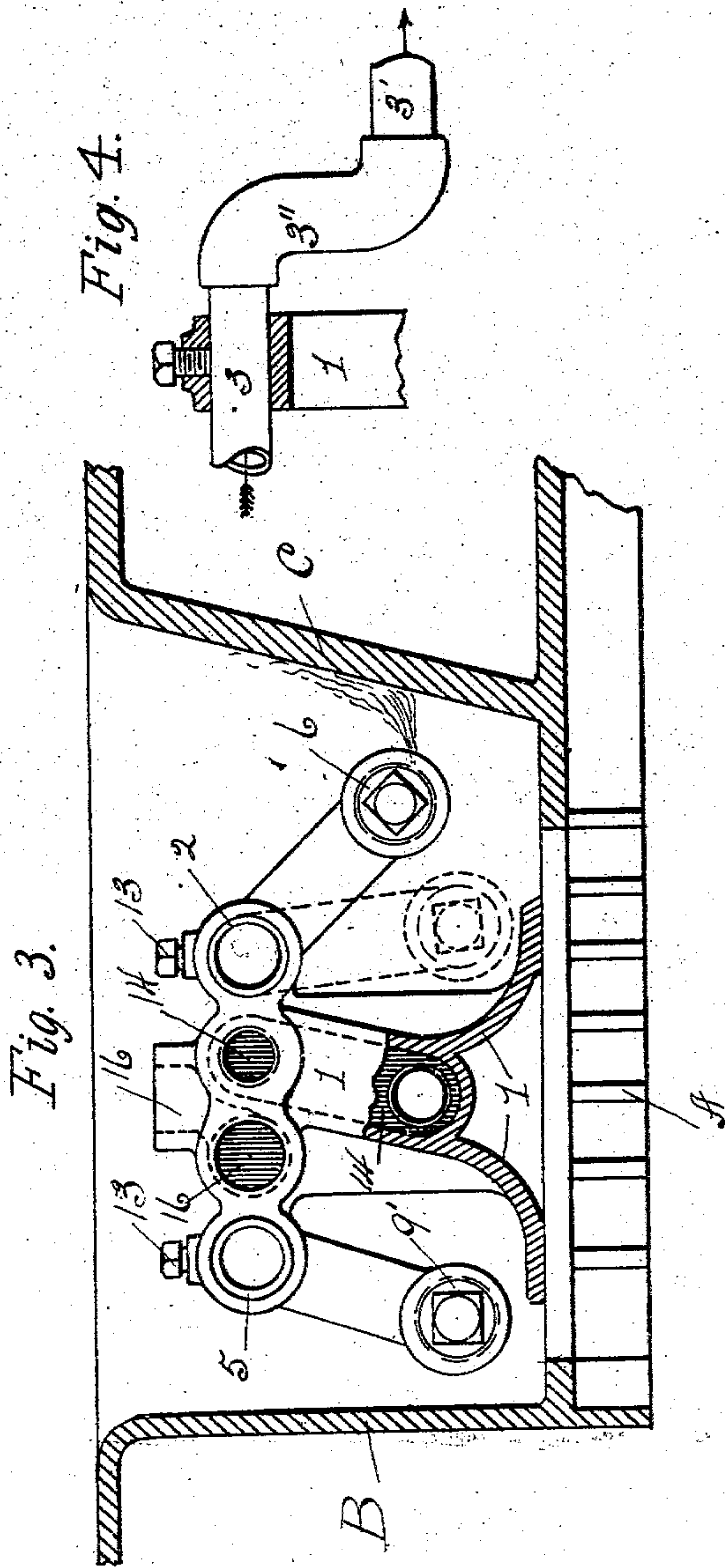


Fig. 3.

