A. N. EDWARDS.

PNEUMATICALLY OPERATED GAS VALVE.

APPLICATION FILED FEB. 19, 1912.

1,067,414.

Patented July 15, 1913.

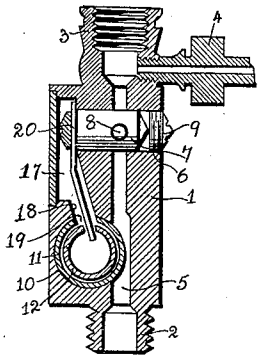


Fig 1

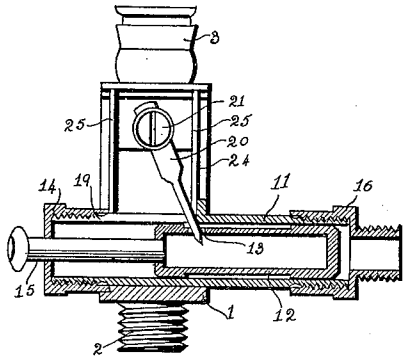


Fig 2

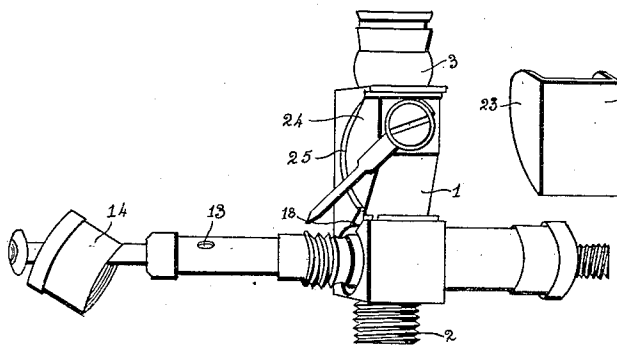


Fig 3A

Fig 3

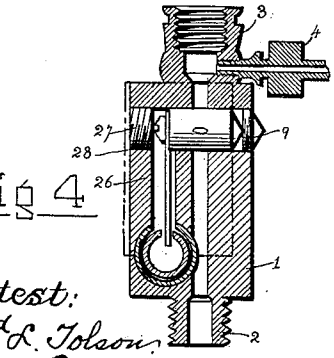


Fig 4

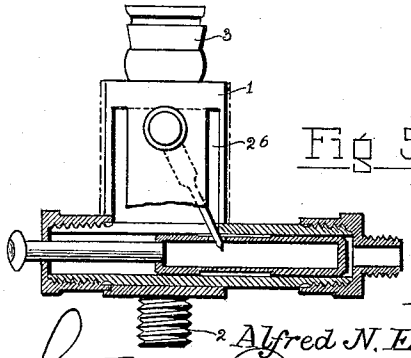


Fig 5

Attest:
Edwd. L. Tolson.
C. E. Parsons.

Inventor:
Alfred N. Edwards,
by Spear, Middleton, Donnelan & Spear
Attys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALFRED NEVILLE EDWARDS, OF LONDON, ENGLAND.

PNEUMATICALLY-OPERATED GAS-VALVE.

1,067,414. Specification of Letters Patent. Patented July 15, 1913.

Application filed February 19, 1912. Serial No. 678,469.

To all whom it may concern:

Be it known that I, ALFRED NEVILLE EDWARDS, a subject of the King of England, residing at 36 Farringdon street, London, E. C., England, have invented certain new and useful Improvements in Pneumatically-Operated Gas-Valves, of which the following is a specification.

The invention relates to pneumatically operated gas valves.

The object of the invention is to provide a device of simple and reliable construction, in which the gas valve and the mechanism for operating the valve are arranged in a fitting and form a self-contained whole therewith.

A further object of the invention is to provide a device in which the gas valve can be operated against considerable resistance, so that it is well-adapted for use with high pressure gas, although it is in no way restricted to this application.

