No. 690,792. Patented Jan. 7, 1902.

C. W. TAYLOR.

BUNSEN BURNER.

(Application filed Sept. 7, 1901.)

(No Model.)

Fig. 1.

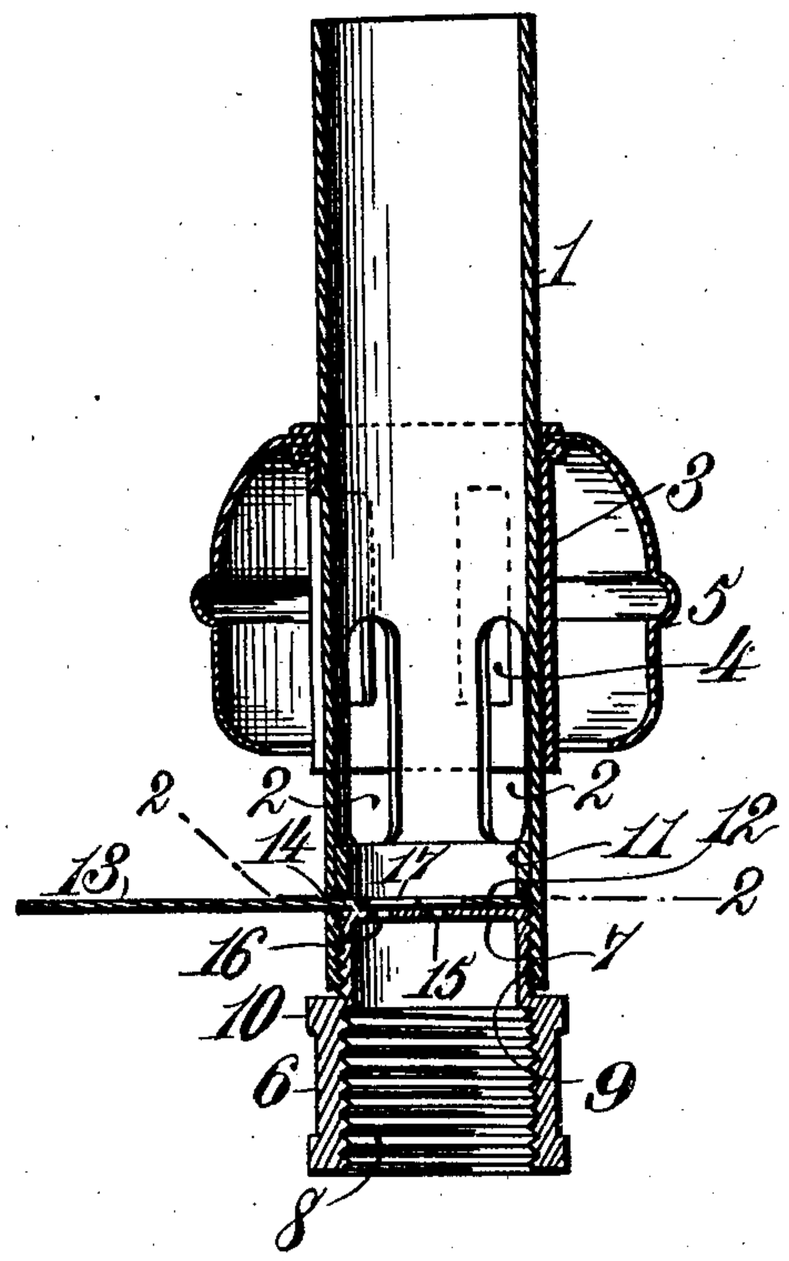


Fig. 2.