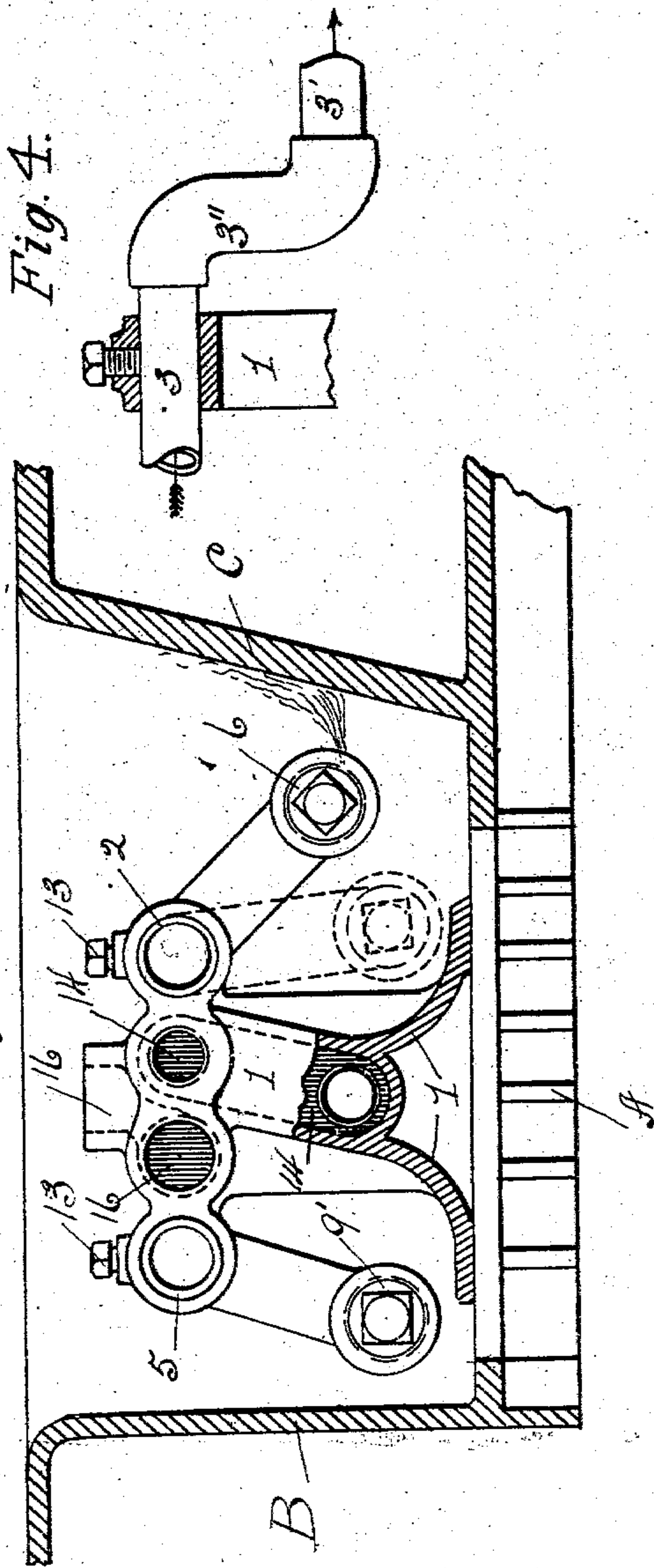


Fig. 4.

Witnesses:
David C. Walter
Russell Schreiber.

Inventor.
Eugene O. Daniels,
By Oweend Oweend
His attorneys.

UNITED STATES PATENT OFFICE.

EUGENE ORA DANIELS, OF TOLEDO, OHIO.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 740,402, dated October 6, 1903.

Application filed April 13, 1903. Serial No. 152,288. (No model.)

To all whom it may concern:

Be it known that I, EUGENE ORA DANIELS, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Gas-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to the class of burners employed in the consumption of natural or artificial gas, is especially adapted and designed for use in connection with the ordinary cook-stove, and can be used either for cooking or heating purposes.

