No. 768,753. PATENTED AUG. 30, 1904.

A. G. KAUFMAN.

BURNER.

APPLICATION FILED NOV. 24, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1

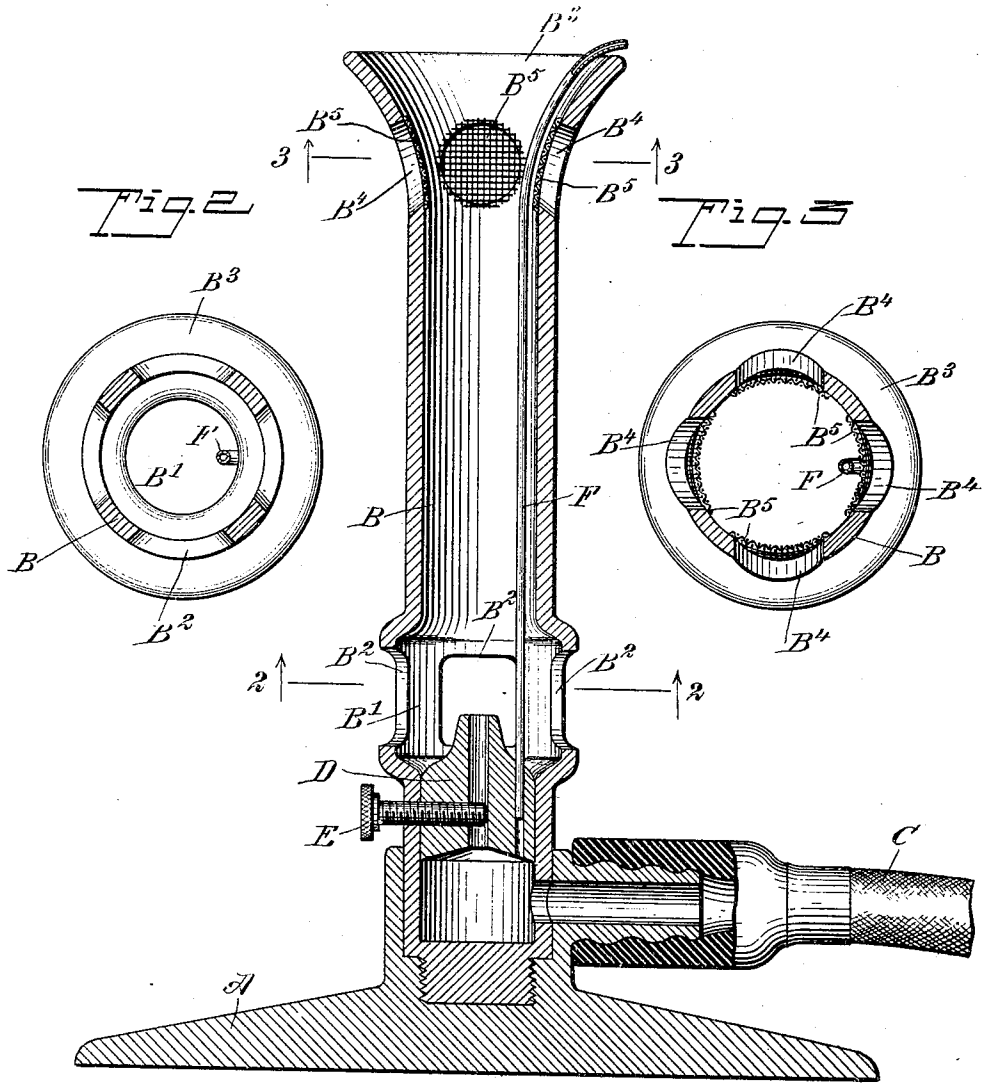
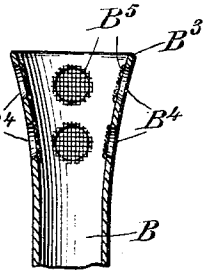


Fig. 4



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APPLICATION FILED NOV. 24, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 7.

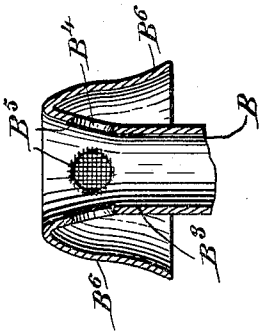


Fig. 6.

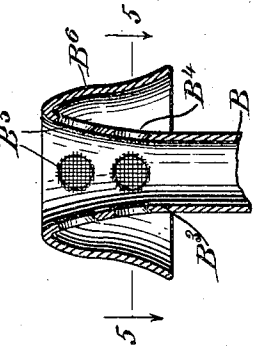


Fig. 5.

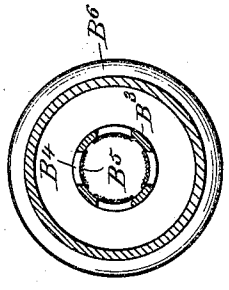


Fig. 8.

