

No. 842,334.

PATENTED JAN. 29, 1907.

P. E. PETERSON.
GAS BURNER.

APPLICATION FILED OCT. 26, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

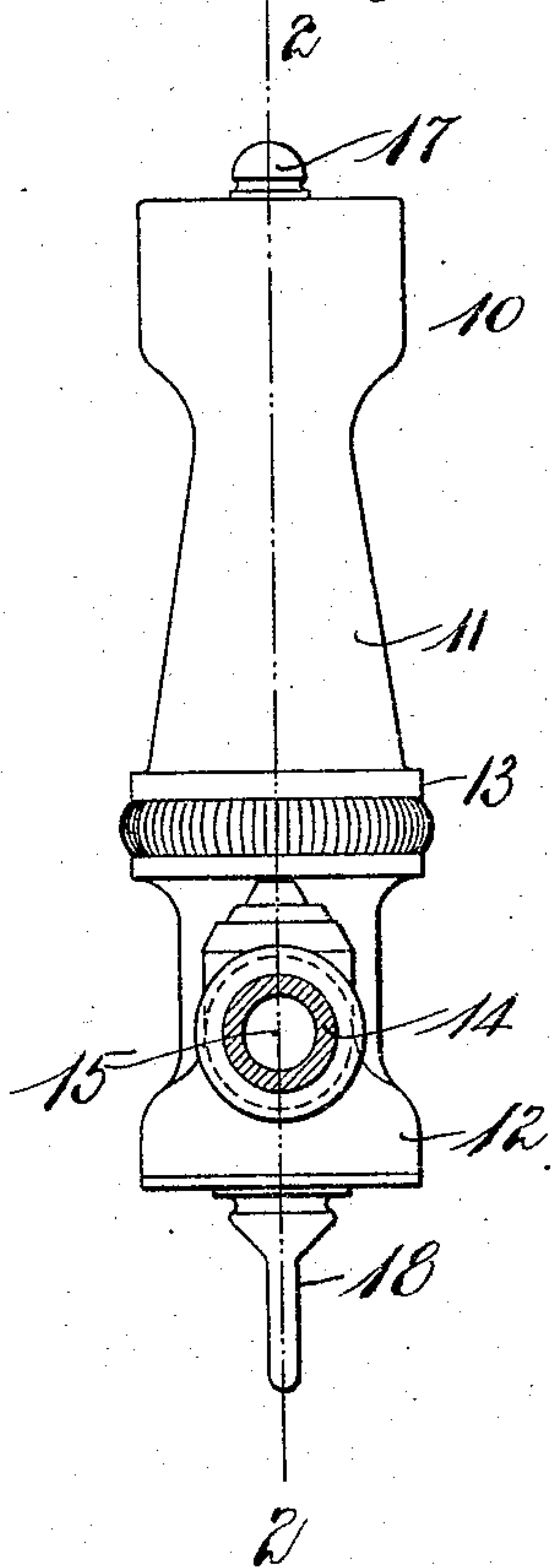


Fig. 2.

