Dec. 29, 1931. J. F. ROGERS 1,838,706

RAW GAS VALVE

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Fig. 2.

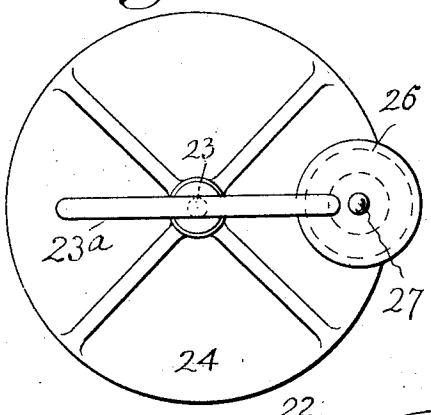


Fig. 1.

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Fig. 3.

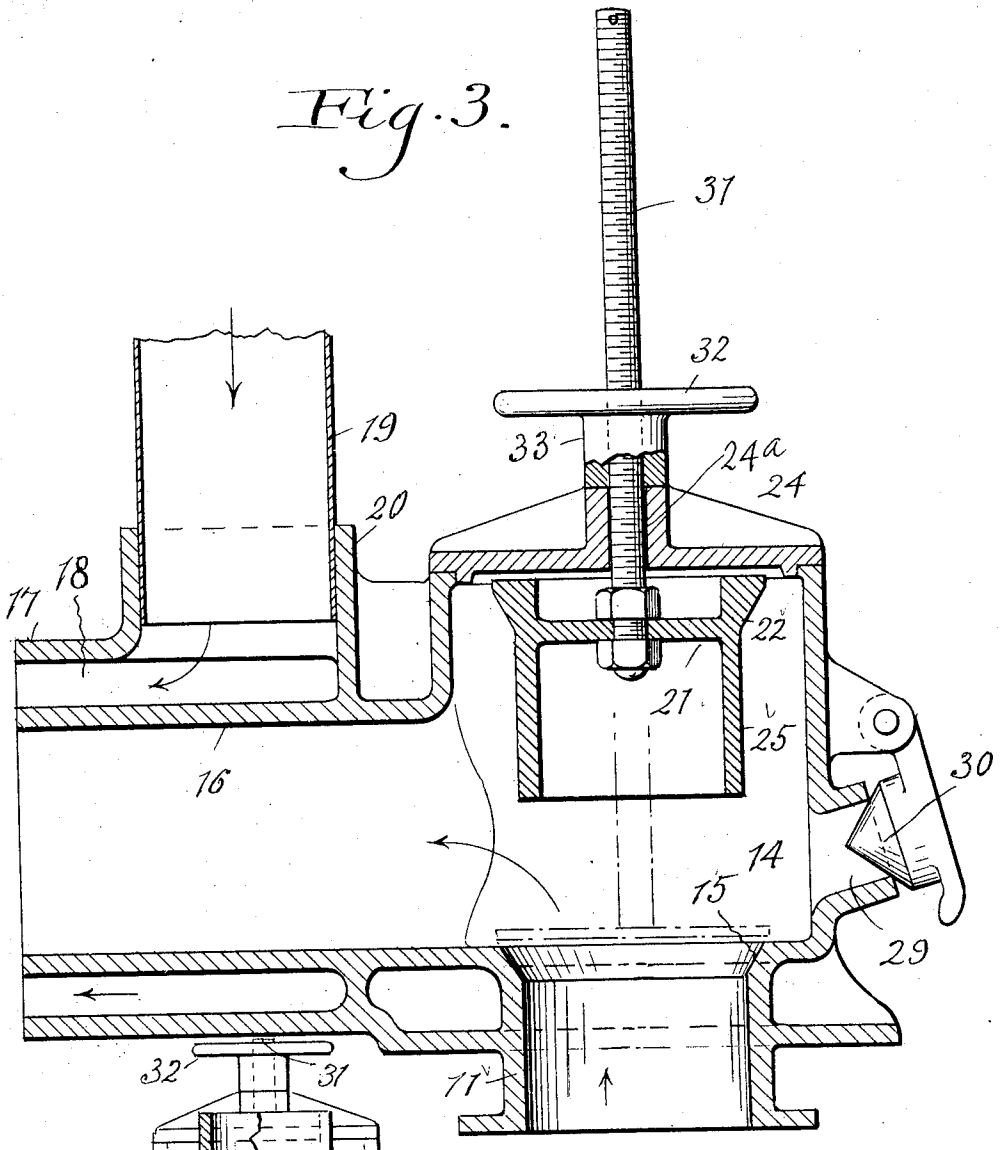


Fig. 4.

