(No Model.)

D. R. BURNS.

STRAIGHTWAY VALVE.

No. 270,009. Patented Jan. 2, 1883.

Fig. 1.

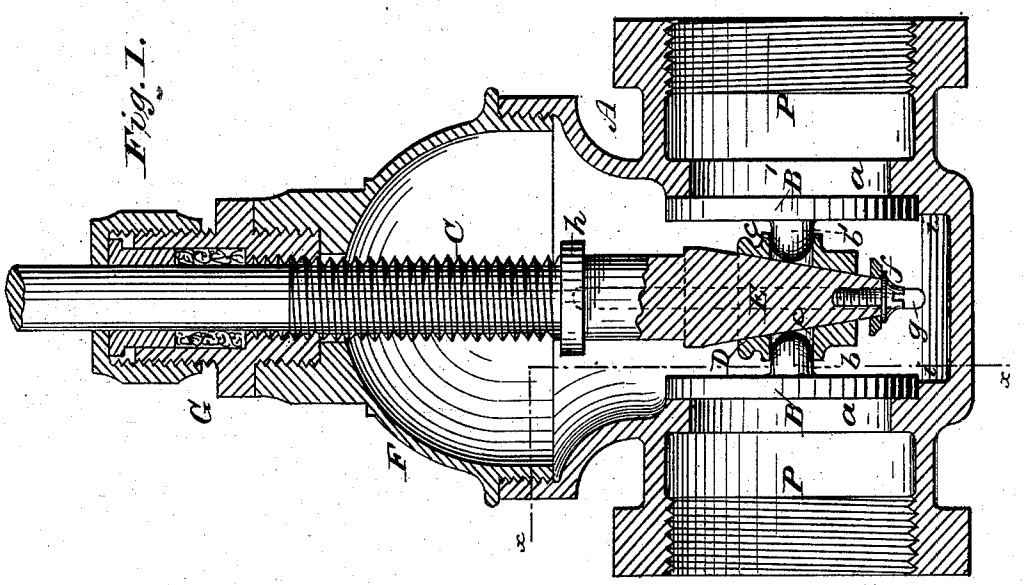


Fig. 2.

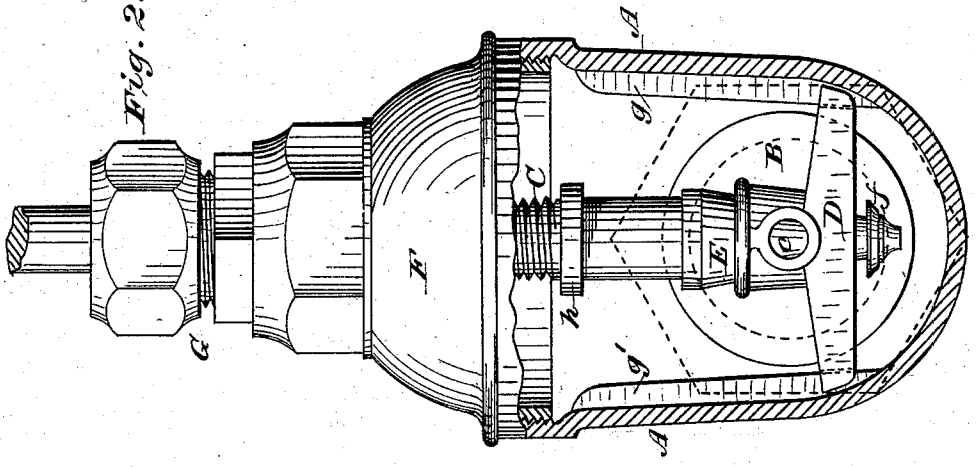
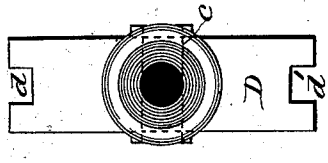


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

DANIEL R. BURNS, OF DAYTON, OHIO, ASSIGNOR TO HIMSELF AND ALBERT L. JACKSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

STRAIGHT-WAY VALVE.

SPECIFICATION forming part of Letters Patent No. 270,009, dated January 2, 1883.

Application filed May 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, DANIEL R. BURNS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Straight-Way Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in straight-way valves; and the object is to provide a straight-way valve in which the two valve-faces are firmly pressed against their seats when the valve is closed, and thereby to prevent leakage, and at the same time to instantly release and ease them from their seats when the valve is to be opened.

