May 27, 1930. L. F. DOEN 1,759,892

VALVED COUPLING

Filed April 15, 1927

Fig. 1.

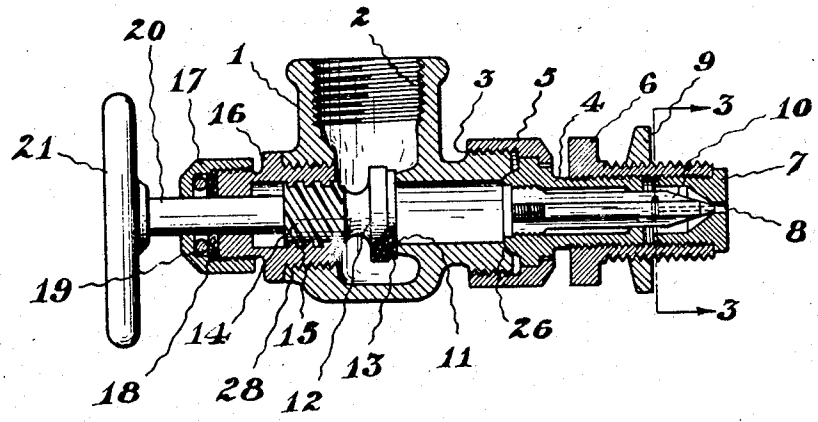


Fig. 3.

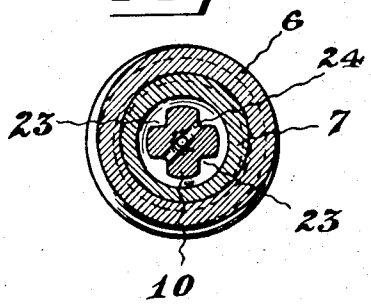
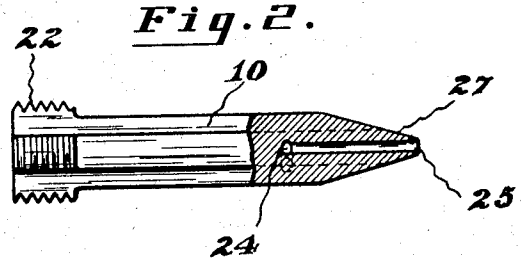


Fig. 2.



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UNITED STATES PATENT OFFICE

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VALVED COUPLING

Application filed April 15, 1927. Serial No. 184,141.

This invention relates to gas burning appliances and in particular the means for regulating and controlling the flow of gas from the source of supply to the heating burners of the appliance.

It has for its object the provision of a shut-off valve that may be readily and easily secured to and detached from the appliance.

Another object of this invention is to provide a shut-off valve in which the outlet orifice may be independently adjusted to take care of the various kinds of gas and different gas pressures.

Another object of this invention is to provide a valve for gas burning appliances which facilitates the disconnecting of the appliance from the gas supply line and that does not necessitate turning off the gas at the meter when such disconnection is made.

A further object of this invention is to provide a valve in which the inlet and outlet portions of the valve are detachably secured to each other.

Prior to my invention it has been the usual practice to secure valves of the type shown to the mixing or Venturi tube of the gas burner without the interposition of any convenient means for disconnecting the gas conduit from the burner. It is often desirable and necessary in gas burning appliances to remove the burner for cleaning and other purposes. Such removal of the burner may readily and easily be accomplished with my improved valve, by simply unscrewing the union nut 5 from the valve body, which serves to disconnect the burner from the gas supply line.

In the drawing Figure 1 is a sectional elevation of my improved valve.

Figure 2 is an enlarged elevation partly in section of the adjusting needle.

Figure 3 is a section taken on line 3—3, Figure 1.

The valve shown in the drawing comprises a valve body 1 having an inlet opening 2 threaded to receive a pipe to be connected to the source of gas supply and having an externally threaded outlet 3 to receive the union nut 5 which provides a means for detachably securing the nipple 4 to the valve body.

The nipple 4 is externally threaded to receive a spud carrier 6 which in turn receives a spud 7, provided with an orifice 8. The spud carrier 6 is externally threaded for securement to the applicance upon which it is used. The locknut 9 provides a means for locking the spud carrier to the appliance. The nipple 4 is internally threaded to receive the adjusting needle 10.

Referring to the enlarged view of the needle 10, shown in Figures 2 and 3 it will be seen that the needle has a threaded portion 22 at one end by which it is adjustably carried in the nipple 4. The opposite end 27 of the needle 10 is conical in shape for reception in the orifice 8 of the spud 7 and provides a means of varying the size of the opening of the orifice 8. The needle 10 is further provided with longitudinal recesses 23, which permit the flow of gas through the nipple 4.

