

No. 714,265.

Patented Nov. 25, 1902.

J. VAILLANT.  
SAFETY BY-PASS DEVICE FOR GAS BURNERS.

(Application filed Nov. 5, 1901.)

(No Model.)

Fig. 1.

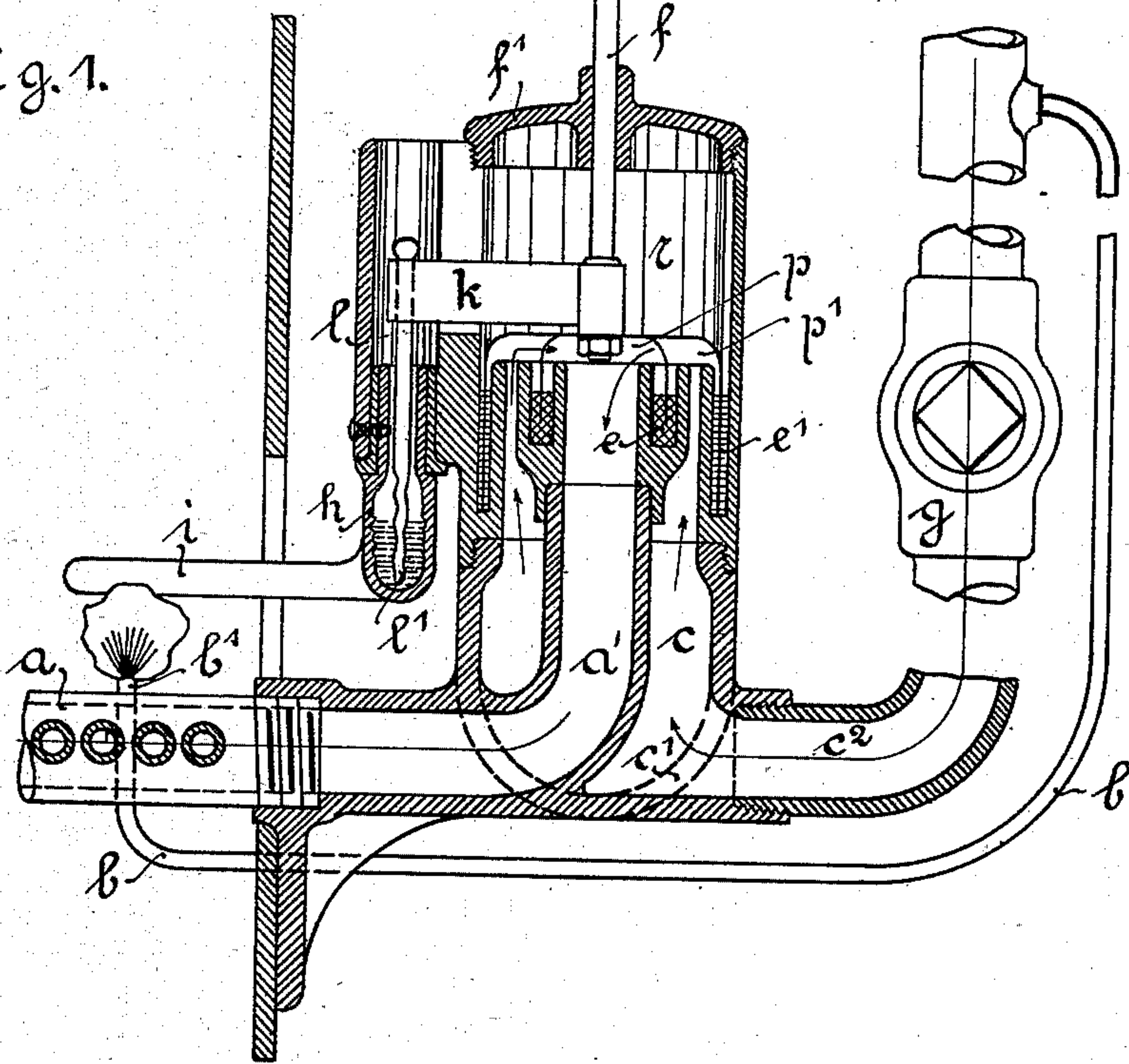
