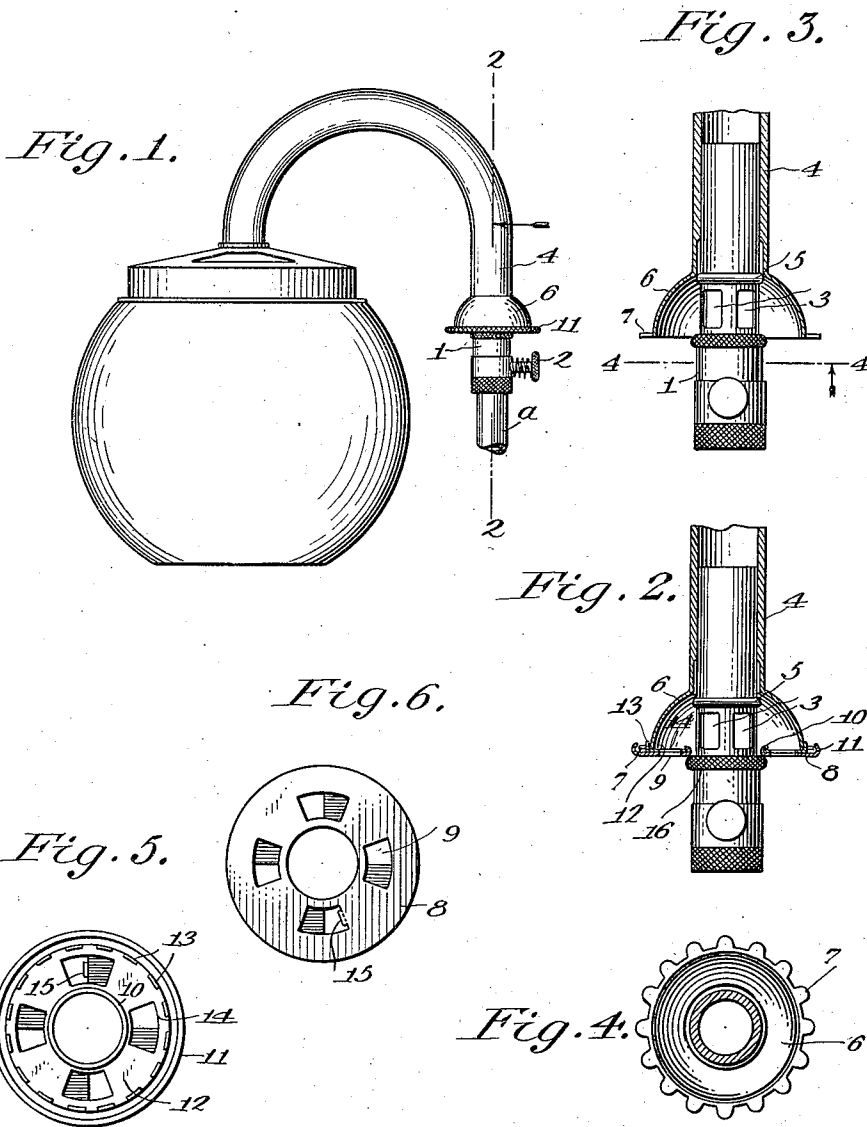


E. S. SANDERSON.
GAS BURNER.
APPLICATION FILED FEB. 14, 1910.

1,014,777.

Patented Jan. 16, 1912.



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UNITED STATES PATENT OFFICE.

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GAS-BURNER.

1,014,777.

Specification of Letters Patent.

Patented Jan. 16, 1912.

Application filed February 14, 1910. Serial No. 543,753.

To all whom it may concern:

Be it known that I, EDWARD S. SANDERSON, a citizen of the United States, and a resident of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Gas-Burners, of which the following is a description.

My invention relates to incandescent gas burners of either the inverted or upright type. In burners of this character it is usual to provide inlets in the supply tube for the admission of air drawn in by the gas current and to surround such orifices by a cup-shaped "flash diaphragm" for preventing the flashing back of the flame during ignition. The air inlets in the supply pipe when correctly designed are of such size as to admit the proper quantity of air to insure complete combustion of gas of ordinary richness. In using such a burner with lean gas it is necessary to use an air shutter for varying the size of the air inlets, thereby controlling the air supply and avoiding the entraining of excessive quantities thereof. Such a shutter, however, while a necessity with lean gas, is not only unnecessary with ordinary gas but is actually disadvantageous since users will frequently partially or entirely close the shutter thereby producing imperfect combustion which cuts down the efficiency of the lamp, carbonizes the mantle, etc.

My invention has for its object the provision of a burner of the type referred to, which is complete without an air shutter and is so constructed that an air shutter may be readily applied thereto, so that the burners may be sold either with or without air shutters and one form of burner converted into the other practically in an instant.

My invention also includes a novel form of air shutter adapted to be so applied.

In order that my invention may be more fully understood, reference is hereby made to the accompanying drawings in which—

Figure 1 is a side elevation of one form of gas lamp embodying my invention, the air shutter being applied thereto. Fig. 2 is an enlarged section on line 2—2 of Fig. 1. Fig. 3 is a view similar to Fig. 2 with the air shutter removed. Fig. 4 is a section on line 4—4 of Fig. 3. Figs. 5 and 6 are respectively top and bottom plan views of the air shutter.

