Aug. 31, 1937. J. V. KINDL ET AL 2,091,550

SAFETY DEVICE FOR GAS STOVES

Filed Feb. 24, 1933

Fig. 1

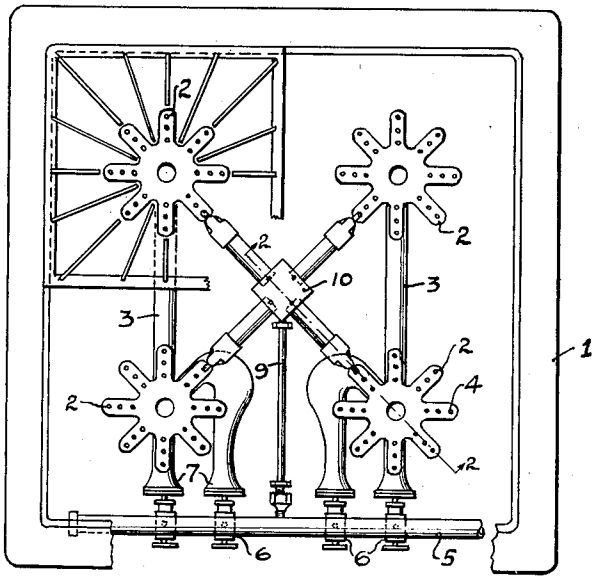


Fig. 6

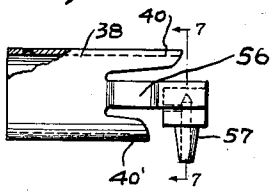


Fig. 7

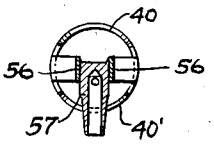


Fig. 2

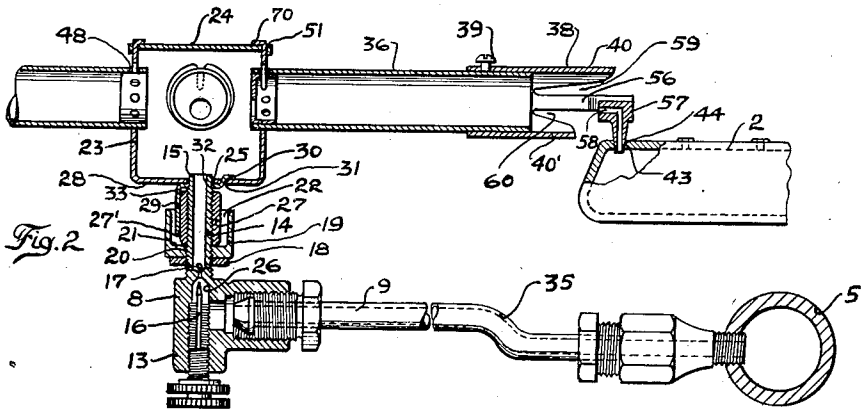


Fig. 3

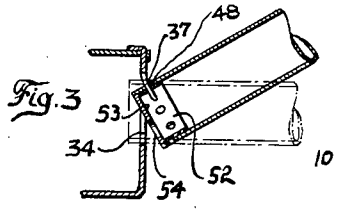


Fig. 4

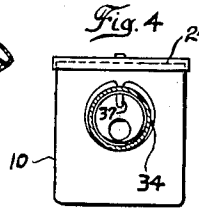
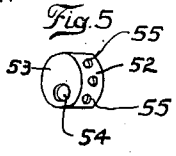


Fig. 5



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Patented Aug. 31, 1937

2,091,550

UNITED STATES PATENT OFFICE

2,091,550

SAFETY DEVICE FOR GAS STOVES

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Application February 24, 1933, Serial No. 658,451

2 Claims. (Cl. 158—115)

Our invention relates to improvements in safety devices for gas stoves, primarily adapted to prevent the escape of the gas into a room or dwelling in the event the gas is accidentally or otherwise turned on.

The invention contemplates the provision of a small but constantly burning pilot-light or burner arranged at a point substantially equidistant between the several main burners, and in direct communication with the latter whereby gas will be conducted from the main burners to the pilot where the gas becomes ignited and conveys the flame back to the main burners to ignite or light the same.

Heretofore considerable trouble has been experienced by manufacturers of pilot light equipment because the burners of a conventional gas stove, generally four in number, are frequently irregularly spaced with respect to each other, and thus prevent accurate alignment of the gas stream with respect to the pilot light.

One of the main objects of the invention is to provide adjustable means at the pilot end of the gas conducting tube which conducts the gas from the main burner to the pilot whereby the gas stream can be accurately directed towards the center of the pilot flame.

Another object is to provide means, at that end of the gas conducting tube which receives the gas from the main burner and returns the flame to the main burner, for insuring rapid lighting of the main burner.

Another object of the invention is to provide means for causing the gas to back up in the gas and flame conducting tubes and thereby insure substantially instantaneous transfer of flame from the pilot to the main burner.