A hole 24 is drilled through the adjusting needle 10 intersecting the inner terminus of the axially drilled hole 25 provided in the conical end of the needle. The openings 24 and 25 provide a minimum fixed opening for gas to be supplied to the burner when the conical end 27 of the needle 10 is in contact with the spud 7 at the margin of the orifice 8. The size of the holes 24 and 25 is determined by the size of the burner with which the valve is to be used.

With a given burner the passages 24 and 25 are of such size that when the gas supply is wholly under their control, the burner will receive the proper amount of the highest grade natural gas at the maximum pressures which may be anticipated, for its operation at maximum efficiency.

The orifice 8 of the spud 7 is designed to provide an opening for a given burner so that when it is fully uncovered by the needle 10 and the flow of gas is restricted only by the orifice 8, a proper amount of the lowest grade of artificial gas and at minimum pressure will be supplied to the burner for its operation at maximum efficiency.

The previously cited conditions represent the extreme adjustments which are necessary

in a valve of this type and any desired adjustment between these two extremes may be obtained by moving the needle 10 toward or away from the orifice 8.

Heretofore the usual practice has been to use spuds having larger or smaller orifices to take care of the various types of gas and gas pressures. Thus a gas burning appliance when used with natural gas of high B. t. u. value would have a spud with a small orifice and when used with artificial gas of low B. t. u. value would be provided with a spud having a large orifice. My proposed arrangement does away with the necessity of changing the spuds and provides a gas control valve that will handle any commercial type of gas at any ordinary pressure that may be encountered by reason of the large orifice 8 and the relatively small orifice 25 and the adjustments that may be effected between these two limiting orifice sizes.

The nipple 4 is provided with a spherical face 26 adapted to be held in the fluid tight contact with a portion of similar contour on the outlet end of the valve body 1 by the locknut 5. The valve body has a valve seat 11 formed integrally therein. A valve head 12 coacts with the valve seat 11 to open and close a passage through the valve body. The valve head 12 is provided with a valve face 13 of a relatively yielding material, such as leather, fibre or hard rubber.

The valve head 12 has a threaded portion 14, adapted to be received by a suitably threaded portion 15 of the bushing 16, that is threadably received at 28 by the valve body 1. The valve head is formed integrally with the valve stem 20 or suitably secured thereto. The exposed end of the valve stem is provided with a small hand wheel 21, which provides a means for rotating the valve into an open or closed position.

Packing means for the valve stem are provided by a washer 18, which is urged against the valve stem 20 and the bushing 16 by the apertured cap 17 and annular washer 19.

In attaching this device to a gas burning appliance the inlet side 2 of the valve is placed in communication with a gas conduit. The spud carrier 6 and the nipple 4 are secured to the appliance and locked in position by the nut 9. The union nut 5 is then tightened up on the outlet end 3 of the valve body and the device is then in a position for operation.

If for any reason it is desired to remove the burner or to adjust the fixed orifice of the valve this may be done by simply unscrewing the union nut 5 whereupon access may be had to the adjusting needle 10 and if it is desired, the burner may be removed from the valve without disturbing its adjustment. Ordinarily the gas flow adjustment is accomplished by rotating the element 6 on the nipple 4 to position the inlet of the spud orifice 8 closer to or farther away from the conical end of the centrally bored needle 10.

An important feature of my improved valve is that it is not necessary to shut off the gas ahead of the valve when taken apart at its union connection as the valve itself provides a gas shut-off means ahead of the union connection.

Furthermore, it is to be understood that the particular forms of apparatus shown and described and the particular procedure set forth are presented for purposes of explanation and illustration and that various modifications of said forms and procedure can be made without departing from my invention as defined in the appended claims.

I claim:

1. An angle valve having a male union outlet, a centrally bored regulating needle mounted in said outlet, a spud having a reducing orifice, and means longitudinally adjustable on said union outlet and carrying said spud whereby the position of said spud may be adjusted relatively to said regulating needle so that in the limiting positions of said spud fluid flow from the valve is controlled by the size of spud orifice in one case and in the other case by the size of the central bore of said regulating needle.

2. A combination of an angle valve having a threaded inlet and union outlet, a nipple forming a part of said union outlet, and an adjustable needle valve comprising a centrally bored needle carried in said nipple, and a spud adjustably associated with said nipple and needle providing a valve seat for said needle, said needle valve having maximum and minimum adjustment as determined by the size of the spud orifice and the orifice of the centrally bored needle.

In testimony whereof I affix my signature.

LORAN F. DOEN.