

No. 817,287.

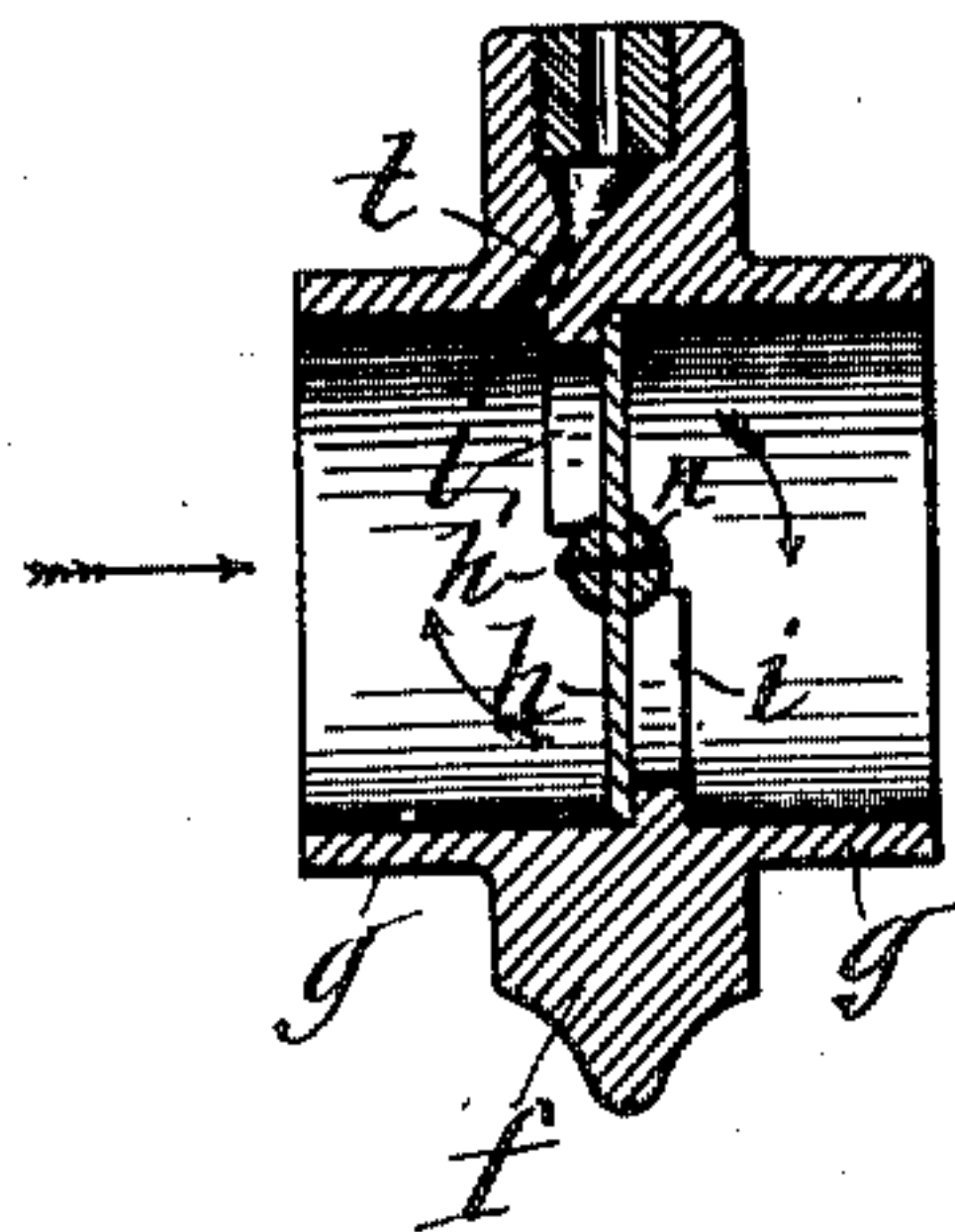
