

(No Model.)

G. C. BLACKMORE.
RADIATOR VALVE.

2 Sheets—Sheet 1.

No. 487,901.

Patented Dec. 13, 1892.

Fig. 2.

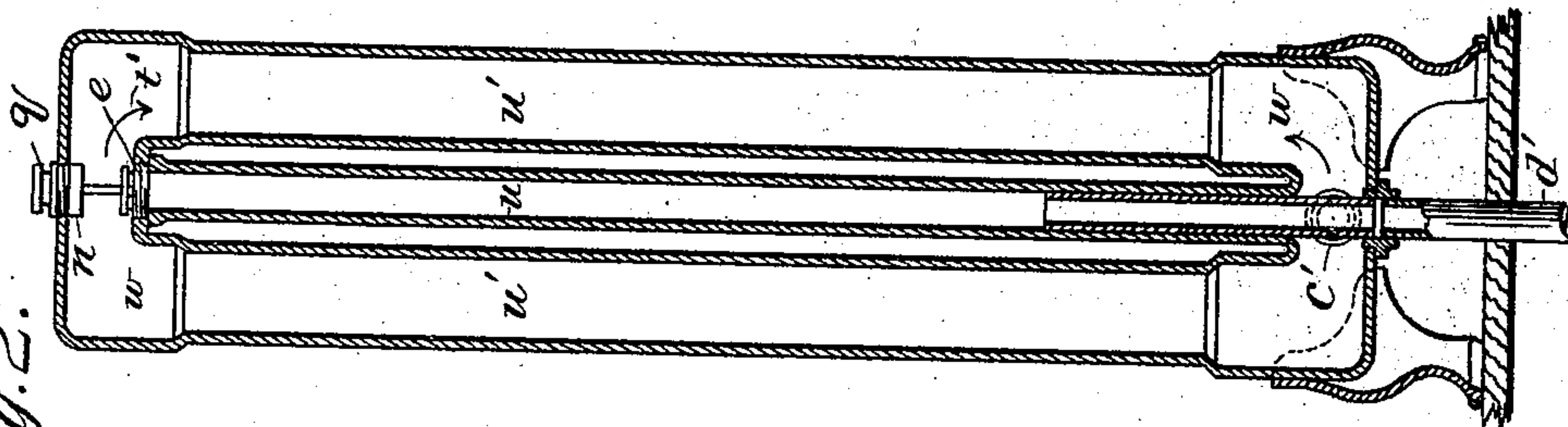
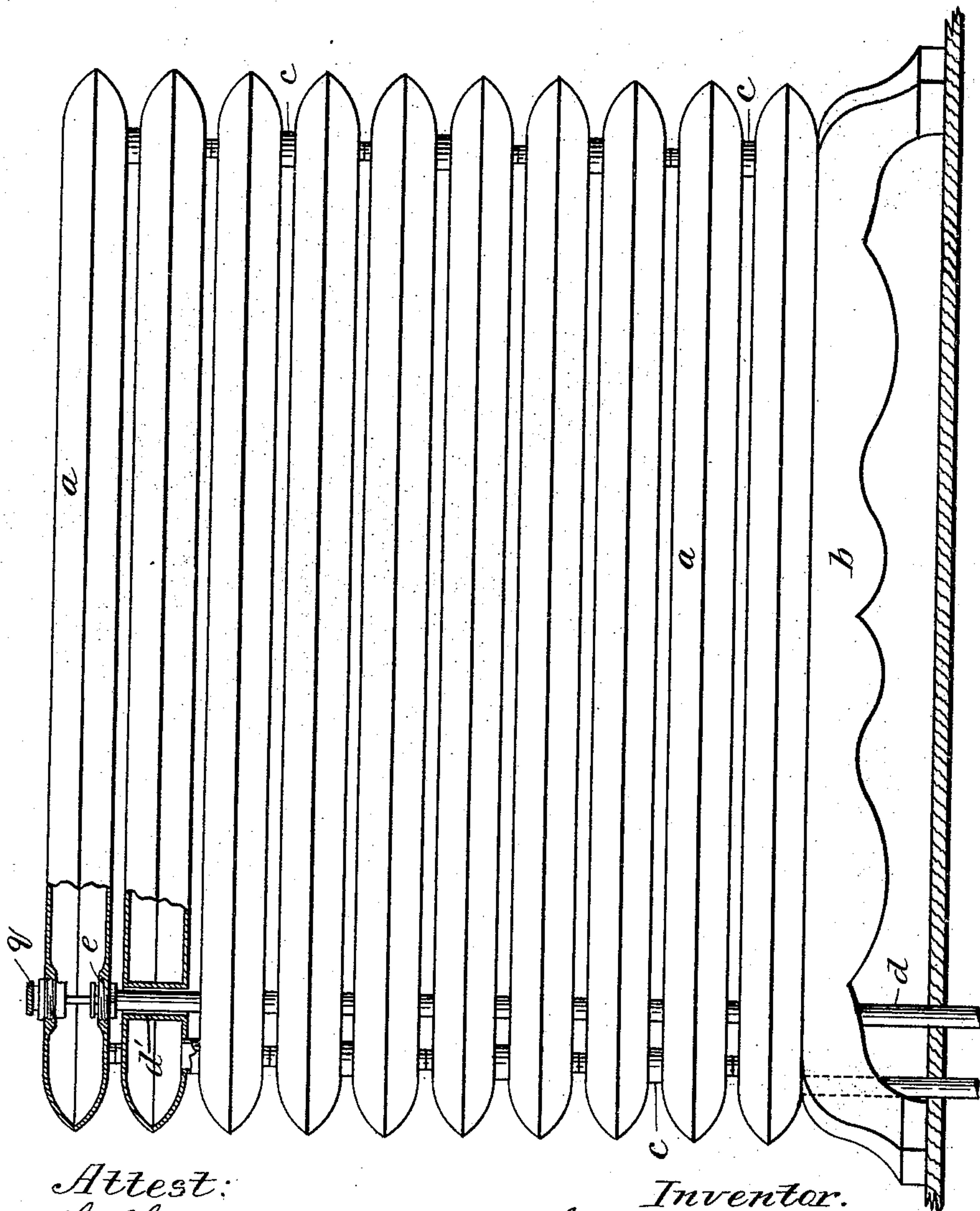


