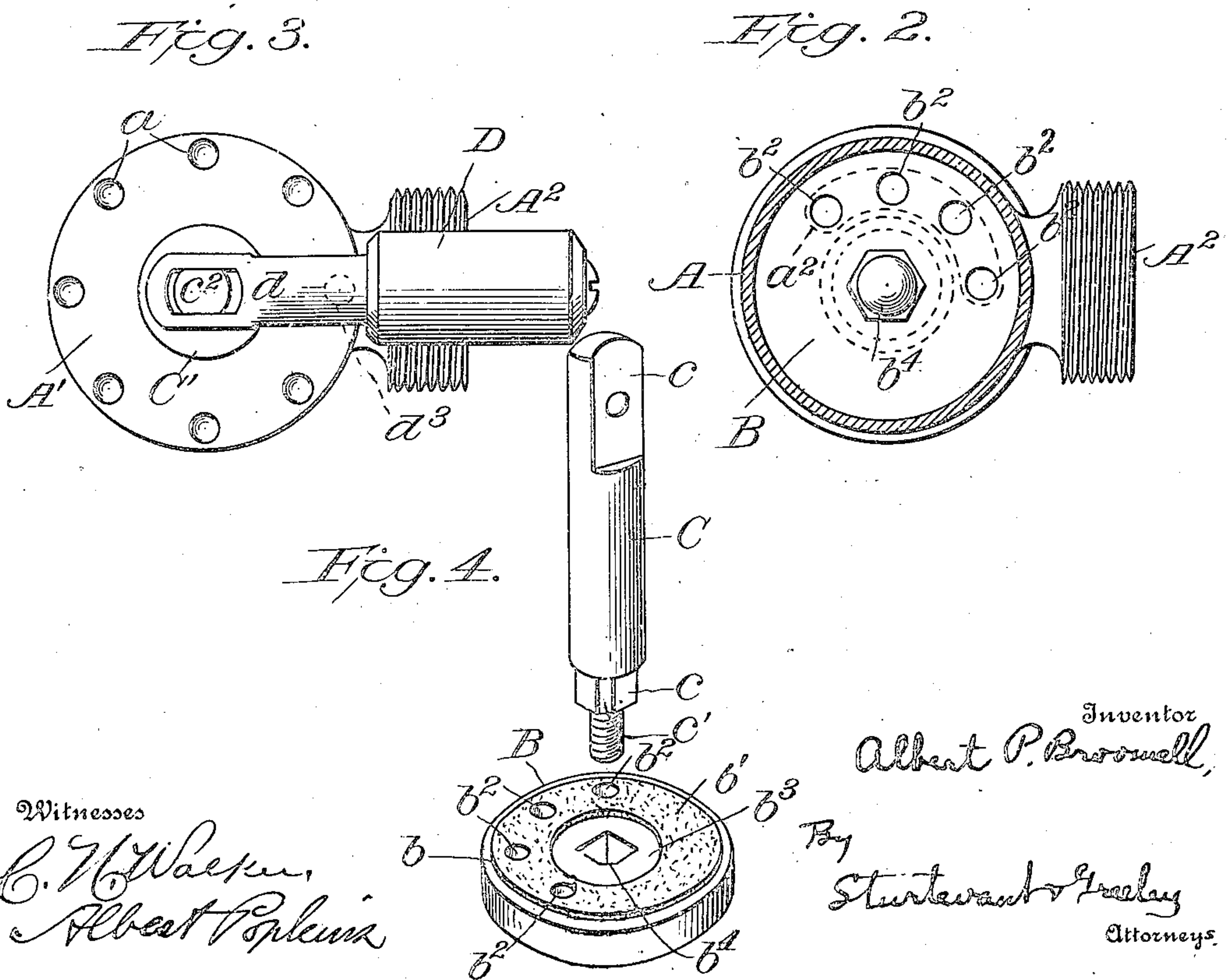