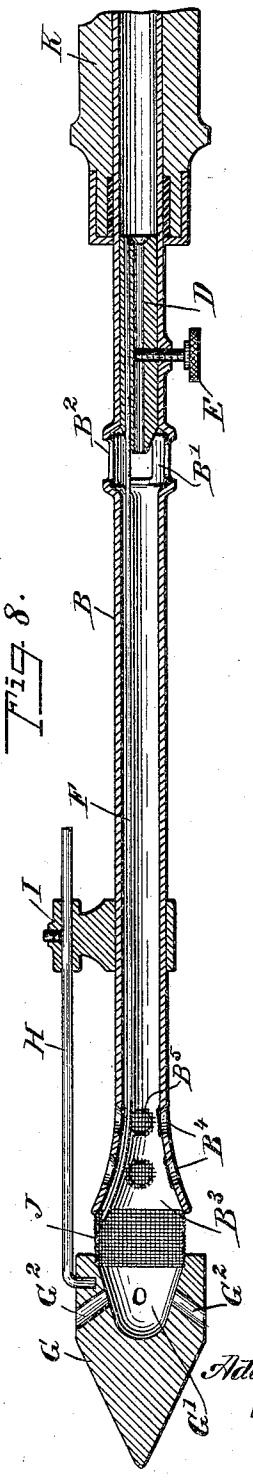
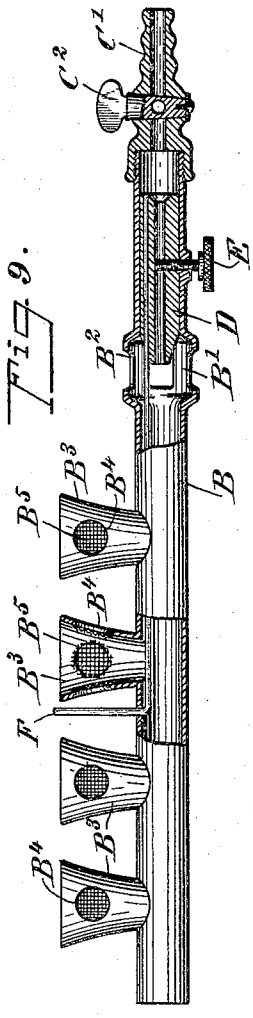


Fig. 9.



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No. 768,753. Patented August 30, 1904.

UNITED STATES PATENT OFFICE.

ADOLPH G. KAUFMAN, OF NEW YORK, N. Y., ASSIGNOR TO THE A. G. KAUFMAN MANUFACTURING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

BURNER.

SPECIFICATION forming part of Letters Patent No. 768,753, dated August 30, 1904.

Application filed November 24, 1902. Serial No. 132,568. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH G. KAUFMAN, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Burner, of which the following is a full, clear, and exact description.

The invention relates to Bunsen burners; and its object is to provide a new and improved burner which is simple and durable in construction and arranged to produce a powerful heating-flame with a comparatively small amount of gas.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

The practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is an inverted sectional plan view of the same on the line 2 2 of Fig. 1. Fig. 3 is a similar view of the same on the line 3 3 of Fig. 1. Fig. 4 is a sectional side elevation of a modified form of the conducting-tube. Fig. 5 is a sectional plan view of another modified form of the conducting-tube, the section being on the line 5 5 of Fig. 6. Fig. 6 is a sectional side elevation of the same. Fig. 7 is a similar view of another modified form of the improvement. Fig. 8 is a longitudinal sectional elevation of the improvement as arranged for a soldering-iron; and Fig. 9 is a side elevation, partly in section, of the improvement arranged as a burner for a stove or a range.

The burner illustrated in Figs. 1, 2, and 3 is mounted on a suitably-constructed base A, carrying the conducting-tube B, connected by a hose C or other suitable means with the gas-supply, and in the said tube B is arranged a nozzle D, opening into the mixing-chamber B′, formed in the tube B adjacent to the point of the nozzle D. The nozzle D is provided with a regulating-valve E, extending to the outside of the tube B and under the control of the operator to regulate the amount of gas passing through the nozzle D into the mixing-chamber B′. The latter is provided in its side walls with air-inlet openings B^2, so that air can pass into the tube B and mix with the gas issuing from the nozzle D, the mixture then passing through the tube B to the flaring mouth B^3 thereof to be burned at the said mouth for heating or other purposes. The flaring mouth B^3 is provided in its side wall with openings B^4, preferably covered with a netting B^5 and serving to allow air to pass into the mouth B^3 at the time the mixture of gas passing from the tube into the mouth begins to expand, so that this additional amount of air passing into the mixture at the mouth insures the production of an exceedingly-strong mixture of air and gas to insure the formation of a powerful heating-flame with a comparatively small amount of gas.

