

R. MICHL.
BUNSEN BURNER.
APPLICATION FILED SEPT. 26, 1910.

1,064,153.

Patented June 10, 1913.

Fig. 1.

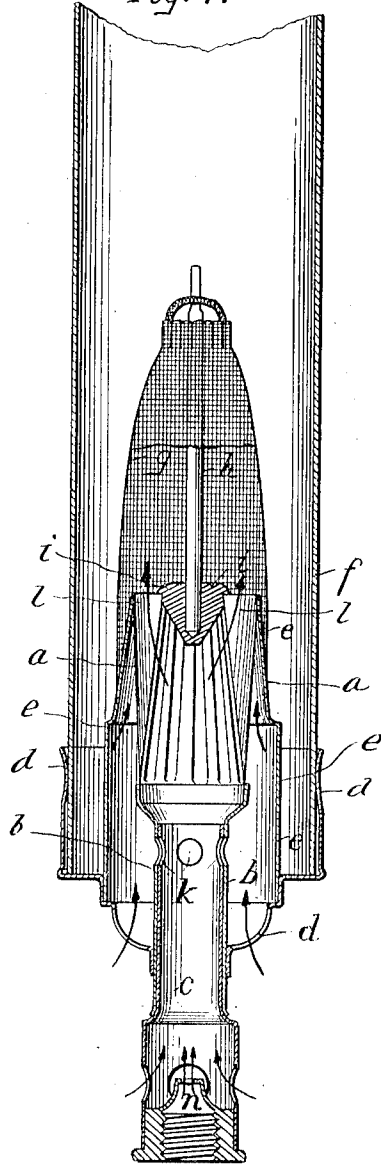


Fig. 3.

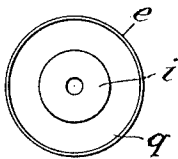


Fig. 2.

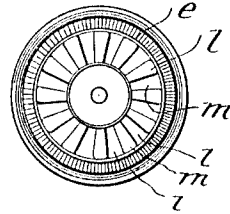


Fig. 4.



Witnesses.

Hugo Michl
Wilhelm Kessel

Inventor.

Robert Michl

UNITED STATES PATENT OFFICE.

ROBERT MICHL, OF STEGLITZ-BERLIN, GERMANY.

BUNSEN BURNER.

1,064,153.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed September 26, 1910. Serial No. 583,850.

To all whom it may concern:

Be it known that I, ROBERT MICHL, a subject of the Emperor of Austria-Hungary, residing at Sedanstrasse 42, Steglitz-Berlin, Germany, have invented a new and useful Improvement in Bunsen Burners, of which the following is a description.

My invention relates to Bunsen burners for lighting and heating purposes, in which over the whole ring-shaped section of the burner head piece apertures to convey the combustible and air mixture are distributed and between which apertures additional air is led to the flame.

According to this invention, compared with similar constructions, in the burner head piece the openings for the combustible and air mixture and of the additional air for combustion are restricted in the middle of the head piece and the velocity of the gases passing is considerably increased.

In the drawing Figures 1, 2, 3 and 4, is shown an upright incandescent burner with a burner head piece according to this invention; Fig. 1 shows a central section of this burner and Figs. 2, 3, and 4 are plans of the burner head piece.

The ring-shaped aperture of the burner is formed by the gap between the middle portion *i* and the burner casing *e* as shown by Fig. 1. This gap (*g*) is shown in Fig. 3, where all the other parts of the burner are omitted. From Fig. 3 it is seen that the diameter of the middle portion *i* is not smaller than half of the outside diameter of the ring-shaped gap *g*. In the latter the apertures of the passages *l* for the gas and air mixture are arranged side by side in one ring shaped row and leave the intervening spaces *m* as shown in Fig. 2 which form the apertures of the passages for the additional air which extend from the outer circumference to the inner circumference of the ring shaped issuing section *q*.

