

No. 791,173.

PATENTED MAY 30, 1905.

C. E. ANGLIM.
VALVE.

APPLICATION FILED MAR. 29, 1904.

3 SHEETS—SHEET 1.

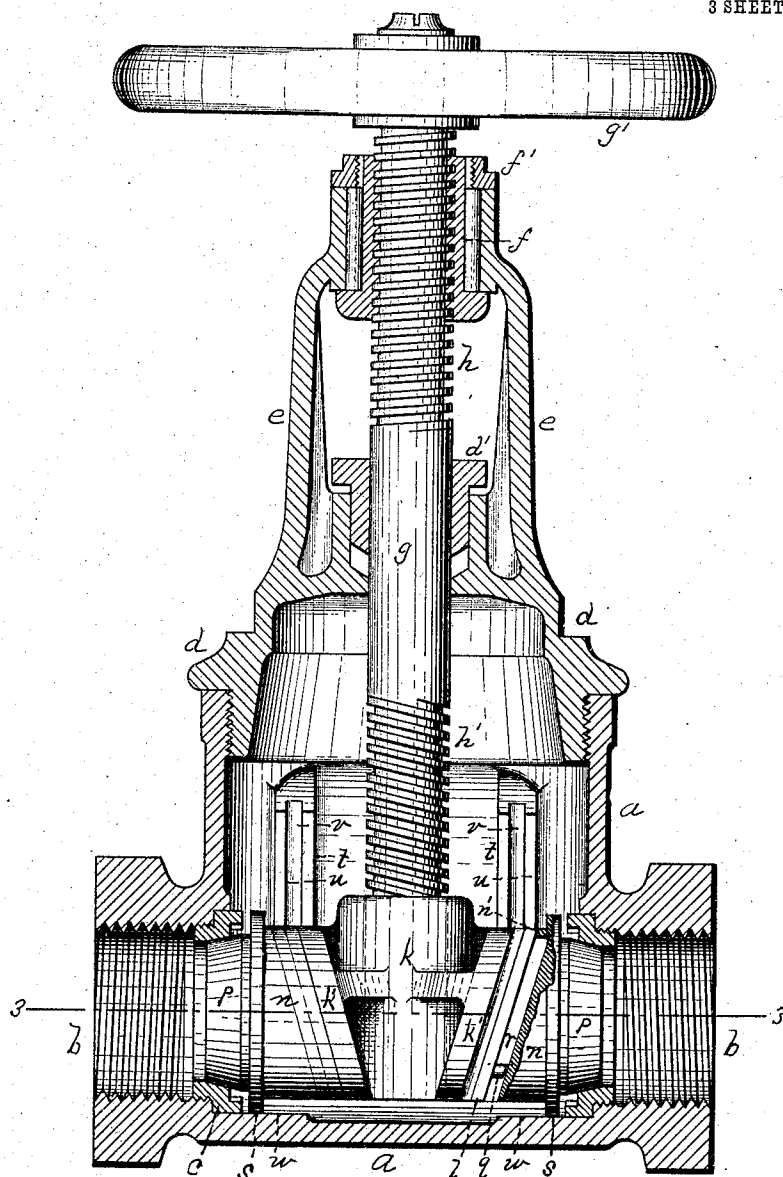


Fig. 1.

WITNESSES.

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By his Atty.

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3 SHEETS—SHEET 2.