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Patented Dec. 29, 1931

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UNITED STATES PATENT OFFICE

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RAW GAS VALVE

Application filed October 29, 1923. Serial No. 671,334.

This invention relates to raw gas valves, and has for its chief object to avoid the difficulties heretofore encountered in maintaining the valve opening through which the raw gas from a gas producer is admitted to the valve chamber clear of condensate and in cleaning off the condensate.

In burning raw gas the sticky tarry products carried in comminuted form in the gas collect upon and around the valve seat, and on the wall forming the opening leading to the valve seat, and this condensate must be cleaned out from time to time, otherwise the valve opening is gradually closed up and the valve has practically no regulating action at all.

It has been customary heretofore to clean away this condensate by rods or pokers extended down through openings in the top of the valve chamber, but the cleaning operation cannot be done in this manner conveniently or effectively.

In accordance with the present invention, the valve itself is utilized to cut away the condensate, the same being so constructed and mounted that whenever desired it can be lowered to remove the condensate from the valve opening, including the opening in the neck or extension of the valve chamber which extends down to and is attached to the top of the gas conduit through which the gas is supplied.

The invention may be further briefly summarized as consisting in certain novel details of construction, and combinations and arrangements of parts which will be described in the specification and set forth in the appended claims.

In the accompanying sheets of drawings, Fig. 1 is a vertical sectional view through my improved valve in its preferred form; Fig. 2 is a partial plan view; Fig. 3 is a view similar to Fig. 1, but showing a modification; the valve being diagrammatically illustrated in closed position in side elevation, and Fig. 4 is an end view on a reduced scale looking toward the outlet end of the valve.

The valve chamber 10 is in the main, of general or common construction. It is provided at the bottom with a neck portion 11, which sets upon the top of the gas supplying conduit, a portion thereof being indicated at 12, and in this instance the neck portion 11 has a flanged base 13 for conveniently mounting the valve in place.

The gas passes up through the neck 11 into an enlarged portion 14 of the chamber, there being at the top of the neck 11 a tapered valve seat 15. Leading from the enlarged portion 14 is a laterally extending delivery portion 16, a portion of which is surrounded by an annular wall 17 forming an annular space 18 to which air is supplied through a pipe 19 fitted to an extension 20 of the wall 17 so that the air issuing from the space 18 at the end of the delivery portion or extension 16 of the valve may mix with the gas issuing through the delivery extension 16. Beyond the end of the extension 16 such gas with the proper admixture of air is burned, the valve and burner therefore being combined in one unit.

The valve opening is designed to be closed, and the flow of gas to be regulated by a vertically movable valve 21 provided at the top with a tapered portion 22 designed to seat upon the tapered seat 15. This valve is carried by a stem 23 which in this instance extends loosely through an opening formed in a central boss 24*a* of a cover plate 24.

For the purpose of cleaning out condensate from the valve opening inside the seat 15 and neck 11, I provide two important features of construction. These are, first, a cleaner on the valve which will act as a cutter or knife and when lowered extends down through the neck 11; and, secondly, provision is made for lowering the valve with its cleaner whenever desired.

The cleaner is in the form of an annular skirt 25, the diameter of which is slightly less than the diameter of the inner wall of the neck 11, and its length is somewhat greater than the length of the neck so that when the valve is lowered its full distance it will extend entirely through the neck. It is apparent that when the valve is lowered this cleaner will act as a knife, cutting the condensate from the wall forming the valve

opening including the opening in the neck.

In order that the valve may be lowered readily and without disturbing its adjustment, the stem 23 is, as previously stated, passed freely through the cover 24, and it is designed to be supported in any given position by an adjustable support 26 from which the stem may be readily disengaged. In this case the stem has an enlargement in the form of a handle 23*a*, the length of the handle in a lateral direction being such that it may rest upon the support 26, and the latter is in the form of a disk on a fixed threaded rod 27 projecting up from the cover 24, as clearly shown in Fig. 1. If any adjustment of the valve 21 is necessary, the disk 26 is screwed up or down, as the case may be, and the handle 23*a* hooked over it so that it will support the valve at the proper height.

Inasmuch as the handle 23*a* is narrow, it is obvious that it can be disengaged from the disk 26 simply by giving it a slight turn of a quarter or less. This frees the valve from any support so that the operator may force the valve down to clean out the valve opening, and if necessary he can pump it up and down and drive it forcibly into the condensate to clean out the valve opening, and when the cleaning operation is completed he has only to lift the valve by the handle 23*a*, and hook the latter over the disk 26, whereupon the valve is supported in its previous position.

