Oct. 13, 1936. L. W. JEDEKA 2,057,193

AUTOMATIC BURNER IGNITER

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Fig. 1

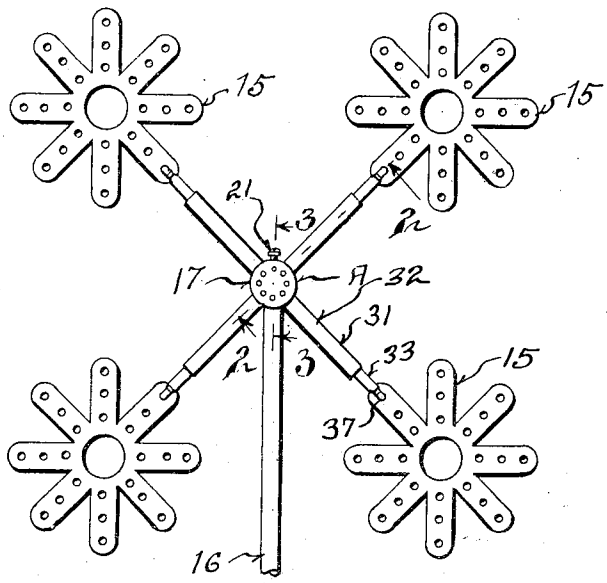


Fig. 2

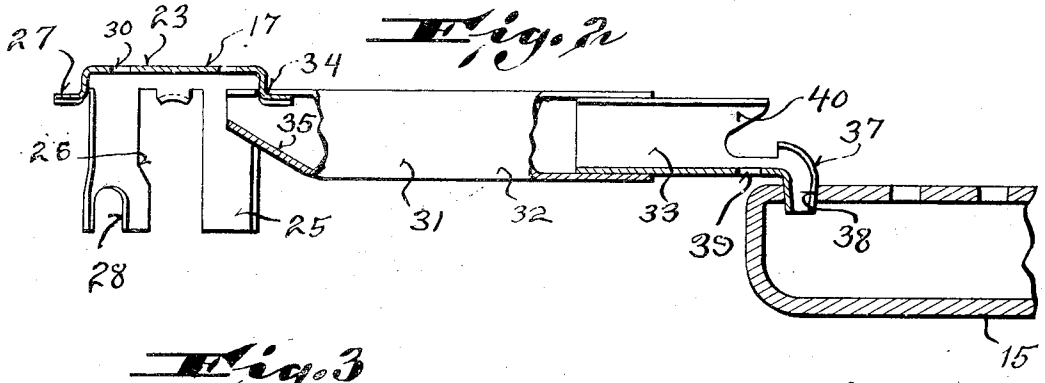


Fig. 3

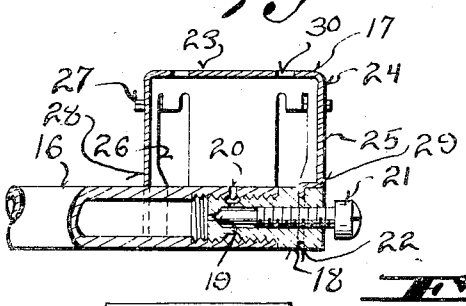


Fig. 4

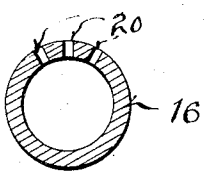
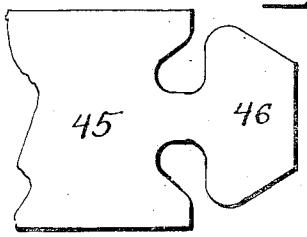