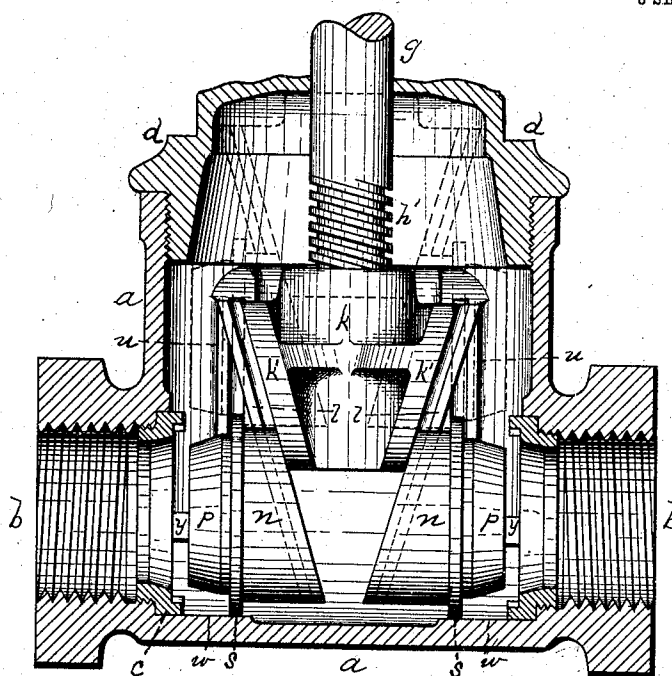


Fig. 2.

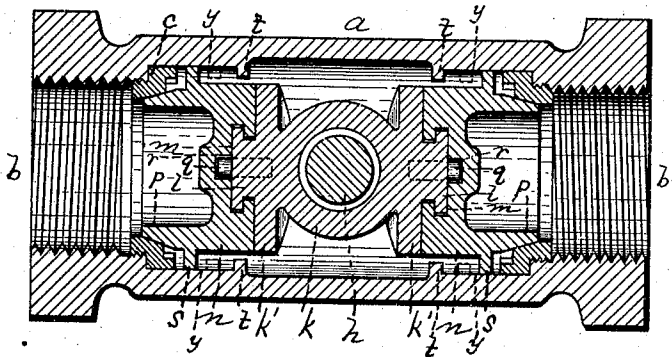


Fig. 3.

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3 SHEETS—SHEET 3.

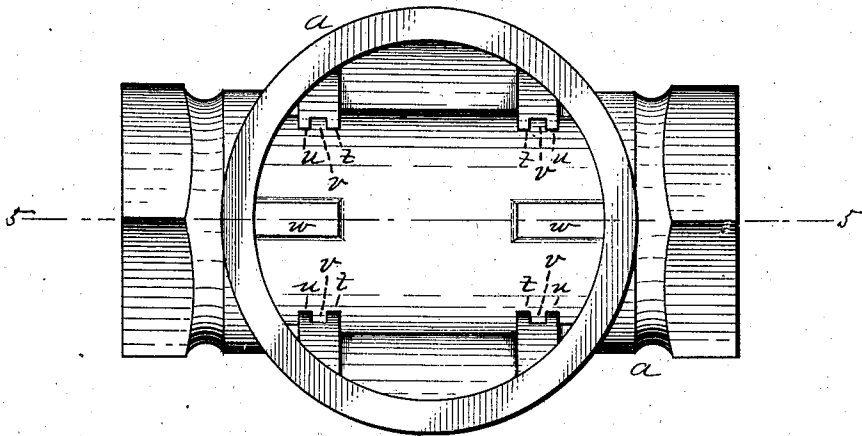


Fig. 4.

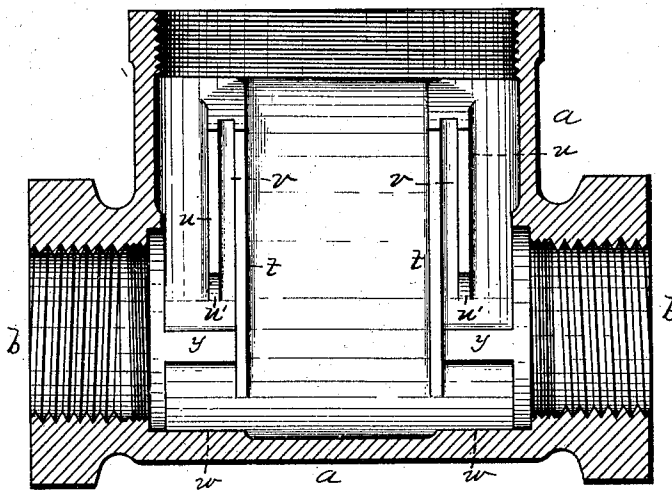


Fig. 5.