In the accompanying drawing:

Figure 1 is a top plan view of a conventional type of gas stove, the grill being broken away, showing the relative position of the burners and illustrating the application of the improved lighting device;

Figure 2 is a section on line 2—2 of Figure 1;

Figure 3 is a fragmentary sectional view showing one of the gas and flame conducting tubes interlocked with a side wall of the hood, the dash-dotted lines showing the position of the tube before its interlocking with said wall;

Figure 4 is a side view of Figure 3;

Figure 5 is a perspective view of the cup-shaped washer adjustably mounted within the gas and flame conducting tubes;

Figure 6 is a side view of the tubular extension for the gas and flame conducting tubes; and

Figure 7 is a sectional view on line 7—7 of Fig. 6.

Referring more particularly to the drawing, 1 represents the top of a gas stove of conventional design, provided with a plurality of main burners 2, to which gas is supplied through tubes 3. The burners 2, four in number, are formed with the usual small openings 4 for the emission of combustible gas fed to tubes 3 from a main gas supply pipe or manifold 5, extending from the usual mains. The flow of gas to the tubes 3 and thence to the burners is controlled by valves 6, the tubes as usual being provided with air mixers 7.

The pilot light comprises a T fitting 8 mounted on one end of a tube 9, the other end of which is connected to the manifold 5. The fitting 8 includes a chambered body portion 13, formed with an upstanding hollow extension or stem 14 threaded exteriorly for a greater portion of its length and terminating at its upper extremity in a smooth tip portion 15. A needle valve 16 controls the flow of gas through the chamber 26 in body portion 13, while transverse openings 17 through the walls of hollow extension 14 supply the necessary air to the gas stream. The size of these openings can be regulated by means of threaded washer 18, which also serves as a stop for a recessed or cup-shaped nut 19 provided with a threaded opening 20 in its bottom wall 21 for threaded engagement with the stem 14. A sleeve nut 27 also threadedly mounted upon the pilot stem is adapted to enter the recess 22 of nut 19 in spaced relation to the walls thereof, and when screwed home against the bottom wall 21 locks the recessed nut 19 and threaded washer 18 against turning movement.

The hood 10, previously referred to, preferably formed of suitable gauge metal stampings, comprises a bottom wall 28, upwardly folded side walls 23 integral with the bottom wall, and a removable cap or top 24. The bottom wall 28 of the hood is formed with a centrally disposed opening 25 adapted to snugly receive the reduced unthreaded tip portion 15 of pilot stem 14. The hood is rigidly supported on the stem 14 for freedom of vertical sliding movement to permit of ready removal thereof, by means of a centrally apertured supporting member 29, having upwardly extending projecting portions 30 which extend through narrow slots 31 in the bottom wall of the hood and are adapted to be clinched by bending the extended ends of the prongs back upon themselves against the upper face of the bottom wall of the hood. The arrangement of the prongs and slots is such that opening 32 in

the supporting member will register with the opening 25 in the bottom wall of the hood when these parts are assembled. Member 29 is also formed with symmetrically arranged depending flat fingers 33 adapted to removably enter the recessed nut 19 and snugly engage or grip the flat polygonal faces 27' of sleeve nut 27.

In the present embodiment, the sleeve nut 27 is of hexagonal shape and the equally spaced fingers 33 are three in number, and correspond in width to the width of the faces 27' of nut 27. Consequently the fingers will engage alternate faces with wrench like effect when the hood is mounted upon the pilot. The member 29 thus serves not only to support the hood removably upon the pilot stem for rotary adjustment, but also provides convenient means for screwing up and unscrewing the sleeved lock nut 27 incident to assembly operations. The lock nut adjustments, preferably made at the factory, are such that the tip portion 15 of the pilot stem will protrude through and slightly above the bottom wall of the hood, and the conducting tube openings 34 will face toward the main burners 2. Thereafter any necessary adjustments will be so slight as not to interfere with the desired pilot flame action, as it will be seen that the hood can be rotated within a relatively wide range without causing any considerable change in height of the hood. The pilot will of course, always remain stationary, any slight vertical adjustment relative to the horizontal axis of lighter tube 9 being made at the factory, by bending or arching the tube as at 35 to conform to the manifold and main burner set-up requirements submitted by individual stove manufacturers. When seated within the recessed nut 19, the fingers 33 are protected from the deteriorating and distorting effect of the heat, and consequently are not liable to become jammed.

Each side wall 23 of hood 18 is formed with a relatively large round opening 34 for loosely receiving the inner ends of the gas and flame conducting tubes 36, one for each main burner 2, which tubes are connected at their outer ends to the main burners. Fingers 37 depending from the top portion of the wall of each opening 34 are adapted to loosely enter or fit in openings or slots 48 formed in the upper portion of the inner end of each tube 36 and thus hold the tubes removably in place, the tubes being free for slight adjustment in any direction. These fingers are slightly bent at their lower ends in an outwardly direction, and preferably are sufficiently flexible to facilitate assembly of the tubes by forcing the fingers inwardly after the tubes 36 have been assembled in the manner described in our co-pending application Serial No. 658,450 filed February 24, 1933.