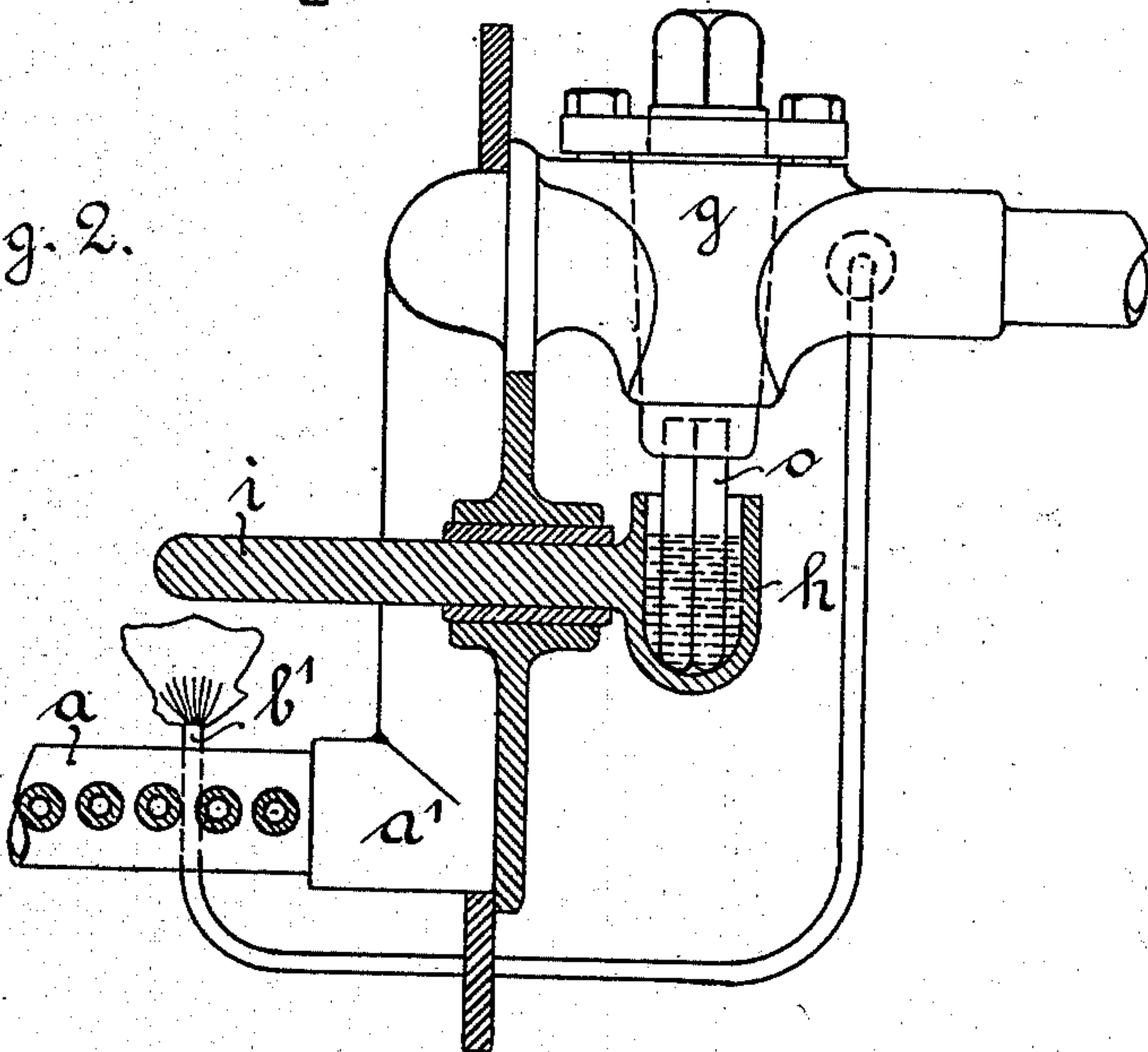


Fig. 2.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## SAFETY BY-PASS DEVICE FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 714,265, dated November 25, 1902.

