W. L. BELT.

Gas and Water Valve for Sewerage-Connections.

No. 202,219. Patented April 9, 1878.

Fig. 1

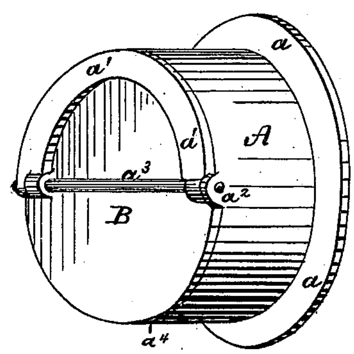


Fig. 2

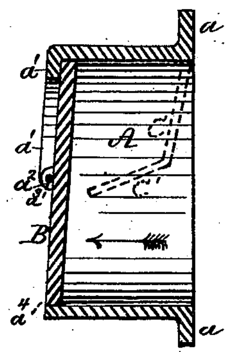


Fig. 3

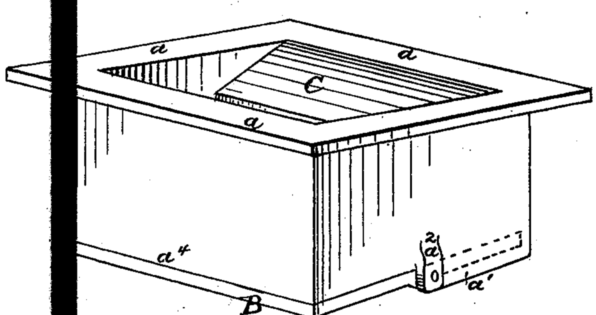


Fig. 4

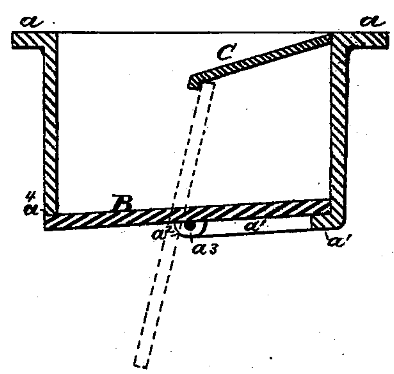
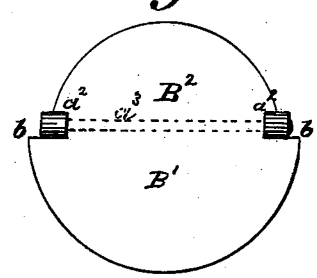


Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM L. BELT, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO DANIEL SMITH, OF SAME PLACE.

IMPROVEMENT IN GAS AND WATER VALVES FOR SEWERAGE-CONNECTIONS.

Specification forming part of Letters Patent No. **202,219**, dated April 9, 1878; application filed March 4, 1878.

To all whom it may concern:

Be known that I, WILLIAM L. BELT, of the city of Washington, District of Columbia, have invented certain new and useful Improvements in Gas and Water Valves for Sewer-Connections, of which the following is a specification:

My invention is more particularly adapted to drain-pipes and sewer laterals and connections, to prevent the back flow of water and escape of gas from the sewer, while it will permit the drainage or waste-water to discharge itself without undue obstruction.

The improvement consists, first, in a valve pivoted approximately in the middle portion of its surface, upon one side of the pivot of larger area than the other portion, in combination with a shell having a portion of its valve-seat formed upon an inwardly-projecting flange, and the other portion upon its rim, as hereinafter described; second, in combining with a diametrically-pivoted valve an encircling case, and a peculiarly-formed deflector-plate and apron, to direct the water passing through the valve-opening to one side only of the valve, as will hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a perspective view of a circular valve; Fig 2, a longitudinal vertical section of the same; Fig. 3 a perspective view of a rectangular casing and valve; Fig. 4, a longitudinal vertical section of the same, and Fig. 5 a plan view of the valve detached.

In figs. 1 and 2, a circular shell, A, is formed with suitable flange *a* upon its mouth for attachment to its connections, and has formed upon its opposite edge a flange, a^1, extending inward around one-half of the valve-opening, and having its inner face smoothly finished to form a seat for the upper half of the valve, as will hereinafter appear.

