Aug. 13, 1935. W. J. MASONER 2,011,412

ADJUSTABLE EXTERNAL LIGHTER

Filed May 23, 1935

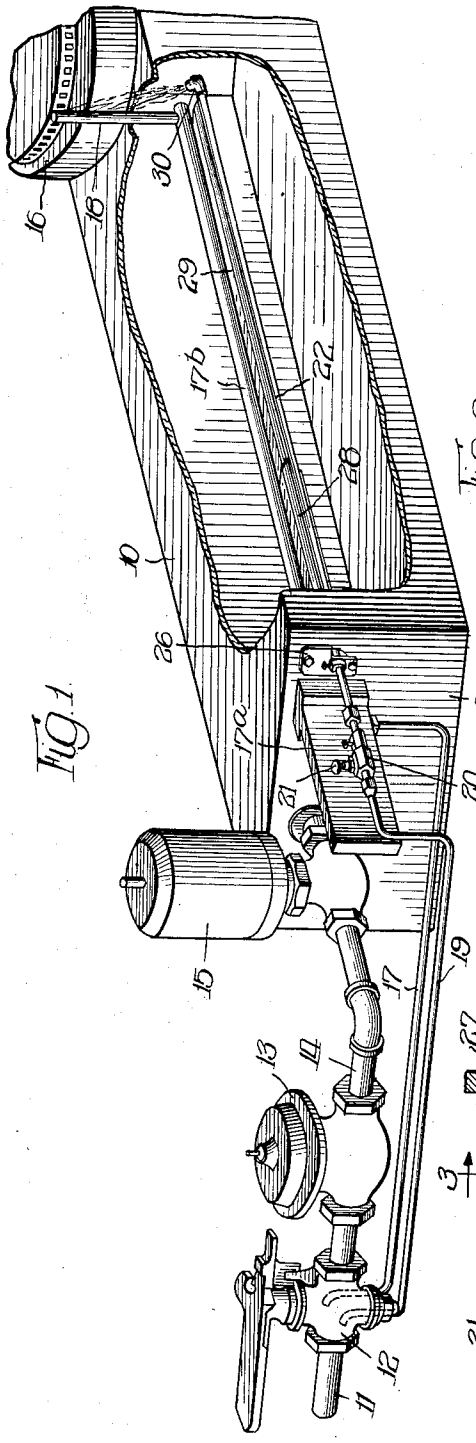


Fig. 1

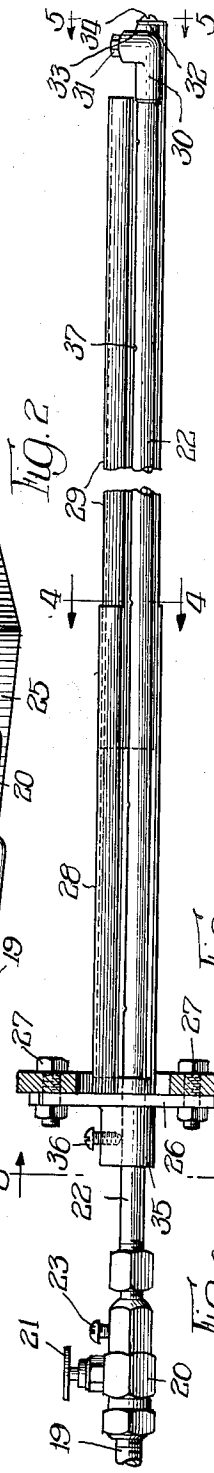


Fig. 2

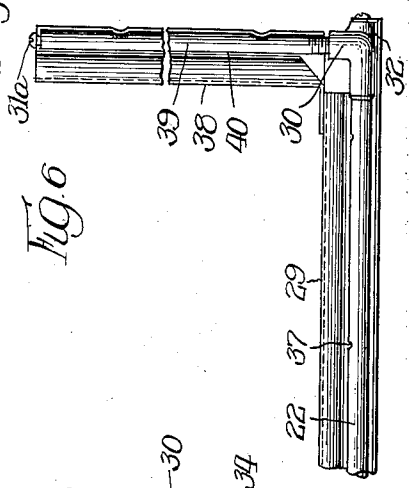


Fig. 6

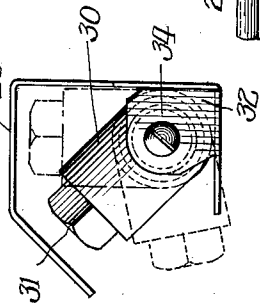


Fig. 5

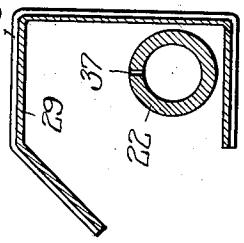


Fig. 4

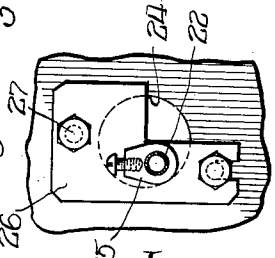


Fig. 3

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2,011,412

ADJUSTABLE EXTERNAL LIGHTER

William J. Masoner, Chicago, Ill.

Application May 23, 1935, Serial No. 23,006

9 Claims. (Cl. 158—115)

My invention relates to an adjustable external lighter for use in connection with the lighting of pilot lights for various types of burners and has particular reference to a lighter arrangement by means of which the pilot light can be lighted at the beginning of the operation of a furnace, if used for domestic heating, or which can be relighted if for any reason the pilot light has gone out during the operation of the furnace, without the necessity of using a long taper to reach into the pilot light or getting access to the pilot light itself and using a match or other means of igniting it.

My invention has particular reference to mechanism which is capable of being installed in adjusted positions, thereby insuring that the pilot lighting means is placed in proper relation with respect to the pilot to function properly, and also enables the mechanic when making the original installation, to fit the pilot lighter mechanism into the furnace in such manner that it functions properly thereby providing a pilot lighting mechanism which is capable of a plurality of uses and susceptible of being installed in varying conditions of furnace installation, something which has not been possible heretofore with devices of this type.

Another and further object of my invention is the provision of an external pilot lighting means which is capable of being placed in position in a furnace in a plurality of adjusted positions, both with respect to the length of the burner casing and also with respect to the pilot light in that the lighter spud can be rotated in a plurality of positions to insure the flame from