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A. H. BENNETT & S. JONES.

GAS BURNER.

(Application filed Jan. 5, 1901.)

(No Model.)

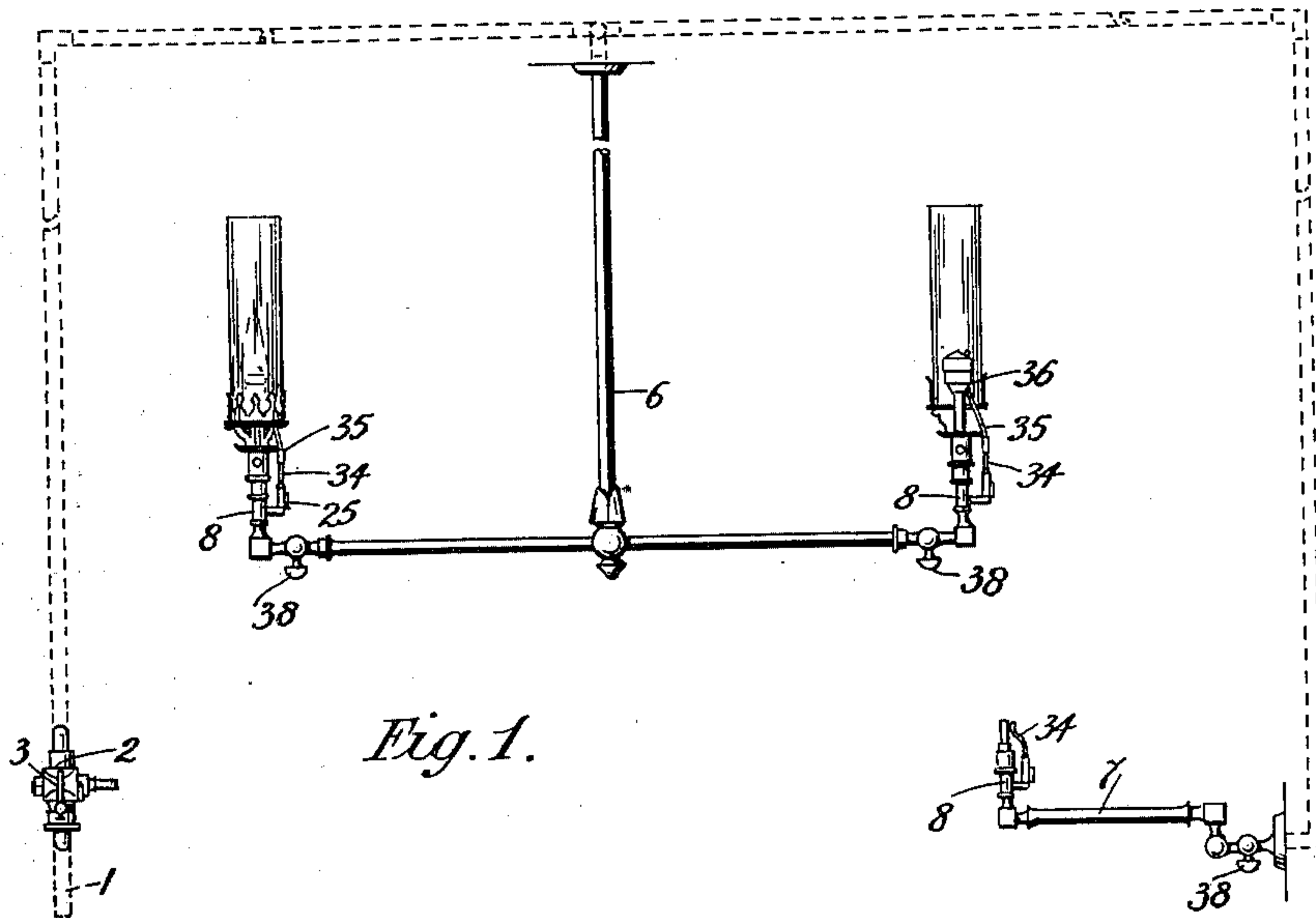


Fig. 1.