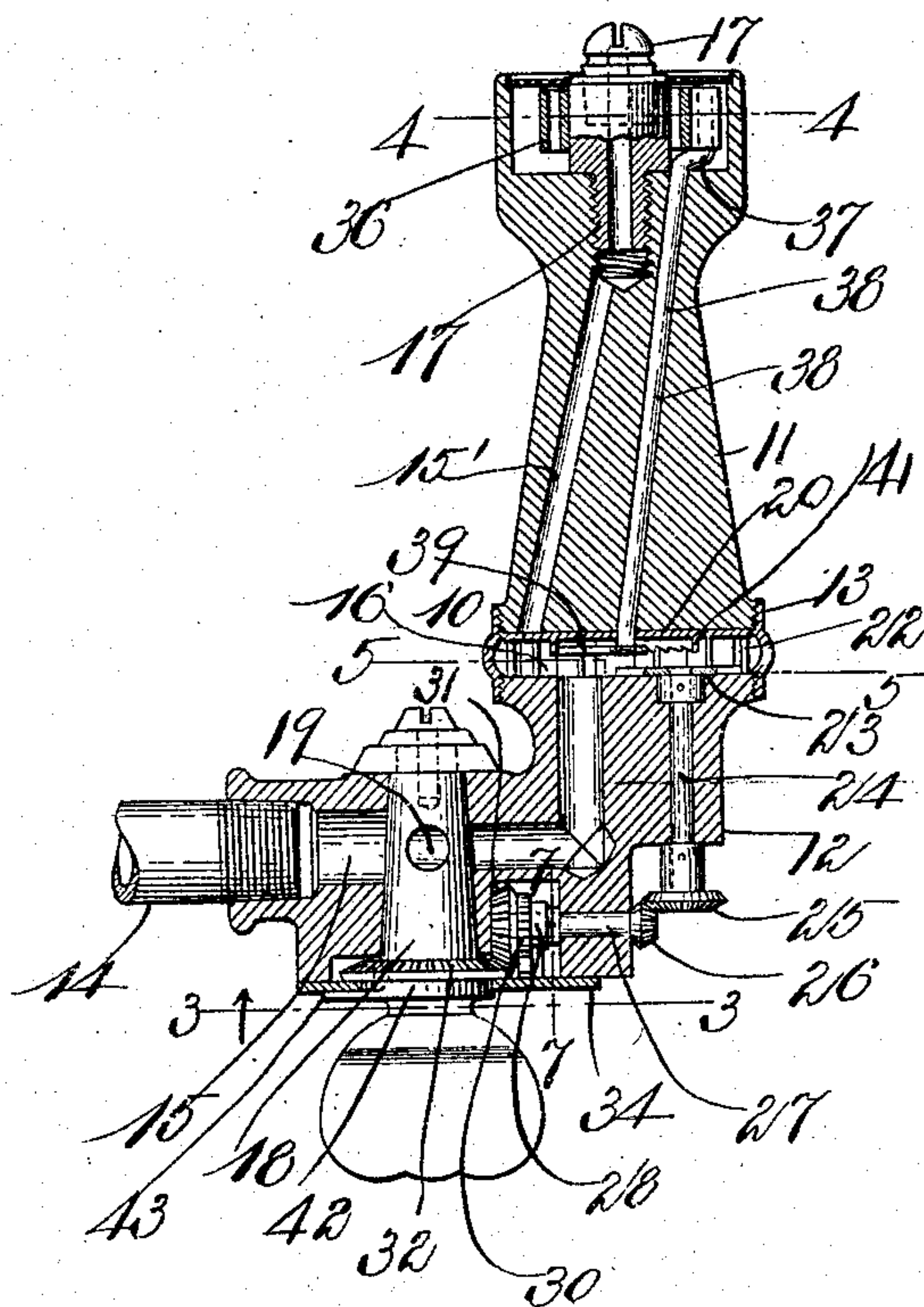