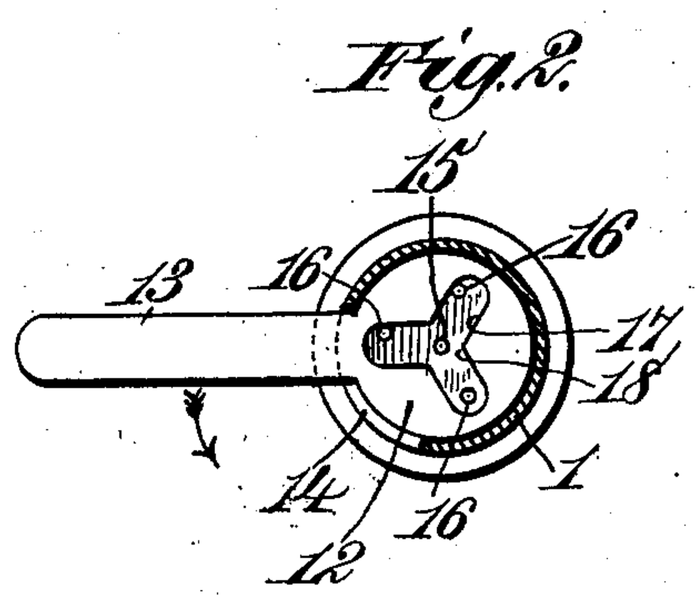
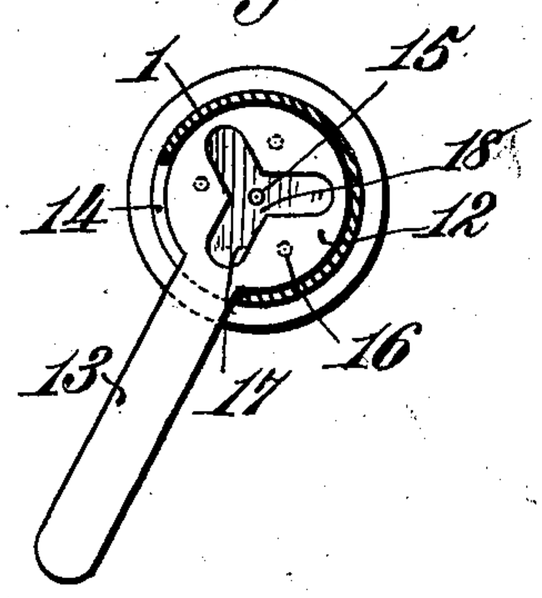


Fig. 3.



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UNITED STATES PATENT OFFICE.

CLARENCE W. TAYLOR, OF SIOUX CITY, IOWA.

BUNSEN BURNER.

SPECIFICATION forming part of Letters Patent No. 690,792, dated January 7, 1902.

Application filed September 7, 1901. Serial No. 74,700. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE W. TAYLOR, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented new and useful Improvements in Bunsen Burners, of which the following is a specification.

This invention relates to Bunsen burners, and has for its object to provide such a burner with improved means so constructed and arranged that there will at all times be maintained a central small jet or flow of gas passing through the burner, whereby a current of gas and air is forced up through the burner-tube and tends to prevent gas escaping through the lateral air-openings before a sufficient forceful flow is turned on in adjusting the burner.

It also has for its object to provide such a burner with improved means for regulating and controlling the supply of gas to the burner-tube.

Finally, it has for its object to provide a Bunsen burner which, while being fully as satisfactory, economical, and efficient as those heretofore placed upon the market, is capable of being manufactured and sold at a greatly-reduced cost.

To these ends my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a vertical central sectional view of my improved Bunsen burner. Fig. 2 is a transverse sectional view on the line 2 2 of Fig. 1, showing all the gas-passages open; and Fig. 3 is a similar view showing all the gas-passages excepting the central one closed.

Referring to the drawings, the numeral 1 indicates the burner-tube, which may be of any suitable, approved, or preferred construction, but which in the present instance is shown as consisting of a metallic tube provided near its lower end with a series of vertical slots 2, forming air-inlet openings, and a sleeve 3, provided with corresponding openings 4, adapted to be adjusted so as to register to a greater or less extent with the air-openings 2, and thereby regulate and control the quantity of air admitted to the burner-tube. The sleeve 3 is provided at its upper end with an annular depending hood 5, that operates as a shield for the air-openings. As above described, the burner-tube is of ordinary and well-known construction and need not therefore be described in detail.

The burner-tube is adapted to be readily and tightly attached to an ordinary gas-fixture, as follows: The numeral 6 indicates a coupling-thimble closed at its upper end by a diaphragm or partition 7 and internally screw-threaded, as at 8, and externally screw-threaded on its upper portion, as at 9, said thimble being provided with a knurled collar 10. The burner-tube is screwed on the threaded upper end 9 of the thimble, and the latter may be readily screwed on an ordinary gas fixture or bracket. An annular collar 11 is arranged on the interior of the burner-tube near the lower end of the latter, and rotatably disposed in said burner-tube, beneath the collar and between the latter and the diaphragm 7, is a circular disk 12, which is provided at one edge with a radial horizontally-projecting handle 13, preferably formed integral with the disk and projecting through a segmental horizontal slot 14, formed in one side of the burner-tube. The diaphragm 7 is provided centrally with a perforation 15 and also with a plurality of perforations 16, formed at points intermediate the center and the outer edge of the diaphragm, and the disk 12 is provided with apertures which may be thrown into and out of register with the perforations 16 in the diaphragm, so as to permit or prevent the passage of gas therethrough. In the arrangement herein shown the perforations 16 in the diaphragm lie in a circle concentric with the central perforation 15 and at unequal distances apart. The rotatable disk is shown as being provided with three radial slots or elongated apertures 17, formed one hundred and twenty degrees apart and converging together at the center of the disk to form a central aperture 18, that at all times registers with the central perforation 15 in the diaphragm. In the arrangement shown and described the apertures 15 and 18 in the centers of the diaphragm are always open and in alinement with each other to permit the passage of gas therethrough no matter what