It is obvious that the valve opening can in this manner be cleaned quite readily and frequently without disturbing the adjustment of the valve, and this permits the flow of gas to be regulated by the valve to a better extent than heretofore.

The enlarged part of the valve chamber may be provided opposite or in line with the extension 16 with a stoke opening 29 for the insertion of any suitable cleaner to clean out any condensate which may collect in the extension 16, this opening being normally closed by a door or hinged cover 30.

In the modification shown in Figs. 3 and 4, the construction is in all material respects the same, except for a difference in the manner of supporting the valve in open position, and in the method of manipulating the valve or releasing it so that it may be utilized to clean out the valve opening or inlet opening leading to the enlarged part of the chamber. The chamber is similar to that previously described, except as to minor details, and the same reference characters heretofore used in describing the parts of the chamber of Fig. 1 are applied to the corresponding parts of Fig. 3, so that a detailed description of such corresponding parts need not be given.

The body of the valve is also constructed similar to that first described, inasmuch as it has a tapered upper portion adapted to engage the seat formed at the top of the neck 11 of the valve chamber, and a cleaner in the form of a depending skirt 25 of a size such that when the valve is lowered it will extend down through the neck 11 and shear off the condensate which may have collected on the neck 11. In this instance the valve is provided with a threaded stem 31 which passes loosely through the opening in a central boss 24*a* of the cover 24, and this stem is provided with a hand wheel 32 having a threaded boss 33 which engages the threads of the stem 31 and normally rests on the boss 24*a* of the cover, and thus supports the valve in any adjusted position. Obviously, assuming that the usual right hand thread is employed, by turning the hand wheel in a clockwise direction, the valve 21 is elevated, and by moving the hand wheel in the reverse direction the valve will be lowered.

When it is desired to clean out the valve opening, including the passageway in the neck 11, the operator will lower the valve until it engages the condensate which may be on the seat. He will then spin the hand wheel so as to elevate it on the stem until there will be sufficient clearance between the boss on the hand wheel and the boss of the cover to enable the operator to force the valve downward until the lower part of the skirt 25 projects below the bottom of the neck 11, or until the tapered seat portion 22 of the valve engages or substantially engages the seat 15 of the chamber wall.

Though I have described two forms only of the invention, these two forms showing two different ways of supporting the valve in any adjusted position so as to permit the valve to be used as a cleaner whenever desired to clean out the valve opening including the passageway leading to the chamber proper, nevertheless, I do not desire to be confined to the forms shown, but aim in my claims to cover all modifications which do not involve a departure from the spirit and scope of my invention as defined in the appended claims.

Having described my invention, I claim:

1. A raw gas valve comprising a valve chamber having an elongated inlet portion provided with a valve seat and a delivery portion, and a valve in line with the inlet portion, said valve being provided with a portion for engaging said seat and a tubular skirt formed to fit within the wall of the inlet portion for cutting condensate from the wall of the inlet portion.

2. A raw gas valve comprising a valve body or chamber having a tapered seat and a neck beneath the same, and a movable valve having a portion for engaging the seat, said valve also having a tubular depending skirt portion formed to fit within the neck for cutting condensate from the wall of the neck.

3. A raw gas valve comprising a valve body or chamber having a tapered valve seat,

a substantially cylindrical neck projecting downwardly therefrom, and a valve in line with the neck provided with a tapered portion adapted to engage the seat, said valve being provided with a substantially cylindrical condensate removing extension adapted to fit within the neck and of greater length than the neck, said extension having at its lower end a scraping edge which contacts with the neck during movement of the valve to closed position.

4. A raw gas valve comprising a valve body or chamber having an inlet portion provided with a valve seat and an outlet portion, a valve adapted to be moved toward and from the seat and having a stem extending through the cover of the valve, an extension for cutting condensate from about the valve opening of the chamber including the wall of the inlet portion, and means from which the stem may be disengaged at will for supporting the valve in any desired adjusted position.

5. A raw gas valve comprising a valve body or chamber having a valve seat and a neck beneath the same, and having also a lateral delivery portion, a valve adapted to be moved toward and from the seat and provided with a condensate removing extension adapted to be extended down through the neck when the valve is lowered to the seat, a stem projecting through the top of the chamber, and an adjustable abutment with which the stem may be engaged and from which it may be disengaged whereby the valve may be lowered to clean off the condensate and then again restored to its previous position.

In testimony whereof, I hereunto affix my signature.

JOHN F. ROGERS.