

993,164.

3 SHEETS—SHEET 1.

FIG. 1.

40a

39

29

36

26

25

24

10

35

20

34

III

WITNESSES:
J. Herbert Bradley.
Harold C. Jones.

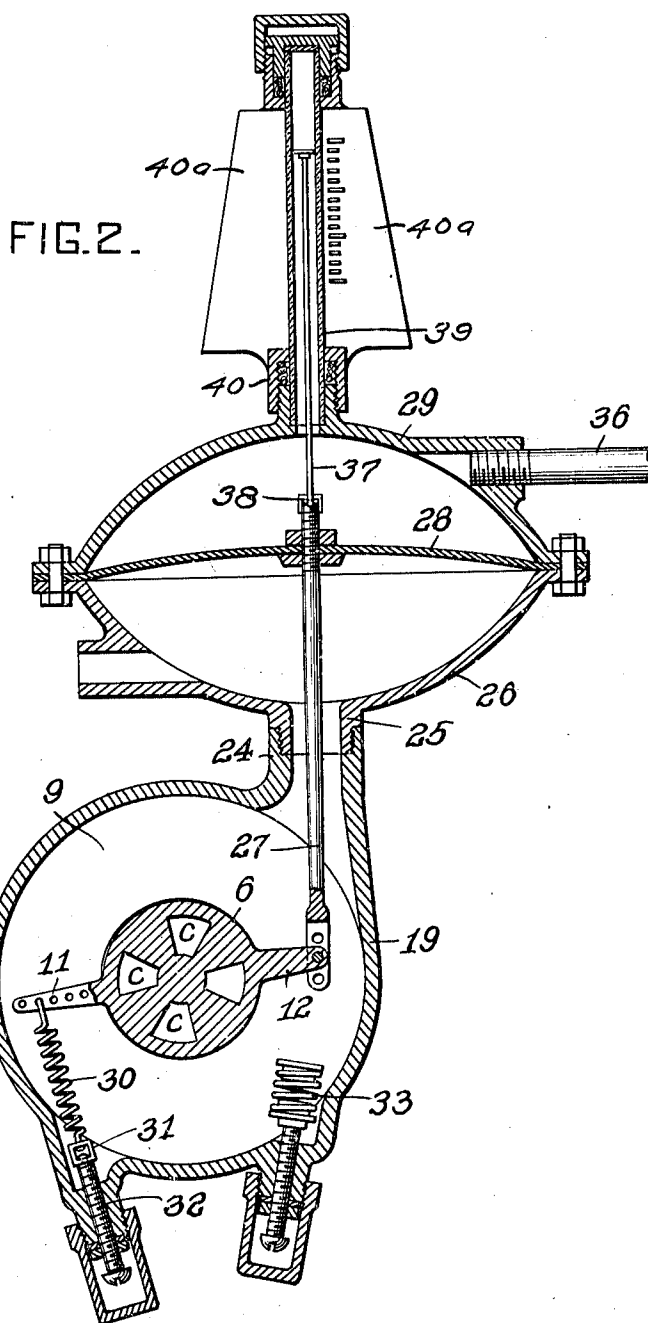
INVENTOR
John J. Heitz
by Sammie B. Wolcott Atty

J. J. HEITZ.
 COMBINED GAS REGULATOR AND CUT-OFF.
 APPLICATION FILED AUG. 8, 1910.

993,164.

Patented May 23, 1911.

3 SHEETS-SHEET 2.



WITNESSES:
J. Herbert Bradley
Harold G. Jones.