Fig. 1.



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2 Sheets—Sheet 2.

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Fig. 8.

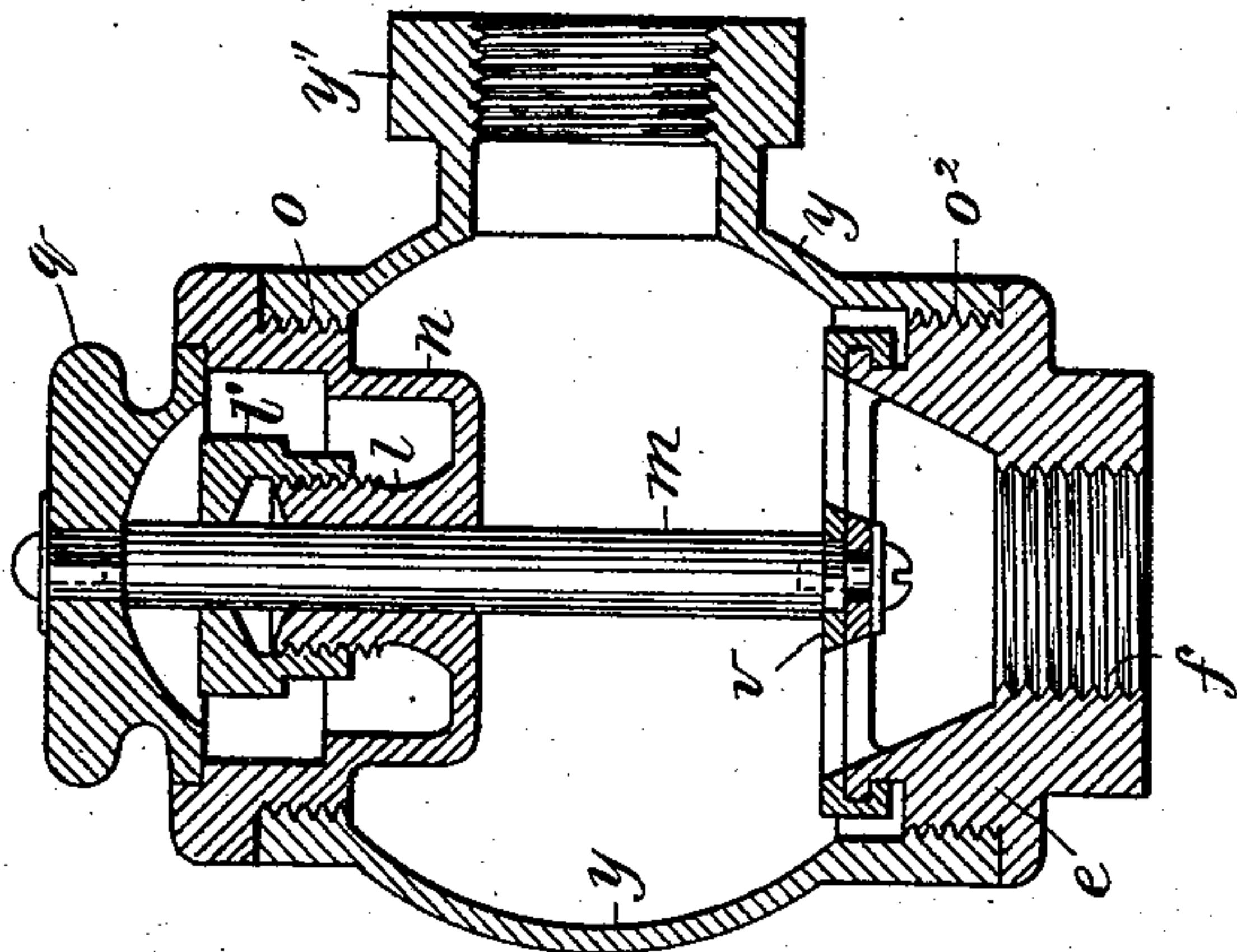


Fig. 4.

