

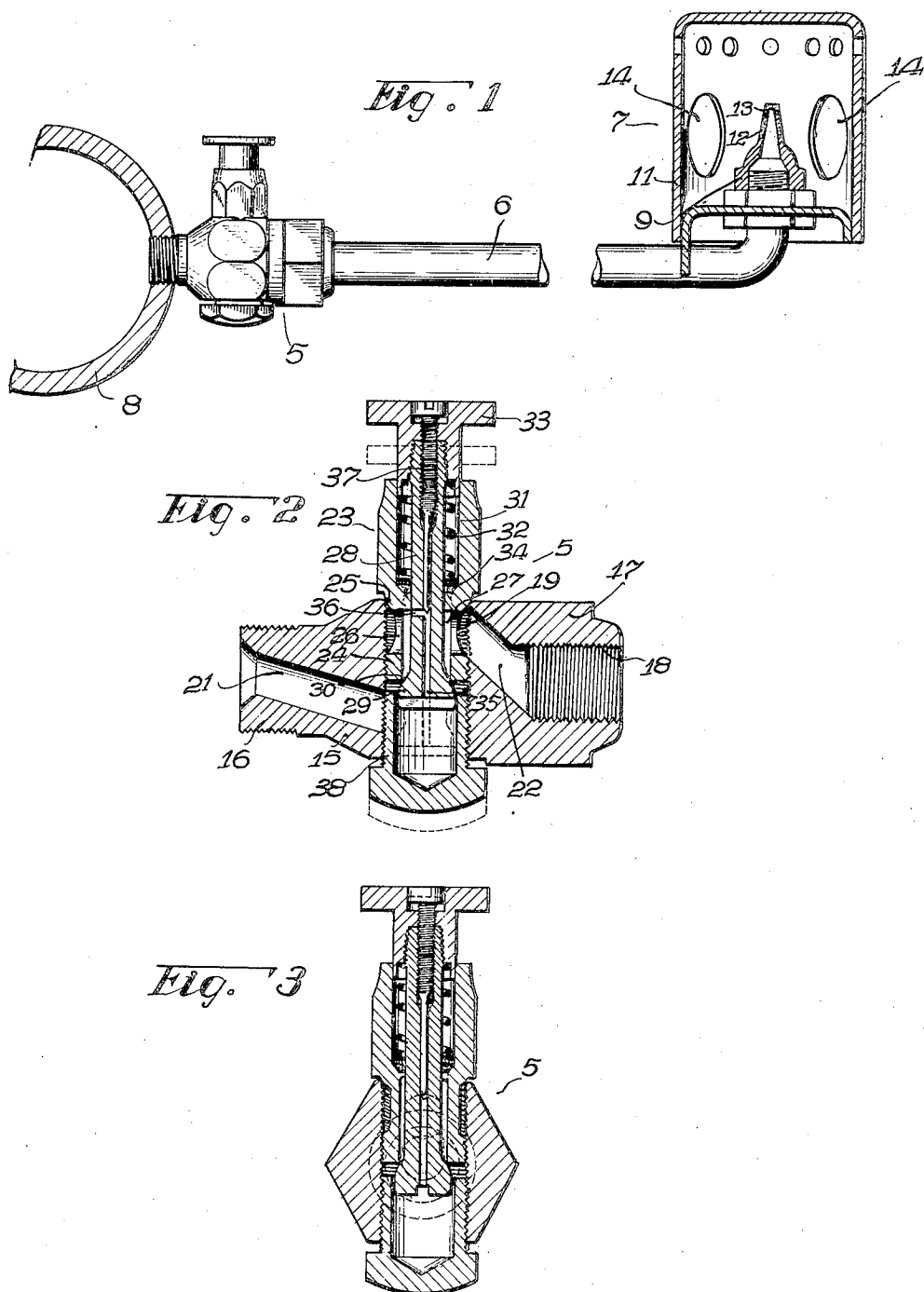
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FLASH IGNITER VALVE

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## UNITED STATES PATENT OFFICE.