Tubular extensions 38 sleeved on the outer ends of tubes 36 for longitudinal adjustment relative thereto, are fixed in any desired adjusted position by set screws 39. Each of these extensions is provided at its outer end with upper and lower lip portions 40 and 40' respectively. Arranged at each side of these extensions midway between the lip portions, is a forwardly and inwardly inclined projecting finger 56. A nipple 57 rigidly supported between the outer extremities of these fingers is secured thereto by riveting or in any suitable manner. The lower end of this nipple is preferably beveled to snugly but removably fit in a correspondingly shaped opening 43 formed in each burner 2 by enlarging one of the burner holes 44 thereof. This arrangement permits of the nipple being rigidly supported and also makes it possible to have the gas passage 58 coincide with the longitudinal axis of extension 38 and tube 36. Heretofore it has been the practice to extend the lip 40' and mount the nipple in the end thereof but this has proven unsatisfactory because the lip would frequently become bent due to rough handling and dropping. In the present construction lip 40', which is much shorter than upper lip 40 terminates short of nipple 57 and burner 2. The stream of gas emitted from burner 2 is axially guided through the extension 38 and tube 36 by the fingers 56, while the openings or slots 59 and 60 above and below these fingers surround the gas stream and insure proper mixture. The converging fingers 56 also serve in cooperation with the lips 40—40' and the nipple 57, to deliver the returning flame to all parts of the burner.

Whenever the burners 2 are turned on or whenever gas leaks occur, sufficient gas flows through nipples 57 into tubular extensions 38 and thence through tubes 36 to the hood 18 enclosing the tip portion 15 of the pilot where the gas becomes ignited and conveys the flame back to the burners.

The top or cap member 24 is secured to the hood by means of flat projecting portions 70, extending upwardly from each side wall of the hood, adapted to be inserted in correspondingly shaped slots 51 formed in the cover, and then bent back upon themselves against the top face of the cover as best illustrated in Figure 2.

In mounting the lighter, the hood can be rotated slightly in either direction to bring the tubes 36 into axial alinement with the burner openings 43, by merely loosening threaded washer 18 and sleeve nut 27. The outer ends of tubes 36 can also be elevated slightly, due to the loose fit of the inner ends thereof in openings 34 in the pilot housing, so that nipples 57 can be conveniently inserted in the openings 43, without danger of the tubes becoming disconnected from the housing during this operation. This loose fit also insures a desirable supply of secondary air to the pilot adjacent the point of gas discharge from the tubes 36. The pilot housing 10 and tubes 36 are readily removable as a unit for cleaning or inspection purposes, and when so removed the tubes will be held against accidental displacement by the fingers 37.

The inner ends of tubes 36 fit loosely in the openings 34 and are thus free to be moved slightly in any direction in order to direct the stream of gas issuing therefrom directly towards the center of the pilot flame issuing from the tip or nipple portion 15 of the pilot. However this flexibility has not proven adequate under all conditions and arrangements of main burner assemblies. In order to overcome this objection a sleeved or cup-shaped washer 52 is snugly but adjustably mounted in the inner end of each tube 36, the end wall 53 of the washer being formed with a substantially round opening 54 eccentrically mounted with respect to the axis of the end wall and tube. The periphery of opening 54 preferably passes through or extends to the longitudinal axis of tube 36 so that the gas issuing from the opening can be directed to any desired point within the circumferential range of the tube 36, by merely turning the sleeved washer about its axis. A plurality of small openings 55 are formed in the sleeve portion of washer 52, adapted to register with the opening 48 formed in tube 36 for the reception of fingers 37. The sleeve

washer can thus be locked in any desired adjusted position.

As the sleeved washers **52** completely close the ends of tubes **36** with the exception of the relatively small passage provided through the eccentrically arranged opening **54**, the gas flowing from the main burners will back up or accumulate sufficiently to cause an explosion when the gas emitted through opening **54** becomes ignited by the pilot flame. The flame will thus be communicated to the main burners practically instantaneously.

Having thus described our invention, what we claim is:

1. In a lighter, the combination of a burner, a source of fuel supply therefor, a pilot, a housing for said pilot having an opening therein, a tubular connection communicating at one end with said housing and at its other end with said burner, a sleeve movably mounted in the first mentioned end of said connection having a tubular end wall provided with an eccentrically arranged opening therein, and means on said housing for locking said sleeve in said tubular connection and said tubular connection in said housing.

2. In a lighter, the combination of a burner, a source of fuel supply therefor, a pilot, a housing for said pilot having an opening therein, a tubular connection communicating at one end with said housing and at its other end with said burner, a sleeve movably mounted in the first mentioned end of said connection having a tubular end wall provided with an eccentrically arranged opening therein, said tubular connection and sleeve having registering openings therein, and a finger on said housing adapted to seat in said registering openings to lock said sleeve in desired adjusted position.

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