J. A. GEHRUNG.

GAS VALVE.

APPLICATION FILED APR. 22, 1915.

1,167,060. Patented Jan. 4, 1916.

Fig. 1.

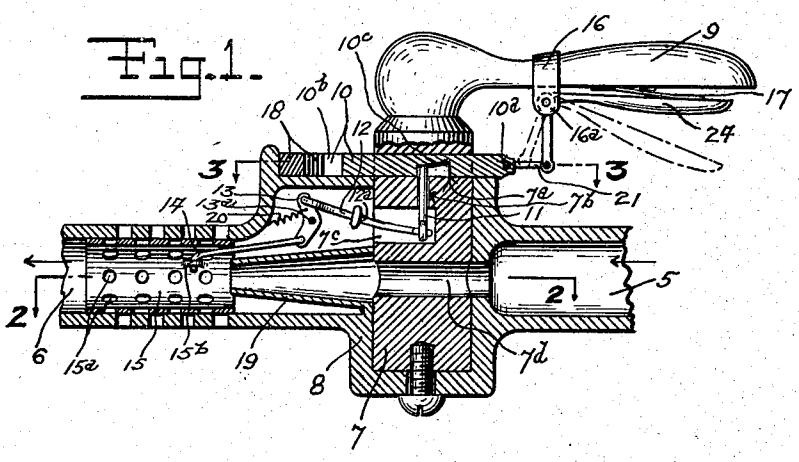

Fig. 2.

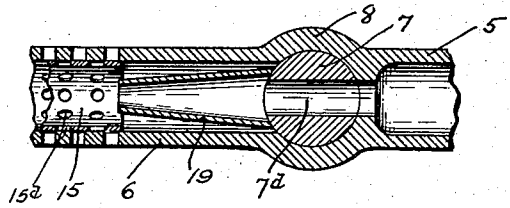

Fig. 3.

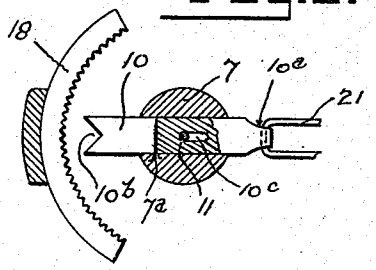

Fig. 5.

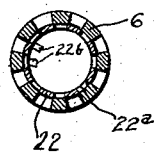

Fig. 4.

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GAS-VALVE.

1,167,060. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed April 22, 1915. Serial No. 23,041.

To all whom it may concern:

Be it known that I, JULIEN A. GEHRUNG, a citizen of the United States, and resident of the city, county, and State of New York, have invented certain new and useful Improvements in Gas-Valves, of which the following is a specification.

This invention relates to improvements in gas valve construction or supply means therefor, and more particularly aims to provide a means for predetermining the mixture for proper and safe combustion, especially when igniting or extinguishing.

One of the objects is to provide a simple, safe, convenient and inexpensive and to a certain extent automatic means for controlling the mixture to be burned, as well as to so design said means that it will be characterized by compactness of construction and reliability of operation and will permit of a ready attachment of an embodiment of the present invention to an ordinary gas-supply means.

Another object is to provide an improved locking means for the supply valve which will lock said valve in any desired supply position, a further object being to provide a connection between said locking means and mixture controlling means which will prevent the possibility of an explosive mixture being supplied at the opening or closing of the valve.

Other objects, aims and advantages of the invention will be apparent from a consideration of the elements, combinations, arrangements of parts and applications of principles constituting the invention; and the scope of protection contemplated will appear from the claims.

In the accompanying drawing, which is to be taken as a part of this specification, and wherein there are shown two of the various possible embodiments of the invention as at present preferred: Figure 1 is a vertical sectional view of one of said embodiments, with certain of the parts shown in elevation; Fig. 2 is a detail horizontal sectional view, taken on the line 2—2 of Fig. 1; Fig. 3 is a view similar to Fig. 2, but taken on the line 3—3 of Fig. 1; Fig. 4 is a view generally similar to Fig. 1, but disclosing another of said embodiments, and Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 4.

Similar reference characters refer to similar parts throughout the several views of the drawing.