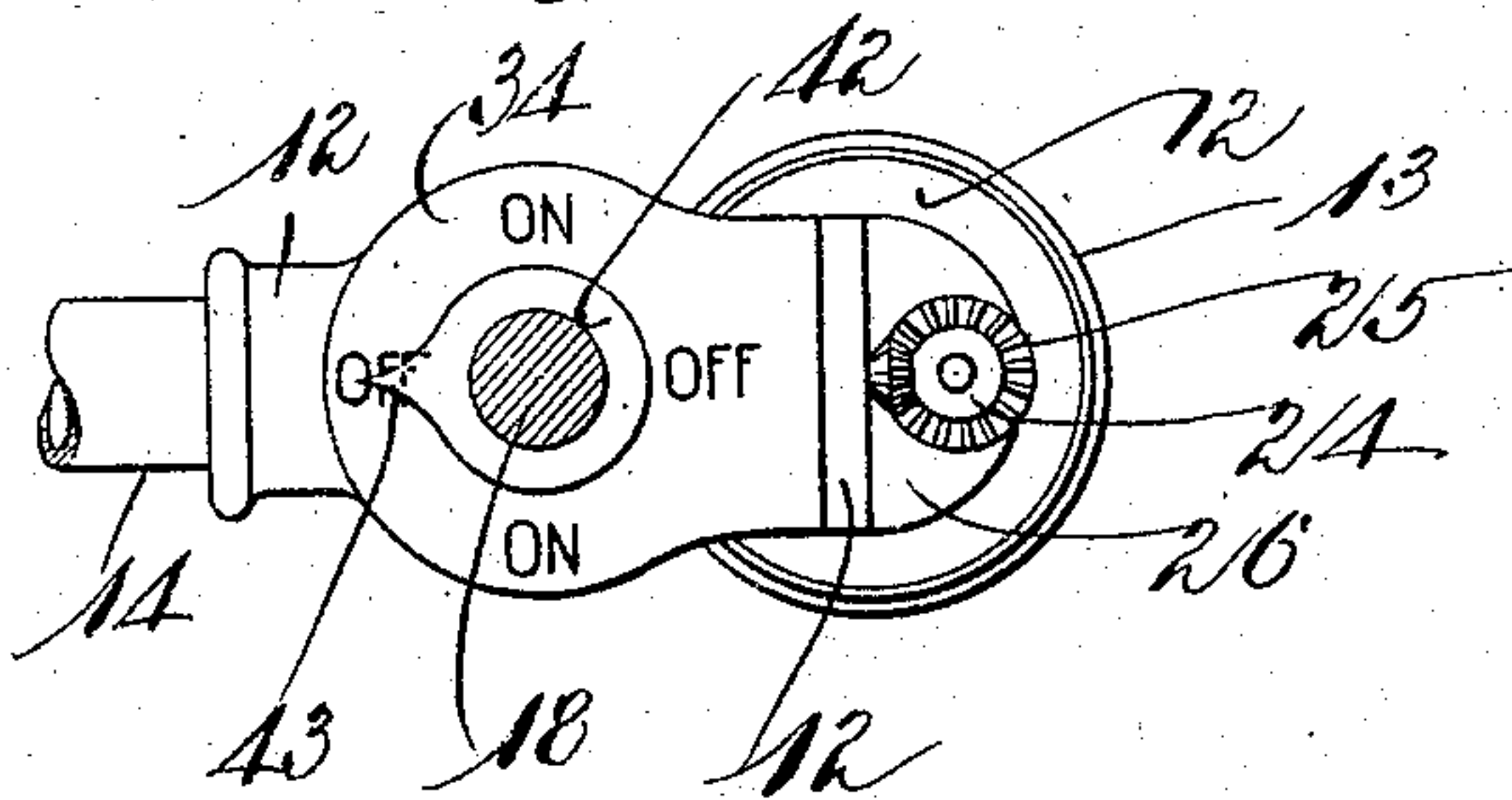


