Aug. 17, 1943. J. G. KOSKY ET AL 2,327,195

COMBINED FUEL FILTER AND REGULATOR AND CUTOFF DEVICE

Filed July 3, 1940 2 Sheets-Sheet 1

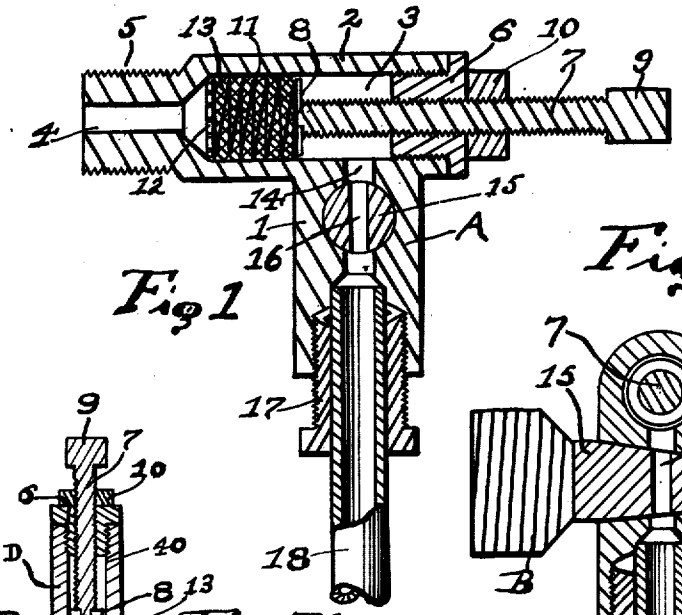


Fig 1

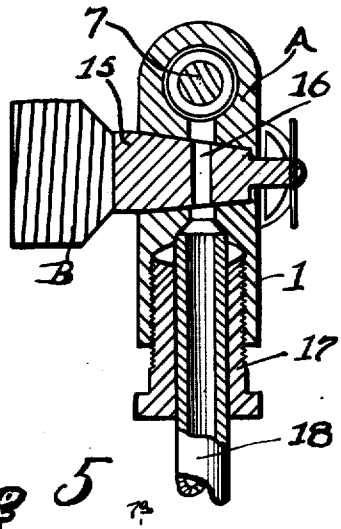


Fig 2

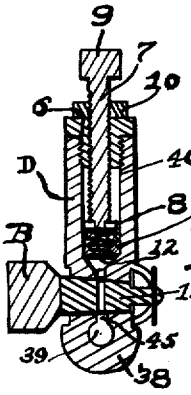


Fig 7a

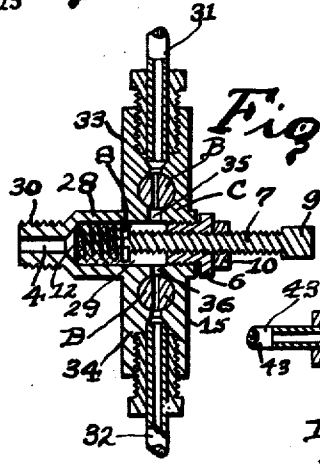


Fig 5

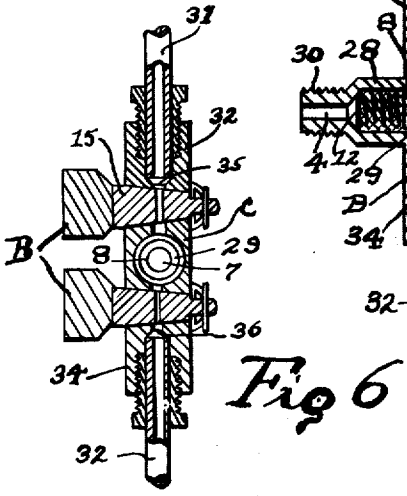


Fig 6

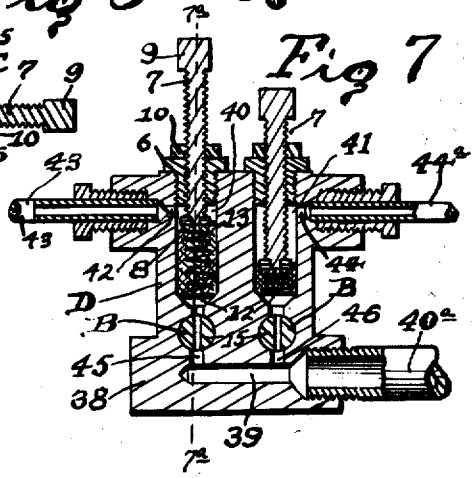


Fig 7

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Fig 3

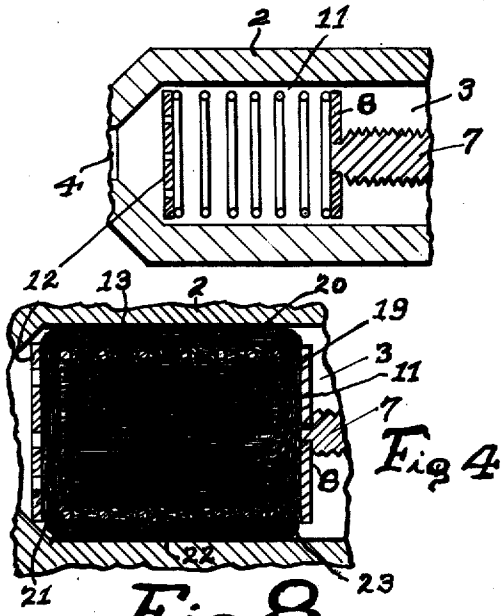


Fig 4

Fig 10

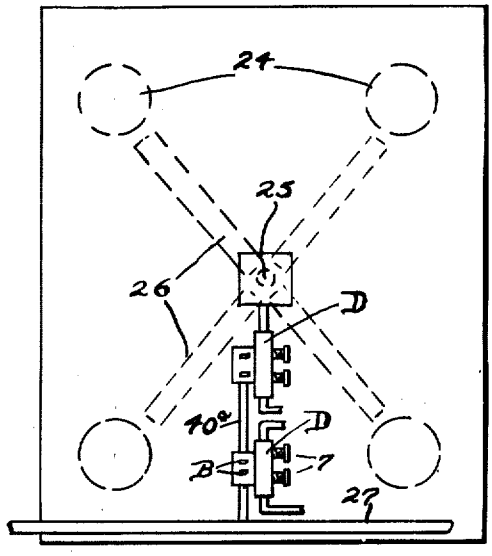


Fig 8

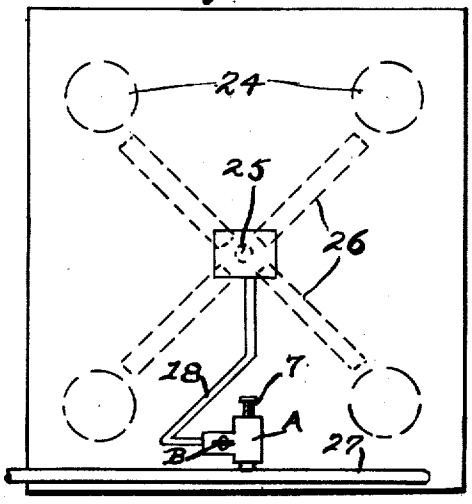
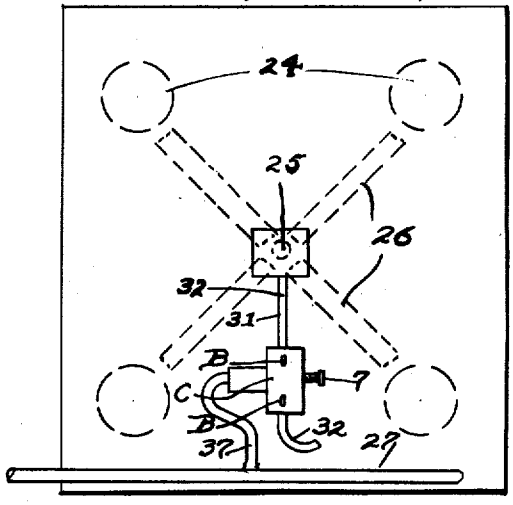


Fig 9



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2,327,195

COMBINED FUEL FILTER AND REGULATOR AND CUTOFF DEVICE

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Application July 3, 1940, Serial No. 343,866

8 Claims. (Cl. 138—43)

The requirements for performance and safety in respect to gas ranges has been each year increasing and becoming more drastic, and today the specifications and requirements in many instances are such as to require automatic ignition not only for the cooking top burners but also the oven and broiler burners for gas ranges.

This means that in respect to some ranges as many as four constant burning pilot lights are required, as for instance would be the case in respect to a divided cooking top range which has separate broiler and baking ovens. In a range of this type a constant burning pilot would be required for the burners of each of the two separated cooking top portions of the range and a constant burning pilot would be required for the broiler burner and for the burner in the baking oven.