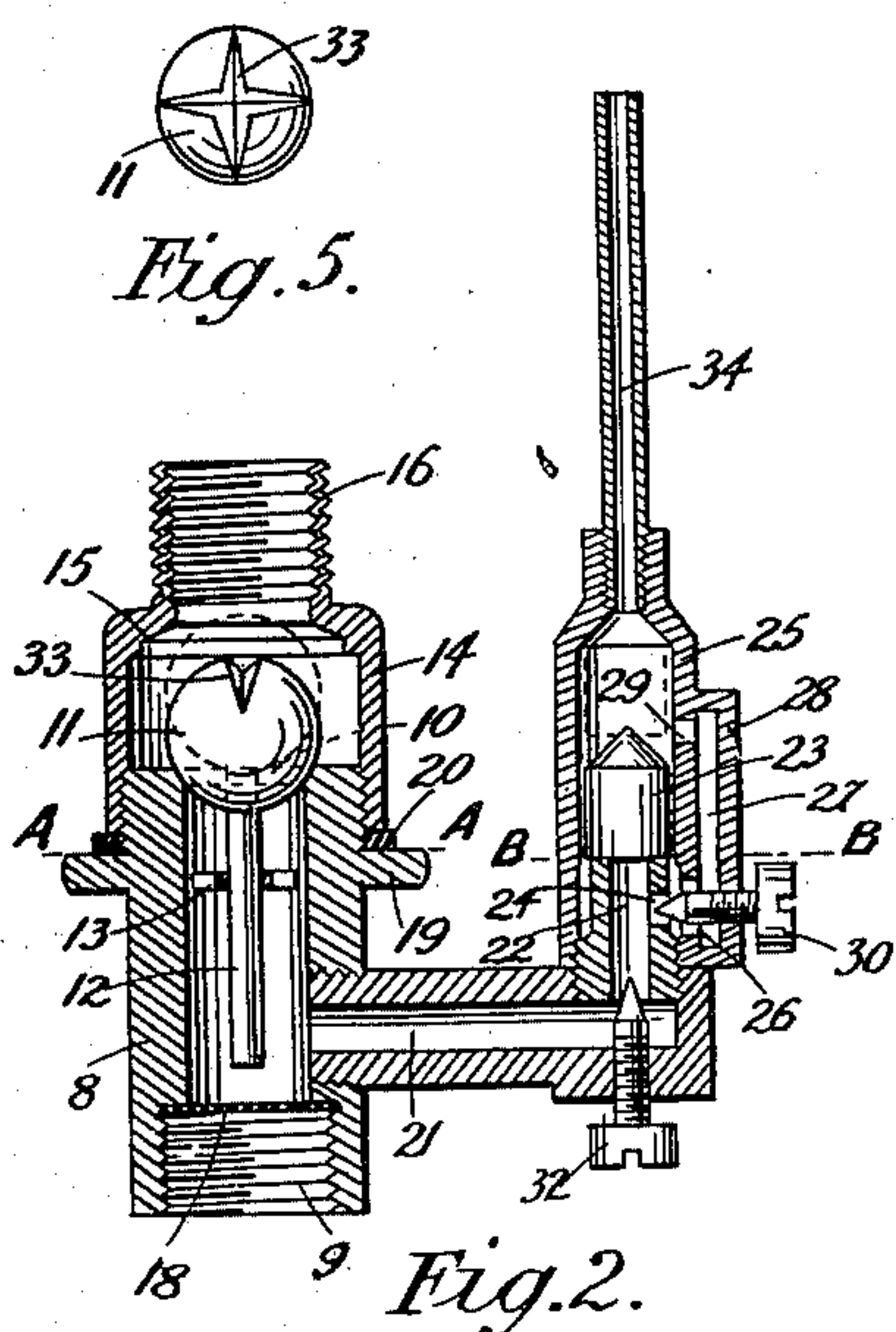


Fig. 2.