Application filed November 5, 1901. Serial No. 81,198. (No model.)

*To all whom it may concern:*

Be it known that I, JOHANN VAILLANT, a subject of the German Emperor, residing at 13<sup>c</sup> Berghauser street, Remscheid, in the Province of the Rhine, Kingdom of Prussia, Germany, have invented a certain new and useful Improvement in Safety By-Pass Devices for Gas-Burners, of which the following is a specification, reference being had therein to the accompanying drawings.

In connection with by-passes as at present used for heating, illuminating, and other gas services it is possible for serious accidents to arise should such by-pass become extinguished, as then an escape of gas would follow, and in cases where the supply of gas may be regulated by a tap or cock at a distance therefrom said extinguishing of the by-pass flame may not be known to the operator until an explosion occurs; and to provide means to prevent such accidents is the object and purpose of my invention, which consists of the construction and use of a device by means of which the gas can only issue from the burner or burners when the by-pass is alight.

Figure 1 is a vertical section of my invention according to one form of construction, while Fig. 2 illustrates an alternative form of utilizing the heat from the by-pass for safety purposes, though both are based upon the same principle of action, and in which for purposes of illustration it is assumed that my invention is employed in connection with stoves or other heating devices in which a series of holes in alinement or other form or forms exist, from which the gas or gas mixture escapes and is ignited. The tubes in which is provided such series of holes or igniting part or parts are represented in the drawings by *a*, suitable means being provided by which this may be connected to my invention.

In carrying my invention into effect I cast or otherwise provide of any suitable metal or material a device having a tubular portion *a'*, the lower and preferably horizontal end of which is adaptable for connection with the burner *a*, while its upper and vertical end is connected thereto or is adapted to form an annular groove or well *e*. The frame or casing of the device is constructed so as to form

a second annular groove or well *e'*, parallel with and outside of *e*, and above these is placed an inverted bell having two mouths *p* and *p'*, respectively, the former of which dips into the groove or well *e* and the latter into the groove or well *e'*. The casing of the device is also constructed to form around the vertical portion of the tube *a'* a chamber *c*, having an inlet-mouth *c'*, to which is connected a gas-supply pipe *c''*, governed by a suitable tap or valve *g*, from which gas is allowed to enter into the chamber *c*, and beyond the said tap or valve *g* a gas-conduit *b* is provided, which supplies gas to a by-pass burner *b'* in the usual way.

The annular grooves or wells *e* and *e'* may be charged with water, mercury, or other fluid, so that while the mouths *e* and *e'* of the bell-valve *d* dip thereinto a seal is thereby formed and gas cannot pass from *c* into *a'* to feed the burners *a*. The said bell-valve is connected to a vertical rod *f*, adapted to slide in a vertical passage formed in the cover *f'* of the case or frame, so that the said bell-valve *d* may rise and fall in the chamber *c*. Rod *f* carries an arm *k*, in the free end whereof is a suitable hole in which may freely slide a vertical rod *l*, jagged, threaded, or otherwise irregularly formed at its lower end *l'*, which dips into a chamber *h*, partially filled with any suitable substance or compound that will set hard when cold and fluidize when hot—such, for instance, as crude paraffin or other wax, lead, pewter, &c. The said chamber *h* is constructed to form or has connected thereto a horizontal projection *i*, which extends over the by-pass burner *b'* and may be heated thereby.

To close the apparatus from work, downward pressure may be exerted upon the rod *f* until the bell-valve is in its lowest position, with its mouths *e* *e'* dipping into the seals in the grooves or wells *p* *p'*, when if the gas be turned off at the by-pass burner until the substance in *h* is sufficiently cold to retain the rod *l* such pressure of *f* may be released, as the bell-valve would be prevented from rising by the hold of the rod *l* upon arm *k*, connected to the rod *f*.