Should clogging of any of the pilot gas lines occur which should result in either extinguishing a pilot flame or reducing the gas flow so as to so far reduce the size of the pilot flame as to render the pilot inoperative, not only are there service complaints but it will be obvious that a dangerous situation is created in that explosions or asphyxiation can easily result due to the escape of raw unburned gas from that burner or those burners which are not being served by a pilot light due to its extinguishment.

Consequently the provision of a construction in which the possibility of the clogging of the pilot burner gas lines is remote is of very considerable importance.

The major object of the present invention is therefore the provision of a fuel filtering device which reduces to the minimum the possibility of the failure of the pilot light burners by reason of interference of fuel delivery to the pilot light due to clogging.

In respect to constant burning pilot lights it is essential that provision be made to regulate the flow of gas or other fuel to them in order to regulate the size of the flame which they burn. It will be obvious that regulation of this character is essential to reduce to the minimum the fuel expense item incident to the maintenance of a constant burner and that reduction in cost of operation is of very material importance when the range is equipped with as many as four constant burning pilot lights.

The regulation of the size of the flame burned by a constant burning pilot light is now new but has almost always been provided in connection with cooking equipment utilizing constant burning pilot lights. The valves in most cases heretofore used for obtaining and providing for pilot flame regulation have been either of the so-called "plug" type or the so-called "needle" valve type. In respect to both types of valves regulation of the pilot flame is obtained by regulating the flow of fuel through an orifice which when wide open is extremely minute in size and which when the valve is brought into play has its size reduced even further. In respect to a needle type of valve the opening is more or less annular in shape and we have found that this type of valve is more subject to clogging than is the so-called "plug" type.

By reason of the foregoing the heretofore mentioned undesirable clogging which has resulted in the flow of fuel to a constant burning pilot light has occurred in the majority of instances in the valve which is provided for controlling the flow of fuel to the pilot light and the size of the pilot light flame.

Provision of a conveniently adjustable control means for varying the flow of fuel to the pilot light and the size of the flame of the pilot light is essential and equally essential is the provision of a valve for completely stopping the flow of fuel to the pilot light because the public demands a convenient means by which all flow of fuel to the pilot light can be stopped so as to effect a saving of fuel when the stove or range is not to be used over a long period, as for instance when the occupants of a house leave for an extended vacation or the home is vacant over a long period for some other reason.

The present invention has therefore as another object the provision of a fuel filtering means in combination with a fuel cut-off valve which is such as to reduce to the minimum the possibility of clogging at that point in the fuel line to the pilot light where a minute fuel passageway is under the control of a fuel cut-off valve.

In the conception and provision of a device having the foregoing objects in mind other specific objects and novel features of construction are attained and built into the invention and the nature of these as well as the objectionable features of devices now in use will appear and be specifically pointed out in the following description when read in the light of the accompanying drawings.

In the drawings which are illustrative of the inventive concept and its manner of application to ranges of different characters,

Fig. 1 is a vertical sectional view through a

combined fuel filter and regulator built in accordance with the present invention.

Fig. 2 is a vertical sectional view taken at right angles to Fig. 1.

Fig. 3 is an enlarged fragmentary vertical sectional view illustrating the filtering and regulating portion of the device.

Fig. 4 is an enlarged detail view illustrating the manner in which the filtering material is inserted in and wrapped about the spring.

Fig. 5 is a vertical sectional view of a still further modified form of the invention.

Fig. 6 is a vertical sectional view taken at right angles to Fig. 5.

Fig. 7 is a vertical sectional view through a modified form of the invention showing a dual assembly.

Fig. 7*a* is a vertical sectional view taken at right angles to Fig. 7 of the drawings and on the line 7*a*—7*a* thereof.

Fig. 8 is a diagrammatic view illustrating a range having only one pilot light.

Fig. 9 is a diagrammatic view illustrating a range utilizing two pilot lights.

Fig. 10 is a diagrammatic view illustrating a range having four pilot light burners.