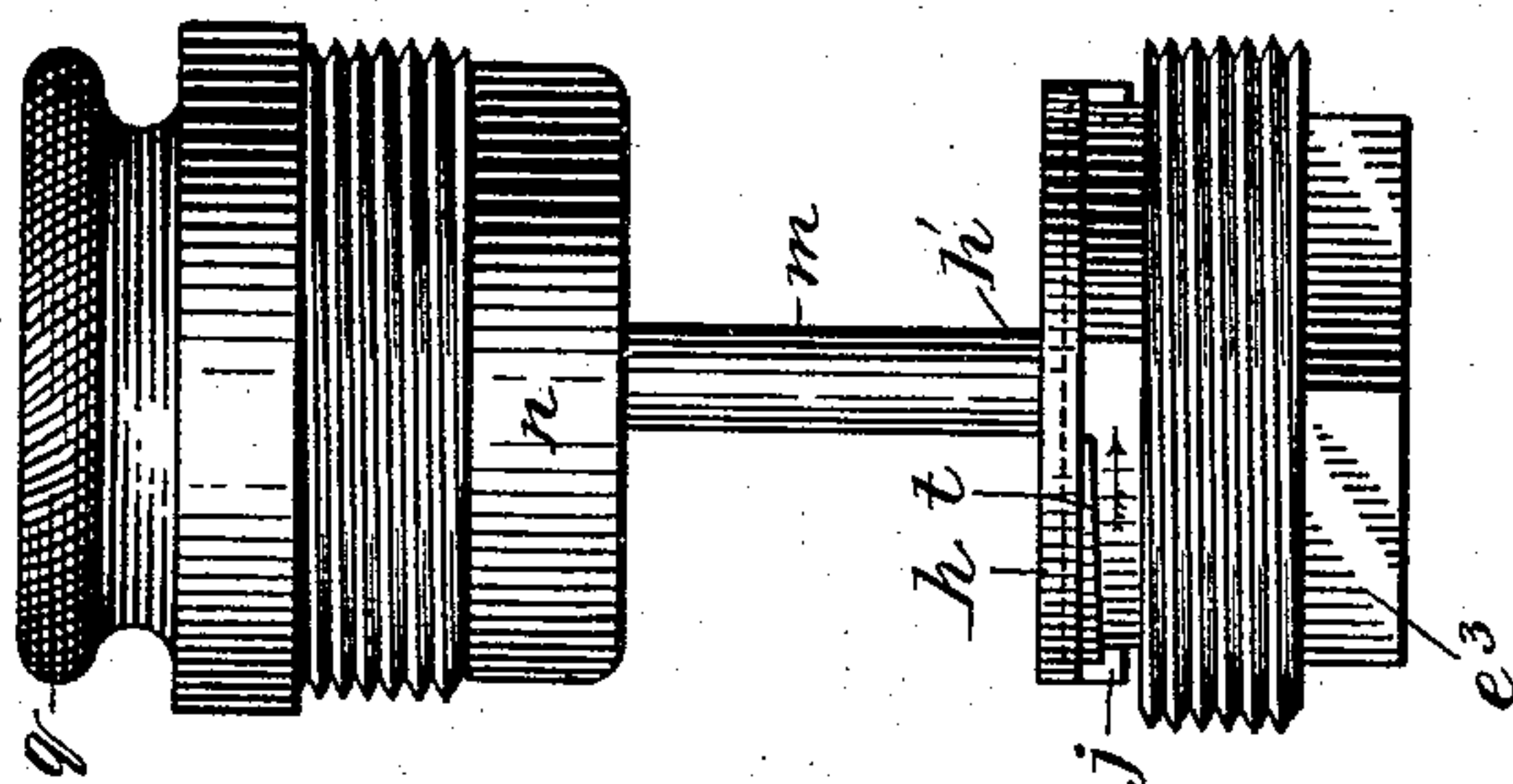