the position of the rotary disk may be; but it will be evident that if the disk be turned to one position the imperforate part of the disk will cover the perforations 16 in the diaphragm, and the gas can only pass through the central perforations 15 and 18, while if the disk be turned to another position the perforations 16 will be in alinement with the slots 17, and the gas will flow through all the perforations and apertures. In moving from the one position to the other, however, the perforations 16 are not all simultaneously uncovered or opened, but instead are opened one at a time. This will be readily understood from an inspection of Fig. 2, in which position of the disk all the apertures are open. If now the disk be turned in the direction indicated by the arrow, it will be seen that the perforation shown on the left will first be closed, leaving the others open. Then the lowermost perforation on the right will be closed, and finally the uppermost perforation will be closed. It will therefore be evident that in moving the disk in one direction or the other the perforations will be opened or closed one at a time, according to the direction in which the disk is turned, and any number of the perforations may thus be opened or closed to regulate the amount of gas admitted to the burner-tube. The disk may be freely turned by means of its handle 13, and when the handle is moved to one end of the slot 14 all the perforations 16 will be uncovered or open; but when the handle is moved to the other end of the slot all the perforations 16 will be covered or closed. By these means the quantity of gas admitted to the burner-tube can be regulated with precision and the character of the flame or the heat generated thereby varied.

By means of the coupling-thimble the burner-tube may be quickly and tightly affixed to a gas bracket or fixture, and by screwing the burner-tube down upon the upper end of the thimble the collar 11 clamps the rotatable disk closely to its seat on the diaphragm 7 and effectually prevents leakage of gas. In order that the collar may at all times be adjusted to clamp the disk onto the diaphragm, the threaded upper end of the thimble should be made longer than the threaded lower end of the burner-tube. The collar 11 may be formed in any desired manner—that is to say, it may consist of a ring or a sleeve fixed in the burner-tube, it may be formed integral with the burner-tube in the form of an annular shoulder, or it may be formed by spinning an annular internal bead in the tube, the particular manner of forming the collar being immaterial, and various different ways of forming it will readily suggest themselves to a mechanic, it only being essential to provide an internal projection that will engage the upper side of the disk and hold the latter rotatably to its seat on the diaphragm. I also wish it to be understood that while I have shown a simple and efficient manner of arranging the perforations and apertures in the diaphragm and disk I do not confine myself to such arrangement, as other arrangements can obviously be adopted for accomplishing the same result.

In the Bunsen tubes at present on the market great trouble has been experienced through the regulating holes or apertures becoming filled with carbon and other accumulations, and in adjusting or regulating the flow of gas to meet different requirements and pressures the holes are rubbed full, so that in time the regulator becomes inoperative. In my improved regulator the central hole, which is provided for the minimum flow of gas, is always open and there is no plate to rub over it at any time. The holes that are rubbed over by the rotary plate or disk are only required to provide the flow above minimum and to maximum, and should these holes ever become filled the coupling can be readily unscrewed, the diaphragm removed, and the holes cleaned out.

Having described my invention, what I claim is—

1. In a Bunsen burner, the combination with the burner-tube having a diaphragm therein provided with a central opening and with a plurality of perforations formed eccentrically therein, of a rotatable disk arranged in contact with the diaphragm and provided with a plurality of radial apertures communicating with one another at the center of the disk and with said central opening in the diaphragm, and means for turning the disk, said radial apertures being arranged to successively open or close the eccentric perforations in the diaphragm one at a time as the disk is turned in one or the other direction, substantially as described.

2. In a Bunsen burner, the combination with the burner-tube provided with a fixed internal projection near its lower end, and a diaphragm adjustably arranged below the said projection and provided with a central opening and a plurality of openings formed at points between said central opening and the edge of the diaphragm, of a rotatable disk arranged between said projection and diaphragm and provided with a central aperture constantly registering with the central opening in the diaphragm, said central aperture having extensions extending outwardly in position to be placed in communication with the openings formed in the diaphragm between the central opening and the edge of the diaphragm, and means for turning the disk to open and close the openings, excepting the central one, in the diaphragm, substantially as described.

3. In a Bunsen burner, the combination with the burner-tube provided with an internal collar near its lower end, of a coupling-thimble internally threaded for engaging a gas-fixture and closed at its upper end by a perforated diaphragm, said thimble being screwed into the lower end of the burner-

tube, a disk rotatably seated between the diaphragm and collar, said diaphragm and disk being provided with openings adapted to be thrown into and out of register by turning the disk, and means for turning said disk, substantially as described.

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

CLARENCE W. TAYLOR.

Witnesses:
O. J. TAYLOR,
R. H. BROWN.