The object of my invention is to provide an apparatus having a series of burners adjustably arranged within the stove with which it is connected in such manner as to cause the combustion to take place and the heat therefrom to be evenly and perfectly distributed to the parts of the stove desired to be heated and also to provide a burner of the class described that is simple and novel in its construction and arrangement of parts and in which the ports for the admission of air to the mixing-chambers are so arranged with relation to the burners that a perfect commingling and combustion of the air and gas is insured.

While the essential features of my invention are necessarily susceptible of modification, the preferred embodiment thereof is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my invention, showing portions of the same broken away to illustrate the mode of mixing the air and gas. Fig. 2 is a front longitudinal view of a portion of one of the burners adapted to be used in my invention, showing the gas-escape openings therein. Fig. 3 is a transverse vertical sectional view of my invention with the lid-burners removed, taken on the dotted line $x x$ in Fig. 1 and showing the

same mounted within the fire-box of a stove and equipped with adjustable front and rear burners; and Fig. 4 is a modified construction of a portion of the supply-pipe leading to the rear lid-burner.

Referring to the drawings, A represents the grate, B the casing interposed between the oven and fire-box, and C the water-front, of an ordinary cook-stove in which my invention is adapted to be used.

In Fig. 1 of the drawings, 1 represents a single standard or supporting-bracket having a series of transverse openings therein arranged on a horizontal plane and adapted to receive and support the transmission-pipes 2, 3, 4, and 5, which lead therefrom to the front or water-heating burner 6, the lid-burners 7 and 8, and the rear or oven burner 9, respectively. Each of these pipes connects at its outer end with an independent valve 10, by means of which the discharge of gas from the common feed-pipe 11 to the said pipes is controlled.

The transmission-pipes 2 and 5, which are connected with the valves 10 by having their ends slipped tightly over the gas-discharging nipples 12, are loosely inserted in and project through the bearings or openings provided for their reception in the standard 1. To the other end of the pipe 2, which terminates at a point intermediate of the burners 7 and 8, the leg or elbow of the T-shaped burner 6, the cross-piece of which is horizontally disposed and provided with a row of apertures or escape-openings through which the gas is discharged to the atmosphere. The end of the pipe 5 which projects through the bearing in the standard 1 may be prolonged and provided with apertures to form an elongated horizontal stationary burner 9, as shown in Fig. 1, or it may be shortened and equipped with a T-shaped burner 9', similar to the burner 6, as shown in Fig. 3. To retain these burners in proper adjustment within the standard 1, I provide the binding-bolts 13 13.

It will be seen by reference to Fig. 3 that the burners 6 and 9' may be placed in close juxtaposition to the leg of the standard 1 or swung outwardly and upwardly therefrom, as it is desired to transmit the heat to the lower

or upper portion of the stove or to adapt it to be placed in stoves having fire-boxes of various sizes.

The transmission-pipe 3 is screw-threaded at one end to its valve 10 and at its other end to the standard 1, where it communicates with an obliquely-disposed vertical bore 14 in said standard, which passes to the lower portion thereof and communicates with a rearwardly-extending conduit or pipe 3', leading to the mixing-chamber 15 of the rear lid-burner 8. If it is desired, the pipe 3 may pass entirely through the standard 1 and communicate with the pipe 3' through the elbow 3'', as shown in Fig. 4.

The transmission-pipe 4 is connected with the valve 10 in the same manner as the pipes 2 and 5 and has its other end threaded to the standard 1, where it communicates with the front lid-burner 7, which is centrally mounted on said standard through the obliquely-disposed vertical bore 16.

It will be apparent that by loosening the binding-bolts 13 13 the pipes 2 and 5, with their respective burners, may be easily disconnected from their valves and removed from the standard 1, thus enabling my invention to be used as either a two, three, or four burner apparatus.