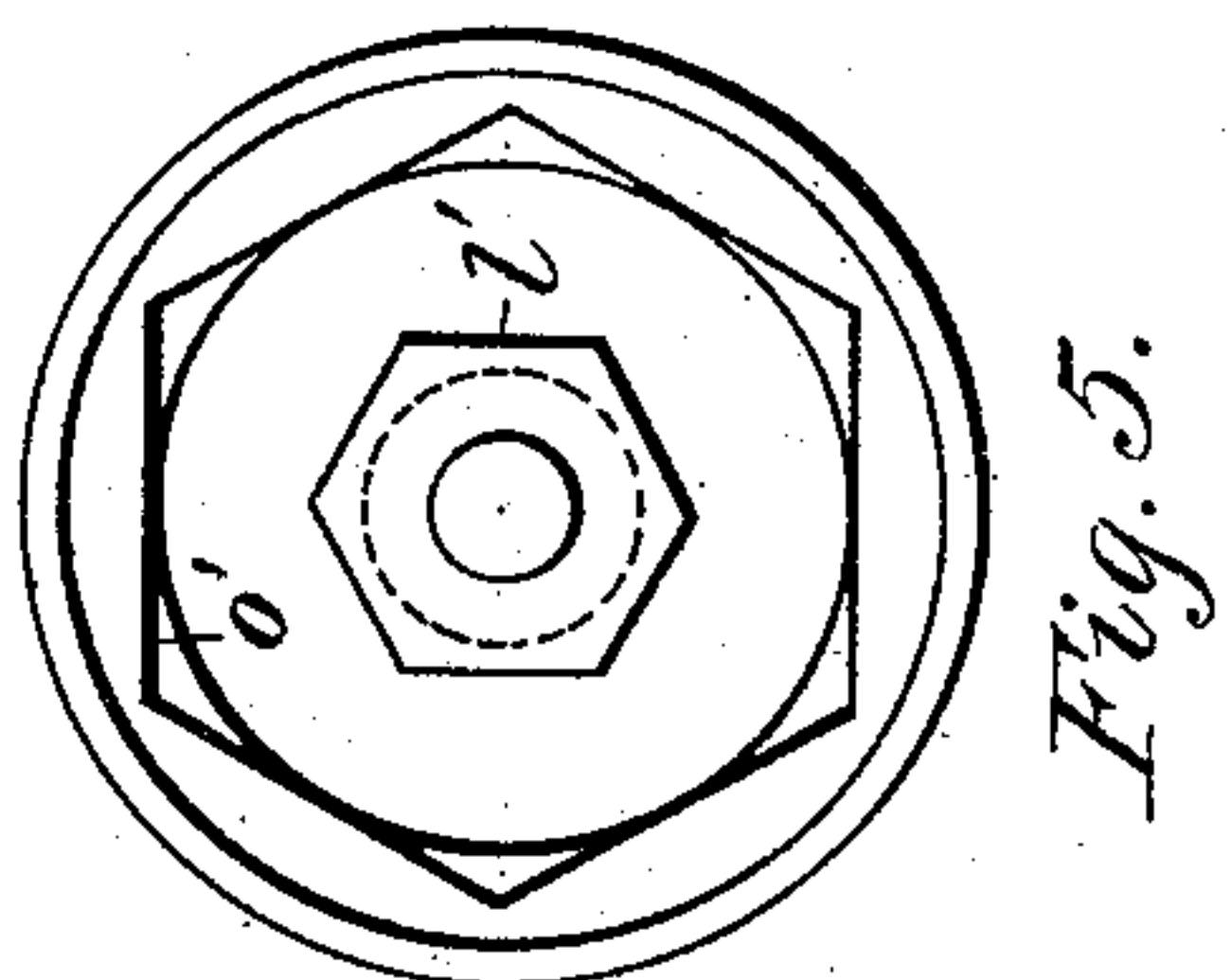
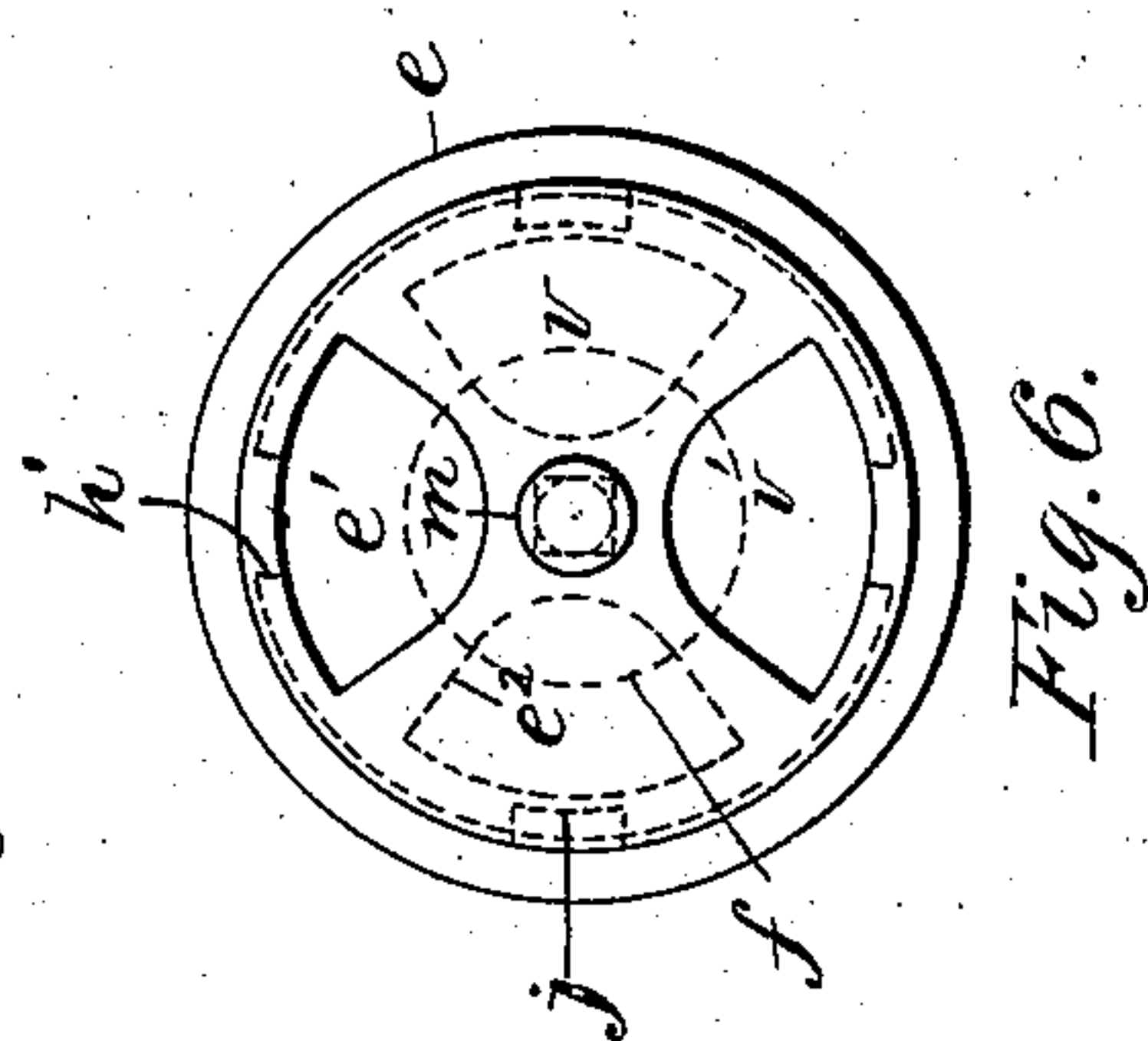