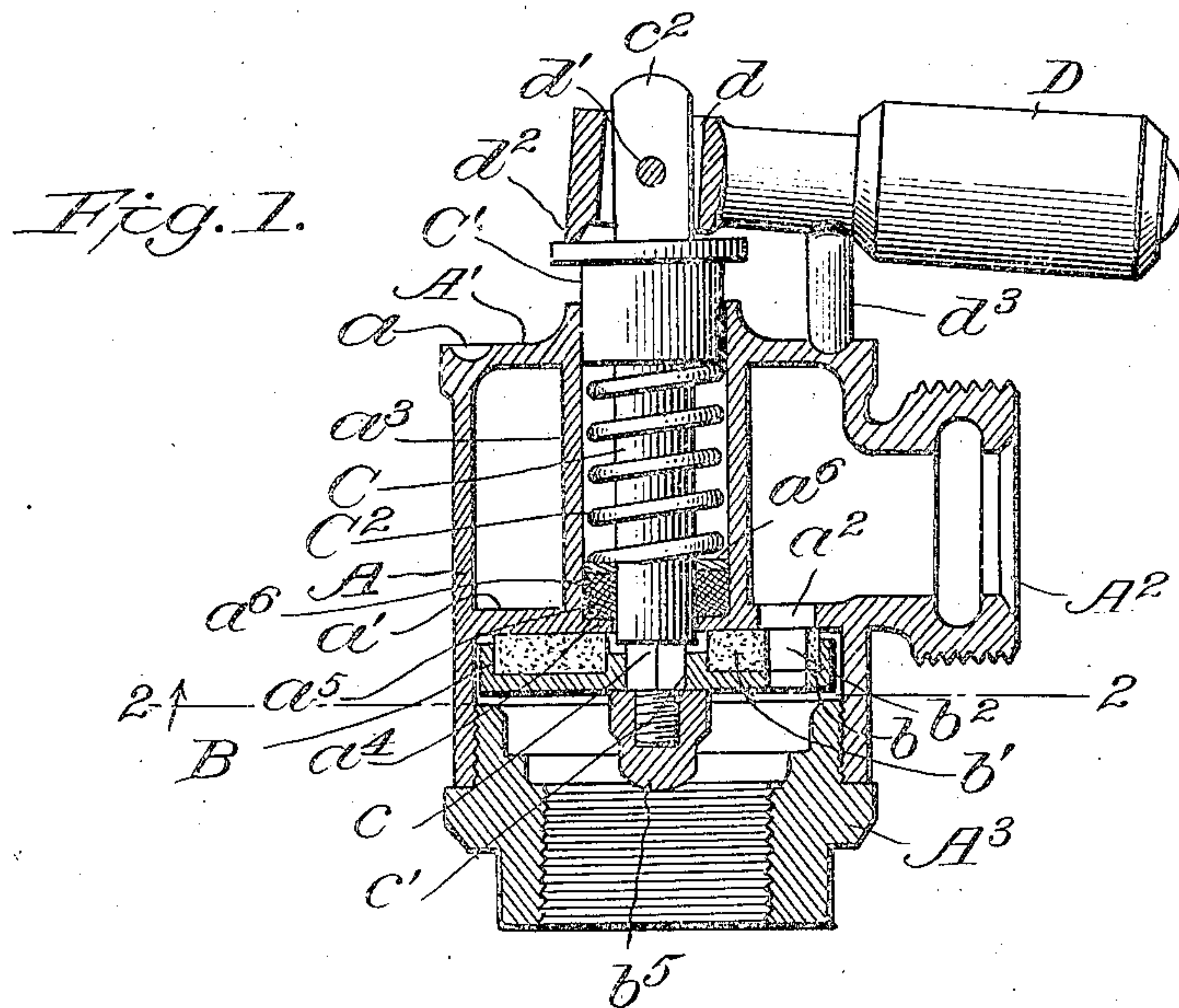