the lighter spud being directed towards the pilot to insure the proper lighting of the pilot and also insures the quick simultaneous lighting of the pilot in such manner that danger of explosions from accumulated gas or combustible mixtures is eliminated, and a safe, sure and speedy means of effecting the lighting of the pilot is provided.

It will be understood that in the installation of these devices, particularly with respect to the modern types of gas heating furnaces for domestic purposes, the operation of the burner is intermittent, thereby requiring a constant burning pilot light to ignite the gas when it is turned into the burner through the operation of thermostatic control valves or the like. For this reason it has become common in devices of this kind to install pilot lighting means which are operable from some point external of the burner casing or furnace, but which will serve to ignite the pilot light located at a point adjacent the burner for convenience and also for the purpose of reducing service calls as any one may light the pilot light through the use of these external lighting means.

With my improved invention I provide pilot lighting means which is capable of being installed in adjusted positions to compensate for various lengths of furnace heating chambers and the like, and at various positions with respect to the pilot light so that when the burner installation is made a suitable installation can easily be made by the mechanic making the burner installation without the necessity of cutting a large number of parts to fit the locations and dimensions of each particular job, thereby necessitating delay and also not providing proper installations of the pilot lighter equipment if the measurements are not correctly and adequately taken.

Another and further object of my invention is the provision of external pilot lighting means which can be easily installed with any type of equipment now in use, which does not include external pilot lighting means. There are a great many such installations now in use which are not equipped with external pilot lighters, and my invention provides a structure which can easily and quickly be applied to such installations.