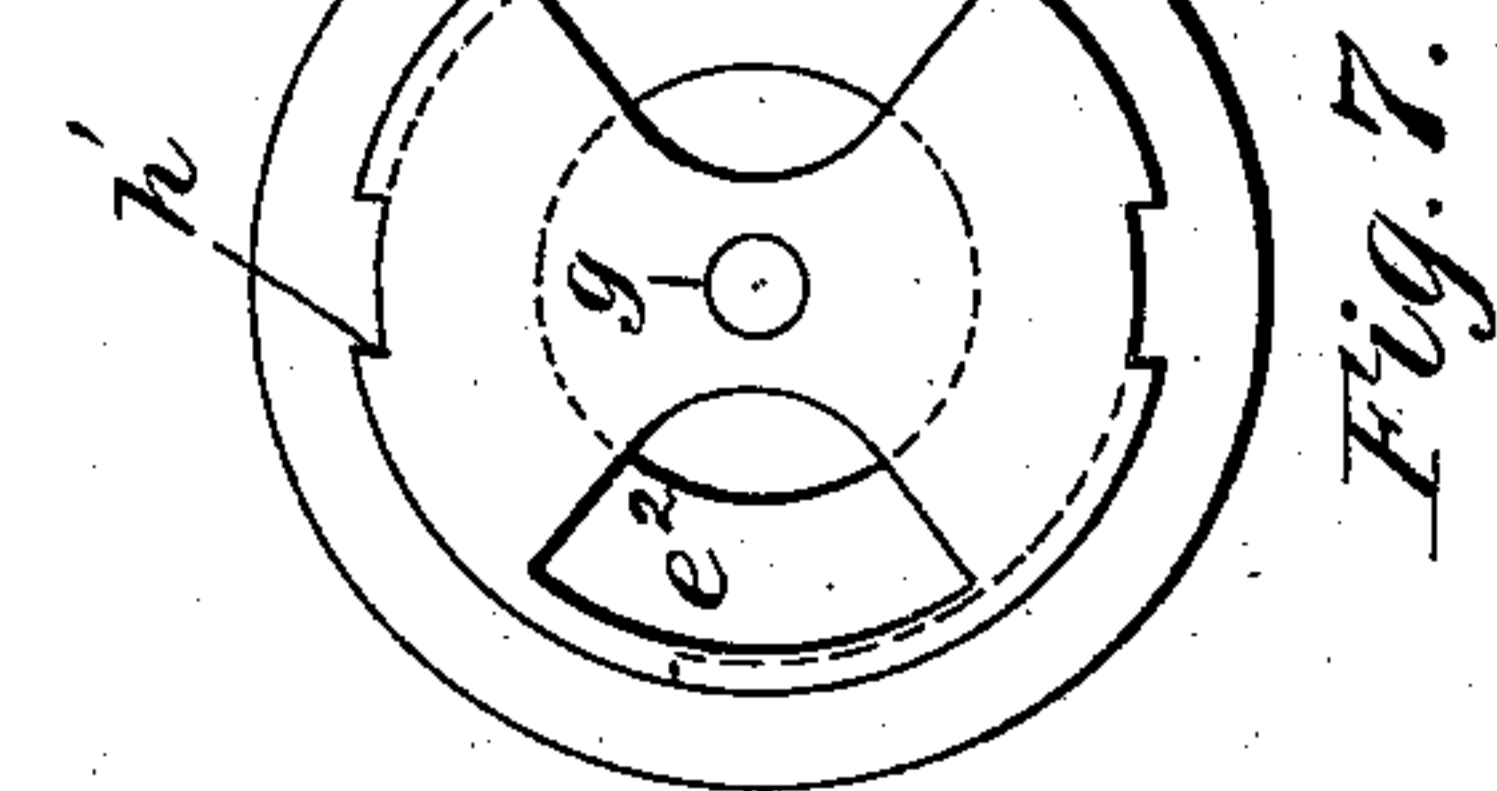