In order to include this specification within the smallest possible confines consistent with a clear and proper disclosure, let us assume for the purposes of illustration that the pipe 5 in the case of each embodiment leads in the direction of the small arrow shown from a source of gas supply and that the pipe 6 in each of such cases similarly leads toward a gas-burner of a suitable type.

Adverting now particularly to the parts shown in Figs. 1 to 3 inclusive, the reference numeral 7 indicates a usual type of gas-valve cylinder provided with a transverse passage 7^a for the gas, said passage being of the usual kind and so designed that the cylinder 7 may be arranged variously to cause various amounts of gas to pass from pipe 5 to pipe 6 in accordance with the axial adjustment of the cylinder. The cylinder is rotatively mounted within a sleeve 8, and has fixedly offset from its upper terminus a handle 9. Cylinder 7 is provided with a transverse, preferably square in cross-section, slot 7^a, within which slot is reciprocally mounted a slide-block 10. One terminal portion of this slide-block carries a horizontally arranged transverse hole 10^a and the other terminus of said block is vertically bifurcated to provide teeth as shown at 10^b. The under-surface of block 10 is undercut to establish the cam-groove 10^c. The effective or roof surface of cam-groove 10^c is adapted predeterminedly to function against the upper terminus of a thrust-rod 11 which is reciprocally mounted within a vertically arranged guide-hole 7^b formed in cylinder 7. This hole last-mentioned is preferably axially coincident with the axis of said cylinder for a reason which will hereinafter be explained. The lower mouth of hole 7^b communicates with, and the lower terminal portion of thrust-rod 11 always projects downwardly into, a working space established by a transverse groove 7^c cut rather deeply into cylinder 7.

Thrust-rod 11 at its lower end carries an eye with which is flexibly connected an eye carried at one of its ends by a lever of the first class 12, which is intermediately substantially fixedly pivoted as at 12^a. Lever 12 carries at its other end a similar eye which is flexibly connected with the adjacent terminus of a bell-crank lever 13 fixedly pivoted as at 13^a. The other terminus of the bell-crank lever is connected as shown to one end of a link 14, the other end of which

link is pivotally connected to a lug 15^b fixedly carried within a shutter 15 that, reciprocally mounted in pipe 6, in the present instance (and indeed in both of the present embodiments) comprises a hollow cylindrical sleeve having a foraminous side-wall as indicated. And pipe 6 is provided with a plurality of perforations each of which is adapted normally to register so as to admit to pipe 6 air for combination with the gas fed for combustion, the space inclosed by the sleeve 15 constituting a mixing chamber. A collar 16, with depending terminal ears 16^a, is mounted fast upon the barrel of handle 9, and there is pivotally mounted between these ears a clasp-lever 24. A link 21, preferably O-shaped in plan view as partially disclosed in Fig. 3, passes through hole 10^a of slide-block 10 and serves operatively to connect said slide-block and clasp-lever 24. A V-leaf-spring 17 is nested between handle 9 and the operating arm of lever 21, and tends normally to maintain said arm as illustrated in broken lines in Fig. 1 and consequently tends normally to maintain slide-block 10 at its extreme leftward, or normal, location (not shown in the drawing), thereby to permit retractile spring 20, mounted as shown in Fig. 1, to maintain the perforations 15^a carried by shutter 15 normally in registry with the perforations formed in pipe 6. Slide-block 10, or rather the terminal bifurcation 10^b thereof, is adapted to coöperate with certain of the teeth (see particularly Fig. 3) carried by the inner curved wall of an arcuate member 18, upon a manual release of lever 24 and upon the consequent assumption by the parts of their normal locational characteristics, no matter what be at the time the axial adjustment of valve-cylinder 7. The usual nozzle 19 may be present as shown.

It will be apparent that the position of the thrust rod 11 co-axial with cylinder 7 will enable said thrust rod to be acted upon by the cam surface of the cam-bar no matter to what position the valve is turned. It will also be apparent that, in order to start or cut off the supply of gas, the cam-bar must first be moved to disengage from the rack 18 before the valve 7 can be turned, and, consequently, by reason of the operative connection between the cam-bar and the shutter 15, the air supply will be cut off, either wholly, as here shown, or partially as desired, before the gas can be turned on or off. By this means, a mixture rich in gas is insured and any danger of explosion or "back flash" is eliminated. Spring 20 acts to automatically return the shutter to its normal or open position when the valve handle is released, the spring 17 causing automatic reëngagement of the cam-bar with the rack 18.