The valve B is hinged upon ears a^2, formed upon the shell A, either by means of pins a^3, or by means of a single stem passing across the back of the valve approximately upon its diameter. The valve B is formed with slight semi-elliptical sides in order to fit the valve-seat, which is made at a slight angle to the axis of the pipe, in which position the weight of the water tends to open the valve in one direction or close it in the other.

That portion of the valve's circumference above the pivot-line a^3 is of less diameter than the portion of the valve below the same, and fits snugly within the inner diameter of the shell, and rests upon the half-circle flange a^1 above described. The edge of the lower portion of the valve having the longer diameter bears against the rim a^4 of the shell A, and thus completes the seal. The offsets *b b* in Fig. 5, connecting the shorter and longer diameters, are rounded, and form bosses, through which the pivots pass. The bosses fit snugly into similarly-formed recesses in the shell, and make, with them, water and air tight joints. The longer diameter of the valve, being at the bottom, may be made of sufficient weight to rest closely upon its seat, but not offer undue obstruction to the passage of water through it in the direction indicated by the arrow in Fig. 2.

When the valve is placed in a horizontal position, a deflector-plate, C, is placed at a slight angle with the axis of the pipe, and, extending across the upper half of the valve, serves to deflect any water passing through the pipe upon one side only of the valve—that portion having the largest area and opening outward. A small quantity or slight pressure of water will thus operate the valve and prevent it from counterbalancing itself upon opposite sides of the pivot. The valve is also intercepted by the deflector-plate, and prevented from overturning upon its pivots. An apron, C′, extends downward from the deflector-plate, and serves to better carry out its purposes. The deflector-plate and apron may be held in place by pins or set-screws, and is preferably made removable, so that the valve and its seat may be easily reached to remove obstructions, if necessary. Reducing-pipes of well-known form may be connected to either or both ends of the valve-shell, to connect the same with pipes having a discharge area equal to the capacity of the valve-opening. This, however, is only necessary when the valve is used in a horizontal position.

The rectangular valves and shells shown in Fig. 3 are constructed upon the same principle

and operate in a similar manner to the disk-valve above described, but are better adapted for closing the mouths of sewers in street-connections. In this form the flange *a* of the casing rests upon the brick-work at a suitable distance below the grade of the street and corner-boxing usually employed. Ears a^2 are cast upon, and are depending from, the lower edge of the shell, between which the corresponding ears formed upon the valve are fitted. The valve B is formed of parallel sides, the portion B^1 upon one side of the pivots being of greater diameter and area than the portion B^2 upon the opposite side of the pivots. The upper edge of the lower portion fits against the lower edge of the shell opposite thereto, and the lower edge of the smaller portion of the valve rests upon a flange, a^1, extending beneath the same. A deflector and apron similar to that shown in Figs. 1 and 2 is either cast upon the shell or removable therefrom, as in the cylindrical form. The pivot-pins, in the form first described, may be placed slightly above the diameter of the valve, in order that the preponderance of weight may be below and keep the valve against its seat, and thus prevent the escape of gas, and the pivots may be placed nearer the discharge end of the shell, in the rectangular form, for the same purpose; or the valves may be properly weighted to hold them against their seat.

The valve's shell or casing may be made either wholly or partially of Babbitt metal, to prevent rust and form a closer joint to obviate leakage. They may be employed in various connections to prevent the flow of water in one direction through the valve-opening and intercept it in the opposite direction.

The portion of the valve having the largest area opens downward or toward the sewer and the pressure of the backwater, and is kept closed against any pressure that might operate upon the opposite portion of the valve having a smaller area.

I claim as my invention and desire to secure by Letters Patent—

1. A valve to prevent the flow of backwater, pivoted approximately in the middle, and having the portions upon opposite sides of its axis of unequal area, in combination with a trap case or shell, substantially as described.

2. A valve to prevent the flow of backwater, pivoted approximately in the middle, and having the portions upon opposite sides of its axis of unequal area, in combination with the shell having the corresponding parts of its valve-seat formed upon opposite surfaces, substantially as described.

3. The combination of a valve pivoted upon its opposite sides, the casing, and a deflector-plate so arranged as to direct the water against one side only of the axis of the valve, substantially as described.

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