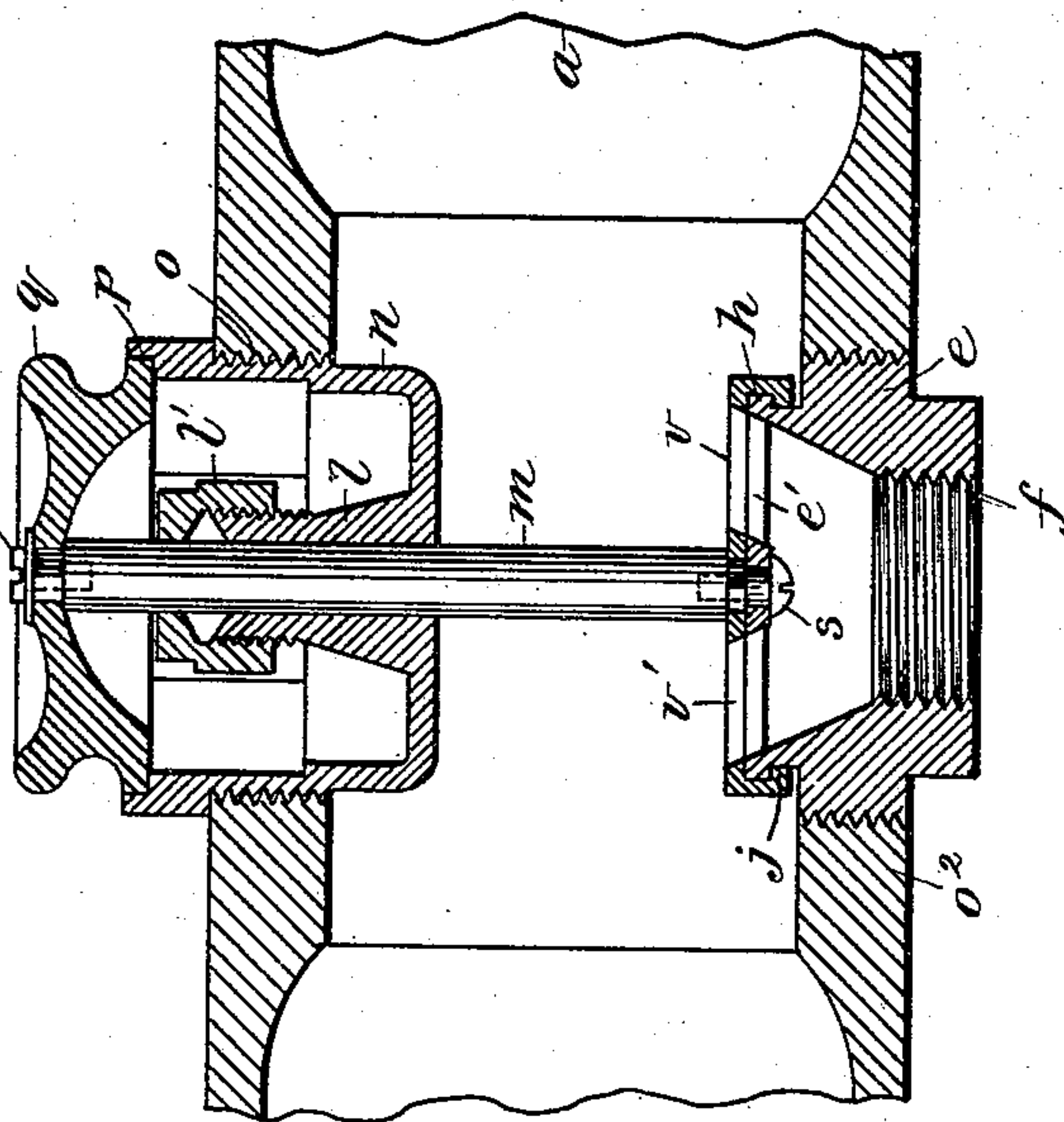