Fig. 3.



Witnesses:

Walter T. Pierce
Louis A. Jones.

Inventor:

Peter E. Peterson
by his attorney, Paul S. Fording.

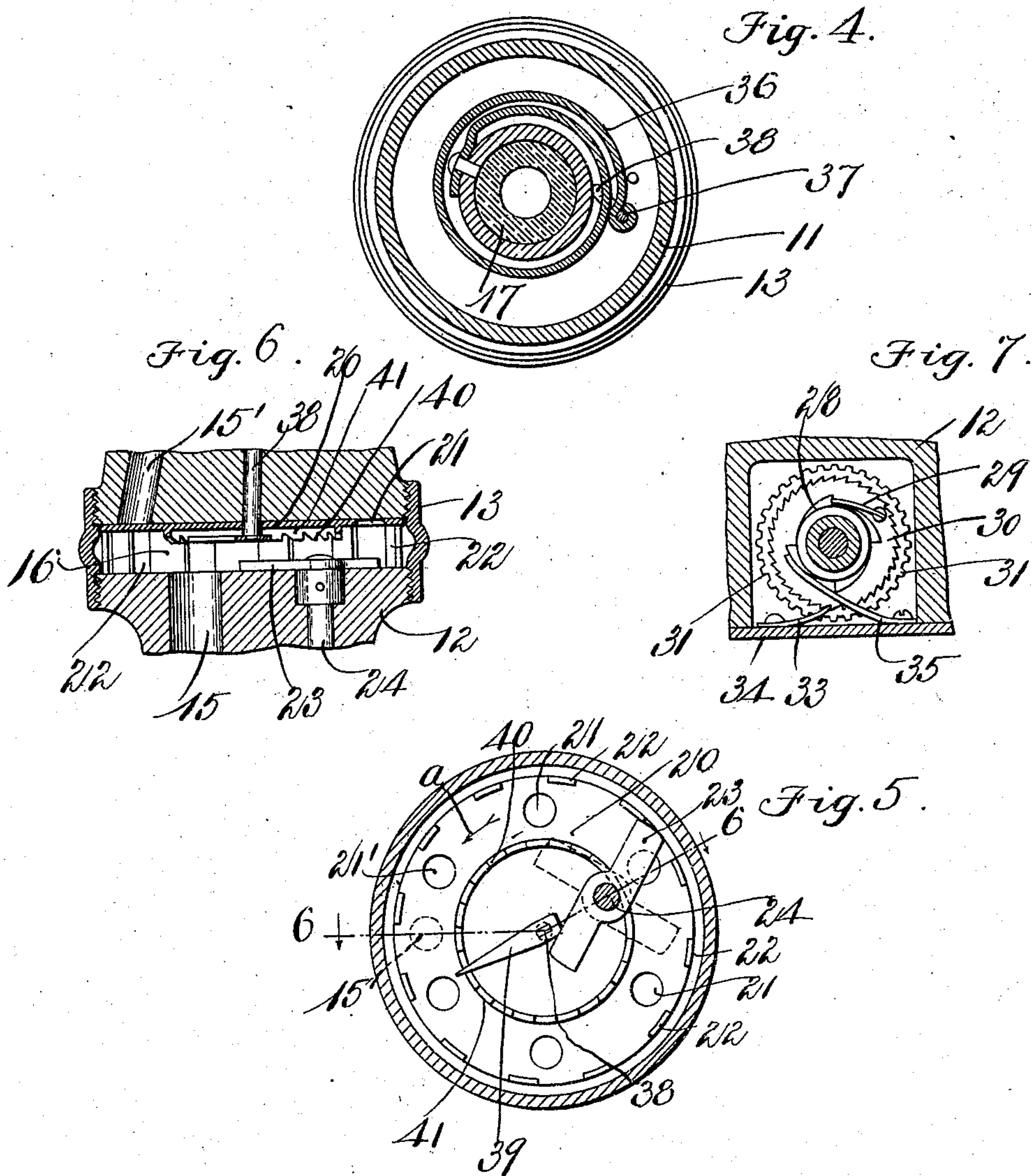
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2 SHEETS—SHEET 2.



Witnesses:

Walter L. Pierce

Samuel A. Jones.

Inventor:

Peter E. Peterson

By his attorney, Charles S. Gooding.

UNITED STATES PATENT OFFICE.

PETER E. PETERSON, OF MILFORD, NEW HAMPSHIRE.

GAS-BURNER.

No. 842,334.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed October 26, 1906. Serial No. 340,635.

To all whom it may concern:

Be it known that I, PETER E. PETERSON, a citizen of the United States, residing at Milford, in the county of Hillsboro and State of New Hampshire, have invented new and useful Improvements in Gas-Burners, of which the following is a specification.

This invention relates to automatically-closing gas-burners, the object of the same being to provide a gas-burner which will shut off the gas if the same becomes accidentally extinguished, either by the lowering of pressure in the gas-main or by the gas being blown out at the burner-tip, either by a draft or by an ignorant person.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings, Figure 1 is a rear elevation of my improved gas-burner with the gas-supply pipe shown in section. Fig. 2 is a sectional elevation taken on line 2 2 of Fig. 1. Fig. 3 is an underneath plan, partly in section, on line 3 3 of Fig. 2. Fig. 4 is a sectional plan taken on line 4 4 of Fig. 2. Fig. 5 is an underneath plan, partly in section, taken on line 5 5 of Fig. 2. Fig. 6 is a sectional elevation taken on line 6 6 of Fig. 5 looking in the direction of the arrows on said line. Fig. 7 is an enlarged section taken on line 7 7 of Fig. 2 looking toward the left in said figure.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 10 is a casing formed, preferably, in two parts 11 and 12, which are joined together by a collar 13, having screw-threaded engagement with said parts. The lower part 12 is connected to a gas-supply pipe 14. A passage-way 15 leads from the gas-supply pipe 14 to a chamber 16, located between the upper and lower parts 11 and 12, respectively, of the casing 10. The passage-way 15' is continued in the upper part 11, terminating at its upper end in a burner-tip 17, which has screw-threaded engagement with said upper part 11. A stop-cock 18 is rotatably mounted in the lower part 12 and has a port 19 extending transversely thereacross in alinement with the passage-way 15.

