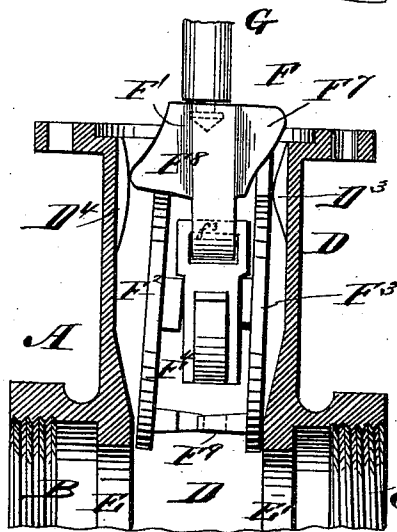
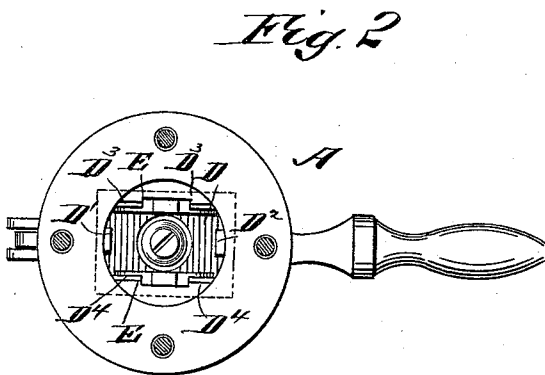
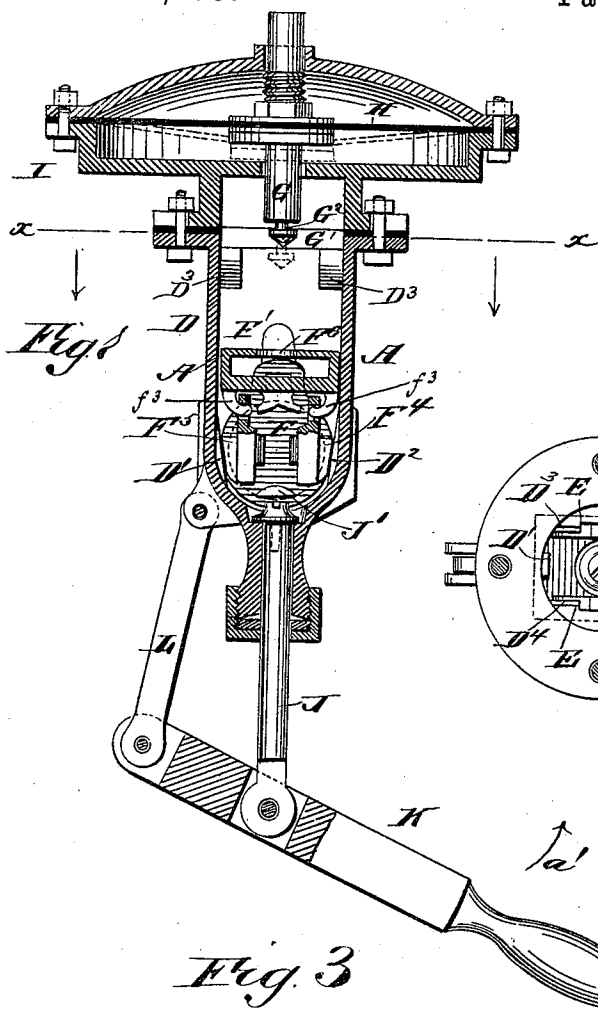


D. B. KENNEY.
CUT-OFF VALVE.

No. 467,033.

Patented Jan. 12, 1892.