To these ends the device forming the object of the present invention essentially comprises a fitting, a valve mounted in the longitudinal gas passage of the said fitting, an air cylinder mounted in the fitting transversely to but outside the said gas passage, a pneumatically operated piston within the said cylinder and means for operating the valve by the movement of the said piston, the arrangement forming one self-contained whole.

The invention further consists in the arrangement and construction of parts hereinafter described.

In the accompanying drawings, forming part of this specification, two forms of carrying out the invention are shown, the same figures denoting similar parts throughout the specification.

Figure 1 is a central vertical section through one form of the device forming the object of the invention. Fig. 2 is a front view of the device with the air cylinder and piston in section. Fig. 3 is the perspective front view of the device with the parts partly taken apart. Fig. 3ª shows a cover which is removed in Figs. 2 and 3. Fig. 4 is a central vertical section through another form of the device. Fig. 5 is a front view of the device shown in Fig. 4 with the lower part in section.

The fitting 1 has a socket 2 for the reception of a gas conduit and a socket 3 for the connection with the burner or a pipe leading thereto, the socket 3 being provided with a by-pass 4.

The fitting 1 is shown in Figs. 1–3 in about 1½ times its natural size, and is intended to contain not only the gas valve, but also the parts for pneumatically operating the said valve. According to Figs. 1–3 the fitting is of square section and is provided with a longitudinal gas passage 5 and a transverse bore 6 in which a rotatable plug 7 provided with a gas passage 8 is mounted, the bore 6 being closed at one end by a screw 9. The fitting is further provided with a bore 10 arranged transversely to the longitudinal gas passage 5. In this bore a cylinder 11 is mounted, within which a hollow piston 12, provided with a slot 13, is movably arranged. This piston has a bearing surface at both ends and is restricted in the middle, a long bearing surface being obtained thereby. At one end the cylinder 11 is closed by a cap 14 through which passes a handle 15 attached to the piston, so as to be able to operate the piston by hand if this should be desired. The other end of the cylinder is closed by a cap 16 to which the air pipe is connected.

The fitting 1 at its front has a recess 17 which is extended above the cylinder 11 into a slot 18, which at the one side extends through the fitting as shown in Fig. 3. Below the slot 18 of the fitting also the cylinder is provided with a slot 19 which extends to the end of the cylinder.

To the rotary valve 7 a lever 20 is attached by means of a screw 21, the lever is mounted in the recess 17 and passes through the slots 18, 19 into the slot 13 of the piston.

For closing the recess 17 a cover 22 serves (see Fig. 3ª). The cover 22 is provided with side wings 23 for the reception of which the fitting 1 is provided at both sides with side recesses 24 and grooves 25.

The operation of the device is as follows:—Pneumatic pressure applied to the right hand side of the piston 12 will cause the latter to travel to the left carrying with it the arm 20 and the rotary valve plug will be turned about its longitudinal axis so that the transverse passage 8 of the plug 7 will

be brought from the "off" position in which it is shown in the drawings to aline with the gas way 5, thus permitting the gas to pass through the burner. On a suction action of the pneumatic apparatus the piston will be moved in the reverse direction and the plug 7 again turned to the "off" position.

It will be seen that in the device described all the parts form one self-contained whole, as such easily to be attached to any gas pipe and burner. The arm 20 affords considerable leverage, so that the plug 7 can be operated against considerable resistance, and the piston 12 which has considerable bearing surface is mounted outside the gas passage 5, and is therefore not liable to be hindered in its motion by deposits from the gas on the same.

Fig. 3 shows how the parts of the device can be easily taken apart. In case the piston is to be cleaned the gas valve is nevertheless free to be operated by the lever 20. After unscrewing the cap 14 the said lever 20 can be turned out of the slots 18, 19 and the piston can then be taken out of the cylinder, for instance for cleaning purposes. After disconnecting the lever and the piston the lever may be again turned into the "on" or "off" position.