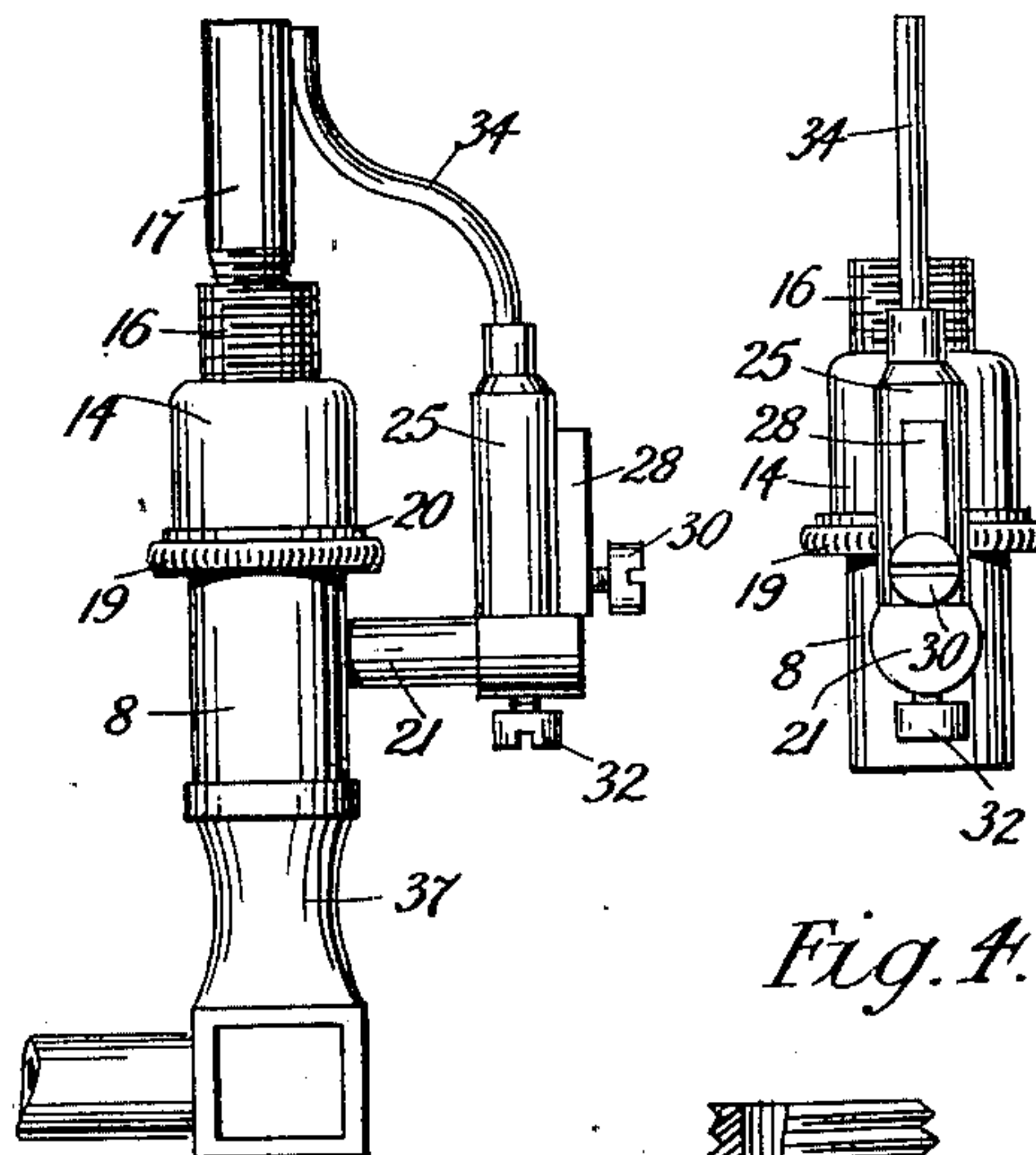


Fig. 3.

Fig. 4.

