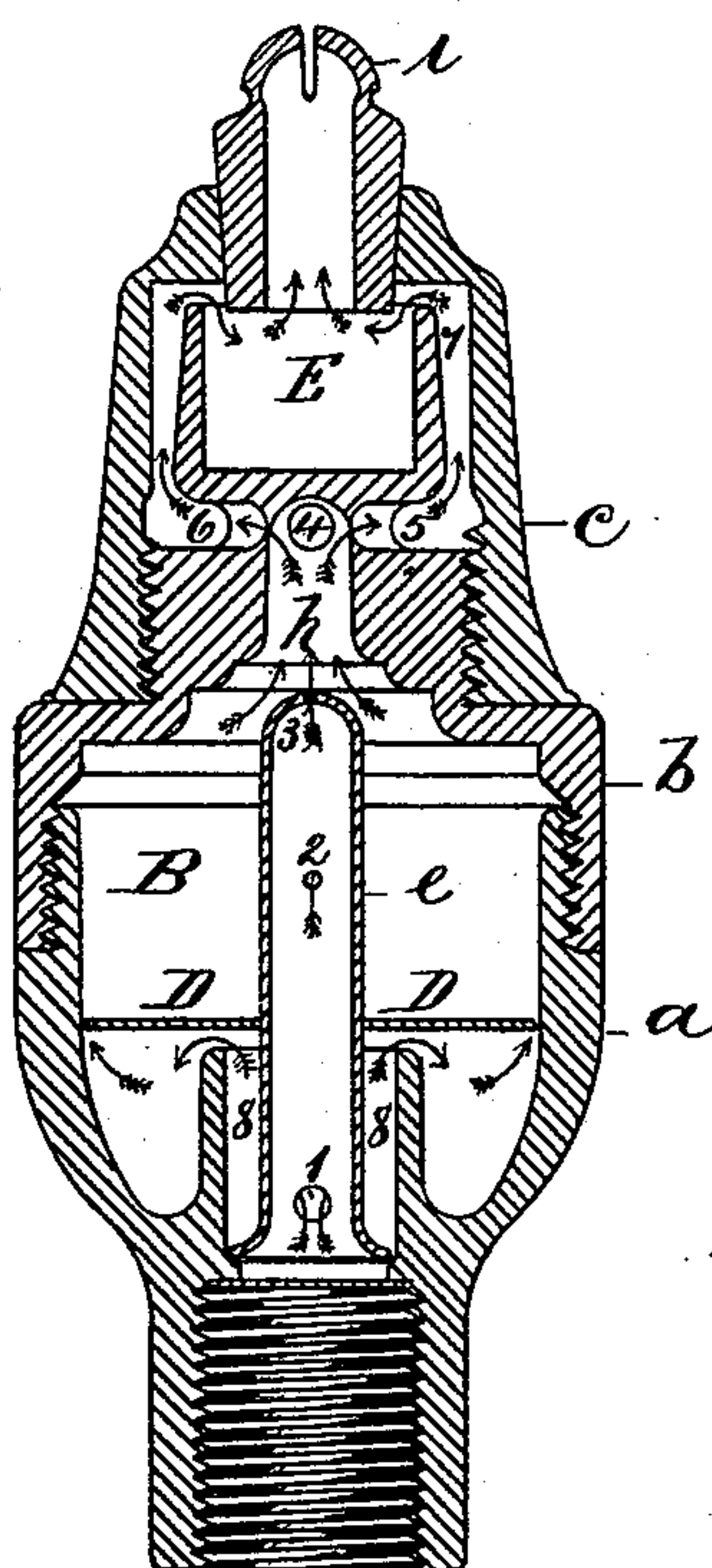


(No Model.)

J. N. CHAMBERLAIN.
Gas Regulating Burner.

No. 236,551.

Patented Jan. 11, 1881.



Witnesses
Wm. H. Chapin.
Chas. B. Bill.

Inventor
John N. Chamberlain
By Henry A. Chapin
Atty

UNITED STATES PATENT OFFICE.

JOHN N. CHAMBERLAIN, OF SPRINGFIELD, MASSACHUSETTS.

GAS-REGULATING BURNER.

SPECIFICATION forming part of Letters Patent No. 236,551, dated January 11, 1881.

Application filed May 3, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN NILES CHAMBERLAIN, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Pressure-Governing Gas-Burners, of which the following is a specification.

This invention is in the nature of an improvement upon the construction of pressure-governing gas-burners as shown in my United States Patent of October 15, 1878, and has for its object an improved construction of gas-passages through the governing devices, whereby they are made more sensitive to the action of varying pressures, thereby causing the light to be more steady, and to provide improved rarifying gasways near the tip of the burner and an improved drip-cup under the burner-tip. I attain these objects by the devices and construction illustrated in the accompanying drawing, consisting of one figure, which shows a vertical sectional view of my improved burner.

