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H. HOARE & M. J. KENNEDY.

CENTRAL STATION CONTROLLED AUTOMATICALLY LIGHTED AND EXTINGUISHED GAS BURNER.

(No Model.) (Application filed Sept. 14, 1898.)

Fig: 2.

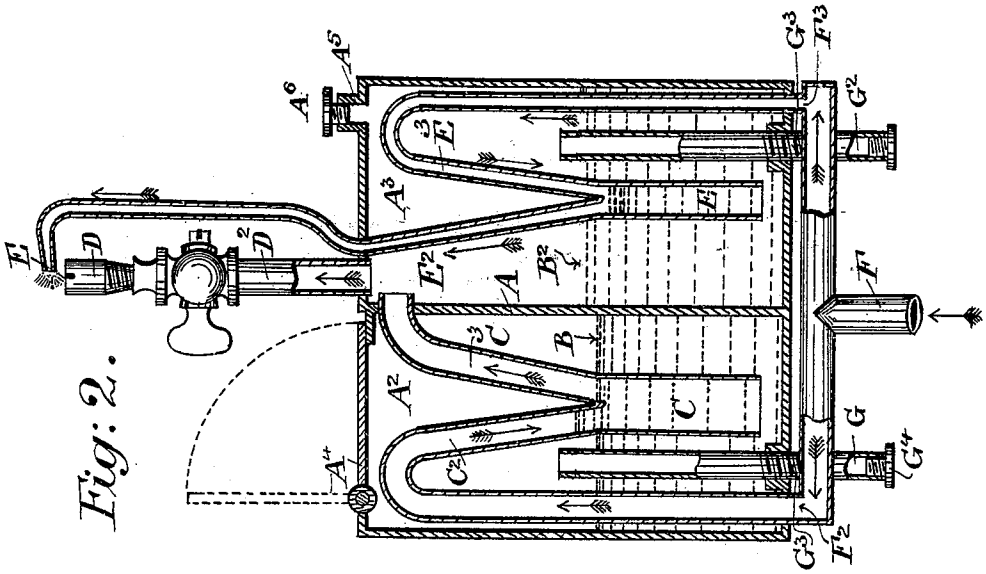
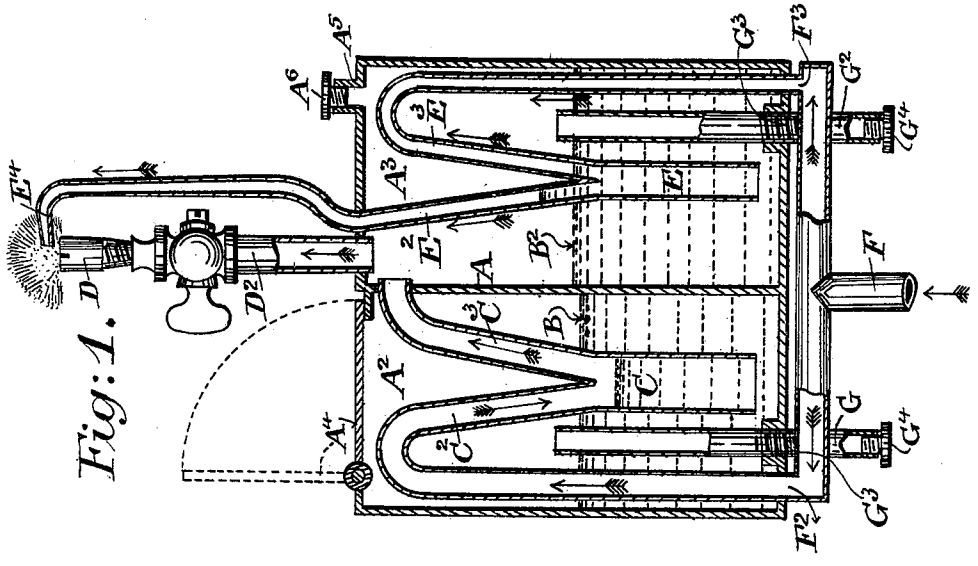


Fig: 1.



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UNITED STATES PATENT OFFICE.