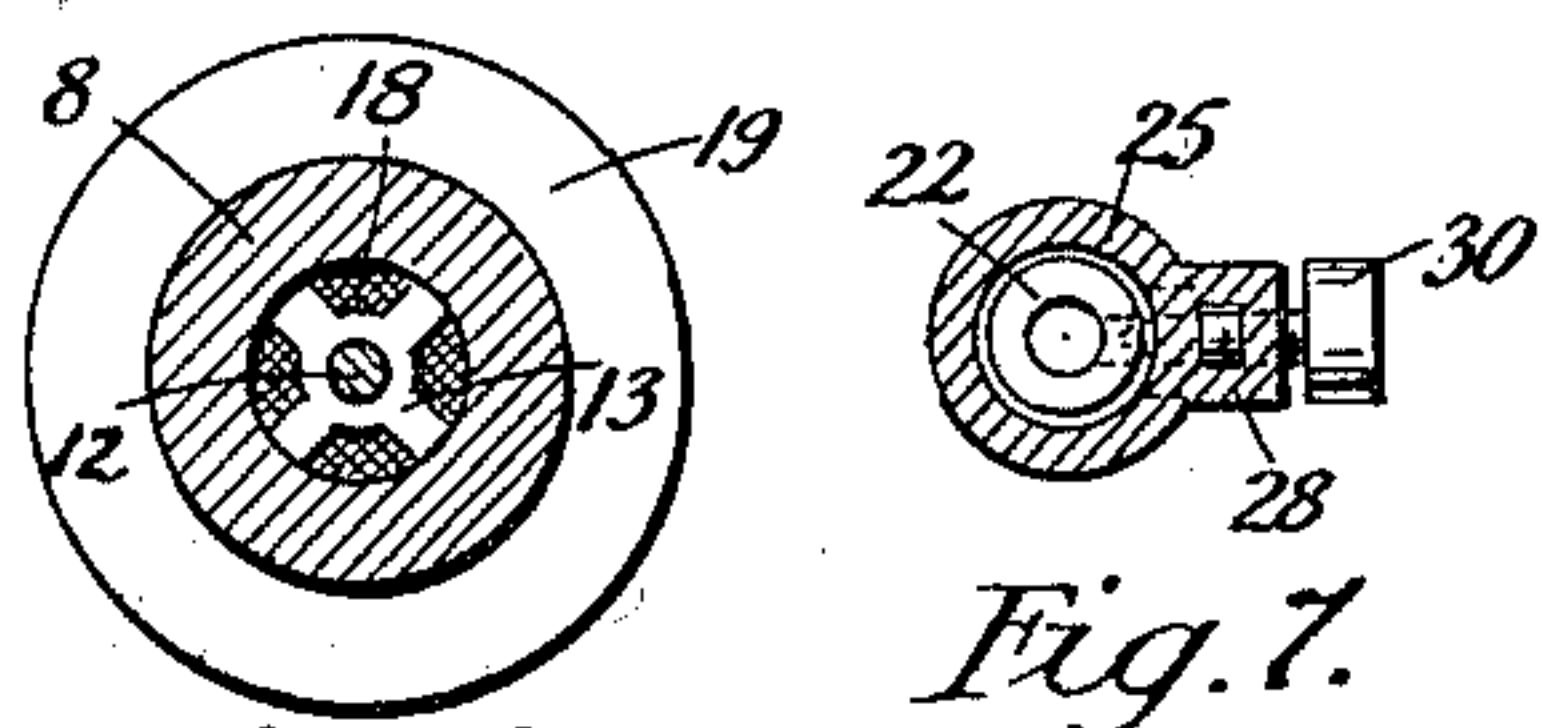


Fig. 6.

Fig. 7.