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UNITED STATES PATENT OFFICE.

CLARENCE E. ANGLIM, OF BROCKTON, MASSACHUSETTS.

VALVE.

SPECIFICATION forming part of Letters Patent No. 791,173, dated May 30, 1905.

Application filed March 29, 1904. Serial No. 200,516.

To all whom it may concern:

Be it known that I, CLARENCE E. ANGLIM, a citizen of the United States, residing in Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to gate-valves, and specifically to the class known as "straight-way" valves; and the principal objects of my invention are to provide a valve of this character in which the operative portion of the valve does not present a flat surface to a corresponding flat surface at right angles thereto, whereby particles of matter are held between said surfaces to the injury of the same and to enable the two opposite valves or plugs to approach the side valve-seats and recede from them in a horizontal line and when at a short distance therefrom to approach and recede in a vertical line. In order to accomplish these objects, I provide a vertically-moving valve-stem, a central oppositely-inclined or wedge-shaped head, and valves on opposite sides of said head having inner faces which are inclined to correspond with the wedge-shaped head, and other details of construction fully described below, all as illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical section taken through the case and bonnet of a valve mechanism embodying my invention, the head and valves being shown in elevation and a small portion of one of the valves being broken out, the valve being represented as closed. Fig. 2 is a similar sectional view of the lower portion of the device, the valves being represented in full lines as having left their seats in a horizontal line, but without having moved in a vertical line, and in dotted lines in the position assumed at the end of their upward movement. Fig. 3 is a horizontal section taken on line 3, Fig. 1. Fig. 4 is a plan view of the case or body with the bonnet, valves, and valve mechanism removed. Fig. 5 is a vertical section taken on line 5, Fig. 4.

Similar letters of reference indicate corresponding parts.

a represents the body portion or case formed

with the oppositely-extending horizontal ports *b*, provided at their inner ends with the rings or seats *c*. The upper end of this case is screw-threaded to receive the bonnet *d*, provided with the integral upward extensions *e*, which support an internally-screw-threaded head or nut *f*, surmounted by a check-nut *f'*, said parts *d*, *e*, *f*, and *f'* not being new in this invention.

g represents a vertical valve-stem whose central smooth portion has its bearings in the bushing *d'* within and supported by the bonnet, and this valve-stem is provided at its upper portion with the right thread *h* and its lower portion with the left thread *h'*, the stem being operated by the hand-wheel *g'*. The thread *h* is in engagement with the nut *f*, and the thread *h'* extends into and is in engagement with the internally-threaded head *k*. This head has integral with it oppositely-extending wings or operative portions *h'*, the outer surfaces of said wings being oppositely inclined vertically or wedge-shaped, as illustrated in Figs. 1 and 2. The opposite faces of these wings *h'* are provided vertically with central tongues *l*, T-shaped in cross-section, as shown in Fig. 3, said tongues engaging slidably with T-shaped grooves *m* on the inner faces of the valves *n*, said valves being provided with the outwardly-extending cone-shaped rings *p*, adapted to fit into and against the seats *c*. The inner faces of the valves *n* are beveled or inclined to correspond with the faces of the opposite wings *h'* of the wedge-shaped head *k*, and the T-shaped tongues *l* are prevented from sliding longitudinally out of engagement with the correspondingly-shaped grooves *m* by locking-pins *q*, which project horizontally from the tongues into grooves *r*, which extend centrally from the bottoms of the grooves *m*, said grooves *r* ending near the upper ends of the grooves *m*, whereby shoulders *n'* are produced, which operate as stops for the pins *q*.

The valves *n* are provided with annular flanges *s*, and the inner surfaces of the case are provided with four pairs of vertically-extending and inwardly-projecting ribs, each pair of ribs consisting of the inner long rib *t* and the outer short rib *u*, the upper ends of

the ribs being of even height, but the lower end of the rib *t* extending to the bottom of the case, while the lower end of the rib *u* is at a considerable distance above the bottom and is

5 curved or beveled at *u'*, as shown in Fig. 5. The pairs of ribs on one side of the case are opposite the pairs of ribs on the other side, and the ribs of each pair produce a vertical groove or slideway *v* of suitable width to receive one of the annular flanges *s*.