It is understood that by the use of the flaring mouth the pressure of the gas in the tube B gradually diminishes in its passage through the mouth, thus avoiding escape of the gas through the openings B^4. Furthermore, the oxidation-flame at the end of the mouth tends to produce a suction to cause the air to readily enter the mouth at the openings B^4. By covering the openings B^4 with a netting B^5 the entering air is minutely divided to insure a perfect mixture of this air with the mixture of air and gas passing from the tube B into its mouth B^3. By providing the tube B with the flaring mouth B^3, having openings B^4, it is evident that the burning flame at the end of the mouth is not liable to react or draw back into the tube B, and hence the danger from explosions and overheating of the base end of the device is completely prevented.

An auxiliary pipe F is secured to the nozzle D and extends through the tube B and its mouth B^3 to the outside of the latter, as plainly indicated in Fig. 1, and as the rear or inner end of the pipe F is connected with the gas-supply it is evident that gas can pass through the pipe F to supply the outer end of the

mouth B^3 with a small flame for igniting the mixture of gas and air soon after the valve E is moved into the open position. It is evident that when the valve E is closed and the flame extinguished at the end of the mouth B^3 then the small flame at the end of the pipe F remains burning, and when the valve E is again opened and the mixture of air and gas is formed and passes through the tube B and mouth B^3 then this mixture is ignited by a pilot-flame at the end of the pipe F. This pilot-flame forms a reduction-flame and prevents the oxidation-flame burning at the mouth of the tube from inward movement or back action and injury to the working parts of the device.

As shown in Figs. 1, 2, and 3, four openings B^4 are employed and located in the same transverse plane; but this construction may be varied—that is, two or more rows of such openings B^4 may be employed and covered with a netting B^5, as plainly indicated in Figs. 4 and 6. In the modified forms shown in Figs. 6 and 7 the mouth B^3 of the tube B is surrounded externally by a shield B^6, extending from the upper edge of the mouth rearwardly and outwardly, so as to form an air-space between the outer wall of the mouth and the said shield to allow the air to readily enter the openings B^4 for the air to pass to the interior of the mouth.

The device may be utilized for various purposes. For instance, as shown in Fig. 8, it may be arranged as a soldering-iron, and in this case the head G of the soldering-iron is secured on a rod H, held adjustable on a bracket I, attached to the tube B. The head G is formed in its base with a combustion-chamber G′, from which lead openings G^2 to the outer wall of the head, as plainly indicated in Fig. 8.

The flaring mouth B^3 of the conducting-tube B is connected with the said combustion-chamber G′ by a cylindrical netting J, so that the mixture of air and gas from the mouth B^3 passes through the netting J to the combustion-chamber G′ to be burned therein. By the arrangement described the flame is confined within a convenient chamber and is not liable to react back into the conducting-tube owing to the free supply of air at the netting J and the openings B^4. The rear end of the conducting-tube B is connected with a suitable gas-supply and is provided with a handle K, adapted to be taken hold of by the operator for manipulating the soldering-iron in the desired manner.

The improvement illustrated in Fig. 9 is provided with a conducting-tube B, from which extend a plurality of flaring mouths B^3, having the inlet-openings B^4 covered by netting B^5, and the said mouths B^3 are arranged one alongside the other with the pipe F terminating adjacent to one of the mouths B^3 to ignite the gaseous mixture as the same passes from the conducting-tube B into and through the mouth. The rear end of the conducting-tube B is provided with a nipple C′ for engagement by a hose to conduct the gas to the nozzle D, the same as previously explained in reference to Fig. 1, and in the said nipple C′ is arranged a valve C^2 for turning off the gas-supply whenever it is desired to do so.

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

1. A burner, consisting of a base, a conducting-tube mounted on the base and having its lower end provided with means for connecting it with a gas-supply, said tube having a flaring mouth and provided with a mixing-chamber at its lower end, the walls of the tube being apertured at the mixing-tube and flaring mouth, the apertures of the mouth being covered with netting, a nozzle in the lower end of the tube and projecting into the mixing-chamber, a regulating-valve for the nozzle, and a pipe secured in the nozzle and extending through the tube and its mouth to the outside of the latter, as set forth.

2. A burner, comprising, a conducting-tube enlarged near one end to form a mixing-chamber, and having a flaring mouth at its other end, the tube being provided with openings in the walls of the mixing-chamber and mouth, the apertures of the mouth being covered with netting, a nozzle secured in the tube and projecting into the mixing-chamber, a regulating-valve for the nozzle, and a pipe secured in the nozzle and extending through the tube and its mouth to the outside of the latter, as set forth.

3. A burner, comprising a conducting-tube having one end flared and then bent outwardly and downwardly to form a shield surrounding the said end, the tube having a mixing-chamber near its other end and provided with openings in the walls of the mixing-chamber and flared end, the openings in the flared end being covered with netting, a nozzle secured in the end of the tube beyond the mixing-chamber and projecting into said chamber, and a valve for said nozzle, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ADOLPH G. KAUFMAN.

Witnesses:
THEO. G. HOSTER,
JNO. M. RITTER.