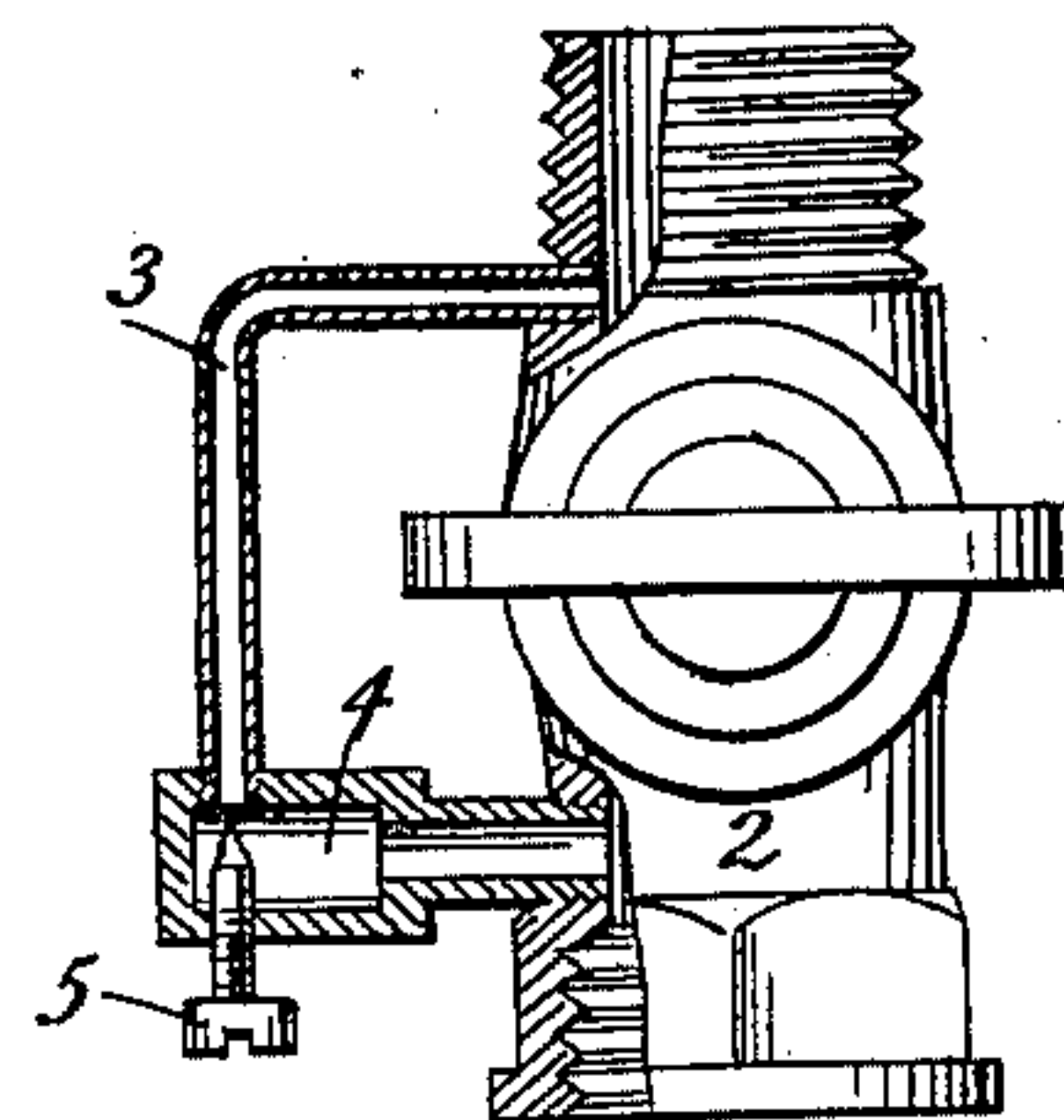


Fig. 8.

Witness
Chas. N. Smith
J. Staib

Inventors
Arthur H. Bennett
Stephen Jones
per L. H. Pierce

UNITED STATES PATENT OFFICE.

ARTHUR HENRY BENNETT, OF RICHMOND, AND STEPHEN JONES, OF
MOONEE PONDS, VICTORIA.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 672,817, dated April 23, 1901.

Application filed January 5, 1901. Serial No. 42,193. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR HENRY BENNETT, residing at 44 Swan street, Richmond, and STEPHEN JONES, residing at 51 Athol street, Moonee Ponds, in the Colony of Victoria, subjects of the Queen of Great Britain, have invented a new and useful Improvement in Gas-Burners, of which the following is a specification.