When the apparatus is to be placed in a position for working, the by-pass burner *b'* may be lighted, which would make hot the projec-



tion *i*, and the heat conveyed from this to the chamber *h* would fluidize the substance or compound therein and so release the rod *l*. If now gas be turned on at the valve or tap *g*, the pressure from this would raise the bell-valve into the chamber *r*, and the rising of this would cause the arm *k* to lift the now released rod *l*, and such rising of the bell-valve would cause its mouths *p p'* to be lifted out of the fluid in the grooves or wells *e e'*, when gas would pass to the burners *a* in the direction of the arrows and there be lighted by the by-pass burner *b'*. When the heating apparatus or the like is done with, this may be extinguished by turning off the gas at *g*, which may be any distance away, the by-pass burner *b'* still remaining alight until when required, and such turning off of the gas at *g* would remove the pressure and allow the bell-mouthed valve to fall into its grooves or wells *e e'* again and the rod *l* into its lowest position in the melted substance in *h*.

Now in ordinary apparatus when the heating-burner *a* is a long distance from the tap or cock *g* if the by-pass light should be accidentally or spontaneously extinguished gas would escape from the burners *a* when next the gas was turned on at *g* and an explosion probably ensue; but according to my invention if such by-pass light should be so extinguished when the gas was turned off at *g* the projection *i* and chamber *h* would get cold and the substance or compound in the latter solidify, thus retaining in captivity the rod *l*, so that the bell-valve being thereby held with its mouth *p p'* sealed in the grooves or wells *e e'* gas when turned on at *g* would not pass such seal to enter the passage *a'* until the by-pass burner was again lighted and the chamber *h* again heated. Hence the attainment of the object of my invention.

Fig. 2 illustrates an alternative arrangement of the chamber *h* and means for dispensing with the bell-valve. In this device it is assumed that the gas-tap *g* is vertically disposed and adjacent to the chamber *h*, so that the lower end of said tap may have attached thereto or be constructed to provide a depending pin *o* of triangular, rectangular, or polygonal formation in cross-section and dips into the substance or compound in *h*. The gas in this arrangement passes directly into the passage *a'* when the tap or cock *g* is turned on; but if, as previously described, the

by-pass light should become extinguished after turning off the gas at *g* according to this device the solidifying of the substance or compound in *h* would hold the pin *o* and prevent the turning on or off of the gas at *g* until the by-pass burner was again lighted.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a safety by-pass device for gas-service burners, the combination with the gas-supply conduit, of a chamber containing a substance capable of liquefaction by heat, and serving by its change of state to control the movement of a valve, said valve governing the gas-supply, and a by-pass burner, the latter being arranged to heat said chamber, substantially in the manner and for the purpose set forth.

2. In a safety by-pass device for gas-service burners, the combination with the gas-supply conduit, of a chamber containing a substance capable of liquefaction by heat, and serving by its change of state to control the movement of a valve, said valve governing the gas-supply, a by-pass burner, and a projection extending from said chamber to said by-pass burner, said projection conveying the heat to said chamber, substantially in the manner and for the purpose set forth.

3. In a safety by-pass device for gas-service burners the combination of a case or frame, a chamber therein, a gas-conduit, opening in said chamber, and a cock or tap, governing said gas-conduit, a double bell-valve for admitting gas into the conduit, grooves or wells for said bell-valve forming a liquid seal by dipping into said grooves, a chamber, a cover for said chamber, and a rod projecting through said cover into said chamber and having attached to it said bell-valve, adapted to slide in said chamber, an arm carried by said rod, a rod or pin carried by said arm and a chamber charged with any suitable substance, capable of liquefaction by heat, said rod or pin dipping into said chamber, a projection extending from said chamber for conveying heat thereto and a by-pass burner, heating said extension, all substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHANN VAILLANT.

Witnesses:

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