In the embodiment shown in Fig. 4 there are present the pipes 5 and 6, the latter provided with its plurality of perforations, the valve-cylinder 7 with its passage 7^d, its slots 7^a and hole 7^b, and its groove 7^c, the sleeve 8, the handle 9, the slide-block 10, with its cam-slot 10^c and its terminal hole 10^a and its terminal bifurcation 10^b, the thrust rod 11, the arcuate member 18, the collar 16 with its terminal ears 16^a, the operating or clasp-lever 24, and the link 21, and even the nozzle 19. A shutter 22, having formed therein perforations 22^a, generally similar to the shutter 15, is also employed. Shutter 22 is provided with a pair of ear-lugs 22^b between which lugs is arranged the free terminus of a lever 23 of the first class, pivoted as at 23^a, and having its other end directly flexibly connected with the eye carried by thrust-rod 11 at its lower end. A retractile spring 25, similar in function to the spring 20, is also utilized as shown. Attention need not be called to the fact that this second embodiment of the invention possesses all of the salient characteristics of the embodiment of Fig. 1, except that upon an actuation of lever 24 to abnormal location, the travel of slide-block 10 causes a fractional rotation of shutter 22 thereby abnormally to place out of registry the perforations formed in pipe 6 and the perforations 22^a of said shutter, as best shown in Fig. 5.

Having described this invention, what I claim as new, and desire to secure by Letters Patent is:—

1. In a device of the class described, a gas supply means, an air supply means, a valve controlling the supply of gas, a valve controlling the supply of air, said last mentioned valve being normally open, a manually operable locking means for said gas supply control valve, and means effecting an operative connection between said manually operable locking means and air supply control valve whereby release of the locking means will cause a closing of the air supply valve.

2. In a device of the class described, a gas supply means, an air supply means, a valve controlling the supply of gas, said valve having an offset handle, a normally open valve controlling the supply of air, locking means for said gas supply control valve, a lever for operating such locking means, such lever being fulcrumed upon the said handle, and means effecting an operative connection between said locking means and air supply control valve whereby release of the locking means will cause a closing of the air supply valve.

3. In a device of the class described, a gas supply means, an air supply means, a valve controlling the supply of gas, a normally open valve controlling the supply of air, means for locking said gas supply control valve in different supply positions, and means effecting an operative connection be-

tween the said locking means and air control valve irrespective of the supply position of the latter whereby release of the locking means will cause a closing of the air supply valve.

4. In a device of the class described, a gas supply means, an air supply means, a valve controlling the supply of air, a rotary valve controlling the supply of gas, such valve having a slot therein, a cam-bar slidably mounted in said slot, a device with which said cam-bar is adapted to engage to lock said gas supply valve against rotation, means whereby said cam-bar may be reciprocated to lock or release said rotary valve and means effecting an operative connection between said cam-bar and air supply valve whereby the latter is caused to open or close upon reciprocation of the cam-bar in opposite directions.

5. In a device of the class described, a gas supply means, an air supply means, a valve controlling the supply of air, a rotary valve controlling the supply of gas, such valve having a transverse slot and an axial hole therein, a cam-bar slidably mounted in said transverse slot, a device with which said cam-bar is adapted to engage to lock said gas supply valve against rotation, means whereby said cam-bar may be reciprocated to lock or release said rotary valve, and means effecting an operative connection between said cam-bar and air supply valve whereby the latter is caused to open or close upon reciprocation of the cam-bar in opposite directions, including a thrust rod slidable in said axial hole and engaging the cam portion of said cam-bar.

6. In a device of the class described, in combination, movable gas-supply means adapted to be manually set in supply adjustment or in non-supply adjustment, movable air-supply means normally in supply adjustment, and locking means for normally maintaining said gas-supply means immovable as previously set, said locking means being manually releasable and while thus maintained released automatically establishing said air-supply means in abnormal non-supply adjustment, said locking means being spring-urged to locking position irrespective of the then adjustment of said gas-supply means.