10 Our invention relates to a gas-burner in which a pilot-light is used for lighting the main burner, said pilot-light being extinguished as soon as said main burner is lighted and again lighted when the main burner is ex-
15 tinguished.

We will now describe the invention, having reference to the accompanying sheet of drawings, in which—

20 Figure 1 shows a view of a small example of our system of lighting, in which is illustrated a chandelier and a wall-bracket. Fig. 2 shows a vertical section of the means for controlling the gas-supply to the pilot-light and the burner. Fig. 3 shows an elevation
25 of the construction shown in Fig. 2, drawn to a smaller scale, the same being here applied to an ordinary gas fitting and burner. Fig. 4 shows an edge view of a portion of the parts shown in Fig. 2. Fig. 5 shows a plan
30 of the ball-valve 11 shown on Fig. 2. Fig. 6 shows a section taken on the line A A of Fig. 2. Fig. 7 shows a section taken on the line B B of Fig. 2. Fig. 8 illustrates the operating-tap and its adjustable by-pass.

35 In the drawings, 1, Fig. 1, represents the ordinary gas-supply pipe, and 2 a cock on same. This cock (see Fig. 8) has a by-pass pipe 3, one end of which enters the bore of the cock and the other end enters a cylindrical box 4, the said box being screwed into
40 the bore of the cock on the side of the valve opposite to that which receives the by-pass-pipe end. The box 4 has a small independent tap preferably constructed, as shown, in
45 the form of an adjustable screw 5, which is arranged to control the passage of the by-pass 3 and which will normally be kept open or partly open, so as to allow of a constant passage of gas independently of the cock 2,
50 so as to supply at all times the pilot-lights, as hereinafter described. The gas-supply to

the burner or burners is controlled by the cock 2. Fig. 1 illustrates two incandescent-mantle burners supported by a chandelier 6 and an ordinary burner on a wall-bracket fitting 7. We employ the following construction to be connected to the gas-fitting in every case: A cylinder 8 (see Fig. 2) is internally threaded at its base 9, so as to screw onto the gas-fitting. This cylinder has a milled rim 60 19, and the portion above same is screw-threaded. The top of this cylinder is beveled at 10, and so forms a seat for an aluminium ball-valve 11. Said ball-valve has a rod 12 attached, and a perforated and open plate 65 13 is set within the cylinder and forms a guide for the said rod 12 and allows also of a passage of gas. A shouldered tube 14 screws onto the top of the cylinder 8 and rests on washer 20, and the shoulder 15 of the tube 14 70 forms a stop for the said valve. The top of the ball 11 is cut away or grooved out at 33, Fig. 5, so as to allow of the upward passage of gas when the said ball comes against the shoulder 15. The ball will, however, in practice "float" in the tube by reason of the gas-
75 pressure when the gas-supply cock is turned on. The neck 16 of the shouldered tube is threaded both internally and externally, so that when the apparatus is employed in conjunction with a Welsbach gas-burner such
80 burner will screw onto the external thread; but when employed in conjunction with an ordinary gas-burner such burner will be received by the internal thread, as shown in Fig. 85 3. The cylinder 8 is provided at its base with a disk of wire-gauze 18 for the dual purpose of checking any foreign matters or dust and preventing back-lighting. This cylinder has a perforation through its wall, and a short 90 branch pipe 21 screws into same. This pipe is preferably set at right angles to the cylinder. The top of this branch pipe near its end has a short pipe-section 22 screwed into it, and the bore of which latter is at right 95 angles to and communicates with the bore of branch pipe 21, and the top of the pipe-section forms a seat for an aluminium valve 23. This valve has its top tapered conically. The wall of this short pipe-section 22 has a perforation 24 through it, and a pipe or tube 25
100 screws onto the said pipe-section. The per-

foration in the wall of the pipe-section 22 communicates with a perforation 26 in the pipe or tube 25 near its base, and which latter communicates with a by-passage 27, 5 formed by a casing 28 on the tube 25, and which has an opening 29 into the said pipe or tube 25 near its top. The inside of the top of this tube forms a seat for the valve 23 when in its altered position, as hereinafter 10 described. The by-pass casing 28 is provided with a small adjusting-screw 30, the end of the said screw being tapered to a point and same being designed to control the opening 24, so as to regulate the amount of flow of gas 15 to supply the pilot-light.