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## FLASH-IGNITER VALVE.

Application filed September 6, 1921. Serial No. 493,364.

*To all whom it may concern:*

Be it known that I, OSCAR J. LEINS, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Flash-Igniter Valves, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The present invention relates to valves for flash igniters such as are commonly employed for lighting the burners of gas stoves and ranges. Igniters of this class usually include a firing head for directing a narrow jet of flame toward any or all of the several burners. A small pilot light is constantly maintained for the purpose of igniting the lighting flame. For expediency of operation, it is desirable that the igniting flame be produced by means of a valve which is adapted for instantaneous operation, such as a plunger valve which can be operated by the housewife by a simple depression of a plunger button.

This type of valve is not generally capable of accommodating the different gas pressures which prevail in different localities. For example, natural gas usually has a different pressure from artificial gas, and apart from these two is high pressure artificial gas which has still a different pressure. When an igniter is designed for one gas pressure its operation is usually very unsatisfactory when used under a different pressure. If the latter pressure is much lower the igniting flames do not reach the burners, while if the pressure is considerably higher, the flames are likely to flash beyond the burners and probably completely out of the stove with possibilities of dangerous consequences.

It is one of the principal objects of the present invention to provide a construction of igniter which will have provision for adapting the device to widely different gas pressures. For simplicity and cheapness of construction, this pressure adjustment is preferably embodied directly in the valve unit of the igniter, although it may be em-

bodied at any other point in the igniter if preferred.

A further object of the invention is to provide a simplified construction of valve mechanism of few parts which can be manufactured at a relatively low cost, and which embodies an improved adjustment for regulating the pilot light.

In the accompanying drawing forming a part of this specification:

Figure 1 is a broken elevational view of an igniter embodying my invention;

Figure 2 is an enlarged longitudinal section through the valve mechanism; and

Figure 3 is a transverse section of the same.

The igniter illustrated is adapted for mounting between the cluster of burners of the ordinary cooking stove, and comprises the valve unit 5, the connecting pipe 6 and the firing head 7. The valve unit 5 threads into the supply pipe 8 extending across the front of the stove, and the firing head 7 is located centrally between the burners for projecting a plurality of igniting flames outwardly to each of the burners. The firing head 7 consists of a tip or nozzle 9 mounted on the end of the pipe 6, and a hood 11 surrounding the tip 9 and protecting the same from drafts. The gas issues from ports in the tip 9 to form a pilot flame at the upper end of the tip, the tip having different arrangements of ports for gases of different characteristics, such as the lower series of ports 12, or the lower and upper series of ports 12 and 13. When the full gas pressure is admitted to the tip, these ports emit igniting flames through apertures 14 in the hood 11.

The valve unit 5 comprises a valve body or casing 15 having an externally threaded nipple 16 at one end for screwing into the supply pipe 8. At the other end a hub 17 is formed with a threaded bore 18 for receiving the end of the pipe 6. Extending transversely through the valve body 15 is a threaded bore 19, which is of uniform diameter from end to end. The threaded nipple 16 is provided with a diagonal drill hole 21 which extends downwardly to intersect the lower part of the transverse bore

19, and a second diagonal drill hole 22, drilled from the upper end of the bore 19, intersects the horizontal bore 18.

A valve cage 23 screws down into the upper end of the transverse bore 19, the lower end of this valve cage being threaded for screwing into the bore and closing the same intermediate the passages 21 and 22. The cage is formed with a conical or rounded shoulder 25 which is adapted to bear against the upper edge of the bore 19 and seal the same against leakage. Above the threaded portion 24 the valve cage is provided with a horizontal drill opening 26 extending entirely therethrough and intersecting a longitudinal passageway 27 in the lower end of the valve cage. A valve stem 28 extends downwardly through the passage 27 and is formed with a spherical or conical valve head 29 which is adapted to seat against the shoulder 30 at the lower end of the passageway 27. The upper end of the stem 28 extends through an enlarged bore 31 in the upper end of the valve cage in which is confined a compression spring 32. A button or cap 33 is threaded over the upper end of the stem 28 for reciprocation in the bore 31, and the lower end of this bore is closed against leakage of gas from the lower bore 27 by the provision of a packing 34 consisting of a washer and packing ring against which the lower end of the spring 32 bears.

