No. 620,147. Patented Feb. 28, 1899.

# J. G. A. KITCHEN.

## GAS BURNER.

(Application filed Nov. 19, 1897.)

(No Model.)

*Fig. 1.*

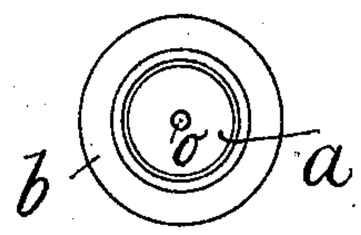



*Fig. 2.*

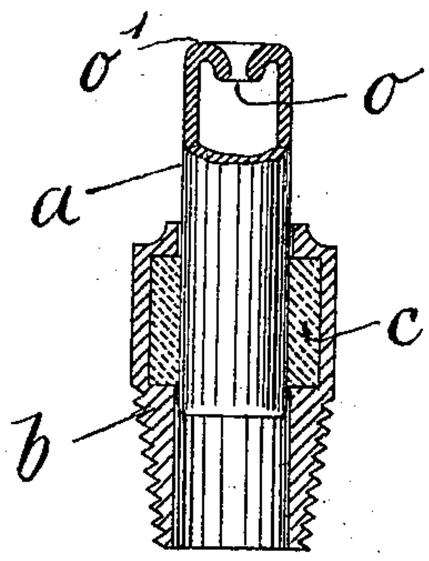



*Fig. 3.*

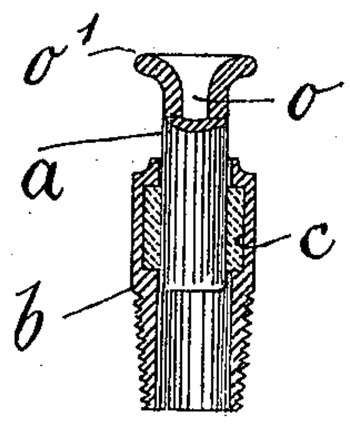
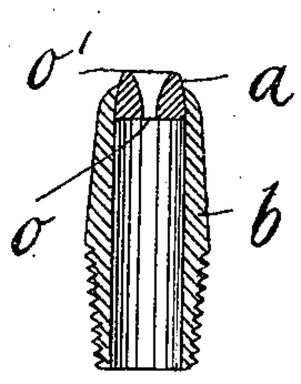



*Fig. 4.*




Witnesses

G. N. Harte

E. L. Lockwood

Inventor

J. G. A. Kitchen

By his Atty Edward S. Thompson

# UNITED STATES PATENT OFFICE.

JOHN GEORGE AULSEBROOK KITCHEN, OF MANCHESTER, ENGLAND, ASSIGNOR TO THE MANCHESTER CYCLE COMPONENTS COMPANY, LIMITED, OF SAME PLACE.

## GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 620,147, dated February 28, 1899.

Application filed November 19, 1897. Serial No. 659,111. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN GEORGE AULSEBROOK KITCHEN, a subject of the Queen of Great Britain, residing at Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

This invention refers more particularly to gas-burners for consuming heavy gases rich in carbon, such as pure acetylene or acetylene unmixed with air previous to entering the burner; and the objects of the improvements are chiefly to prevent the carbon deposit from choking the orifice or orifices in the burner and to provide a simple and inexpensive burner.

In carrying out my invention, to prevent the carbon deposit from choking up the orifice in the burner I form the external termination of the orifice trumpet-shaped or bell-mouthed, by which formation the edge of the flame at which the deposit occurs is carried some distance away from the orifice.

To provide an inexpensive and efficient burner, I preferably form the nozzle of the burner from or in the form of a piece of tube having its end turned inward all around to produce the contracted bell-mouthed orifice above referred to. I find that glass tubing of suitable size so formed makes an efficient and inexpensive burner. I may sometimes fit it into an india-rubber-lined socket, thus enabling it to be readily inserted and removed.

I may arrange these burners in any suitable way to obtain flames of different illuminating powers.

On the sheet of drawings appended hereunto the improved burner is shown in three modified constructions.

In the burner shown by Figure 1 in plan and Fig. 2 in vertical section the nozzle of the burner consists of a glass tube *a*, the orifice of which is formed by melting the end by means of a blowpipe and turning it inward, so as to form a contracted orifice *o*, widening out in a trumpet or bell-mouth shape to the top *o'* of the burner. This glass nozzle is fitted into a metal holder *b*, provided with an external or internal thread for screwing it to a gas-bracket, and is fixed gas-tight by means of an india-rubber ring *c*, sprung into an annular groove of the holder *b*, which ring has a smaller internal diameter than the outside diameter of the nozzle *a*, so that the latter has to be forced into it.

In the construction shown by Fig. 3 in vertical section the nozzle *a* consists of a glass tube of small diameter, the end of which after being softened is widened out to the bell-mouthed shape shown by a suitable mandrel.

In the construction shown by Fig. 4 a bead-shaped glass nozzle *a*, having a bell-mouthed or trumpet-shaped perforation, is pushed and cemented into a metal holder *b*. Instead of glass, porcelain or equivalent smooth fusible substance may be used for the nozzle.

Instead of using glass nozzles fixed in metal holders the burners can be made entirely of metal with bell-mouthed or trumpet-shaped orifices.

In consequence of the shape of the nozzles the gas is not ignited immediately above the outlet-orifice *o*, but only above the upper edge *o'*, and the carbon dissociated from the flame is prevented by the current of gas from being deposited inside the bell-mouth; but any deposit of carbon can only take place around the outer edge *o'* and in small quantity, especially where glass nozzles are used, to whose smooth surface the carbon does not readily adhere, so that the outflow of the gas and the size of the flame are not interfered with.

I claim as my invention—

In a single-jet gas-burner the combination of a socket *b* adapted for being screwed to a gas-pipe and formed with an annular recess, a nozzle *a* having a trumpet-shaped outlet-orifice and an india-rubber ring *c* inserted into said annular recess and surrounding said nozzle.

In testimony whereof I have hereunto set my signature in the presence of two witnesses.

JOHN GEORGE AULSEBROOK KITCHEN.

Witnesses:
CARL BOLLÉ,
RIDLEY J. URQUHART.