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE C. BLACKMORE, OF NEWARK, NEW JERSEY.

RADIATOR-VALVE.

SPECIFICATION forming part of Letters Patent No. 487,901, dated December 13, 1892.

Application filed April 27, 1892. Serial No. 430,883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. BLACKMORE, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Radiator-Valves, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 The object of this invention is to furnish a construction for a hot-water radiator-valve by which the valve may be opened and closed with a very slight movement of the hand-piece; and the invention consists in a flat seat
15 having a perforated disk pivoted thereon, with the seat secured in the bottom of a suitable casing, and a concealed stuffing-box secured in a recess in the top of the casing and covered by a circular handpiece.

20 The invention is shown in the annexed drawings in three forms, adapting it for application to the interior of a radiator with horizontal sections, also to the interior of a radiator with vertical sections, and also to an
25 angle-valve for external application to the base of the radiator.

Figure 1 shows a radiator of horizontal sections with a portion of the two upper sections broken away to exhibit the valve. Fig. 2 represents a part of a radiator made in vertical sections, one of the sections being divided transversely upon the center line to show the water connection at the bottom and the valve at the top of the same. The valves in Figs.
30 1 and 2 are not shown in section. Fig. 3 is a section, upon a larger scale, of the valve and the adjacent parts shown in Fig. 1. Fig. 4 is an external view of the valve parts detached from the radiator-section. Fig. 5 is a plan of the socket for stuffing-box; Fig. 6, a plan of the valve-seat with the valve shown turned to close the apertures. Fig. 7 is a plan of the valve-seat alone, and Fig. 8 is a central section of an angle-valve.

45 In Fig. 1, *a* are the horizontal sections of the radiator, sustained upon a base *b*, and connected alternately at their opposite ends by thimbles *c*. A pipe *d* is extended through suitable closed tubular channels *d'* in the various sections to the bottom of the upper section, where the valve-bed *e* is attached there-
50 to. The adjacent parts of the horizontal ra-

diator-section *a* are shown in Fig. 3, where the valve-bed *e* is shown screwed into the lower side of the section and provided with a
55 threaded nozzle *f* to receive the top of the pipe *d*. The valve-seat *e'* is flat on top with a pivot-hole *g* in the center and segmental ports *e²* at opposite sides of the same. The periphery of the seat is provided with two
60 tapering flanges *h*, which are formed with notches *h'* at opposite sides, (see Fig. 7,) and the valve *v*, which is of disk shape, is formed with lugs *j*, adapted to hook beneath the flange *h*. The valve is formed with ports *v'*, correspond-
65 ing to the ports *e'*, and is furnished with a stem *m*, projected upward through the top of the radiator-section. The lugs *j* are of suitable width, as shown in Fig. 6, to pass through the notches *h'* to engage the under sides of the
70 flanges, and the rotation of the valve upon the seat in closing the ports, as shown in Figs. 4 and 6, forces the lugs *j* into close contact with the inclined under surface of the flanges *h*, and thus presses the valve firmly upon its seat. 75
A stuffing-box *l*, with screw-cap *l'*, is applied to the rod to prevent the escape of fluid, and the stuffing-box is inclosed within a socket *n*, which is projected into the upper side of the section *a*, so as to sink the stuffing-box as
80 much as possible below the surface of the radiator. The socket *n* is provided with a screw-thread by which it is fitted tightly to a threaded aperture *o* in the top of a radiator-section *a* and is formed at the top with a re-
85 cess *p*, in which the lower part of a hand-piece *q* is fitted to turn freely. The hand-piece is formed with a rounded collar to be readily turned by the fingers, and the stem *m* is secured to the middle of the same by a re-
90 movable screw *r*. The stem is fitted, respectively, to the valve *v* and the handpiece *q* by squares upon its opposite ends, and a screw *s* is inserted through the hole *g* in the seat *e'* into the end of the stem to prevent the valve
95 from displacement upon its seat. The socket is formed internally with flat sides *o'* (shown of hexagon shape in Fig. 5) to admit a wrench for turning it into the threaded aperture *o*. The lower end of the valve-bed *e* is also formed
100 with a projecting nozzle having flat sides *e³*, by which it is screwed into the aperture *o²* in the lower part of the section *a*.

From the above description it will be seen

that the valve-seat e' is held in the proper relation to the stuffing-box l by the insertion of the valve-bed e and the socket n upon a line with one another in the opposite sides of the radiator-section a and that such section constitutes a casing from which the fluid is excluded when the valve v is closed, as shown in Fig. 6, and to which casing the fluid is admitted when the valve is opened.

The movement of the valve in opening the ports, which is effected by turning in the direction of the arrow t in Fig. 4, is limited by the contact of the hooks j with the sides of the notches h' , which adjusts the ports v' directly over the ports e^2 , and thus secures a full opening for the passage of the fluid. As the movement through ports in a flat plate offers a certain obstruction to the fluid, the combined area of the ports is made greater than the area of the pipe which may be screwed into the valve-bed e , and a free passage of the fluid through the valve is thus secured. The application of the valve to the upright radiator-section (shown in Fig. 2) is of analogous character, the construction of the valve parts being the same and equally adapted without change to fit either kind of radiator-section, excepting a variation in the length of the valve-stem m .