7. In a device of the class described, in combination, a mixing chamber having a normally open air inlet, a rotatable gas-valve controlling the supply of gas to said chamber, a handle for said valve, a manually operable device carried by said valve and adapted to lock the latter in position, a shutter adapted to close the said inlet, and means effecting an operative connection between said locking device and shutter whereby actuation of the former will cause operation of the latter.

8. In a device of the class described, in combination, a rotatable cylindrical gas-valve having a transverse passage, a mixing chamber beyond said passage having a plurality of perforations in the wall thereof, a movable shutter having a plurality of perforations that normally are in registry with the perforations in said wall, a handle for operating said valve, a lever pivotally mounted upon said handle and resiliently urged to normal disposition, a cam-bar longitudinally slidable transversely of said valve and in operative connection with said lever, a tooth carried by the cam-bar, a curved rack adapted to be engaged by said tooth to lock said valve when said lever is in normal position, a thrust-rod supported with its axis in coincidence with the axis of the valve, said thrust rod engaging the cam portion of said cam bar, and means actuated by said thrust rod to move the perforations in the wall of the mixing chamber and shutter out of registry with each other.

9. In a device of the class described, in combination, a rotatable cylindrical gas-valve having a transverse passage, a mixing chamber beyond said passage having a plurality of perforations in the wall thereof, a movable shutter having a plurality of perforations that normally are in registry with the perforations in said wall, a handle for operating said valve, a lever pivotally mounted upon said handle and resiliently urged to normal disposition, a cam-bar longitudinally slidable transversely of said valve and in operative connection with said lever, a tooth carried by the cam-bar, a curved rack adapted to be engaged by said tooth to lock said valve when said lever is in normal position, a thrust-rod supported with its axis in coincidence with the axis of the valve, said thrust rod engaging the cam portion of said cam-bar, and means actuated by said thrust rod to move the perforations in the wall of the mixing chamber and shutter out of registry with each other, such means including a lever one end of which is pivoted to the end of said thrust rod removed from said cam-bar.

10. In a device of the class described, in combination, a rotatable cylindrical gas-valve having a transverse passage, a mixing chamber beyond said passage having one or more perforations in the wall thereof, a movable shutter having one or more perforations that normally are in registry with the perforations in said wall, a handle for rotating said valve, a lever pivotally mounted upon said handle and resiliently urged to normal disposition, a cam-bar longitudinally slidable transversely of said valve and in operative connection with said lever, a thrust rod supported with its axis in coincidence with the axis of the valve, said thrust rod engaging the cam portion of said cam-bar, and

means actuated by said thrust rod to move the perforations in the wall of the mixing chamber and shutter out of registry with each other.

11. In a device of the class described, in combination, a rotatable cylindrical gas-valve having a transverse passage, a mixing chamber beyond said passage having a plurality of perforations in the wall thereof, a movable shutter having a plurality of perforations that normally are in registry with the perforations in said wall, a handle for rotating said valve, a lever pivotally mounted upon said handle and resiliently urged to normal disposition, a cam-bar longitudinally slidable transversely of said valve and in operative connection with said lever, a thrust rod supported with its axis in coincidence with the axis of the valve, said thrust rod engaging the cam portion of said cam-bar, and means actuated by said thrust rod to move the perforations in the wall of the mixing chamber and shutter out of registry with each other, such means including a lever one end of which is pivoted to the end of said thrust rod removed from said cam-bar.

12. In a device of the class described, in combination, a rotatable cylindrical gas-valve having a transverse passage, a handle for rotating said valve, a lever pivotally mounted upon said handle and resiliently urged to normal disposition, a cam-bar slidable transversely of said valve and in operative connection with said lever, and a device adapted to be engaged by said cam-bar to lock said valve against re-adjustment.

13. In a device of the class described, in combination, a rotatable cylindrical gas-valve having a transverse passage, a handle for rotating said valve, a lever pivotally mounted upon said handle and resiliently urged to normal disposition, a cam-bar slidable transversely of said valve and in operative connection with said lever, a tooth upon said cam-bar, and a curved rack adapted to be engaged by said tooth to lock the valve against re-adjustment.

Signed at the city, county and State of New York on the 5th day of April, 1915.

JULIEN A. GEHRUNG.

Witnesses:
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