My invention consists in combining, with a valve-casing and its valve-stem, a carrier located on the inner plain-surfaced end of the valve-stem and secured thereon by a fastening screw or nut, with the disks or gates having central projections loosely seated in apertures formed in the carrier, the end of the valve-stem and the interior or bore of the carrier being so constructed that when the carrier is placed on the plain-surfaced or screwless portion of the stem and the nut or screw applied the carrier cannot be accidentally detached by turning the valve-stem for operating the disks or gates for opening or closing the ports.

The invention further consists in the construction and arrangement of certain parts of a straight-way valve by which the above results will be accomplished, all of which will be more fully described hereinafter, reference being had to the accompanying drawings and the letters of reference marked thereon.

Like letters of reference refer to like parts in the different figures of the drawings, in which—

Figure 1 is a vertical longitudinal section of my improved valve. Fig. 2 is a part vertical cross-section on line *x x* of Fig. 1 and a part elevation. Fig. 3 is a plan view of the cross-head.

In the drawings, A indicates the valve-casing or shell, having two openings or ports, P, with screw threads or flanges to connect them with the pipes. In this casing the valve disks or gates B B′ are contained, and when closed securely fit on the seats *a*. The disks or gates are provided with teats or projections *b b′*, which enter and loosely fit into the apertures *c c* in a cross-head, D, which has two notches, *d d′*, one at each end, that fit over two guides, *g g′*, on the inside of the valve-casing, and serve to guide the cross-head and disks or gates to and from the seats. The valve-stem is shown as provided with a wedge-shape part, as at E; but it is evident that it could be of any other form for connecting with the disks or gates without departing from the spirit of my invention. The cross-head, support, or carrier D is loosely fitted on the valve-stem, and is held in place by a suitable nut and washer, *f*, or other fastening device. When the valve is to be closed the disks or gates are pressed upon their seats by the wedge part E, which forces the disks or gates apart or upon their seats; but on opening the valve, by retracting the wedge part E the disks or gates will be released, and are free to move away or rise from their seats. A cap, F, with an ordinary stuffing-box, G, is arranged on the valve-casing, by which leakage is prevented around the valve-stem. A collar, *h*, on the stem prevents the disks or gates from passing too high in the casing when the valve is opened.

The valve-faces may be made either parallel, as shown in the drawings, or they may be made inclined or wedge-formed, and will operate in a similar manner, and the seats can be flat or rounding on their faces.

An important feature of my invention is that in case the disks or gates need grinding to their seats a suitable tool can be attached to the teat and the grinding done through the opening P.

The operation is as follows: When the valve is to be closed the valve-stem and the disks or gates descend, and when they come in contact with the projections *i* the disks are forced apart by means of the wedge part of the stem and firmly close the openings. When the valve-stem is turned in the opposite direction the wedge part of the stem releases the disks or gates from the pressure exerted on them, when they will be liberated from their seats and the valve can be easily opened.

The valve can be made of any suitable size and configuration, according to circumstances,

without departing from the spirit of my invention.

It will be noticed that the essence of my invention consists in the employment of valve disks or seats, which are loosely connected with a cross-head or other suitable carrier or support carried by the valve-stem, the construction and arrangement being such that the disks or gates are capable of being moved or advanced to and from their seats with perfect accuracy, and when forced against their seats they will automatically and uniformly adjust their faces to the faces of their seats, provided the faces of the disks or gates and the faces of their seats have imparted to them during the process of construction corresponding or working bearing-faces. If the valve-seats possess parallel or vertical seats or faces the faces of the disks or gates will be correspondingly formed; but if said seats be formed with inclined faces, then the faces of the disks or gates will be correspondingly formed, so as to match with each other; but in all instances the disks or gates should be connected with a support or carrier upon or carried by the valve-stem, each by a loose connection, in the nature of a universal joint, so that said gates or disks will be permitted to freely adjust themselves to their seats when brought in contact therewith.

What I claim is—

1. The combination, with a valve-casing, its valve-stem, and a carrier located on the inner plain-surfaced end of the valve-stem and secured thereon by a fastening screw or nut, of the disks or gates having central projections loosely seated in apertures formed in the carrier, substantially as described.

2. In a straight-way valve, the combination, with a suitable casing having seats *a*, of the disks or gates B B′, provided with central teats or projections, *b b′*, fitting into openings *c* in a cross-head, D, and operated by a wedge, E, on the valve-stem C, said wedge passing through the cross-head, substantially as specified.

3. The straight-way valve herein described, consisting of the casing A, having ports P and seats *a a*, in combination with the disks or gates B B′, provided with teats *b b′*, fitting into apertures *c* in the cross-head D and operated by a valve-stem, C, having wedge part E, forming part thereof, and all constructed and arranged substantially as shown and described.

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

DANIEL R. BURNS.

Witnesses:
A. L. JACKSON,
L. F. KELEHER.