Fig. 13



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Fig. 5

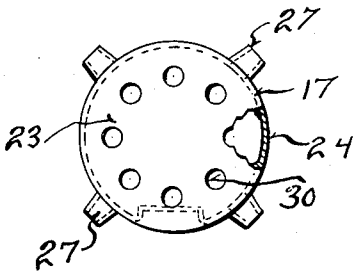


Fig. 6

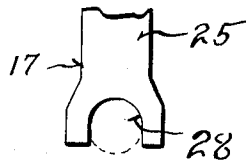


Fig. 7

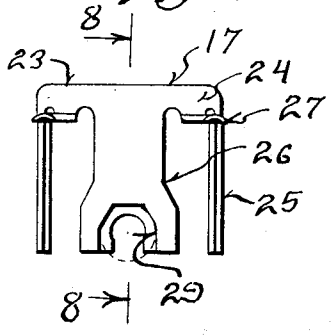


Fig. 8

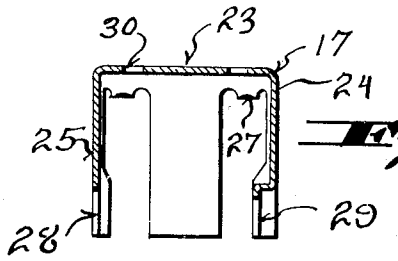


Fig. 12

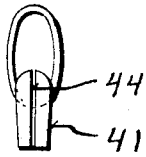


Fig. 9

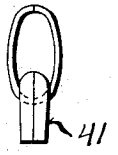


Fig. 10

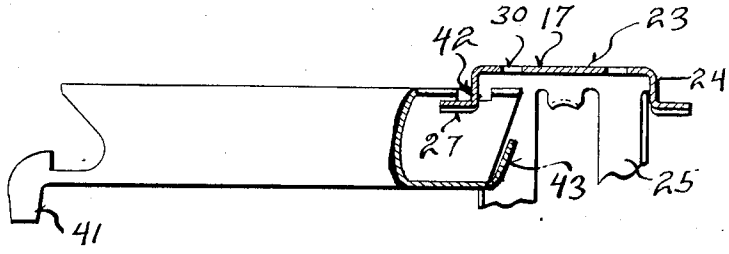


Fig. 11

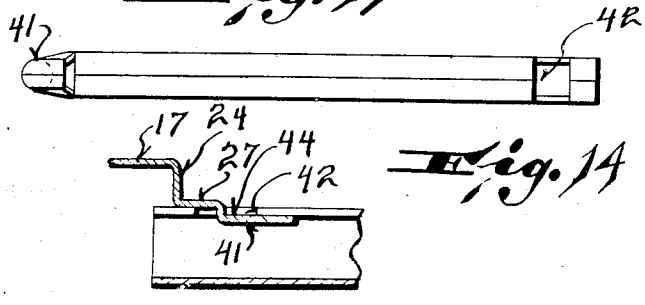


Fig. 14

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UNITED STATES PATENT OFFICE

2,057,193

AUTOMATIC BURNER IGNITER

Lloyd W. Jedeka, Milwaukee, Wis., assignor, by mesne assignments, to Milwaukee Gas Specialty Company, Milwaukee, Wis., a corporation of Wisconsin

Application October 10, 1932, Serial No. 636,970

2 Claims. (Cl. 158—115)

This invention appertains to an automatic igniting device for the standard burners of gas cook stoves, and more particularly to gas burner lighting devices of the so-called "flash-back" type. In gas stove lighting devices of this type, a central lighted pilot is provided with gas collecting tubes radiating therefrom toward the burners so that when a burner is turned on, escaping gas therefrom will be led from the tube to the pilot and ignited thereby, causing a flash through the tube to the burner for lighting the same.

While lighting devices of this character having many commendable features are in use, there are certain detrimental characteristics inherent in the use thereof. First, there is always danger that the flash in one of the tubes will extinguish the pilot; second, when boiling over of the kettles extinguishes the flame in the burners, frequently the lighter fails to function; and third, all of these devices with which I am familiar are somewhat complicated and expensive to manufacture, and the maximum amount of efficiency is not obtained therefrom.

It is therefore one of the salient objects of my invention to provide an igniting device which will effectively accomplish its purpose, and one which can be readily and quickly associated with a standard gas cook stove.

Another salient object of my invention is to provide novel means for forming the hood for the pilot from a single stamping to reduce the cost of manufacture and to increase the ease of rigidly associating the same with the pilot and pilot feed pipe and to decrease the possibility of the pilot being blown out by the wind.

A further important object of my invention is to provide a novel means for constructing the hood of the pilot whereby a maximum amount of air is provided for supporting combustion of the pilot light without danger of the pilot light being extinguished by a gust of air.

A further object of my invention is to provide novel means for forming the flash tubes from metal stampings and to so construct these tubes as to increase the air entrainment and thereby insure the proper mixing of the air and gas in the tubes.

A further object of my invention is to provide novel means for associating the flash tubes with the hood whereby adjustment can be obtained for the tubes relative to the burners so as to take care of any irregularities in the spacing and positioning of the burners relative to the hood or pilot.

A still further object of my invention is to provide an improved igniting device for the burners of gas stoves, which will be durable and efficient in use, one that will be simple and easy to manufacture and one which can be placed upon the market and incorporated with a standard stove at a small cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, in which:

Figure 1 is a top plan view illustrating the application of my improved igniting device applied to the four burners of a gas stove.

Figure 2 is an enlarged framentary detail vertical section taken on the line 2—2 of Figure 1 looking in the direction of the arrows illustrating my novel hood for the pilot and one type of my novel flash tubes.