It is well known that in some localities gas ranges are operated on manufactured gas while in other localities natural gas is used. Most manufactured gases contain what is commonly referred to as gum and it is this material or substance that to the greatest degree causes the undesirable clogging heretofore referred to. Corrosion can likewise cause the clogging, and in some instances no doubt does, and this corrosion is in all probabilities brought about by the sulphur compounds which are found in some manufactured gases. However, today these compounds are being to a major degree more efficiently removed from the gas by the gas manufacturing companies. The gum constituent is quite costly of removal due to the equipment necessary to its elimination and even today these gum constituents are prevalent in manufactured gases. Actually there are two kinds of gum—one is commonly referred to or known as the liquid phase and the other as the vapor phase. The liquid phase gum constitutes the less hazard from the clogging standpoint but the vapor phase often constitutes a combination of many chemical compounds produced during the gas manufacturing operation. This vapor gum consists of fine particles which will collect on or in a minute opening or orifice and particularly so where or when a large pressure drop occurs, and it is our belief that this is the reason that needle type valves clog more readily and quickly than do the plug type valves.

We have found that with the needle type valve and with some manufactured gases clogging will occur within a day or two whereas with other and differently manufactured gases which contain less gum clogging does not occur until a greater passage of time just as ordinarily a larger time interval is required for the clogging of the plug type valve.

We have additionally found that some gases contain what is commonly referred to as "dust" which we believe to be largely iron rust although it could be some various other particles that are commonly found and that are present in the gas mains and are carried therethrough by the flow of gas in the mains.

This dust will cause clogging and is most prevalently encountered with natural gas and is more likely to occur if the piping system or gas mains have originally been used to furnish manufactured gas.

From the foregoing it will be seen that both gum and dust may be and are commonly present in manufactured gas and the distributing systems therefor but that dust only is ordinarily present in natural gases.

In many cities and localities a mixture of natural and manufactured gas is distributed to gas range users. It is generally recognized that the clogging heretofore described as objectionable is brought about by either gum or dust or the combination of the two and this fact makes clear the need of a device capable of performing the objects and improved results of the present invention.

We recognize that prior to our invention the idea of a filtering device was not new but such devices were and are unlike our own and particularly so as to the use of the particular material utilized as a filtering element. These prior devices have used as filtering elements such material as mineral wool which is also known as rock wool, but we have found this material to be so fragile and brittle as not to be serviceable or efficient and to lack resiliency which is an important attribute to a device of the present nature as will hereinafter more clearly appear. Additionally devices such as our own are in many instances installed on gas ranges in a location or position which subjects them to heat the temperatures of which reach heights too great to be withstood by material such as cotton or felt which in some prior devices has been utilized as a filtering element.

Prior devices have further been undesirable in that the filters are to serve as means for completely cutting off the supply of fuel to the pilot lights but in this capacity the devices have proven not only unsatisfactory but eventually have failed entirely to operate to completely cut off the fuel supply to the pilot lights. In our device a separate cut-off valve is provided as will hereinafter more clearly appear.

Having outlined in a general way the objects and advantages of the invention specific description of the invention will now be made by reference to the accompanying drawings in which similar parts are designated by like characters and reference numerals.

Referring to Figures 1 and 2 of the drawings, A designates a metallic, preferably brass or bronze, fitting which is substantially of an L-shape in cross sectional configuration with the pair of arms making up the fitting being designated as 1 and 2 respectively. The arm 2 is the inlet of the fitting and is provided with a chamber 3 having an inlet passageway 4 which extends through the exteriorly threaded end 5 of the arm which end is adapted for connection with the pipe or conduit through which the fuel is supplied for the constant burning pilot light. The chamber 3 is closed at one end by a screw plug 6 within which is threadedly mounted a set-screw 7 which at its inner end within the chamber 3 is provided with a plunger head 8 which is of a diameter or size to loosely fit the interior bore of the chamber. At its outer end the set-screw is provided with a squared head 9 to provide an adjusting means and a lock nut 10 is provided for securing the set-screw and plunger in its set and adjusted position.

A coil spring 11 having a smaller diameter than the interior bore of the chamber 3 is positioned

between the plunger head 8 and a perforated plate 12 which is held in abutment with the inlet end of the chamber by the tension of the coil spring 11. The plate 12 like the plunger head 8 and coil spring 11 is of a lesser diameter than the interior bore of the chamber 3. A filtering medium 13 completely fills and surrounds the coil spring and the exact nature of this filtering medium and its disposition within and about the coil spring is illustrated in Figures 3 and 4 of the drawings and will be described in detail hereinafter.

The outlet leg 4 of the fitting is provided with a passageway 14 which communicates with one side of the fitting chamber 3 at a point remote to the inlet end of said chamber. The plug portion 15 of a rotary plug valve B is positioned in said passageway intermediate its ends and this plug is provided with the conventional transverse passageway 16. The passageway 14 beyond the plug valve towards its outlet end is enlarged and internally threaded to receive an externally threaded pipe fitting or nut 17 which secures within the outlet end of the passageway 14 and of the leg 4 a pipe or conduit 18 the opposite end of which is intended and adapted for communication and attachment with the constant burning pilot light, as will more clearly apear when reference is made to and description given of Figure 8 of the drawings.