A cut-off plate 20 is rotatably mounted upon the casing 10 between the parts 11 and 12, as seen in Figs. 2, 5, and 6, said cut-off plate being provided with a series of ports 21 concentric therewith and adapted to be

brought alternately into and out of alinement with the passage-way 15' by mechanism hereinafter described. Around the periphery of the cut-off plate 20 are provided teeth 22, which are engaged for the purpose of rotating said cut-off plate by a two-armed driver 23. Said driver 23 is fast to a shaft 24, journaled to rotate in the part 12 and having fastened thereto at its lower end a bevel-gear 25, which meshes into a bevel-gear 26, fast to a shaft 27, journaled to rotate in the lower part 12. The shaft 27 has a toothed clutch 28 fast thereto and adapted to engage a spring-pawl 29, fast to a stop-ratchet 30. The stop-ratchet 30 is fastened rigidly to a bevel-gear 31, which meshes into a bevel-gear 32, fast to the stop-cock 18.

A stop-pawl 33 is fastened to a plate 34, which in turn is fastened to the bottom of the lower part 12. A spring 35 is also fastened to said plate 34 and bears against the periphery of the hub of the toothed clutch 28. It will be understood that the toothed clutch 28 is fast to the shaft 27 and that the ratchet 30 and bevel-gear 31 are mounted to rotate loosely upon said shaft 27.

A coil of flat metal 36 of two or more convolutions surrounds the tip 17, the inner end being fastened to said tip, the outer end to a crank-arm 37, formed upon a vertically-extending shaft 38, journaled to rotate in the upper part 11 and having fastened to its lower end an arm 39, which constitutes, in effect, a pawl, being formed of thin metal and engaging at its outer end ratchet-teeth 40, formed upon an annular rib 41 integral with and extending downwardly from the cut-off plate 20. The metal coil 36 is preferably formed of two layers or thicknesses of different kinds of metal, one of said metals being more easily expanded than the other, so that when the gas is lighted at the burner-tip the heat therefrom will cause the metal coil 36 to expand, and when the gas is turned out or blown out, as the case may be, the heat being removed, the metal forming the coil 36 will contract, thus moving the outer end of the coil outwardly when it is expanded and inwardly when it contracts and rotating the shaft 38, as well as the arm 39 attached thereto, for the purpose hereinafter described.

The general operation of the device hereinbefore specifically described is as follows: Before the gas is turned on the cut-off plate 20 and its driver 23 are in the position illustrated in dotted lines, Fig. 5, and the ports 21

are out of alinement with the passage-way 15. The gas is turned on in the usual manner by means of the stop-cock 18 and flows through the passage-way 15 upwardly into the chamber 16. One of the ports 21, Fig. 5, is brought into alinement with the passage-way 15' by the quarter-rotation of the stop-cock 18, hereinbefore referred to, and of the gears 32 31, shaft 27, gears 26 25, and shaft 24, which by a quarter-rotation of said stop-cock causes the driver 23 to rotate a quarter-turn from the position illustrated in dotted lines, Fig. 5, to that illustrated in full lines therein, thus moving the cut-off plate 20 in the direction of the arrow *a* from the position illustrated in Fig. 5 until the port 21' is in alinement with the passage 15. The gas now passes through the port 21' and into the passage-way 15' and thence upwardly through the burner-tip 17, where it is lighted. As soon as the gas is lighted the heat therefrom causes the metal coil 36 to expand, the outer end thereof being drawn outwardly by such expansion and rocking the crank-arm 37, giving a partial rotation to the shaft 38 and to the arm 39, fast thereto. Said arm slips over several of the ratchet-teeth 40, and as soon as the gas is turned or blown out the coil of metal contracting causes the outer end thereof to approach the center of said coil, thus rocking the crank-arm 37 and shaft 38 in the opposite direction to that hereinbefore referred to or in the direction of the arrow *a*, Fig. 5, and rotating the cut-off plate 20 until the port 21 is moved out of alinement with the passage-way 15' and the ports assume the same relative position to said passage-way as is shown in Fig. 5.