WITNESSES:

F. M. Ordle.
C. Sedgwick

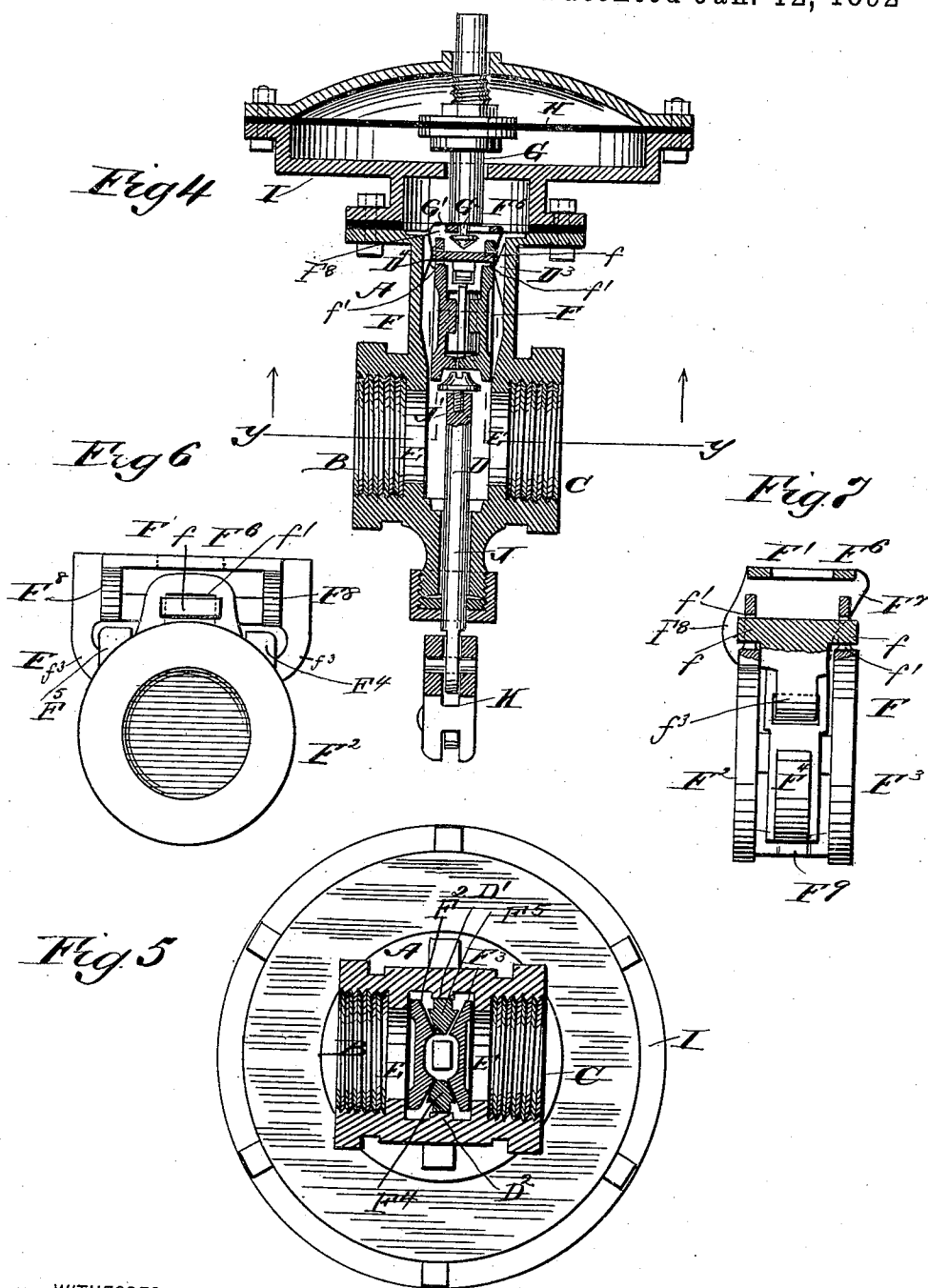
INVENTOR:

D. B. Kenney
BY Munn & Co
ATTORNEYS

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J. W. Arble,

W. Sedgwick

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UNITED STATES PATENT OFFICE.

DANIEL B. KENNEY, OF DETROIT, MICHIGAN.

CUT-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 467,033, dated January 12, 1892.

Application filed March 2, 1891. Serial No. 383,424. (No model.)