A restricted flow of gas is maintained in shunt of the valve 29—30 through a longitudinal bore 35 in the valve stem for maintaining the pilot light at the firing head 7. The bore 35 is intersected by a horizontal bore 36 which opens into the valve cage area 27. A metering screw 37 threads down through the cap 33 and upper end of the plunger stem and adjustably controls the flow of gas for the pilot valve at the juncture of the bores 35 and 36.

The main flow of gas for creating the lighting flames is adjustably controlled by a screw plug 38 which threads up into the lower end of the transverse bore 19, this plug having the usual polygonal head for its easy manipulation. This screw plug is recessed from its inner end for receiving the valve head 29 when the same is depressed, this recess being larger than the valve head for permitting the free flow of the pilot supply of gas between the valve head and plug. The plug 38 performs its regulating function by restricting the effective area of the diagonal bore 21 through adjusting the height of the upper edge of the plug. For a relatively high gas pressure the plug would be threaded up into the bore 19 to impose considerable restriction at the bore 21, and for a relatively low gas pressure the plug would of course be threaded down as indicated in dotted lines to expose a greater

area of the bore 21. In this manner, the length and intensity of the lighting flames from the firing head can be conveniently regulated for any pressure encountered.

It will be noted that by embodying the pilot supply passage and metering screw in the main valve member, and by disposing the valve cage and plug member 38 in the same transverse bore, that the number of gas passages in the valve body 15 is reduced and the construction of the valve body is otherwise simplified. The mounting of the main valve and the pilot valve in the valve cage 23 permits convenient removal or substitution of the valve members without dismounting the valve body 15 or firing head from its position in the stove. The arrangement illustrated is preferred but it will be understood that in lieu of the adjustable plug shown an arrangement of interchangeable plugs of different heights might be used, or interchangeable plugs having calibrated orifices could be used.

I claim:

1. In a device of the class described, a valve casing having a bore extending transversely therethrough and forming a well, a fuel inlet opening into said bore, a fuel outlet opening from said bore, a valve cage mounted in one end of the bore, a valve mounted in said cage, said valve affording means for supplying a restricted flow of fuel to the outlet and being operable to increase said supply and a controlling member adjustably mounted in and closing the opposite end of the transverse bore, said member controlling the pressure of the fuel supply to the well.

2. In a valve for flash igniters and the like, the combination of a valve casing having a transverse threaded bore therein, admission and discharge passages intersecting said bore at opposite ends thereof, a valve cage threaded into said bore, said valve cage comprising an end portion forming a closure member for closing said bore intermediate said passages, a valve seat on said closure portion, a valve cage passage extending from said valve seat, said valve cage passage having an opening communicating with one of said first named passages, a valve stem extending through said valve cage passage and having a valve head seating on said valve seat, a spring normally retaining said valve seated, a hole in said valve member in shunt of said valve and valve seat, a screw member for imposing an adjustable restriction in said hole, and a plug threading into the other end of said transverse bore for imposing an adjustable restriction at one of the first mentioned passageways in said valve casing.

3. In a device of the class described, the combination of a valve casing having a transverse well, admission and discharge

passages opening into and from said well, a  
controlling member mounted in one end of  
said well and adapted for regulating the  
fuel supply thereto, a valve cage mounted  
5 in the opposite end of the well independ-  
ently of said controlling member, and a  
valve mounted in said cage and affording  
with said cage means for supplying re-  
stricted and increased flows of fuel to the  
discharge passage.  
10 In witness whereof I hereunto subscribe  
my name this 2nd day of September, 1921.

OSCAR J. LEINS.