The filtering medium which we utilize is glass wool which is sometimes referred to and sold on the open market as "fibre glass." We have found that this particular filtering medium has the desirable and necessary attributes required in a device of the present character. It is quite resilient and the fibres of which it is composed are quite fine. Furthermore this particular material is not brittle and can be readily compressed and expanded without danger of its breaking and its inherent resiliency taken in conjunction with the resiliency of the coil spring 11 render it particularly adapted to use in the present device. By reference to Figures 3 and 4 of the drawings the manner of completely encasing or covering the coil spring so as not to leave any voids or fuel passageways is illustrated. It will be understood that the filtering medium is applied to and about the coil spring prior to the insertion of said spring through the open end of the chamber 3 which is obtained by removal of the screw plug 6. The exact manner of application of the filtering medium to the coil spring can be varied. We have illustrated this application as being made by forming a core 19 of the glass wool and inserting this within or between the coils comprising the spring and then carrying an extending end portion of the core about one of the outer sides of the spring as at 20, across the inner end of the spring as at 21 and then down the opposite side of the spring as at 22 and lapping the extending portion 23 of the material over the core portion as it comes out of the spring. This manner of application, as stated, can be varied as the extending end of the core could be wrapped spirally around the outer side of the spring. The important point is that the spring shall be completely encased and that the inner bore of the chamber 3 shall be completely filled in respect to its diameter which means that the filtering material shall not only fill the spring but shall also be disposed between the spring and the adjacent inner surface or face of the chamber 3.

Although we have found glass wool to be the preferable material to utilize as the filtering medium we recognize that there are other materials having attributes sufficiently similar to glass wool as to make it possible to use them as a filtering medium with varying degrees of success and efficiency.

The foregoing products or materials have by test withstood satisfactorily temperatures as high as 400° F. and it is improbable that they would be subjected to any temperature appreciably higher than this under the conditions in which the combined fuel filter and regulator would be used.

The foregoing materials have adequate resiliency to withstand the compressions to which they will be subjected whereas ordinary fibrous material, such as for instance the product commonly known as rock wool, and similar materials, would be completely unsatisfactory as their fibres are brittle and break up into fine parts when compressed.

Hereinafter modified forms of the invention will be described but in respect to each of them the same type of filtering medium is utilized and is applied in a manner to completely encase the coil spring as just described and with this understanding repetition of the detailed description of the filtering medium and its application to the coil spring will not be given.

The device illustrated in Figures 1 and 2 of the drawings is intended for use on a range having or requiring only a single constant burning pilot light and in Figure 8 of the drawings is diagrammatically illustrated a use of such a device. Here it will be seen that a plurality of cooking top burners 24 of a range are serviced for automatic ignition by a substantially centrally disposed constant burning pilot light 25 through suitable flash or lighter tubes 26. The present device is illustrated and designated as an entirety at A and its inlet end is connected to a main gas supply manifold 27 which also incidentally serves as a supply conduit for the cooking top burners. It will be seen that the fuel supply to the pilot light passes through our device and is conveyed to the pilot light 25 by the hereinbefore mentioned pipe or conduit 18.

In operation the fuel entering our combined fuel filter, regulator and cut-off device A through the inlet passageway 4 thereof flows, but in reality more or less seeps, through the glass wool which it reaches and penetrates without difficulty by way of the perforations of the plate 12 and around the peripheral edges thereof into the chamber 3 back or behind the filtering element from which point it can pass freely to the pilot light through the conduit 18 in the event the manually operable plug valve B is not closed.

The setting of the set-screw 7 and the corresponding position of the plunger head 8 will control the density of the glass wool by reason of the degree to which said glass wool is compressed. Accordingly the glass wool in addition to acting as a filtering medium to prevent clogging of the fuel lines and particularly clogging of the passageway through the manually operable plug valve B, serves as a regulating medium to control the flow, and consequently the amount, of fuel permitted to reach the constant burning pilot light and in this manner control the size of the flame burned thereat.

A very limited degree of trial will indicate the amount of glass wool which should be used in the filter to assure that with the minimum fuel pressure which would be encountered enough fuel will pass through the filter to assure adequate

flame at the pilot light when the glass wool is under no compression. The average pilot flame is ordinarily adjusted to burn between 100 to 150 B. t. u. per hour.