No. 843,996.

PATENTED FEB. 12, 1907.

A. P. BROOMELL.
VALVE FOR HEATING SYSTEMS.
APPLICATION FILED MAY 26, 1906.



UNITED STATES PATENT OFFICE.

ALBERT P. BROOMELL, OF YORK, PENNSYLVANIA, ASSIGNOR TO VAPOR HEATING COMPANY, OF YORK, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

VALVE FOR HEATING SYSTEMS.

No. 843,996.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed May 26, 1906. Serial No. 318,859.

To all whom it may concern:

Be it known that I, ALBERT P. BROOMELL, a citizen of the United States, residing at York, in the county of York, State of Pennsylvania, have invented certain new and useful Improvements in Valves for Heating Systems, of which the following is a description, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

The invention relates to improvements in the valve shown in United States Patent No. 657,059, August 28, 1900.

The objects of the invention are to seat the valve, hold its operating-handle in its locked position, and keep the valve-stem properly packed, all by one and the same spring.

These objects I accomplish by the construction shown in the accompanying drawings, in which—

Figure 1 is a central vertical section of my improved valve. Fig. 2 is a horizontal section on line 2 2, Fig. 1. Fig. 3 is a plan view, and Fig. 4 is a perspective view, of the valve-stem and the disk valve separated.

A designates the valve-casing, having a closed upper end A' and there provided with a circular series of recesses a . One side of the casing is provided with a threaded nipple A^2 to connect with the radiator, and the bottom of the casing is closed by a removable externally and internally threaded cap A^3 for connection with the source of supply.

The casing is divided just below the outlet-nipple A^2 by a transverse partition a' , having a semicircular slot a^2 , and the center of the partition is connected with the center of the upper end A' by an integral tube a^3 . The opening through the partition at the lower end of the tube is reduced so as to form an annular shoulder a^4 to receive the packing material a^5 , above which is a washer a^6 .

B is the valve in the form of a disk, having an annular recess b in its upper face, within which fits a non-metallic packing-ring b' , of asbestos, fiber, or other suitable material. The upper or working face of this packing-ring projects above the valve-disk B, so that it engages the under side of the partition a' and prevents any metallic part of the valve from coming into contact therewith. The periphery of the valve-disk B is spaced from the interior of the casing A. The valve B b'

is provided with a series of circularly-arranged apertures b^2 to register successively with the slot or opening a^2 in partition a' .

The central collar b^3 of the metal disk B is lower than the peripheral or outer flange, and upon it rests the lower shouldered end of the valve-stem C, which stem passes down through the tube a^3 and through washer a^6 , packing a^5 , and annular shoulder a^4 .

The bore of the collar b^3 is generally square, but has one corner flattened, as at b^4 , and the squared portion c of the valve-stem is similarly flattened, as at c' , so that the valve-disk must be properly positioned before it can be placed on the stem. When in place, the valve is secured by means of the cap-nut b^5 , screwed on the lower threaded end of the stem.

C' is a sliding flanged collar on the valve-stem in the upper end of the tube a^3 , and between this collar C' and the washer a^6 at the bottom of the tube is placed a spiral expansion-spring C^2 , through which the valve-stem works.

D is the horizontally-disposed handle, pivoted to rock vertically on the upper end of the valve-stem by means of a slot d , through which passes the flattened upper extremity c^2 , secured therein by a transverse pivot-pin d' . The spring C^2 forces the collar C' upwardly against the lower side of the handle D and causes it to pull upwardly on the stem C, and so hold the non-metallic face b of the valve B against its seat. Furthermore, the spring performs the very important function of compressing the packing material a^5 through the medium of the washer a^6 , and so the valve-stem is kept constantly packed.

The handle is provided at the lower side of its outer end beyond its pivot with a projection d^2 , which engages the collar C' , and at the opposite side of its pivotal point the handle is provided with a depending locking-lug d^3 to engage any one of the recesses a in the upper face of the valve-casing, the upward force of the spring on projection d^2 tending to press the lug d^3 down and hold the handle against accidental displacement. Thus the spring performs the three important functions of seating the valve, keeping the valve-stem packed, and holding the handle locked.

When it is desired to move one of the

valve-apertures b^2 into register with the slot a^2 , the handle D is raised, causing the projection d^2 to bear down on and depress the collar C', when by turning the elevated handle in the proper direction the valve will be rotated to throw the apertures b^2 successively into and out of register with the slot a , thus admitting or shutting off the fluid to the extent desired.

10 In order to make these valves suitable for different sizes of radiators, it is only necessary to change the size of the apertures b^2 in the valve-disks and not change the size of the valves themselves. For instance, a No. 1 valve for a radiator of twenty-five feet heating-surface will have holes one-eighth of an inch, while a No. 2 valve for a radiator of fifty or sixty feet heating-surface will have holes of three-sixteenths of an inch, and so on.

20 Thus with interchangeable valve-disks valves of only one size are required for all sizes of radiators.

The valve is particularly adapted for use with the steam-heating system shown in Patent 650,778, May 29, 1900; but it may be used in other relations.

I do not restrict myself to the particular construction shown, since the same may be considerably changed without departing from the scope of my invention.

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

1. A valve comprising a casing provided with locking-recesses, a rotary valve controlling the passage of fluid through the casing, a stem for the valve, a handle on the stem having a portion to engage any one of said recesses, and a spiral spring between the handle and a part of the casing to hold the valve to its seat and also hold the handle in its locked positions.