It will be understood that when the stop-cock is turned a quarter-turn the driver-plate 23 is also turned a quarter-turn. Assuming the said driver-plate to be in the position illustrated in Fig. 5 in dotted lines, a quarter-turn brings the same substantially to the position shown in full lines and lets the gas on, turning the port 19 in the stop-cock into alinement with the passage-way 15. Now another quarter-turn shuts the gas off and rotates the driver-arm to the position illustrated in dotted lines, Fig. 5. When the driver-arm is turned, as hereinbefore described, by the stop-cock from the position illustrated in dotted lines, Fig. 5, to that illustrated in full lines therein, the port 21' is brought into alinement with the passage-way 15, so that during the first quarter-turn of the stop-cock the passage-way is open from the pipe 14 through the passage-way 15, port 19, chamber 16, port 21', passage-way 15', to the burner-tip 17. Assuming now that the gas is blown out, the coil of metal 36 will contract, rocking the arm 37 and shaft 38, as well as the arm 39, and moving the cut-off plate 20 until the port 21' is out of alinement with the passage-way 15, so that the gas is

then shut off. Assuming the gas to be turned out in the usual manner, a quarter-turn of the stop-cock will rotate the driver 23 from the position illustrated in full lines to that shown in dotted lines, Fig. 5, and will shut off the gas, and a subsequent cooling of the coil 36 will move the port 21' out of alinement with the passage-way 15'.

In order to indicate whether the gas is turned on or off, an index-plate 42 is fastened to the stop-cock 18, said index-plate having a pointer 43 thereon which points to the words "Off" or "On," Fig. 3, when the port 19 stands across or in alinement with, respectively, the passage-way 15.

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

1. In a gas-burner, a casing, a burner-tip fast thereto, a stop-cock, said casing provided with a passage leading from said stop-cock to said burner-tip, a rotary cut-off plate extending across said passage, with a series of concentric ports therein adapted to aline with said passage, teeth on said cut-off plate, a rotary driver-plate adapted to engage said teeth and rotate said cut-off plate, and gearing operatively connecting said driver-plate to said stop-cock.

2. In a gas-burner, a casing, a burner-tip fast thereto, a stop-cock, said casing provided with a passage leading from said stop-cock to said burner-tip, a rotary cut-off plate extending across said passage, with a series of concentric ports therein adapted to aline with said passage, a metal coil surrounding said tip, one end fast to a stationary part, a vertically-extending rod journaled to rotate in said casing, a crank-arm on said rod attached to the outer end of said coil, an arm fast to the lower end of said rod, and ratchet-teeth on said rotary cut-off plate in engagement with said last-named arm, whereby when said metal coil contracts said cut-off plate is rotated to move one of said ports out of alinement with said passage-way.

3. In a gas-burner, a casing, a burner-tip fast thereto, a stop-cock, said casing provided with a chamber and with a passage leading from said stop-cock to said chamber and from said chamber to said tip, a rotary cut-off plate located in said chamber and provided with ports adapted to aline with said passage, and mechanism operatively connecting said cut-off plate to said stop-cock, whereby when said stop-cock is rotated said cut-off plate is intermittently rotated to move said ports into alinement with said passage.

4. In a gas-burner, a casing, a burner-tip fast thereto, a stop-cock, said casing provided with a chamber and with a passage leading from said stop-cock to said chamber and from said chamber to said tip, a rotary cut-off plate located in said chamber and pro-

vided with ports adapted to aline with said passage, mechanism operatively connecting said cut-off plate to said stop-cock, whereby when said stop-cock is rotated said cut-off plate is intermittently rotated to move said ports into alinement with said passage, a metal coil adapted to be expanded and contracted by variations in temperature, and instrumentalities operated by said coil to rotate said cut-off plate and move one of said ports out of alinement with said passage.

5. In a gas-burner, a casing, a burner-tip fast thereto, a stop-cock, a passage leading from said stop-cock to said burner-tip, a rotary cut-off plate with ports therein adapted

to aline with said passage, mechanism connecting said stop-cock to said cut-off plate adapted to rotate said cut-off plate and move said ports into alinement with said passage, and mechanism operable by differences in temperature in one of its parts to rotate said cut-off plate and move one of said ports out of alinement with said passage.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PETER E. PETERSON.

Witnesses:

EDWARD L. KITTREDGE,
EUGENE M. RICHARDSON.