In order to obtain the highest degree of heat from the combustion of the gas as it is expelled through the orifices of the burners, it is necessary that it should be properly diluted and mixed with air before such combustion takes place. To accomplish this, I provide the air-induction ports 17, adjacent to the nipples 12 in each of the transmission-pipes 2, 4, and 5, the said nipples being provided with a restricted central escape-opening through which the gas is discharged into the said pipes or mixing-chambers, where it is mixed with air as it is drawn through said ports. These ports are a sufficient distance from their respective burners to enable the gas and air to be properly mixed before they reach the burners. It is known that the pressure of gas after it has been discharged into the mixing-chamber of a burner is reduced about one-fourth by every right-angled turn in the pipe through which it is required to pass, and I therefore locate the mixing-chamber for the burner 8 directly under said burner, as shown at 15 in Fig. 1, instead of adjacent to its valve 10. The mixing-chamber 15 is semispherical in form, having its bottom or flat portion open to admit the air thereto, the said bottom being adapted to rest upon the grate A of the stove. The burner 8 is supported above the chamber 15 and communicates therewith by means of the pipe 18, which is screwed into said chamber. Within the chamber 15 is formed a tubular casing 19, which communicates with the supply-pipe 3' through an opening in the side of the chamber 15, into which the said pipe is threaded,

and is provided with a restricted escape-opening 20 in its upper portion in vertical alignment with the pipe 18, into which it is adapted to discharge the gas, where it is mixed with air drawn in through the bottom of the chamber 15.

In the construction of my invention I have endeavored to provide an apparatus that might be readily and easily fitted and adjusted to any cook-stove of ordinary size without the necessity of mutilating or breaking the stove in any way. By the use of the standard 1 the transmission-pipes 2, 3, 4, and 5 are supported on a level with and are enabled to pass through the opening provided in the stove for the door, thus avoiding the necessity of cutting an opening therefor.

It is obvious that such changes in the form, proportion, and minor details of construction of the parts as fairly fall within the spirit and scope of my invention may be made without departing from the spirit or sacrificing any of the advantages thereof.

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

1. An apparatus of the class described, comprising a series of lid-burners, and an elongated horizontally-disposed burner supported by a horizontal mixing-conduit and capable of lateral swinging adjustment with relation to said lid-burners, all having valve-controlled communication with a common supply-pipe.

2. An apparatus of the class described, comprising a series of lid-burners, an elongated horizontally-disposed burner pivotally supported and capable of circular adjustment with relation to the horizontal plane of said lid-burners, valve-controlled conduits leading from a common supply-pipe to said burners, and air-induction ports provided in said conduits, substantially as described.

3. An apparatus of the class described, comprising a standard, valve-controlled conduits elevated by said standard, a series of lid-burners having communication with said conduits, an elongated side burner communicating with one of said conduits and adapted to be swung toward or away from the lower portion of said standard and be retained in a desired position in relation thereto, substantially as described.

4. An apparatus of the class described, comprising a series of lid-burners, a pair of horizontally-disposed burners pivotally mounted on either side of said lid-burners and capable of circular adjustment with relation thereto, and valve-controlled conduits leading from a common feed-pipe to said burners and provided with air-induction means.

5. An apparatus of the class described, comprising a standard, valve-controlled conduits leading from a common feed-pipe to and elevated by said standard, one or more lid-burn-

ers having communication with said conduits, a pair of elongated horizontally-disposed burners mounted below and on either side of said lid-burners and adapted to be pivotally supported by and removed from said standard, communication provided between said elongated burners and two of said conduits, and air-induction means provided in said conduits, substantially as described.

10 6. An apparatus of the class described, comprising a standard, a series of valve-controlled conduits leading from a supply-pipe to and elevated by said standard, a burner mounted on said standard, a second burner mounted
15 to the rear of said first burner, elongated horizontally-disposed burners mounted adjacent to and on either side of said first-mentioned burners and supported by and adapted to be turned with relation to said standard,
20 each of said burners having communication with said conduits, and means for diluting the gas with air as it is carried through said conduits, substantially as described.

25 7. A gas-burner comprising a series of stationary and a series of laterally-adjustable pivotally-mounted combustion-chambers having escape-openings therein, mixing-conduits leading to said chambers, air-induction ports provided in said conduits, and valve-controlled means for regulating the discharge of
30 gas into said conduits, substantially as described.