34 represents the pilot-tube, which is screwed into top of the pipe 25. We provide an adjusting-screw 32, which screws into the bottom of the branch pipe 21 and has a tapered point which is arranged to regulate the 20 amount of opening of the pipe-section 22, the object of this screw being to control the gas-pressure entering the said pipe-section.

37, Fig. 3, represents an ordinary gas-fitting 25 in which the cylinder 8 is mounted, and 17 a burner on the tube 14. When the apparatus is employed in conjunction with an ordinary gas-burner, the pilot-tube may be bent to meet the burner, as indicated in Fig. 3; but 30 when the apparatus is employed in conjunction with an incandescent-mantle burner the end of tube 34 will be received by a tube 35, which latter enters or is attached to the burner, as indicated at 36, Fig. 1, or otherwise.

35 The valves are constructed of aluminium, same being a light and serviceable metal; but other suitable metal or material may be substituted therefor, provided that the "floatability" of the valves is preserved.

40 The *modus operandi* of our invention is as follows: Assuming the cock 2 on the supply-pipe 1 to be turned "on" and the adjusting-screw 5 set to regulate the required flow of gas to supply the pilot-light independently 45 of the cock 2, the gas will pass by the main pipe and its branches to the gas-fittings and through same to the cylinder 8, mounted thereon, and its pressure will cause the aluminium ball-valve 11 (see Fig. 2) to rise from 50 its seat 10 and allow the full supply of gas to pass to the gas-burner above. The gas-pressure will cause the valve to float in the chamber; but should it rise to the shoulder 15 the incisions or grooves 33 in the ball will 55 allow of an upward passage of gas to the burner. The gas which passes by pipe 21 and pipe-section 22 during this time will act on the under side of the floatable aluminium valve 23, so as to cause it to rise from its 60 flat bottom seat and close up against the conical seat formed inside the top of the pipe or tube 25, in which it is set, so closing up the gas-passage to the pilot-light tube 34. On turning off the supply-cock 2 the valves 65 11 and 23 will both fall onto their bottom seats, and the gas which escapes by the by-

pass 3, Fig. 8, and passes along the supply-pipe being at very low pressure will not have sufficient force to raise the valves, and this low-pressure gas will pass from cylinder 8 70 through the branch pipe 21 to the regulated mouth of and through the pipe-section 22 and through the regulated hole 24 in the wall of same to the by-passage 27, thence through the opening 29 into the pipe or tube 25 above 75 the valve, (which latter, as before described, will be resting upon the top of the pipe-section,) and thence to the pilot-tube 34. This action will take place sufficiently quickly to cause the pilot to light before the main light 80 becomes quite extinguished. The actions above described will be repeated on each turning on and off of the main cock, and it will be understood that the pilot-light will always be kept going while the main light or 85 lights is or are out.

Referring to the pipe 34, we would have it understood that such duct may be modified or altered in its construction or dimensions to suit the varying forms of gas-burners to 90 which our invention may be applied. For instance, in lieu of the construction 34 and 35, as shown on Fig. 1, the pipe 35 might proceed up parallel with but outside of the incandescent mantle, its top opening being so arranged 95 that it is conveniently placed for ignition of the burner.

With regard to the aluminium being used as the material from which to construct the valves 11 and 23 we would say that we have 100 found such metal to be suitable on account of its lightness and peculiar metallic properties; but we reserve to ourselves the right of constructing such valves of any other suitable metal or material either in a hollow or 105 solid form.