HENRY HOARE AND MATTHEW JOSEPH KENNEDY, OF PERTH, WESTERN AUSTRALIA, ASSIGNORS TO THE AUTOMATIC GAS LIGHTING AND EXTINGUISHING COMPANY, LIMITED, (HOARE & KENNEDY'S PATENT,) OF SAME PLACE.

CENTRAL-STATION-CONTROLLED AUTOMATICALLY LIGHTED AND EXTINGUISHED GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 635,933, dated October 31, 1899.

Application filed September 14, 1898. Serial No. 690,969. (No model.)

To all whom it may concern:

Be it known that we, HENRY HOARE and MATTHEW JOSEPH KENNEDY, subjects of Her Majesty the Queen of Great Britain, residing at No. 218 Wellington street, in the city of Perth, Colony of Western Australia, have invented certain new and useful Improvements in Methods of and Apparatus for Automatically Lighting and Extinguishing Gas-Jets; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the lighting and extinguishing of gas jets or lights at any given point from a distance from such jets by means of utilizing the increase or decrease of the pressure of the gas in the mains. At present in many instances, especially where incandescent mantle-burners are used, the employment of a constantly-burning pilot or by-pass flame is required, while by means of this invention such by-pass flame is in requisition only during such time as the main flame is extinguished, and, conversely, when the latter is alight the by-pass flame is extinguished. In other words, a reciprocal action is obtained by this invention as regards the main and the by-pass flames.

The invention essentially consists in the use and employment of a bifurcated or Y-shaped pipe, hollow chamber, or such like and equivalent form of construction. The trunk of such pipe is of such a length as to project downward sufficiently far into a body of water or other liquid so as to insure its lower end to be sealed by such liquid, which latter is contained in a chamber or vessel preferably of a circular form. This liquid may be water, oil, or glycerin; but a liquid of a non-evaporative nature would be used by preference in the working of this invention. One branch of this bifurcated-shaped pipe is connected to the gas-supply main, while the other branch leads to and is in connection with the burner. For the by-pass flame is used a secondary and similarly-constructed bifurcated pipe which is connected to its own burner and to the gas-supply in similar manner as that of the main-burner apparatus.

The chamber or vessel for containing the sealing liquid is divided into two compartments, one of which is sealed from the outer air, except as hereinafter mentioned, and this one contains the by-pass-flame apparatus, while the compartment which contains the main-burner apparatus is open to the air.

In order that the invention may be clearly understood, reference may be made to the accompanying drawings, in which—

Figure 1 is a sectional elevation illustrating the construction and arrangement of the apparatus, and in this figure the gas-passage for the main burner is shown open and the latter is illustrated as being alight, and, conversely, the gas-passage for the by-pass flame is closed and such by-pass flame is shown as extinguished, and in this figure the sealing liquids are shown at the levels necessary to operate for and obtain this result. Fig. 2 is a similar view to Fig. 1, except that the main burner is shown as extinguished and the by-pass flame alight, the sealing liquids being at the altered levels necessary to obtain such opposite result, as is shown in Fig. 1.

In the drawings an ordinary cylindrical vessel is shown divided by the partition A, whereby are formed the compartments or chambers, as A^2 and A^3, in which are respectively contained the sealing liquids, as B and B^2. The compartment A^2 is open to the air and is provided with a hinged door, as A^4, while the compartment A^3 is sealed from the outer air, except by way of the main burner, and is provided with a filler, as A^5, having a screwed cap, as A^6.

In the chamber A^2 is placed the bifurcated or Y-shaped pipe branched apparatus, whose lower end or trunk C depends down into the sealing liquid, as B. The branch C^2 of this apparatus is connected to the main gas-supply pipe, and C^3 is its fellow branch for supplying the main burner D in manner as shown by its pipe and connections, as D^2.

In the chamber A^3 is placed the bifurcated-pipe apparatus for the by-pass flame, which apparatus is constructed in similar manner

as that for the main burner and having the trunk, as E, which projects into its own sealing agent, as B^2, and also made with the branches E^2 and E^3.

E^4 is the by-pass-flame or pilot burner suitably connected to the branch E^2, as shown.

F is the pipe leading from the gas-supply main and having two vertical extensions, as F^2 and F^3, which respectively connect to the branches C^2 and E^3. The extension-pipe F^3 is smaller than that of F^2 for obvious reasons.