The upright section shown in Fig. 2 is formed with loops u' , united at the top and bottom by transverse passages w , which passages are connected laterally in the series of sections by thimbles c' , so that the fluid introduced to one of the sections circulates through the entire radiator to the outlet-pipe. The socket n containing the stuffing-box is secured in the top side of the section, the same as in Fig. 1, and the valve-bed e is shown secured in the top of a tube u , which is formed between the upright loops u' , and receives the supply of heating fluid by a pipe d' , projected through the bottom of the section into such tube. The fluid admitted into the upper passage w by the opening of the valve circulates downward through the loops u' , as indicated by the arrow t' at the top of the loops, and is thus distributed to the connecting-thimbles c' .

It is obvious that only one section of the radiator would require the tube u to be formed between the loops to conduct the heating fluid to the upper part of the same where the valve-bed e is secured. The adjacent parts of the section in which the valve-bed and the socket n are screwed form the casing for the valve in this construction.

A casing detached from the radiator is shown in a globular shell y in Fig. 8, with the valve-bed e screwed in the lower end of the same and the socket n in the upper end of the same. The threaded aperture f upon the lower end of the bed adapts the construction to receive a pipe carrying the heating fluid through the floor of the apartment in which the radiator is placed, and a threaded nozzle y' is formed upon one side of the shell y to discharge the heating fluid laterally into the

base of the radiator in the usual manner. The valve parts shown in Figs. 1, 2, and 8 are identical in construction and arrangement and are combined in each case by a casing into which the fluid is admitted by the opening of the valve-ports e^2 . It will thus be seen that the construction and operation of the valve are the same in all the arrangements shown. The construction of the valve in the form of a flat disk with the perforations through the same obviously secures a complete opening of the valve-ports by turning the valve ninety degrees, and thus secures a very rapid opening or adjustment of the valve when desired.

The provision of the valve-bed and the stuffing-box socket with external threads adapts the valve for use in the various situations described herein, and thus fits it for use in a different manner from any other valve. This valve is designed especially for hot-water radiators, and is fully adapted to shut off a current of hot water under the pressure ordinarily employed with hot-water radiators; but it was not designed for a steam-valve, where it would be subjected to considerable pressure, as the flat form of the valve-disk v is not adapted to present great resistance. The location of the stuffing-box within the socket n and the projection of the latter within the casing greatly reduces the projection of the handpiece above the top of the casing, and thus secures a more ornamental appearance. The tapering flanges h and the hooks j , engaged with the under sides of the same, may obviously be used to hold the flat disk-valve upon its seat whether or not the valve-bed be formed as shown in the annexed drawings, and I do not therefore limit myself to a valve-bed having an external thread and connected with the casing in the specific manner described. I have therefore claimed such a valve-seat and valve in connection with a suitable casing, and have also made separate claims to the connection of the valve-seat with the casing by means of the valve-bed e , threaded externally.

The formation of the valve-bed and the socket n apart from the casing is obviously a means of facilitating its construction and applying the tools to the valve-seat, the stuffing-box, and other parts of the construction, which cannot be readily finished if such parts were integral with the casing.

Having thus set forth the nature of my invention, what I claim herein is—

1. In a radiator-valve, the combination, with a suitable casing, of the socket n , containing the stuffing-box l , and the valve-bed e , having the valve-seat e' , with the disk valve v , seated thereon, the valve being provided with suitable ports and with the stem m , fitted to the stuffing-box l , and the socket n and die-bed e being threaded externally to secure them in the opposite sides of the casing, as and for the purpose set forth.

2. In a radiator-valve, the combination, with a suitable casing, of the socket n , pro-

vided with the internal stuffing-box *l* and having the handpiece *q* fitted to the recess *p* at the top, and the die-bed *e*, threaded externally and provided with internal thread *f* and having the valve-seats *e'*, with disk valve *v*, fitted thereto, with stem *m*, fitted to the stuffing-box, substantially as herein set forth.

3. In a radiator-valve, the combination, with the casing *y*, having a nozzle *y'* at the side and provided with threaded apertures *o* and *o'*, of the socket *n*, provided with the stuffing-box *l* and handpiece *q* and with external thread, as set forth, and the die-bed *e*, provided with valve-seat *e'*, disk valve *v*, and stem *m*, having handpiece *q* fitted to the top of the socket, substantially as set forth.

4. In a radiator-valve, the combination,

with a suitable casing, of a stuffing-box secured in the top of the same, a flat valve-seat attached to the bottom of the same and provided with the apertures *e'* and the tapering flanges *h* and notches *h'*, as set forth, and the valve *v*, having the hooks *j* fitted to the under sides of the tapering flanges and provided with the ports *v'*, and the stem *m*, projected through the stuffing-box, the whole arranged and operated substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE C. BLACKMORE.

Witnesses:

THOMAS S. CRANE,
E. L. WYMAN.