It will be understood from the foregoing explanations that a large number of the gas-burners fitted with our parts hereinbefore referred to can be distributed over a large hall 110 or building, and after being once lighted the whole of such burners can be turned on or off by one movement of the hand operating a cock, as 2, at any convenient center or room or alternatively at the gas-meter, the portions 115 of the pipe 3 and the adjustment of the screw-cock 5 being previously suitably set in accordance with the number of burners in the system.

It may be noted that where the ordinary 120 gas-taps 38 are used any individual light may be shut off if not required. In somewhat-similar manner to that above described our system and apparatus may be applied to the lighting of street-lamps. In this case the attendant need simply turn on the one cock at 125 night, and vice versa in the morning, thus obviating the present extravagant system, wherein each individual burner must be operated by an employee either before or after 130 the exact proper time for lighting such gas. The use of our invention thus economizes the

gas consumed before the proper minute for lighting at night and the gas consumed after the proper minute when the light should be extinguished in the morning.

5 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. The combination in a gas-burner, of a
10 cylinder 8 adapted to be secured to a gas-fitting, a valve-seat at the top of said cylinder, a tube secured to the upper part of said cylinder and having a chamber for a valve, a
15 burner attached to said tube, a valve within said chamber, a pipe connected to said cylinder, a valve-tube connected to said pipe, a pilot-tube connected to said valve-tube, a valve within said valve-tube, two valve-seats
20 in said tube, and a by-passage opening into said valve-tube above and below the lower valve-seat, substantially as specified.

2. The combination in a gas-burner, of a cylinder 8 adapted to be secured to a gas-fitting, a valve-seat at the top of said cylinder,
25 a tube secured to the upper part of said cylinder and having a chamber for a valve, a burner attached to said tube, a valve within said chamber, a pipe connected to said cylinder, a valve-tube connected to said pipe, a
30 pilot-tube connected to said valve-tube, a valve within said valve-tube, two valve-seats in said tube, a by-passage opening into said valve-tube above and below the lower valve-seat, and means for regulating the flow of gas
35 to the valve-tube of the pilot-burner, substantially as specified.

3. The combination in a gas-burner, of a cylinder 8, adapted to be secured to a gas-fitting, a valve-seat at the top of said cylinder,
40 a shouldered tube 14 fitting onto said cylinder and forming a chamber, a main burner connected to said tube, a ball-valve 11 in said chamber and means for guiding the valve in its movements, a branch pipe 21 from said

cylinder, a pipe-section 22 entering the same 45 and the top of which forms a valve-seat, a tube 25 secured to the pipe-section and having a valve-seat at its top, a pilot-tube connected to said tube 25, a valve 23 with a conical top within said tube, a tube-casing 28, 50 there being an opening 24 in the said pipe-section, an opening 26 in the tube 25 in line with the same and an opening 29 in the tube 25 near its top, and means for regulating the said opening 24, substantially as described. 55

4. The combination in a gas-burner, of the cylinder 8, a valve-seat at the top of said cylinder, a wire-gauze strip at the base of said cylinder and means for securing said cylinder to a gas-fitting, a shouldered tube fitting 60 onto the cylinder and forming a valve-chamber and having a neck internally and externally screw-threaded, a ball-valve in the chamber having incisions at its top and mounted on a rod set in a guide-frame, a 65 branch pipe 21 from the said cylinder, a pipe-section 22 entering the same, a valve-seat at the top of said pipe-section, a pipe 25 attached to said pipe-section, and having a conical top forming a valve-seat, a pilot-tube 34 70 connected to said pipe 25, a pipe-casing 28, a valve 23 within the pipe 25, there being an opening 24 in the pipe-section, an opening 26 in the pipe 25 in line with the same and an opening 29 in the pipe 25 near its top, an ad- 75 justing-screw 30 to regulate the opening 24, and an adjusting-screw 32 to regulate the opening from the branch pipe 21 to the pipe-section 22, substantially as set forth.

In testimony whereof we have signed our 80 names to this specification in the presence of two subscribing witnesses.

ARTHUR HENRY BENNETT.
STEPHEN JONES.

Witnesses:

A. O. SACHSE,
A. HARKER.