Figure 3 is a detail vertical section taken on the line 3—3 of Figure 1 looking in the direction of the arrows illustrating my novel hood and showing the method of attaching the same to the feed pipe for the pilot.

Figure 4 is an enlarged transverse section through the pilot feed pipe showing the pilot burner openings therein.

Figure 5 is a top plan view of my improved hood, parts thereof being shown broken away and in section.

Figure 6 is an enlarged fragmentary detail side elevation of one of the legs of the hood employed for engaging the feed pipe for the pilot.

Figure 7 is a rear elevation of the hood for the pilot.

Figure 8 is a vertical section through the same taken on the line 8—8 of Figure 7 looking in the direction of the arrows.

Figure 9 is an end elevation of one form of my improved flash tube.

Figure 10 is a fragmentary side elevation illustrating the means of adjustably connecting one of the flash tubes with the hood of the pilot.

Figure 11 is a top plan view of one of the flash tubes.

Figure 12 is an end elevation of one flash tube showing a slightly modified form thereof.

Figure 13 is a fragmentary top plan view of the blank from which a flash tube can be constructed.

Figure 14 is a detail fragmentary vertical sectional view illustrating a slightly modified form

of means for adjustably connecting one of the flash tubes with the hood of the pilot.

Referring to the drawings in detail, wherein similar reference characters designate the corresponding parts throughout the several views, the letter A generally indicates my improved igniting device for a plurality of standard gas burners 15.

My improved igniting device A includes a pilot feed pipe 16 leading from the manifold or distributing pipe (not shown) of the gas stove. This gas feed pipe 16 leads toward the center of the stove and terminates equi-distantly between the burners 15. I provide a novel hood or cap 17 for the pilot and the pipe 16 leads to this hood. The outer end of the pipe 16 is closed by a plug 18 having formed on its inner end a needle valve seat 19. The pipe 16 at one side of the seat 19 is provided with a series of burner openings 20 which form the pilot.

By providing these openings arranged arcuately around the circumference of the pipe 16, I reduce the liability of the pilot being extinguished inadvertently. Threaded into the outer end of the plug 18 is a needle valve 21 and obviously, the amount of gas to the openings 20 can be readily controlled by said needle valve. The position of the pilot valve directly within the feed pipe is a decided advantage as I am enabled to control the flow of gas directly at the pilot and by providing the openings 20 directly in the pipe 16, I eliminate the use of pilot nipples and the like. Adjacent to the outer end of the plug 18, I provide an annular groove 22 and the inner wall of this groove is preferably of a polygonal configuration, for a purpose which will be later set forth.

Referring more particularly to the hood 17, which forms an important feature of my invention, it will be noted that the same is formed from a single stamping and embodies a flat disc-shaped top plate 23 having a depending annular flange 24 provided with spaced depending legs 25 forming openings 26 therebetween. The flange 24 between the openings 26 carries outwardly bent supporting tongues 27, for a purpose which will be later set forth, and it is to be noted that the metal for the tongues is formed from the metal struck out from the openings 26.

The front and rear legs 25 are formed in a special manner for engaging the pilot tube and as shown, the front leg is of a yoke shape as at 28 for resting over the pipe, while the rear leg is provided with an inwardly struck U-shaped yoke 29. This yoke 29 is preferably of a polygonal shape in elevation and is sprung into the groove 22 and rests on the outer end of the plug, which can also be of a polygonal shape. This prevents turning movement of the hood on the pipe and insures proper engagement of the hood with the pipe. As clearly shown in the drawings, the bottom of the hood is left open and this provides for the entrance of a maximum amount of air into the hood for supporting combustion. Also the top wall 23 of the hood is provided with air openings 30.

The hood 17 in conjunction with the burners 15 supports the flash tubes 31, which also form an important feature of my invention.

In Figures 1 and 2, I have illustrated one type of flash tube and as shown, each of the same include inner and outer sections 32 and 33. These sections are telescopically arranged so that the active lengths of the tubes can be changed to provide for different spacing of burners in different types of stoves. The section 32 and the section 33 are formed from independent blanks of sheet metal and the blanks are folded with their longitudinal edges in abutting relation to form the closed body. The inner end of each section 32 at its top wall is provided with a slot 34 for receiving its tongue 27 of the hood and the inner end of the section 32 is inserted within its opening 26 of the hood. By providing the tongue and slot connection, the flash tubes can be readily swung on the hood as by a pivot so that the tubes can be adjusted according to the height of the burners relative to the hood. The inner ends of the flash tubes below the slots 34 are provided with an upwardly inclined wall 35 which acts as a guard for preventing the extinguishing of the pilot when the gas within the tube is ignited.