Ordinarily the degree at which the filtering element is compressed is set by whoever installed the range but it will be seen that thereafter adjustment of the pilot flame as may be required can be quickly and readily obtained either by the range user or by a service man by merely altering the setting of the set-screw 8 and its plunger head 8. Those skilled in this art will recognize that it is not feasible or practical to attempt to obtain the fine or close control of fuel which is necessary by attempting to do so by partially closing the main shut-off plug valve B.

Change in the setting of the flow of fuel to the pilot light will unquestionably be periodically necessary to the best and highest efficiency and it is here that the inherent resilient nature and lack of brittleness of the glass wool is of great and material importance and advantage. Repeated compression and expansion of this material can be safely had and its resiliency in combination with that of the coil spring will assure that the filtering material will follow the plunger head as it is retracted from a compressing position and will result in the immediate passage of more fuel through the filter which has been found not to be the case in respect to other filtering materials such as have heretofore been used and are found in devices as heretofore made.

The device likewise provides means to permit convenient and easy total cut-off of fuel delivery to the pilot light in the event this is found desirable such as when a home is to be vacated for a considerable period of time. This cut-off is obtained by merely turning the rotary plug valve B and assures a complete saving in respect to fuel under those conditions where a range is not to be used for a long period of time. The device is not intended to operate in a manner whereby compression of the filtering material is attempted to be made to a degree to completely shut off the flow of fuel to the pilot light. As stated, separate means comprising the rotary plug valve is provided for such a complete cut-off of fuel and by this provision the fuel can be completely cut off as desired without in any way changing the adjustment which has been made of the flow of fuel through the filter. Thus when the fuel flow is cut off from time to time by the plug valve readjustment of the filter is unnecessary when the range is put back into service or use.

The flow of fuel around the plate 12 is obtained due to the fact that its side edge or wall is serrated or notched.

With the understanding that the hereinbefore described objects and attributes are present in the modified forms of the invention, description of them will now be given but duplication of description will be avoided where possible by applying like reference numerals to those parts which are similar to those in the construction illustrated in Figures 1 and 2 of the drawings.

Figures 5 and 6 of the drawings illustrate a double form of the invention which is suitable for use on a range having two constant burning pilot lights, as for instance a pilot light for the cooking top burners and a pilot light for the range oven burner. Figure 9 of the drawings diagrammatically illustrates such an application of the device and will be referred to in conjunction with the following description of the device as illustrated in Figures 5 and 6 of the drawings.

In this modified form of the invention the fitting is designated as an entirety at C and in cross sectional configuration is of a T-shape, the stem of the T is designated at 28 and is provided with a chamber 29 identical to the before-described chamber 3 and within which is the coil spring 11 between the plate 12 and the plunger 8. There is the identical filtering element 13 and the same setting screw 7 which is rotatable within the threaded plug 6 and is provided with the lock nut 10. The outer end of the leg 28 of the T is externally threaded as at 30 for attachment to the main gas manifold 27 (see Figure 9 of the drawings) so that fuel will flow into the chamber through the inlet 4.

In this instance the fuel receiving chamber 29 serves two constant burning pilot lights to which gas is conveyed by suitable conduits 31 and 32 which extend outwardly from the two parts 33 and 34 respectively of the fitting and which constitute the head of the T. These fitting parts or legs 33 and 34 are provided with outlets 35 and 36 respectively which communicate with the chamber 29 at opposite sides thereof. In each of the passageways through the parts 33 and 34 there is a manually operable rotatable plug valve B similar to that heretofore described and which constitute means by which the flow of fuel to either or both of the pilot lights being served can be completely and conveniently cut off.

The operation of this form of the invention is identical to the preferred form previously described relative to the filtration or cleaning of the fuel and relative to the adjustment of compression of the filtering element to control the size of the pilot light flames.

In Figure 9 of the drawings we have illustrated a manner of application of this device to a range having two pilot light burners. It will be seen that a pipe 37 connects the inlet 4 of the device to the main fuel manifold 27 from which it receives the fuel intended for the pilot burners. The outlet pipe 31 goes to the cooking top burner pilot light 25 while the outlet pipe 32 is carried to a pilot light (not shown) which services the baking burner of the range.