G and G^2 are pipes whose purpose is to regulate the predetermined levels of the sealing liquids B and B^2 in their respective chambers, such pipes being screwed, as at G^3, for such purpose, so as to be vertically adjustable. These pipes are provided with screw caps or covers, as G^4.

The working and method of the use of this invention are as follows, and in this explanation the pipes D^2 and E^2 and their burners D and E^4 are open to the air, and also the sealing liquids B and B^2 are placed in the compartments, as A^2 and A^3, to the correct predetermined levels by means of the regulator-pipes G and G^2: Immediately upon the increased or what may be technically termed the "night" pressure being turned on in the gas-main from the gasworks or other such central pressure-controlling point the gas passes through supply-pipes F and F^2, and so into the branch C^2 of the bifurcated or Y-shaped pipe apparatus, and also passes up through pipe F^3 into pipe E^3, and its pressure is concurrently exerted on the faces of those portions of the sealing liquids B and B^2 which are contained within the trunk-junctions C and E of such bifurcated pipes. Reverting to the trunk C, in which the gas displaces such fluid B to the necessary extent, as is shown by the level in Fig. 1, so as to result in the creation of a passage for the gas, which now proceeds in its travel through the fellow branch C^3 and is delivered into the pilot-chamber A^3, from which latter chamber the main burner D is fed by its pipe connection D^2, as shown, whereupon the burner D in the first instance is obviously lighted by hand. It is also evident that as the liquid is displaced in the trunk C it rises to a reciprocal level in the chamber A^2, as shown in Fig. 1. The gas delivered from the branch C^3 into the sealed chamber A^3, and such gas being at the night pressure, obviously exerts such pressure on the face of the sealing liquid B^2 in its chamber A^3, with the result that such liquid is forced up the trunk E^2, and so effectively closes the by-pass-flame passage in the bifurcated apparatus belonging to such by-pass flame E^4. Upon the pressure being reduced to what is termed "day" pressure the liquid B is found to rise in the trunk C and so close the main-burner passage and the liquid B^2 to concurrently fall in the trunk E^2 and open the passage which supplies the by-pass burner E^4, which is ignited by the expiring flame of the main burner D, and such pilot-flame will continue to burn for the reason that the liquid B^2 in chamber A^3 is open to or under atmospheric influence, resulting in the fact that the pressure on the liquid is less outside of the tube E^2 than inside, and so the liquid is forced down in such tube. Upon increasing the gas-pressure sufficiently the liquid would be forced down tube C and correspondingly upward in chamber A^2, as shown in Fig. 1. It is apparent that upon the gas flowing through the tube C^3 the chamber A^5 would then contain gas under pressure, and consequently the liquid B^2 would be forced down in such chamber and up the tube E^2, so closing the passage and thereby cutting off the pilot-flame.

We do not limit ourselves to the exact angle of the branches, or to an arbitrary shape of the apparatus as a whole, or to the materials or general arrangement of its construction, or to the nature of the liquid or fluid which may be used as an equivalent sealing agent to those as hereinbefore specified; but

What we do claim as our invention, and desire to secure by Letters Patent, is—

1. An apparatus consisting essentially of a bifurcated or Y-shaped pipe, tube or chamber, the trunk end of which depends or is placed into a sealing liquid and its other branches being in connection with the gas-main and burner respectively, the junction of such branches and trunk providing or forming means for allowing a passage to be opened or closed respectively for or against the gas-current by the utilization of the different pressures which cause the displacement and replacement of a liquid in the manner as above set forth and substantially as and for the purposes herein described and set forth and as illustrated in the accompanying drawings.

2. An apparatus consisting essentially of divided chambers as A^2 and A^3 in which are confined sealing agents or liquids as B and B^2 and such chambers being each provided with a bifurcated or Y-shaped tubular formation whose branches at their junctions provide means for allowing passages to be opened for or closed against the gas-currents by the displacement and replacement therein of a liquid caused by the differing pressures substantially as and for the purposes herein described and set forth and as illustrated in the accompanying drawings.

In witness whereof we have hereunto set our hands in presence of two witnesses.

HENRY HOARE.
MATTHEW JOSEPH KENNEDY.

Witnesses:
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FRED. WALTHAM.