These and other objects of my invention will be more fully and better understood by reference to the accompanying sheet of drawing, and in which—

Figure 1 is a view more or less diagrammatic, showing a typical installation of my improved adjustable pilot lighter;

Figure 2 is a longitudinal elevational view of the pilot lighter means;

Figure 3 is a view, partially in section, on line 3—3 of Figure 2;

Figure 4 is a transverse sectional view on line 4—4 of Figure 2;

Figure 5 is an end elevational view on line 5—5 of Figure 2; and

Figure 6 is a sectional view showing a modified form of the lighting end of my improved pilot lighter.

Referring now specifically to the drawing, and in which like reference characters refer to like parts throughout, a typical burner casing 10 is shown having a gas inlet pipe 11 connected to a hand operated valve 12, this valve being of a construction shown and described in a copending application Serial No. 733,036, for Valve construction, filed June 29, 1934. Connected to the valve 12 is the usual gas pressure valve 13, with a discharge pipe 14 leading therefrom which is connected to another valve 15, usually thermostatically controlled by automatic actuating means usually controlled by some thermal connection to the pilot light which in turn controls the flow of fuel leading to a suitable burner 16 mounted in the burner casing 10. Connected to the valve 12 is a pilot line 17 leading to a thermal control casing 17^a and from which a pilot line 17^b leads which extends substantially longitudinally of the burner casing 10, and upon which a pilot 18 is mounted adjacent the burner 16. All of the parts heretofore described are the ordinary

commercial forms of installation for a burner and have nothing to do with my present invention.

Also connected to the valve 12 is a tubular lighting line 19 which is connected to a lighter valve 20 having the usual push button device 21 thereon, with a pipe 22 being connected to the valve 20 by a suitable pipe connection such as a nipple or the like, commonly used in work of this character. A screw 23 is provided which extends into the valve 20 and which provides means for controlling the size of the discharge orifice from the valve 20 to control the quantity of gas passing into the pipe 22, as is usual in devices of this type.

Extending through an opening 24 in the front wall 25 of the burner casing 10 is a combined shield and pipe holder which comprises an external plate portion 26 which is bolted to the front wall 25 of the burner casing 10 by means of bolts 27, 27 and has an inwardly projecting portion 28 which in my preferred form is substantially rectangular in shape and open at one side, with an angularly disposed portion thereby a holding member having a channel therein is formed, and which has mounted therein a shield 29 in telescopic arrangement with the inwardly projecting portion 28 of the shield holder, thereby forming a hood or shield over the pipe 22 for substantially its entire length. The pipe 22 has an elbow 30 mounted on the inner end thereof, within which a lighter spud 31 is mounted. The lighter spud 31 has a discharge opening in the end thereof or at the sides, as may be desired, the member 29 having its upper and a portion of the side portions cut away so that the spud projects free of the shield 29 and in such adjusted position that the opening, whether it be in the side or end thereof, is directed toward the pilot 18.

The shield 29 at its end portion is substantially V-shaped and has an end portion 32 which is in abutting engagement with a trunnion 33 formed on the end of the elbow 30, and into which a screw 34 is passed through a hole in the end portion 32 of the shield 29. This screw 34 is tightly fitted in the elbow 30 but is loosely fitted through the portion 32, thereby allowing the pipe 22 including the elbow 30 with the lighter spud 31 to rotate through an arc of approximately 90°, thereby permitting the opening in the lighter spud to be placed in proper alignment with the tip of the pilot 18. A trunnion 35 forms a part of the shield holder and extends outwardly from the portion 26, and has a screw 36 mounted therein, the inner end of which is adapted to engage the pipe 22 so that when the orifice in the spud 31 is placed in proper alignment with respect to the tip of the pilot 18, the screw is tightened to a point where the pipe 22 is held against rotation, thus providing means for adjustably aligning the lighter spud with the pilot 18.