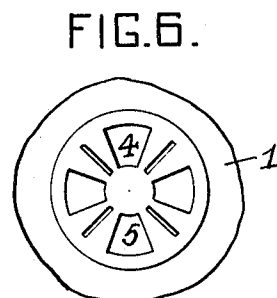
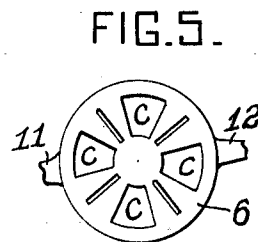
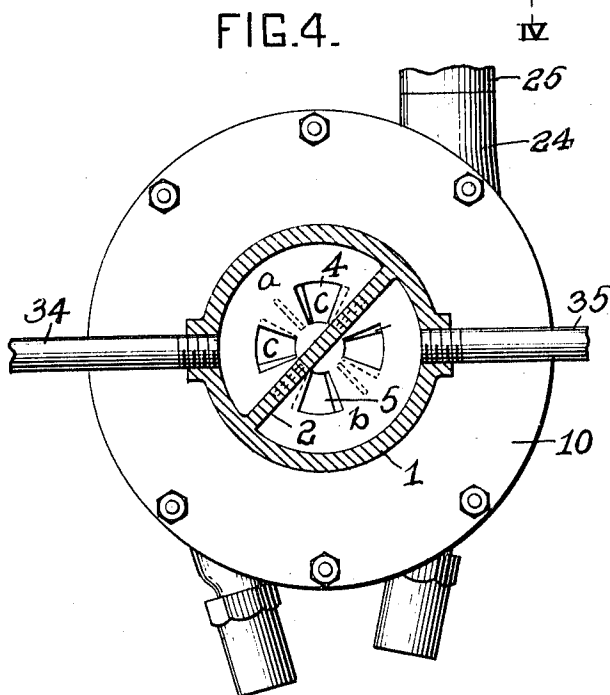
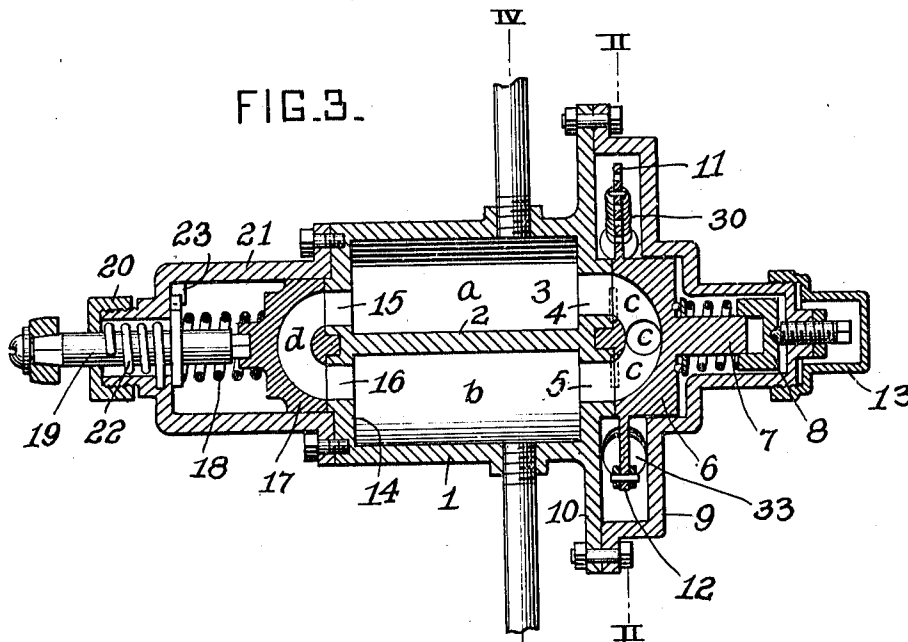
INVENTOR
John J. Heitz
 by *Samuel B. Wolcott* Att'y

J. J. HEITZ.
 COMBINED GAS REGULATOR AND CUT-OFF.
 APPLICATION FILED AUG. 8, 1910.

993,164.

Patented May 23, 1911.

3 SHEETS—SHEET 3.



WITNESSES:
J. Herbert Bradley.
Harold G. Jones

INVENTOR
John J. Heitz
 by *Darwin S. Wolcott* Atty

UNITED STATES PATENT OFFICE.

JOHN J. HEITZ, OF PITTSBURG, PENNSYLVANIA.

COMBINED GAS REGULATOR AND CUT-OFF.

993,164.

Specification of Letters Patent. Patented May 23, 1911.

Application filed August 8, 1910. Serial No. 578,206.

To all whom it may concern:

Be it known that I, JOHN J. HEITZ, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Combined Gas Regulators and Cut-Offs, of which improvement the following is a specification.

The invention described herein relates to certain improvements in gas regulators and cut-offs, and is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a side elevation of my improved regulator and cut-off; Fig. 2 is a sectional elevation of the same; Fig. 3 is a sectional view on a plane indicated by the line III—III Fig. 1, Fig. 4 is a sectional view indicated by the line IV—IV Fig. 3; Figs. 5 and 6 are face views of the main valve and its seat respectively.