In the drawings, *a* is a gas pipe upon which the lamp is mounted and which comprises the supply tube 1 threaded on the pipe *a* and having the usual gas regulator 2 and air inlets 3. This tube telescopes into the burner tube 4 which frictionally engages the same and is supported by the shoulder 5 formed in the tube. A flash diaphragm 6 is attached to the lower end of the burner tube. The edge of said diaphragm is formed with serrations 7 bent into horizontal position to form a flange.

The two-part air shutter comprises a plate 8 formed with apertures 9 and having curved inner and outer flanges 10 and 11 respectively, the latter having a roughened or milled surface as shown. Mounted upon the plate 8 is an annular plate 12 the outer edge of which is formed with serrations 13 bent into vertical position and adapted to engage or interlock with the serrations 7 of the flash diaphragm. The plate 12 is formed with apertures 14 through one of which passes a stop 15 integral with the plate 8. The plates 8 and 12 are freely rotatable with respect to each other within the limits determined by the stop 15, the arrangement being such that in one extreme position the openings 9 and 14 register with each other, and in the other extreme position the openings 14 are closed by the body of the plate 8.

The device shown in Fig. 3 is a complete shutterless structure. In order to apply the two-part air shutter of Figs. 5 and 6 thereto it is necessary merely to separate the burner tube 4 from the Bunsen tube 1 and slide the shutter down the latter until the plate 8 rests upon the shoulder 16 formed on said tube. The burner tube 4 is then telescoped upon the Bunsen tube, until the flash diaphragm abuts against the plate 12, the serrations 7 of the flash diaphragm interlocking with the serrations 13 of the plate, as shown in Fig. 2. In this structure the air supply may be regulated by grasping the roughened surface 11 of the plate 8 and turning the same to open or close the openings 14 to the desired extent.

Having now described my invention, what I claim is:

1. A gas lamp comprising a tube, a second tube engaging the bore thereof, a flash diaphragm carried by one of said tubes and having one or more projections, and an air

shutter removably mounted on the other tube and having means interlocking with a projection on the flash diaphragm, substantially as described.

5 2. A gas lamp comprising a tube, a second tube engaging the bore thereof, a flash diaphragm carried by one of said tubes and having one or more projections, and a two-part air shutter removably mounted on the
10 other tube, the parts of said air shutter being capable of relative movement with respect to each other and having one or more openings brought into and out of alinement by such movement, and one of said parts
15 having means interlocking with one of said projections and separable therefrom, substantially as described.

3. A gas lamp comprising a tube, a second tube engaging the bore thereof, a flash
20 diaphragm carried by one of said tubes, an air shutter removably mounted on the other tube, and separable means on said diaphragm and shutter which interlock when the parts are assembled, substantially as described.
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4. A gas lamp comprising a pair of telescoping tubes, a flash diaphragm carried by one of said tubes, a two-part air shutter removably mounted on the other tube, the
30 parts of said shutter being capable of relative movement, and separable means on said diaphragm and one of said parts which interlock when the tubes are telescoped, substantially as described.

35 5. A gas lamp comprising an outer tube, a second tube engaging the bore thereof, the outer tube carrying a flash diaphragm and the other an abutment, and a two-part air shutter removably held against said flash
40 diaphragm by said abutment, substantially as described.

6. A gas lamp comprising a tube, a second tube engaging the bore thereof, one tube carrying a flash diaphragm having a serrated edge and the other tube having an
45 abutment, and an air shutter composed of two parts capable of relative movement, one of said parts having serrations interlocking with said serrated edge, and said air shutter
50 being held against said flash diaphragm by said abutment, substantially as described.

7. A gas lamp comprising a flash diaphragm having a serrated edge, and a removable air shutter comprising two relatively movable parts, one of said parts having means for engaging said serrated edge to hold said part against movement, substantially as described.

8. A gas lamp comprising a flash diaphragm having a horizontal serrated flange, and a removable air shutter comprising two

parts capable of relative movement, one of said parts having means for engaging said flange for holding said part against movement, substantially as described. 65

9. In a gas lamp, an air shutter comprising a pair of plates one of which has a serrated edge, said plates being capable of relative movement and having openings brought into and out of alinement by such movement, in combination with a flash diaphragm having means interlocking with said serrated edge for holding one of said plates against movement, substantially as described. 70

10. In a gas lamp, an air shutter comprising a pair of plates one of which is provided with one or more projections, the said plates being capable of relative movement and having openings brought into and out of alinement by said movement, a support upon which said shutter is removably mounted, and separable means for engaging one or more of said projections for holding one of said plates against movement, substantially as described. 80 85

11. In a gas lamp, an air shutter comprising a pair of plates, one of which is provided with serrations, said plates being capable of relative movement and having openings brought into and out of alinement by such movement, in combination with a flash diaphragm having means interlocking with said serrations for holding one of said plates against movement, substantially as described. 90 95

12. A gas lamp comprising an outer tube, one end of which is enlarged to form an integral flash diaphragm, a second tube extending from a point below the flash diaphragm into the bore of said first tube and engaging the same at a point above the flash diaphragm, an abutment on the second tube, and an air shutter removably held against said flash diaphragm by said abutment, substantially as described. 100 105

13. A gas lamp comprising an outer tube, one end of which is provided with a flash diaphragm, a second tube extending from a point below the flash diaphragm into the bore of said first tube and engaging the same at a point above the flash diaphragm, an abutment on the second tube, and an air shutter removably held against said flash diaphragm by said abutment, substantially as described. 110 115

This specification signed and witnessed this 8th day of February 1910.

EDWARD S. SANDERSON.

Witnesses:

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MARTIN N. LOWE.