The pipe 22 on the sides adjacent the upper portion of the shield holder 28 and shield 29 has a plurality of spaced openings 37, 37 therein through which the gas leaks when the valve 20 is in open position, thereby allowing a quantity of gas to collect in the upper part of the shield holder 28 and shield 29 to a point adjacent the lighting spud 31. The member 26 at one side thereof is cut away (Figure 3) exposing a part of the opening 24 in the front wall of the burner casing, at which point a match or other lighter having a flame projecting therefrom is applied at the time the valve 20 is opened, which ignites the gas in the upper portion of the shield holder 28 and shield 29, the flame from this ignited gas passing along to a point adjacent the lighter spud 31 and igniting the gas passing from the opening in the lighter spud 31, the flame being directed toward the pilot light 18, thereby igniting the gas passing out of the pilot 18 through an appropriate opening in the top of the burner casing as shown.

In Figure 6 is shown a modified form of device and in which a shield 38 of substantially the same cross sectional form as the shield 29, is secured to the end of the shield 29 and extends at right angles thereto, with a pipe 39 being placed in threaded engagement with the outlet end of the elbow 30. This pipe section 39 has a lighter spud 31a mounted therein, the pipe sections having an orifice 40 in the side thereof through which the gas leaks, forming a continuous channel with the gas in the upper side of the shield holder 28 and shield 29, so that when this column of gas is lighted the flame spreads to a point adjacent the lighter spud 31a, igniting the gas passing therefrom and forming a flame which extends to the pilot light 18, thereby igniting the pilot light, as may be desired. The lighter spud 31a is adapted to fit into the opening in the pipe 39 by a press fit so that the pipe 39 and shield 38 can be cut to the proper length in the field to meet the desired requirement to place the lighter spud 31a in proper alignment with and approximately close enough to the pilot 18 so the flame from the lighter spud 31a will function to light the pilot light.

The shield 29 is cut to the approximate length required for a plurality of jobs of varying dimensions, and as above described, is slidingly mounted in the shield holder 28 so that regardless of the length of the burner casing the pilot lighting means can be easily and quickly adjusted when the burner is installed to fit a plurality of burners, and after being installed is placed in fixed position so that no attention is necessary to secure the proper operation of the device thereafter.

The operation of the device will be readily understood and in connection with the operation of the valve 12 which is described in my copending application above identified, as this valve is opened in one direction, the gas is admitted to the plot line and also to the lighter line. When open in such position that gas flows simultaneously to these two lines, the operator by pushing on the button 21 allows the gas to flow into the pipe 22 and through to the elbow 30 and out of the lighter spud 31. As the gas flows through the pipe 22 there is a leakage through the orifices 37 and which, with the spreading of the gas along the upper side of the shield holder 28 and shield 29 a continuous column of gas is formed. Simultaneously with the opening of this valve the operator applies a match or some other flame producing device adjacent the cut away portion of the member, the column of gas being ignited at this point and rapidly passing along the shield holder 28 and shield 29, thereby igniting the gas which passes out of the lighter spud 31 and igniting the pilot. As soon as this is accomplished the pressure on the button 21 is released, shutting off the flow of gas to the pipe 22 and then if it is desired to place the burner in condition for operation the hand valve 12 is opened to a position where the flow of gas to the pilot lighter is shut off and the gas flows to the burners through the valves 13 and 15 and pipe connections, and is shut off from the line 19 leading to the pilot lighter, the operation of which is de-

scribed in detail in my copending application above identified.

It will be understood that in my improved adjustable lighter, means are provided by which the pilot light can be lighted externally of the burner and the structure is such that when installed it can be placed in a plurality of adjusted positions to conform to different dimensions and varying conditions to be met in the installation of burners of this type in the field, without ordering parts of special dimensions to be fitted to the pilot lighter.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form and the proportion of parts and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit or scope of my invention.

I claim:

1. In combination with a burner, a pilot light associated therewith, a pilot lighter tube, a valve therein, a lighter spud in the end of said lighter tube positioned adjacent the pilot light, a tube holder having a shield portion connected thereto, and a shield telescopically connected to said shield portion terminating adjacent the end of said pilot lighter tube, the said lighter tube having openings therein on the side towards the shield portion of the holder and the said shield.