A still further modification of the invention is illustrated in Figures 6 and 7 of the drawings and like the device illustrated in Figures 5 and 6 of the drawings this particular form of the invention is intended to be utilized where a pair of pilot lights are being supplied with fuel. It differs however from the Figure 5 form of the invention in that individual, rather than dual, filtration and regulation is provided for each of the pilot burners which it serves, as will now appear from the following description.

In this instance the device is designated as constituting a fitting or member D which has a solid base 38 provided with an elongated inlet passageway 39 to which fuel is brought from the main supply manifold 27 by a conduit 40a which is preferably though not necessarily threadedly attached to the fitting base. The fitting extends upwardly from its base and is provided with a pair of chambers 40 and 41 which are disposed in parallelism and are identical to the chamber 3 of the preferred or single form of the device illustrated in Figure 1 of the drawings. Within each of these chambers is the plunger head 8 adjustable externally of the fitting by the set-screw 7. Likewise there is the same perforated plate 12, coil spring 11 and glass wool filtering material and element 13 completely covering the coil

spring. The chamber 40 has an outlet passageway 42 at one side thereof communicating with a conduit 43 adapted for connection with a pilot light burner and the chamber 41 has an outlet passageway 44 at one of its sides communicating with a conduit 44a for conveying fuel to a second pilot light burner.

The chambers 40 and 41 receive fuel from the main base passageway 39 through suitable inlet passageways 45 and 46 respectively and a rotatable plug valve B is disposed in each of these passageways to provide means to cut off individually the flow of fuel to the pilot light burners. The device illustrated in Fig. 7 could be substituted for the device C illustrated in Fig. 9 of the drawings and provide complete individual control and filtration of fuel delivered to the two pilot light burners.

As being more illustrative of the inventive idea the glass wool filtering element in the chamber 41 is illustrated as being more highly compressed than is the glass wool in the adjacent chamber 40. It is questionable however whether the settings of the two set-screws would ever be as divergent as is illustrated.

We have previously mentioned that ranges in some instances have as many as four constant burning pilot lights and an arrangement to take care of such a range is illustrated in Figure 10 of the drawings from which it will be seen that two devices such as the device D illustrated in Figure 7 of the drawings are mounted on the fuel supply conduit 48a in tandem relationship. When an arrangement such as this is used the device nearest the main gas supply pipe 27 would have to have its base passageway 39 extend completely through its base which would be completely through to the left end of the base as viewed in Figure 7 so that fuel could be conveyed on to the second device which is most remote to the fuel manifold pipe 27.

Again referring to Fig. 10 of the drawings it will be seen that one of the devices, such for instance as the one nearest the manifold pipe 27, would have connection as for instance with pilot burners in two separate ovens such as are found on many ranges while the other device would have fuel connection with the cooking top burner pilot light 25 and the pilot light which services the range broiler burner.

From the foregoing it will be seen that we have provided a device which is extremely simple of manufacture and installation and cheap of production yet highly efficient in operation. As a fuel filtering device it is extremely efficient and retains its efficiency over a long period due to the use of the glass wool or spun glass material as a filtering medium by reason of the fact that said material is inherently resilient and not subject to break-down because it is not brittle. Additionally the device can be positioned at any desired point on the range without regard to heat conditions as this particular material will well withstand any temperature to which it would be subjected at any point on or in the range. The device presents a highly efficient and easily operable fuel flow regulating means and has the further attribute that the same degree of compactness of the filtering and regulating element will always be obtained at the same setting of the set-screw or plunger by reason of the resiliency of the filtering element which will cause it to at all times follow the plunger and the fact that the material tends at all times to return to its normal uncompressed status. Thus a constant and known regulation of fuel flow is obtainable at all the points of setting or travel of the set-screw. The device presents for immediate easy operation means for completely cutting off the flow of fuel through the fuel pipe line and accomplishment of this is obtained without varying the setting of the regulation of fuel flow normally permitted through the fuel line.

It will also be obvious that the device will enable the use of the fuel line without danger of clogging over such a long period as to warrant a statement that for all practical purposes the device completely eliminates the possibility of fuel line clogging.

Variations of the invention over the exact forms in which it is illustrated in the drawings can be made without departing from the spirit of the invention or the present inventive concept and the invention is to be therefore limited only within the scope definitely expressed in the hereinafter appended claims.

