F. AND H. T. THORP.

INJECTOR FOR GAS BURNERS.

APPLICATION FILED JAN. 20, 1921.

1,387,565. Patented Aug. 16, 1921.

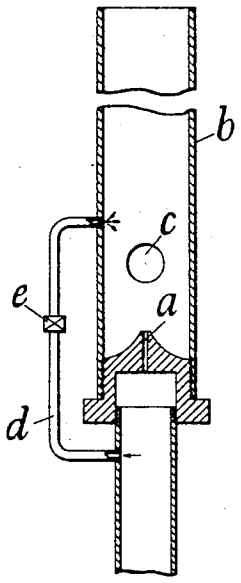


Fig.1

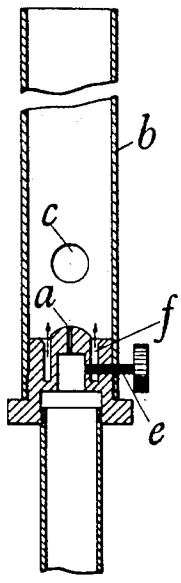


Fig.2

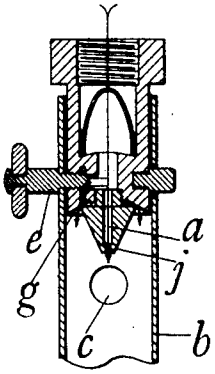


Fig.5

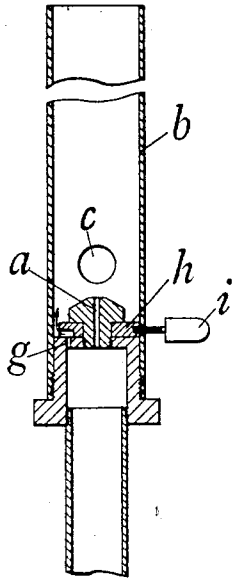


Fig.3

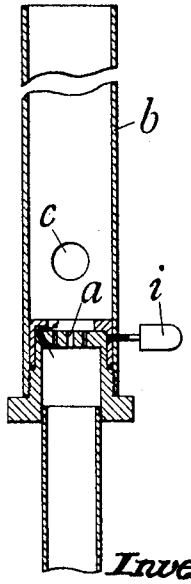


Fig.4

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INJECTOR FOR GAS-BURNERS.

1,387,565. Specification of Letters Patent. Patented Aug. 16, 1921.

Application filed January 20, 1921. Serial No. 438,767.

To all whom it may concern:

Be it known that we, FRANKLIN THORP and HARVEY THOMAS THORP, subjects of the King of Great Britain and Ireland, and residents of Victoria Works, Whitefield, near Manchester, England, have invented certain new and useful Improvements in Injectors for Gas-Burners, of which the following is a specification.

This invention has for its object to construct a gas injector adapted for use more especially with gas of varying quality. Injectors up to the present have been constructed with either a fixed orifice through which the gas passes, or with an adjustable orifice or a series of orifices, the number of which can be varied at will.

In all these devices the jets of gas are used to inject air to mix with the gas.

It is well known that when gas is mixed with air and consumed in an incandescent burner, gas boiling ring, ring fire and in similar apparatus, where a Bunsen flame is desired, there is an area of orifice most suitable for the quantity of mixture being consumed.

Particularly is this the case in incandescent burners where the flame should fit the mantle and be of a good mixture of gas and air.

In accordance with our invention, we provide a gas orifice or orifices through which a definite quantity of gas is passed in any given time, and in conjunction with said gas inlet or inlets we provide the usual air inlet or inlets through which the air is drawn by the injector action of the gas jet or jets, but in order to compensate for any variation in the quantity of the gas and so insure that a flame of approximately the same volume and character is produced, we provide means for admitting a further supply of gas, which exerts no injective action on the air inlet or inlets so that the rate of inflow of air is not materially varied. Such extra gas may be admitted to the gas and air mixture after it has passed the air inlet or inlets or may be diffused into the gas and air mixture.

We do not limit ourselves to any particular form of construction but may modify the same to suit requirements.

It will be seen that our invention particularly consists in the addition of a varying volume of gas without altering the volume of injected air appreciably, thereby providing an adjustment for widely varying qualities of gas while retaining approximately the same volume and character of flame.

In the case of a Bunsen burner fitted with an injector according to our invention, no air adjustment such as is usually necessary is required.

Referring to the accompanying sheet of explanatory drawings which illustrate in sectional elevation five convenient forms of Bunsen burner in accordance with our invention, the ordinary gas supply is admitted at *a* and by reason of the velocity of exit of the gas, air is drawn into the tube *b* through the air orifices *c*. The quantity of gas which enters at *a* is fixed and not adjustable and as this supply of gas alone exerts an injective action on the air required for combustion, the air supply also can be fixed and not adjustable.

Should the quality of gas vary, we provide for the admission of a further supply of gas which may be diffused into the tube *b* or directed therein in such a manner that it exerts no injective action on the air ports. In the arrangement shown in Figure 1, the supplementary supply of gas enters by the tube *d* controlled by a valve *e*.

In the Fig. 2 arrangement, the supplementary supply of gas passes by way of a port controlled by the valve *e* into the annular passages *f* from which it diffuses into the tube *b*.

In the Fig. 3 arrangement, the supplementary supply of gas enters by way of the apertures *g* and impinges against the valve plate *h* which can be turned by the handle *i* so as to cover the aperture and prevent the passage of gas or to allow the gas to diffuse into the tube *b*.

The arrangement shown in Fig. 4 resembles that shown in Fig. 3, but the supplementary gas is directed into the main gas supply instead of outward toward the surface of the tube *b*.

In Fig. 5, the gas nipple *j* is shown detachable and therefore the nipples are readily interchangeable. The gas from the passage *g* is directed against the back of the nipple and diffused into the tube *b*.

The tube *b* may be fitted with any particular type of incandescent or other burner either upright or inverted, or may be an ordinary open Bunsen tube.

Having now described our invention what we claim as new and desire to secure by Letters Patent is:—

In gas burners, the combination with a gas orifice or orifices permitting of the inflow to the burner of a definite quantity of gas in a given time and exerting an injective action to draw air into the burner at a fixed uniform rate, of a supplementary gas inlet to the burner, the gas from which exerts no injective action on the air inlet or inlets to the burner so that the rate of air inflow is not materially varied by the supplementary gas supply, as set forth.

In testimony whereof we have signed our names to this specification.

FRANKLIN THORP.
HARVEY THOMAS THORP.