Referring more particularly to the section 33 of the flash tube, it will be noted that the same is formed to provide a depending nipple 37 which is inserted within an opening 38 in its burner 15. Directly in front of the nipple 37, the section 33 is provided with a relatively large air entrance opening 39 and the outer end of the section is left open as at 40 above the nipple. This provides for means for drawing air into the tube upon the flow of gas through the tube from the nipple 37 and also allows the flashing back of the ignited gas over the burner openings of the gas burners.

By the construction so far, it can be seen that I have provided flash tubes constructed from metal stampings in which the active lengths thereof can be adjusted and in which the same can be raised or lowered to suit various conditions.

In Figures 9, 10, and 11, I have illustrated a slightly modified form of flash tube and in this form, the flash tube is formed from a single blank of sheet metal and is folded to provide a substantially tubular construction. This flash tube is likewise provided at its outer end with a depending nipple 41 for engaging in an opening in the burner and is otherwise constructed the same as the flash tube 31. However, the inner end of the flash tube, shown in Figures 9, 10, and 11, at its top wall is provided with an enlarged opening 42 whereby the supporting tongue 27 of the hood 17 can be readily inserted within the same, and whereby the flash tube can be moved in and out on the tongue to provide radial adjustment as well as adjustment in a vertical plane. In this form also the inner end of the flash tube is provided with a bent-up tongue 43 which acts as a guard for preventing the back flash of the ignited gas into the hood.

In the modification illustrated in Figure 12, the meeting edges of the nipple 41 are spaced apart to provide a slot 44, which permits a small flame to project over the end of the nipple to quickly ignite the burner flame in the event the same becomes extinguished by over-boiling pots or kettles, it being understood that the nipple is positioned in close proximity to the burner openings, as best shown in Figure 2.

In Figure 14 I have provided elongated offset extensions 44 on the supporting tongues of the hoods, and these extensions provide the means for closing the enlarged opening 42 in the tops of the flash tubes.

Particular attention is directed to the fact that the flash tubes are of a flattened construction. This is for the purpose of increasing the air entrainment into the tube and insures the proper mixing of the air and gas.

In Figure 13 I have shown a fragment of a blank

45 from which a flash tube can be made, and it is to be noted that the blank body is provided with an extension 46 which forms the nipples.

The formation of the nipples with the adjacent openings 39 and 40 is important to my invention, as the nipples act in the nature of an injector and insure the proper flow of the air into the flash tubes. Also, it will be noted that the passage within the nipple is arcuate, thus offering a minimum obstruction to the flow of gas therethrough, which insures maximum velocity, and, therefore, rapid operation of the lighter. Here it may be explained that the arcuate passage in the nipple may be formed in numerous ways. For instance, a right angle passage may be provided with an arcuate plate, or the nipple may be cast or formed in various ways.

The arrangement of the front and rear legs on the hood and the side baffles is also important, as these front and rear legs and side baffles, as heretofore stated, prevent the blowing out of the gas in the hood by a gust of wind.

From the foregoing description, it can be seen that I have provided an exceptionally simple and durable type of igniting device for gas burners, which will effectively accomplish its purpose and permit the ready association of the flash tubes with the burners, irrespective of any variation in the construction thereof.

Changes in details may be made without departing from the spirit or scope of this invention, but what I claim as new is:

1. In an igniting device for the burners of a gas stove, a pilot feed pipe having an open inner end, a series of openings in the pipe formed arcuately around the same defining pilot burner openings, a valve plug threaded into said open end of the pipe, a needle valve threaded into the plug, said plug being provided with a head at its outer end and an annular groove adjacent to said head, a hood for surrounding the openings in the pipe including a top wall and depending front and rear legs and side baffles, a yoke formed on the front leg for straddling the pipe, and a struck-in yoke formed on the rear leg for engaging in the groove of the plug and on the head of said plug.

2. In an igniting device for the burners of a gas stove, a pilot feed pipe having an open inner end, a series of openings in the pipe formed arcuately around the same defining pilot burner openings, a valve plug threaded into said open inner end of the pipe, a needle valve threaded into the plug, said plug being provided with a polygonal outer end and an annular groove adjacent to said polygonal end, a hood for surrounding the openings in the pipe including a top wall and depending front and rear legs and side baffles, a yoke formed on the front leg for straddling the pipe, and a struck-in yoke formed on the rear leg in a polygonal shape in elevation for engaging in the groove of the plug and on the polygonal portion of the plug.

LLOYD W. JEDEKA.