To all whom it may concern:

Be it known that I, DANIEL B. KENNEY, of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Cut-Off Valve, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved cut-off valve which is simple and durable in construction, very effective and automatic in operation, and more especially designed for use on natural-gas mains and pipes to automatically shut off the gas-supply after the pressure has once gone down.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse section of the improvement with the valve seated and the gas-supply shut off. Fig. 2 is a sectional plan view of the same with the valve removed from the valve-body, the section being taken on the line xx in Fig. 1. Fig. 3 is an enlarged sectional side elevation of the valve-body with the valve shown in elevation and in an uppermost position. Fig. 4 is a sectional side elevation of the improvement at right angles to the section in Fig. 1 with the valve supported from the diaphragm. Fig. 5 is an inverted sectional plan view of the same on the line yy of Fig. 4. Fig. 6 is a face view of the valve, and Fig. 7 is an end elevation of the same.

The improved cut-off valve is provided with a suitably-shaped valve-body A, provided on opposite sides with openings B and C, of which one connects with the gas-main and the other connects with the service-pipe for leading gas to the dwelling. The inner ends of the openings B and C lead to a chamber D, in which are formed valve-seats E and E', respectively located on the inner ends of the openings B and C. On the valve-seats E and E' is adapted to be seated a valve F, preferably of a construction similar to the one shown and described in Patent No. 411,283, granted to James Galvin on September 17, 1889. The valve F is provided with a yoke F', on

the sides of which are pivoted the valve-disks F² and F³, adapted to be seated on the valve-seats E and E', respectively. The pivoting of the valve-disks is effected by means of the lugs $f f$ on lower side of the yoke at its ends entering apertures $f' f'$ in the upper ends of the valve-disks, as best shown in Figs. 6 and 7. The disks F² and F³ are forced to their seats by the wedge-shaped lugs F⁴ and F⁵, hung on lugs f^3 , depending from the yoke F' between the said disks F² and F³. The yoke F' is provided with a top plate F⁶, in which is formed a central opening into which is adapted to pass the inverted conically-shaped head G', secured at its base to a shank G², projecting from the lower end of a stem G, extending upwardly and secured to a diaphragm H, held in a diaphragm-casing I, secured to the upper end of the valve-body A. The under side of the diaphragm-chamber I is at all times in communication with the chamber D, so that when the valve F is in an uppermost position gas from the gas-main can pass into the chamber D through the valve F into the lower part of the casing I to press against the under side of the diaphragm H.

On the sides of the yoke F' are arranged sets of lugs F⁷ and F⁸, adapted to engage projections D³ and D⁴, respectively, formed on the inner sides of the valve-chamber D, as is plainly illustrated in Fig. 3. The lugs F⁷ are arranged on one side of the yoke F' above the lugs F⁸, which are on the opposite side, so that the said lugs F⁷ come in contact with their projection D³ before the lugs F⁸ come in contact with their projection D⁴ at the time the said valve F is lifted upward. On the downward movement of the valve the lugs F⁸ pass off the lugs D⁴ previous to the lugs F⁷ striking against the projections D³. On the upward movement of the valve F the lugs F⁷, on moving over the projections D³, hold the yoke F' in such a position that the head G' can pass into the opening of the plate F⁶. As soon as the lugs F⁷ have passed the projection D³, the lugs F⁸ come in contact with their projections D⁴, so that the yoke F' is shifted to one side, and the head G' moves under the plate F⁶, so that the shank G² rests against the inner wall of the opening in the said plate, as is plainly illustrated in Fig. 4. The valve F is thus supported on the valve-stem G,

hung on the diaphragm H. The latter is then in an uppermost position, pressed upward by the force of the gas passing from the gas-main into the casing I, as previously described.