The passages *l* for the mixed gases are formed in a simple and suitable way by bending the outside wall (*a*) of the burner head piece (Fig. 1) so that downwardly the folds become flatter. This folded outside wall *a* is attached gas-tight in a collar, an enlargement of the upper part of the short-tube *b*, which latter is put over the mixing tube *c* of the Bunsen burner.

Fig. 4 shows a plan of the upper edge of the folded outside wall *a* of the burner head piece with the issuing apertures *l* and *m*

formed by this wall. The burner head piece casing *e* is formed, (see Fig. 1), as a tube which leads the additional air upward to the passages *m*.

Compared with similar burner head piece constructions the one described herein shows the following new details: By the middle part *i* of the structure described the outlet for the gas and air mixture and for the additional air is restricted at the middle part of the burner head and consequently the velocity of both combustibles is considerably increased. Thereby a strong cooling of the issuing passages *l* and *m* of the burner head is obtained. By arranging the apertures of the issuing passages *l* in one row in the ring-shaped section *q* of the burner head, the waste due to the direct heating of the material forming the apertures by the flame is less and the friction-resistances are smaller than in arrangements with several rows, because the flame is in contact with the circumferences of the apertures of the passages *l* and these circumferences, if compared with the section of the openings, are the smallest when arranged in one row. The folded outside-wall *a* of the burner head offers as a conductor of the gas and air mixture small friction-resistance because the whole inside space of the burner head is used for conducting this mixture and the section of this inside space is considerably larger than the total of the sections of the apertures *l*. Besides, the production of such a burner head is by this method of construction simplified and the cost reduced.

Generally the following remarks must be made in respect to the afore-described burner construction: A burner head constructed according to this invention can be used for gaseous or vaporous combustibles and can be installed for every suitable purpose, either for lighting by incandescence of suitable bodies, heating- or smelting-burners in the well-known manner in furnaces and heating appliances, also in every position, for instance for inverted burners, if the combustibles are supplied with a difference in pressure, below or above atmospheric pressure, and if care is taken that the products of combustion are not mixed with them.

The above described burner head is especially valuable for inverted burners because with these an intensive heating of the gas and air mixture as well as of the additional

air for the burners is effected by the hot products of combustion, as with this burner the direct heating of the apertures *l* and *m* by the flame is small. With regard to the arrangement of the middle part *i* it must be mentioned that such parts of similar structure are generally used for producing a ring-shaped flame; however the flame is in other burners produced over a sieve or a slotted plate or some similar device without conveying additional air over the burner head piece to the flame.

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

1. In a Bunsen burner the combination of the mixing tube for the combustible and air mixture, with a burner head piece with a ring-shaped conducting section at the mouth, the inside diameter of which is not smaller than half the outside diameter and having moreover passages for the supply of the combustible and air mixture the apertures of which are situated in the ring shaped issuing section, leaving intervening space for the passage of additional air, as described.

2. In a Bunsen burner the combination of the mixing tube for the combustible and air mixture, and a burner head piece with a ring-shaped conducting section at the mouth the inside diameter of which is not smaller

than half the outside diameter and having moreover passages for the supply of the combustible and air mixture the apertures of which are situated side by side in a single circular row in the ring shaped issuing section, leaving space for the passage of additional air which extend from the outer circumference to the inner circumference of the ring shaped issuing section.

3. In a Bunsen burner the combination of the mixing tube for the combustible and air mixture, with a burner head piece with a ring-shaped issuing section at the mouth the inside diameter of which is not smaller than half the outside diameter and which has passages for the supply of the combustible and air mixture which extend from the outer to the inner circumference of said ring-shaped issuing section, additional air passages between and alternating with the passages for the combustible mixture, the combustible mixture and additional air passages being the inner and outer grooves respectively formed by fluting the outside wall of the burner head piece.

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

ROBERT MICHL.

Witnesses:

HUGO MICHEL,

WILHELM KESSEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."