8. A gas-burner comprising a standard 1, the horizontal mixing-chambers 2 and 5 loosely
35 supported by said standard and the mixing-chamber 4 rigidly connected to said standard, all having a tight sliding engagement at their opposite ends with the valve-controlled discharge-nipples 12, the elongated combustion-chambers 6 and 9' and the combustion-
40 chamber 7 communicating, respectively, with said mixing-chambers and having discharge-orifices therein, the mixing-chamber 15 having the tubular perforated portion 19 therein adapted to receive and communicate with
45 a valve-controlled horizontal conduit, the vertical tube 18 communicating with said mixing-chamber and supporting a combustion-chamber 8 having discharge-orifices therein,
50 substantially as described.

9. A gas-burner comprising a standard 1 having a series of transverse openings there-through and a series of obliquely-disposed vertical bores one extending to the lower and
55 the other to the upper central portion of said standard, a series of horizontal conduits adapted to rest loosely in said transverse openings and each to communicate at one end with an elongated horizontal combustion-chamber
60 and at the other end with a common supply-pipe, means for retaining said chambers in a desired position with relation to said standard, a series of horizontal conduits communicating with said vertical bores and with said
65 common supply-pipe, a series of combustion-

chambers intermediate of said elongated chamber and having communication with said conduits, means for commingling air with the gas discharged into said conduits, and independent valves for controlling the admission
70 of gas to said conduits, substantially as described.

10. In an apparatus of the class described, the combination with a series of stationary lid-burners having mixing-chambers and
75 valve-controlled communication with a supply-pipe, of one or more elongated horizontal burners pivotally supported and retained in adjacent position to said lid-burners and adapted to be vertically adjusted with rela-
80 tion to the horizontal plane of said lid-burners and having mixing-chambers and valve-controlled communication with a supply-pipe, substantially as described.

11. An apparatus of the class described, comprising a standard, the burners 7 and 8, a
85 valve-controlled conduit leading from a supply-pipe to said burner 7 and elevated by said standard, a mixing-chamber below and having communication with said burner 8,
90 a valve-controlled conduit leading from a supply-pipe to and elevated by said standard and so angled as to connect with said mixing-chamber at a point below the horizontal plane of its point of connection with said standard
95 and having an escape-opening communicating with said chamber, substantially as described.

12. An apparatus of the class described, comprising a standard having a series of ver-
100 tically-disposed bores therein, valve-controlled conduits leading from a supply-pipe to and elevated by said standard and each communicating with one of said bores, a burner mounted above said standard and communi-
105 cating with one of said bores, a second burner at the rear of said first-mentioned burner, a semispherical mixing-chamber having air-induction means arranged below and adapted to communicate with and support said sec-
110 ond burner, a conduit communicating at the lower portion of said standard with one of said bores and connected with and adapted to extend within said mixing-chamber, a re-
115 stricted escape-opening provided in the portion of said conduit extended within said chamber in vertical alinement with said burner, and air-induction means provided in the conduit leading to said first-mentioned burner, substantially as described. 120

13. An apparatus of the class described having an elevated horizontally-disposed conduit and a burner suspended from said conduit and adapted to have a circular adjust-
125 ment with said conduit as its axis, means for securing said burner in proper adjustment, a port in said conduit for the admission of air thereto, and means for controlling the admission of gas to said conduit.

14. In an apparatus of the class described, 130

the combination with one or more lid-burn-
ers having valve-controlled communication
with a supply-pipe, of one or more horizon-
tally-disposed conduits, elongated burners
5 suspended from said conduits and capable of
circular adjustment with relation thereto,
and means for admitting air to said conduits,
substantially as described.

In testimony whereof I have signed my
name to this specification in the presence of 10
two subscribing witnesses.

EUGENE ORA DANIELS.

Witnesses:

C. W. OWEN,
CORNELL SCHREIBER.