In the practice of my invention, I employ a shell or casing 1 which is divided into receiving and outlet chambers *a* and *b* by a partition 2. Through one head 3 of this shell are formed ports 4 and 5 connected respectively with the chambers *a* and *b*. The outer face of this head 3 serves as a seat or face for a disk valve 6 which is provided with curved passages *c* adapted in certain positions of the valve to connect the ports 4 with the ports 5 permitting the flow of gas from the receiving to the outlet chamber. This disk valve is held to seat by a spring 7 interposed between the valve and an adjustable abutment 8 arranged in the cover 9. This cover which is secured to a flange 10 on the shell 1 is connected so as to provide sufficient space for the free movements of the arms 11 and 12 projecting radially from the valve. It is preferred that the screw for adjusting the tension of spring 7 should be protected by a cap 13 removably attached to the cover. The head 14 of the shell 1 is also provided with ports 15 and 16 connected to the chambers *a* and *b* and adapted to be connected one to the other by a curved passage *d* in the disk valve 17. This valve which is held to its seat in the head 14 by a spring 18 is provided with a stem 19 projecting out through a stuffing box 20 in the cap 21 secured to the shell 1 and inclosing the valve 17. The valve 17 is normally held in closed position by a

spring 22 the movement of the handle being limited by the stop 23.

The cover 19 is provided with a hollow neck 24 which is attached to a nipple 25 on the lower section 26 of the diaphragm shell as shown in Fig. 2. A rod 27 which is attached to the diaphragm 28 extends through the nipple and neck and is connected to the radial arm 12 of the valve 6 so that the diaphragm may shift the valve as the former is affected by pressure of gas in the chamber formed by the diaphragm and the upper section 29 between which and the section 26 the edges of the diaphragm are clamped. The arm 11 of the valve 6 is connected to one end of a spring 30 having its opposite end connected to a swivel block 31 on the end of the adjusting screw 32 as shown in Fig. 2. This spring is arranged to shift the valve 6 and diaphragm in opposition to gas pressure above the diaphragm. An adjustable spring cushion 33 is arranged in the path of movement of a part or element movable by the diaphragm and is designed to reinforce under certain conditions, the action of the spring 30.

The chamber *a* is connected to the supply pipe 34 and the chamber *b* the house service line 35 from which extends a branch pipe 36 to the chamber above the diaphragm so that the latter is subjected only to house service pressure. The working pressure is determined by the spring 30 which when there is no pressure above the diaphragm will shift the valve 6 to closed position. In order to start the regulator the valve 17 is shifted by hand to permit a flow of gas from the chamber *a* to the chamber *b* and thence to the chamber above the diaphragm. As soon as the diaphragm is moved to open the valve 6, the handle of the valve 17 is released to permit the spring 22 to close the by-pass valve 17.

In order to prevent the valve 6 being shifted on a sudden increase of pressure sufficiently far to close the ports 4 and 5 the spring cushion is so adjusted as to present its resistance to such excess of movement.

In order to facilitate the adjustment of the regulator a pressure indicator is provided. This consists of a rod 37 having its lower end connected by a flexible joint 38 to the diaphragm and extending up into a glass tube 39 having its upper end closed

in any suitable manner and its lower end extending through a stuffing box 40 into a nipple on the section 29 of the diaphragm shell. The tube is protected by posts 40^a 5 formed integral with the section 29 and these posts are provided with a pressure indicating scale along which a finger on the rod 37 moves as the diaphragm is shifted.

I claim herein as my invention—

10 1. A combined gas regulator and cut-off having in combination a case or shell having receiving and outlet chambers and having a head provided with ports connected respectively with said chambers, a valve rotatably 15 seated on the head and provided with a passage adapted to connect such ports, a cover inclosing the valve secured to the case or shell and provided with means for holding the valve to its seat, a diaphragm for rotating said valve and a spring acting in 20 opposition to diaphragm when shifted by pressure of gas and connected to the valve.

25 2. A combined gas regulator and cut-off having in combination a case or shell having receiving and outlet chambers and having a head provided with ports connecting

respectively with said chambers a valve rotatably seated on the head and provided with a passage adapted to connect said ports, a diaphragm for rotating said valve, 30 a spring connected to the valve and acting in opposition to the diaphragm when shifted by pressure of gas and a spring arranged to reinforce the first spring.

3. A combined gas regulator and cut-off 35 having in combination a case or shell having receiving and outlet chambers and having heads provided with ports connecting respectively with said chambers, valves rotatably seated on said heads and provided 40 with passages adapted in certain positions to connect the ports in heads one of said valves being normally closed, a diaphragm and a spring connected to the other valve and arranged to act in opposition one to the 45 other in shifting said valve.

In testimony whereof, I have hereunto set my hand.

JOHN J. HEITZ.

Witnesses:

G. G. TRILL,

HAROLD G. JONES.