We claim:

1. For use in a fuel delivery conduit to a gaseous fuel burner for filtering and controlling the flow of fuel through said conduit, a combined fuel filter and fuel flow controller comprising, a compressible core positioned in said conduit and at one point therein extending completely across said conduit, said core composed of a coil spring and a mass of fibre glass, said coil spring loosely fitting within said conduit and said fibre glass completely filling the interior of said spring and covering the exterior thereof, said mass of fibre glass being composed of a plurality of individual threads, and that portion of the mass within the spring extending from end to end thereof with the fibre glass threads extending longitudinally of the spring and conduit, and means operable from a point exterior of the conduit for compressing said spring and said mass for varying the compactness of the mass.

2. For use in a fuel delivery conduit to a gaseous fuel burner for filtering and controlling the flow of fuel through said conduit, a combined fuel filter and fuel flow controller comprising, a compressible core positioned in said conduit and at one point therein extending completely across said conduit, said core composed of a coil spring and a mass of fibre glass, said coil spring being positioned with its longitudinal axis lengthwise of said conduit and loosely fitting the conduit, said mass of fibre glass being composed of a plurality of individual threads and completely filling the interior of said spring and covering the exterior of the spring and the space between said spring and said conduit, that portion of the mass which is disposed within said spring having its threads extending longitudinally of the spring, said threads intermediate their ends extending outwardly from one end of the spring and then extending longitudinally along and covering half of the outer face of said spring and then extending across the opposite end of the spring and along and covering the other half of the outer face of the spring, one end of the threads being within the spring and adjacent one end thereof, and the other end of the threads extending partially over the first mentioned end of the spring, and means operable from a point exterior of the conduit for compressing said spring and said mass for varying the compactness of the core.

3. For use in a fuel delivery conduit to a gaseous fuel burner for filtering and controlling the

flow of fuel through said conduit, a combined fuel filter and fuel flow controller comprising, an elongated coil spring adapted to loosely fit within said conduit, an elongated core of fibre glass composed of a plurality of elongated individual threads disposed in substantial parallelism to one another, one end of said core being positioned within said spring adjacent one end of the spring and extending throughout the interior length of the spring and completely filling the same, said core then extending transverse the opposite end of the spring and, along one side of the exterior of said spring and covering a portion of said spring exterior, said core then extending across and covering the opposite end of said spring and down the opposite exterior side of said spring and covering the remaining portion of the exterior of said spring, the core end then overlapping the second named end of said spring, said core on the exterior of said spring being of a thickness to completely fill the space between the exterior face of the spring and the conduit with which it is used, and means operable from a point exterior of the conduit for compressing said spring for varying the compactness of the core.

4. A construction such as defined in claim 3 wherein, a perforated abutment is positioned in said conduit and extends across the same and one end of the spring, said spring compressing means including a plate at the opposite end of said spring, and said perforated abutment and plate constituting means clamping said core to the spring at its ends so that the core must expand and contract as said spring is compressed or permitted to expand in the operation of said spring for varying the compactness of the core.

5. An expansible and contractible core for filtering and controlling the flow of fuel to a gaseous fuel burner or the like, said core composed of a plurality of elongated individual threads of fibre glass disposed in substantial parallelism with one another and being in combination with a resilient member, said core completely enclosing and covering said resilient member, and means clamping said core to said resilient member and operable to compress the resilient member, whereby the core is contractable and expansible with said resilient member for varying the compactness of said core.

6. An expansible and contractable core for filtering and controlling the flow of fuel to a gaseous fuel burner or the like, said core composed of a plurality of elongated individual threads of fibre glass disposed in substantial parallelism with one another and being in combination with a resilient member, said resilient member being in the form of a coil spring, said core extending through and completely filling said coil spring and extending lengthwise of and completely covering the exterior of said spring, said core being continuous as to length and being disposed intermediate its ends so as to close and cover the ends of said spring, and the threads making up said core contracting and stretching as said resilient spring is compressed or extended.

7. A construction such as defined in claim 6 wherein, means is provided for clamping the fibres making up said core against the opposite ends of said spring.

8. For use in a fuel delivery conduit to a gaseous fuel burner for filtering and controlling the flow of fuel through said conduit, a combined fuel filter and fuel flow controller comprising, a compressible core positioned in said conduit and at one point therein extending completely across said conduit, said core composed of a coil spring and a mass of fibrous material of a resilient nature, said coil spring loosely fitting within said conduit and said fibrous material completely filling the interior of said spring and covering the exterior thereof, said mass of fibrous material being permeable and composed of a plurality of comparatively long individual threads normally disposed in parallelism with one another, and that portion of the mass within the spring extending from end to end thereof with all of the threads thereof extending longitudinally of the spring and conduit, and means operable from a point exterior of the conduit for compressing said spring and said mass for varying the compactness of the mass.

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