10 When the parts are in the position indicated in Figs. 1 and 3, the head is closed, both of the cones *t* being seated on the rings *c*. To open the head, the hand-wheel *g'* is turned toward the left, thus causing the thread *h'* to lift the head *k*. While this head is being lifted from the point shown in Fig. 1 to that shown in full lines in Fig. 2, the T-shaped tongues *l* on the inwardly-inclined or wedge-shaped wings *k'* draw inward the valves *n* by means of the engagement of said tongues with the grooves *m* until said plugs have reached the position indicated by full lines in Fig. 2. During the inward horizontal movement the valves rest on the guides *w* and move between guides *y*, integral with the case, until the flanges *s* have passed under the curved lower ends *u'* of the ribs *u* and strike the outer surface of the long ribs *t*, as indicated in full lines in Fig. 2. Further rotation of the valve-stem *g* draws the head *k* and the valves *n* vertically upward by means of the pins *q*, said inward movement being guided by the grooves *v*, within which the flanges *s* are confined by means of the ribs *t* and *u* until the upward movement terminates with the parts in the position indicated by dotted lines in Fig. 2. When the parts are in this position, they are entirely raised above the level of the ports and an absolutely clear passage is provided from the inlet to the outlet. To close the head, the hand-wheel is rotated in the opposite direction, and the head and its valves move vertically from the position indicated in dotted lines in Fig. 2 to that indicated in full lines in the same figure, and the valves then move outward horizontally between the bottom guides *w* and side guides *y* until the head has reached the point indicated in Fig. 1 and the valves have closed both the inlet and the outlet. Owing to the sliding contact between the opposite faces of the head *k k'* and the inner faces of the valves *n*, any solid or sharp substance on any of the said faces is pushed off by the movement of the head, and hence such substances cannot grind into and injure said surfaces.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

60 1. In a valve mechanism of the character de-

scribed, the vertically-moving stem *g* screw-threaded at its lower end; the head *k* on said stem and in engagement with the screw-thread, said head being provided with the oppositely-extending horizontal wings *k'* the opposite faces of which are oppositely inclined or wedge-shaped; the valves *n* formed with inner surfaces or faces at angles corresponding to the inclined faces of the head, said valves being provided at their outer ends with the cone-shaped rings *p*; vertical guides on the inner surface of the case; and horizontal guides on the inner surface of the case, whereby the valves are guided vertically and horizontally as they are actuated by the wedge-shaped head, substantially as described.

2. In a valve mechanism of the character described, the vertically-moving stem *g*; the head *k* on said stem, said head being provided with the oppositely-extending horizontal wings *k'* whose opposite faces are oppositely inclined or wedge-shaped; the T-shaped tongues *l* extending horizontally from the inclined faces of said wings; the valves *n* with inner surfaces or faces at angles corresponding with the inclined faces of the heads, said faces being formed with T-shaped grooves whereby the adjacent faces of the valves and wedge-shaped wings are held slidingly in engagement; the pairs of vertical guides *t* on the inner surface of the case; and the flanges or projections *s* extending from said valves between said guides, substantially as and for the purpose set forth.

3. In a valve mechanism of the character described, the head *k* provided with the wedge-shaped wings *k'*, the faces of said wings being formed with the tongues *l*; the valves *n* provided with inner surfaces at angles corresponding to the surfaces on the wedge-shaped wings, said inner surfaces being formed with the grooves *m*; mechanism intermediate of the head and valves whereby the valves cannot become disengaged from the head; the vertical guides *t* on the inner surface of the case; the vertical guides *u* on the inner surface of the case, said guides *u* having their lower ends at points above the lower ends of the guides *t*; and projections *s* on the valves adapted as said valves move inwardly to pass under the guides *u* and against the guides *t*, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLARENCE E. ANGLIM.

Witnesses:

A. K. HOOD,
HENRY W. WILLIAMS.