In the form of the device shown in Figs. 4 and 5 instead of the recess 17 a transverse slot 26 is provided in which the lever 20 is mounted, and the bore 6 for the reception of the plug 7 extends entirely through the fitting, being closed at either side by screws 9 and 27 respectively. In this form the fitting 1 may be of circular section and the slot 26 is conveniently closed in by a covering cap indicated by chain lines at 28.

The passage 8 in plug 7 instead of being circular in cross-section may take the form of a slot with its diameter of greatest length in line with the longitudinal axis of the plug, so that a quick "on" and "off" action may be obtained with a very small movement of the plug.

It will be understood that the device can be used with any illuminating gas, including coal gas, petrol air-gas and acetylene. Also it should be noted that the plug can be lubricated.

What I claim as new and desire to secure by Letters Patent is:—

1. In a device for pneumatically operating a gas valve the combination of a body-part, a rotary valve plug therein, a pneumatic cylinder carried by said body part at an appreciable distance from, and not opening upon said valve plug, and having an elongated slot at the side nearest said valve plug, a piston in said cylinder having an opening or recess always in register with the aforesaid elongated slot, a lever connected to the rotary valve plug at one end and having its other end passing through said elongated slot and loosely engaging the opening or recess in the piston, and means for completely inclosing said lever and one end of said valve plug.

2. A device for pneumatically operating a gas valve comprising a fitting or body-part, a valve in the longitudinal gas passage of said fitting or body-part, a recess in the front of said fitting or body-part, an air cylinder mounted in said fitting or body-part transversely to, but outside said gas passage, and having a slot, a pneumatically operated piston having a slot in register with the slot in said cylinder a lever within the aforesaid recess connected to the rotary valve and freely engaging the slot in said piston and a guide-stem carried by one end of said piston and passing through one of the end walls or heads of the cylinder.

3. A device for pneumatically operating a gas valve, comprising a fitting, a valve in the longitudinal gas passage of the said fitting, a recess in the front of the fitting, an air cylinder mounted in the fitting transversely to but outside the said gas passage, a slot in the fitting, a pneumatically operated piston having a slot, a slot in the said cylinder, a lever within the said recess connected to the rotary valve and freely engaging the slot in the said piston, means for completely inclosing said lever, and one end of said valve, and means for completely inclosing the other end of said valve, so as to leave no moving part of the apparatus exposed.

4. A device for pneumatically operating a gas valve, comprising a fitting, a valve in the longitudinal gas passage of the said fitting, a recess in the front of the fitting, an air cylinder mounted in the fitting transversely to but outside the said gas passage, an extended slot in the fitting, an extended slot in the cylinder, a pneumatically operated piston, a slot in the said piston, and a lever within the said recess connected to the rotary valve and freely engaging the slot in the said piston, the slots in the fitting and cylinder being so long that the lever can be swung out of engagement with the slot in the piston.

5. A device for pneumatically operating a gas valve, comprising a fitting, a rotary valve in the longitudinal gas passage of the said fitting, a recess in the front of the fitting, a slotted air cylinder mounted in the fitting transversely to but outside the said gas passage, a pneumatically operated slotted piston within the slotted cylinder, a lever mounted in the recess connected to the rotary valve and engaging the slotted piston, and a cover for closing the recess in the fitting and inclosing the valve and lever.

6. A device for pneumatically operating a gas valve, comprising a fitting, a rotary

valve in the longitudinal gas passage of the said fitting mounted in a transverse bore, a slot in the fitting extending parallel to the gas passage, a slotted air cylinder mounted in the fitting transversely to but outside the said gas passage, a pneumatically operated slotted piston within the said cylinder and a lever connected to the rotary valve mounted in the said slot, and freely engaging the slot in the said piston.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED NEVILLE EDWARDS.

Witnesses:

ALBERT MOND,

HERBERT D. JAMESON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."