5 As soon as the pressure in the gas-main ceases the diaphragm H moves downward into a lowermost position, assisted by the weight of the valve, so that the valve F is moved downward by the stem G, the lugs F⁸ move off the projections D⁴, and the lugs F⁷ come in contact with their projections D³, so that the yoke F' is again shifted into a central position, and the head G' is disengaged from the plate F⁶, so that the valve F drops downward by its own weight and seats itself on the valve-seats E and E', thereby shutting off the gas-supply from the service-pipe. It is understood that when the valve F drops the disks F² and F³ are forced firmly against the valve-seats E and E', respectively, by the action of the wedge-shaped lugs F⁴ and F⁵ coming in contact with the projections D' and D² on the inside of the valve-chamber D. (See Fig. 1.)

25 In order to again raise the valve F, so as to support it from the diaphragm H and to establish connection between the gas-main and the service-pipe, and also with the casing I, the following device is provided: In the lower part of the valve-body A is fitted to slide vertically a pin J, carrying on its upper end a set-screw J', adapted to engage lugs F⁹, projecting inwardly from the disks F² and F³ of the valve F. The pin J passes through a suitable stuffing-box in the valve-body to prevent leakage. The outer end of the pin J is pivotally connected with a lever K, pivoted on a link L, pivoted to the valve-body A. The normal position of the lever K and the pin J is shown in Fig. 1, and when it is desired to raise the valve F off the seats E and E' and to engage it with the valve-stem G then the operator moves the lever K upward in the direction of the arrow a', so that the set-screw J' engages the lugs F⁹, thereby pressing the valve F upward off the seats E and E'. The valve F in sliding upward in the chamber D engages by its lugs F⁷ the projections D³ to hold the valve F in a central position to permit the head G' to pass into the opening in the plate F⁶, as previously described, when the lugs F⁸, on the further upward movement of the lever K, come in contact with the projections D⁴ to engage the plate F⁶ with the head G'. As soon as the valve F is thus suspended from the diaphragm H the operator moves the lever K downward into the position shown in Fig. 1. When the pressure in the main ceases, as previously described, the diaphragm H moves downward, as shown in dotted lines in Fig. 1, and the valve F is dropped from

the stem G and seated on the seats E and E', thus shutting off the flow of gas from the main to the service-pipe.

Having thus fully described my invention, 65 I claim as new and desire to secure by Letters Patent—

1. The combination, with the casing having inlet and outlet ports, a downwardly-closing laterally-movable valve therefor, and cam projections for shifting the valve laterally to set and release it when it is moved up and down, respectively, of a diaphragm provided with a stem having a head on its lower end separably engaged by the upper end of the valve when the valve is raised, whereby when the diaphragm moves the stem downward the valve will be disconnected from the said head by said cam projections and fall, and means for raising the valve, substantially as set forth. 70 75 80

2. The combination, with the casing having inlet and outlet ports and an intermediate chamber provided with opposite projections in its upper end, a downwardly-closing valve provided at opposite sides of its upper end with oppositely-inclined cams or lugs to engage said projections and shift the valve laterally in opposite directions to set or release it, and an undercut opening or recess in the upper end of the valve, of a diaphragm having a stem entering the upper end of the said chamber and provided with a head to be engaged with or disengaged from the wall of said opening or recess, as the case may be, and means for raising the valve to engage it with said stem, substantially as set forth. 85 90 95

3. A cut-off valve consisting in the casing A, having transversely-aligned ports and valve-seats E E', a vertical intermediate chamber D, provided on its upper end with opposite projections D³ D⁴ and in its lower end on its sides, at right angles to the valve-seats, with opposite inclines D' D², the vertically-movable valve F, consisting in the yoke F', having an undercut aperture in its top plate F⁶, oppositely-inclined cams or lugs F⁷ F⁸ on its opposite sides to shift the valve laterally to set or release it, valve-disks F² F³, suspended from opposite sides of the yoke, wedge-shaped lugs F⁴ F⁵, suspended from the ends of the yoke between the valve-disks and operated by the inclines D² D' to press the valve-disks outward against seats E E', and the rod J, extending through a packing-gland into the bottom of chamber D to raise the valve, substantially as set forth. 100 105 110 115

DANIEL B. KENNEY.

Witnesses:

THOMAS K. DOHERTY,
THOMAS T. RING.