In the drawing, the burner-case, which consists of three parts, is represented by the letters *a b c*, *a* being the lower portion, *b* the central one, and *c* the upper.

D is the floating disk, whose functions are fully described in my said patent. *e* is a gas-tube surrounded by and attached to the said disk, and having a flange around its lower end, as shown.

1 2 are gas-passages through the sides of tube *e*, and 3 is a gas-passage through the convex end of the said tube.

B is the main gas-chamber, in the case in which disk *D* moves vertically, floating in the gas-current while the burner is lighted; and *h* is a vertical gas-passage leading from chamber *B* and conducting the gas into horizontal gasways 4 5 6. The central portion, *b*, of the case extends upward, as shown, having formed in it the above-named gas-passages *h* 4 5 6, and upon its upper end the drip-cup *E*. The upper portion, *c*, of the case is adapted to receive the burner-tip *i*, and is screwed to the central portion, *b*, as shown; and the space between the inner sides of the part *c* and the outside of cup *E* forms a narrow gas-passage, 7, of increasing dimensions from bottom to top, through which the gas flowing from passages 4 5 6 passes on its way to the base of the tip

i in the direction indicated by the arrows, and in so passing through passage 7 it is exposed to the action of heat imparted to said part *c* by its proximity to the gas-flame.

I have found that in practice it is desirable to provide for a certain volume of gas-flow through tube *e* independent of what may flow from chamber *B* up around the top of said tube into passage *h*; and while the main flow of gas to the burner-tip is through passages 1 and 2, and up between the periphery of disk *D* and the inner sides of the case, the gas-passage 3, through the top or apex of the covered upper end of tube *e*, provides for a certain degree of regular gas-flow, regulated according to the normal degree of pressure on the gas-mains, under which gas is delivered to the burner, and operates, in case of a sudden increase of pressure above the normal one, to discharge a sufficient amount of gas into passage *h*, and thence toward the burner-tip, to regulate the pressure under said tip. The effect upon the gas between the entrance to passage *h* and the combustion-point on said tip of a sudden increase of the burning pressure is to cause disk *D* to lift quickly up, carrying the end of tube *e* up against the entrance to passage *h* so closely as to partially cut off the flow of gas by the end of said tube and for the instant to cause the light to be variable; but by allowing a slight supply to escape through hole or passage 3, the above effect is counteracted, and disk *D* and tube *e* quickly return to their former position relative to the entrance to passage *h*. The passage 2 in tube *e* is the one through which the main flow of gas to the burner-tip passes, and its diameter determines the number of cubic feet which the burner will consume per hour.

It will be seen that provision is made for a free supply of gas up under disk *D* through the passage 1 in tube *e*, and thence through the annular chamber 8, which surrounds the lower flanged portion of said tube, said supply being of sufficient volume, compared to the means of exit through and around said disk, to cause the disk and tube *e* to be buoyed up by the gas-flow, steadied up by the walls of chamber *B* and passage 8, and that the said means of exit can be so regulated to a given gas-pressure as to cause said disk and tube to be maintained in a certain position relative to

the entrance to passage *h*, and thus regulate the size of the opening between the upper end of tube *e* and said entrance, and thus govern the volume of gas-flow from chamber B up to the tip.

The above-described construction of cup E and the annular passage 7 around the latter, together with the gas-passages 4 5 6, result in the following advantages:

10 Instead of allowing passage *h* to conduct the gas directly up to the burner-tip *i*, it is, by the horizontal passages 4 5 6, caused to flow at right angles to passage *h* after passing through the latter against the inner walls of portion *c* of the case, whence it flows upward between them and the outside of cup E, striking the top of the case over said cup, passing downward into the latter, and finally entering the tip *i*. Thus, after the burner shall have
20 been lighted for a few moments, the heat from the upper part of the case causes it to become expanded or rarified gradually as it rises, increasing its volume, and the increasing width of its passage up outside of cup E accommodates its increasing volume, causing its flow
25 to be steady.

The cup E is formed of considerable depth in order to provide a suitable receptacle for any drip which may fall from tip *i*, and said drip may be removed by unscrewing the part 30 *c* from part *h*, and removing it and the tip from over said cup, when passages 4 5 6 may also be cleaned if need be.

What I claim as my invention is—

1. The combination, with the burner-case 35 provided with the annular passage 8, chamber B, and passage *h*, of the disk D, provided with the tube *e*, having a flange on its bottom end, as shown, and the gas-passages 1, 2, and 3 formed therein, substantially as and for the 40 purpose set forth.

2. The burner-case having the annular chamber 7 therein and provided with the vertical passage *h*, the horizontal passages 4 5 6, and the cup E, substantially as and for the pur- 45 pose set forth.

J. N. CHAMBERLAIN.

In presence of—

WM. H. CHAPIN,
H. J. LONGLEY.