2. In combination with a burner, a pilot light associated therewith, a pilot lighter holder, a shield telescopically mounted in said pilot lighter holder, a pilot lighter pipe, a lighter spud therein, and means whereby said lighter pipe is movably connected with said shield, the pilot lighter pipe having spaced openings therein on the side adjacent the shield.

3. In combination with a burner, a pilot light associated therewith, a pilot lighter tube, a valve therein, a lighter spud in the end of said lighter tube positioned adjacent the pilot light, a tube holder having a shield portion connected thereto, and a shield telescopically connected to said shield portion terminating adjacent the end of said pilot lighter tube, the said lighter tube having openings therein on the side towards the shield portion of the holder and the said shield, the said pilot lighter tube being pivotally connected to the said shield.

4. In combination with a burner, a pilot light associated therewith, a pilot lighter tube, a valve therein, a lighter spud in the end of said lighter tube positioned adjacent the pilot light, a tube holder having a shield portion connected thereto and a shield telescopically connected to said shield portion having its upper portion terminating short of the lighter tube and its lower portion extending beyond the end of the said lighter tube and having an upturned end, the said lighter tube having openings therein on the side towards the shield portion of the holder and the said shield, the said pilot lighter tube being pivotally connected to the upturned end of said shield.

5. In combination with a burner, a pilot light associated therewith, a pilot lighter tube, a valve therein, a lighter spud in the end of said lighter tube positioned adjacent the pilot light, a tube holder having a shield portion connected thereto and a shield telescopically connected to said shield portion having its upper portion terminating short of the lighter tube and its lower portion extending beyond the end of the said lighter tube and having an upturned end, the said lighter tube having openings therein on the side towards the shield portion of the holder and the said shield, and a pivotal mounting for said tube extending through the upturned end of the said shield.

6. In combination with a gas burner, a pilot light means associated therewith, pilot lighting means comprising a tube, a spud in the end thereof, a valve located in said tube, a holder for said tube mounted in the burner casing, the said holder having a shield portion extending into the burner casing, a shield telescopically connected to the shield portion, one side of which terminates adjacent the spud, means connecting the said pipe and said shield, and means whereby the end of said tube is held in fixed relation with the said pilot light, the said tube having openings therein in the portion within said shield portion of said holder and the said shield.

7. In combination with a gas burner, a pilot light means associated therewith, pilot lighting means comprising a tube, a spud in the end thereof, a valve located in said tube, a holder for said tube mounted in the burner casing, the said holder having a shield portion extending into the burner casing, a shield telescopically connected to the shield portion, one side of which terminates adjacent the spud, means connecting the said pipe and said shield, the said tube having openings therein in the portion within said shield portion of said holder and the said shield, and means in said holder whereby the said tube is held against longitudinal and radial movement.

8. In combination with a gas burner, a pilot light means associated therewith, pilot lighting means comprising a tube, a spud in the end thereof, a valve located in said tube, a holder for said tube mounted in the burner casing, the said holder having a shield portion extending into the burner casing, a shield telescopically connected to the shield portion one side of which terminates adjacent the spud, means connecting the said pipe and said shield, and means whereby the end of said tube is held in fixed relation with the said pilot light, the said tube having openings therein in the portion within said shield portion of said holder and the said shield, the said shield portion and the said shield substantially enclosing a portion of the tube in the burner casing.

9. In combination with a conversion burner having a burner casing, a burner therein, a pilot light, pilot lighting means comprising a tube holder mounted in said burner casing, a tube mounted therein leading to a suitable source of gas supply, a valve in said tube, an elbow on the discharge end thereof, a lighter spud in said elbow, a shield extension on said tube holder extending into said burner casing, a shield in telescopic arrangement with said extension terminating short of the elbow at its upper side and extending around said elbow on its other side, a pivotal connecting member extending through the end of said shield and into said elbow, and means whereby the said spud is fixed in relation to the pilot light, the said tube having perforations therein in its portion within said extension and said shield.

WILLIAM J. MASONER.