2. A valve comprising a casing provided with locking-recesses and a horizontal valve seat or partition, a rotary valve seating upwardly against the lower side of the said seat or partition, a stem extending upwardly through the casing from the valve, a handle pivoted to the upper end of the stem and having a depending lug to engage any one of the said recesses, and a spiral expansion-spring on the stem between the inner end of the handle and a portion of the casing, and holding the handle locked and the valve seated.

3. A valve comprising a casing provided with a horizontal seat or partition between its inlet and outlet openings, a tube connecting the said seat or partition with the closed upper end of the casing; a shoulder being formed at the lower end of the tube, a rotary disk valve seating upwardly against the under side of the partition or seat, a stem extending down through the tube and secured to the valve, a loose collar on the stem in the upper end of the tube, an expansion-

spring on the stem between the collar and shoulder, a horizontal handle pivoted to the upper end of the stem and engaged at its under side of its inner end by the spring-pressed collar; the handle having a depending lug to engage the upper side of the valve-casing and hold the handle in its adjusted position.

4. A valve comprising a casing provided with a horizontal seat or partition between its inlet and outlet openings, said seat having a curved slot, a tube connecting the partition with the closed upper end of the casing, a shoulder at the lower end of the tube, a valve-stem extending down through the tube, a valve-disk on the lower end of the stem, having a series of apertures to register with said opening, a horizontal handle having a slotted inner end in which the upper end of the stem is pivoted, a spiral spring on the stem within the tube, a collar on the stem in the upper end of the tube and forced upward by said spring against the handle; the inner end of the handle having a projection engaging the collar and the handle having at the opposite side of its pivot a depending locking-lug to engage the top of the casing and hold the handle in its adjusted position.

5. A valve comprising a casing, a rotary valve controlling the passage through the casing, a stem for the valve, a handle on the stem, means for locking the handle to the casing, a spiral spring on the stem between the handle and a shoulder on the casing to hold the handle in its adjusted position, and packing around the stem between the shoulder and spring and constantly compressed against the stem by said spring.

6. A valve comprising a casing, a rotary upwardly-seating valve controlling the passage through the casing, a stem for the valve, a pivoted handle on the upper end of the stem and adapted to engage the casing at its outer portion, an annular shoulder in the valve-casing above the valve-seat, packing on the shoulder around the stem, a washer on the stem over the packing, and a spiral expansion-spring on the valve-stem between the inner end of the handle and the said washer and acting to hold the outer end of the handle down to the casing, press the valve upwardly to its seat and compress said packing around the valve-stem.

7. A valve comprising a casing, a rotary upwardly-seating valve controlling the passage therethrough; said valve consisting of a metallic disk having an annular recess in its upper face and a non-metallic ring therein and projecting above the walls of the recess to prevent engagement of the metal valve-disk with the seat, a stem extending up through the casing from the valve, a packing for the stem over the valve-seat, a locking-handle for the stem and a spring on the stem

between the handle and packing and serving to hold the valve to the seat, hold the packing around the stem and hold the handle in locking engagement with the casing.

5 8. A valve comprising a casing, an upwardly-seating rotary valve therein having a semicircular series of apertures to control the passage through the valve, a central opening in the valve having a flattened or guiding portion, a valve-stem extending down
10 through the casing and valve-seat and shaped at its lower end to correspond with the central valve-opening so that it may be placed properly thereon with respect to the valve-
15 apertures, a spring holding the valve to its seat and a locking-handle for the valve acted on by the spring to hold it in its locked position.

20 9. A valve comprising a casing, a rotary valve controlling the passage through the casing, a locking-handle on the valve-stem and a spiral spring on the stem seating the valve and throwing the handle into locking engagement with the casing.

10. A valve comprising a casing, a valve- 25 seat therein having a slot therethrough, a rotary valve seating upwardly against the seat and having a plurality of openings to successively register with said slot, a stem extending down through the casing, means 30 for predetermining the correct position of the valve on the stem with respect to the openings, a locking-handle on the upper end of the stem and a spiral spring, holding the valve to its seat and the outer end of the handle in 35 locking engagement with the casing.

11. A valve comprising a casing having a valve-seat, and a series of interchangeable valve-disks each having a series of different-sized apertures to enable a single-size valve 40 to be used with different-sized radiators.

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

ALBERT P. BROOMELL.

Witnesses:

ROSA M. NEUMAN,
ANDREW J. HERSHEY.