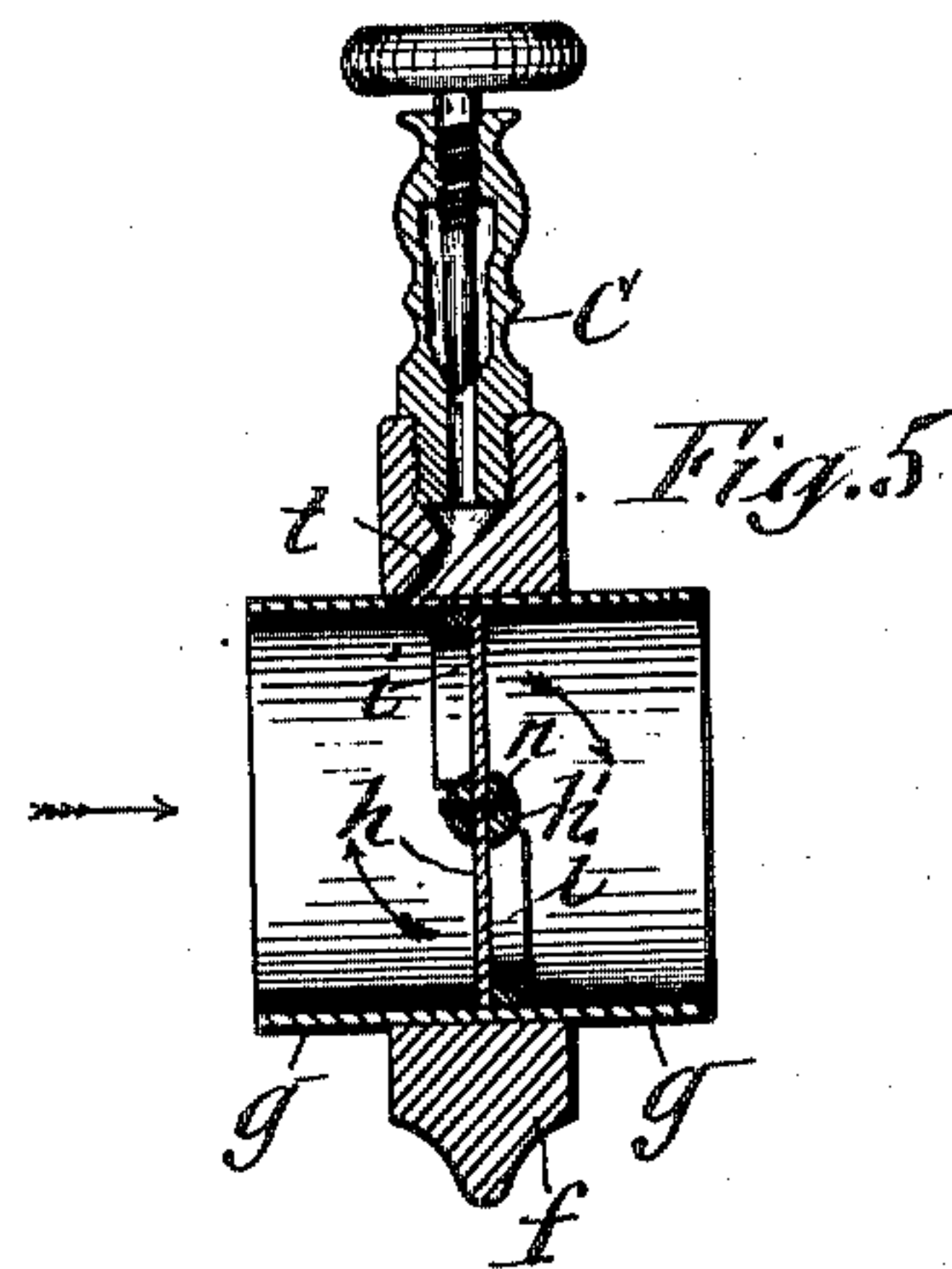
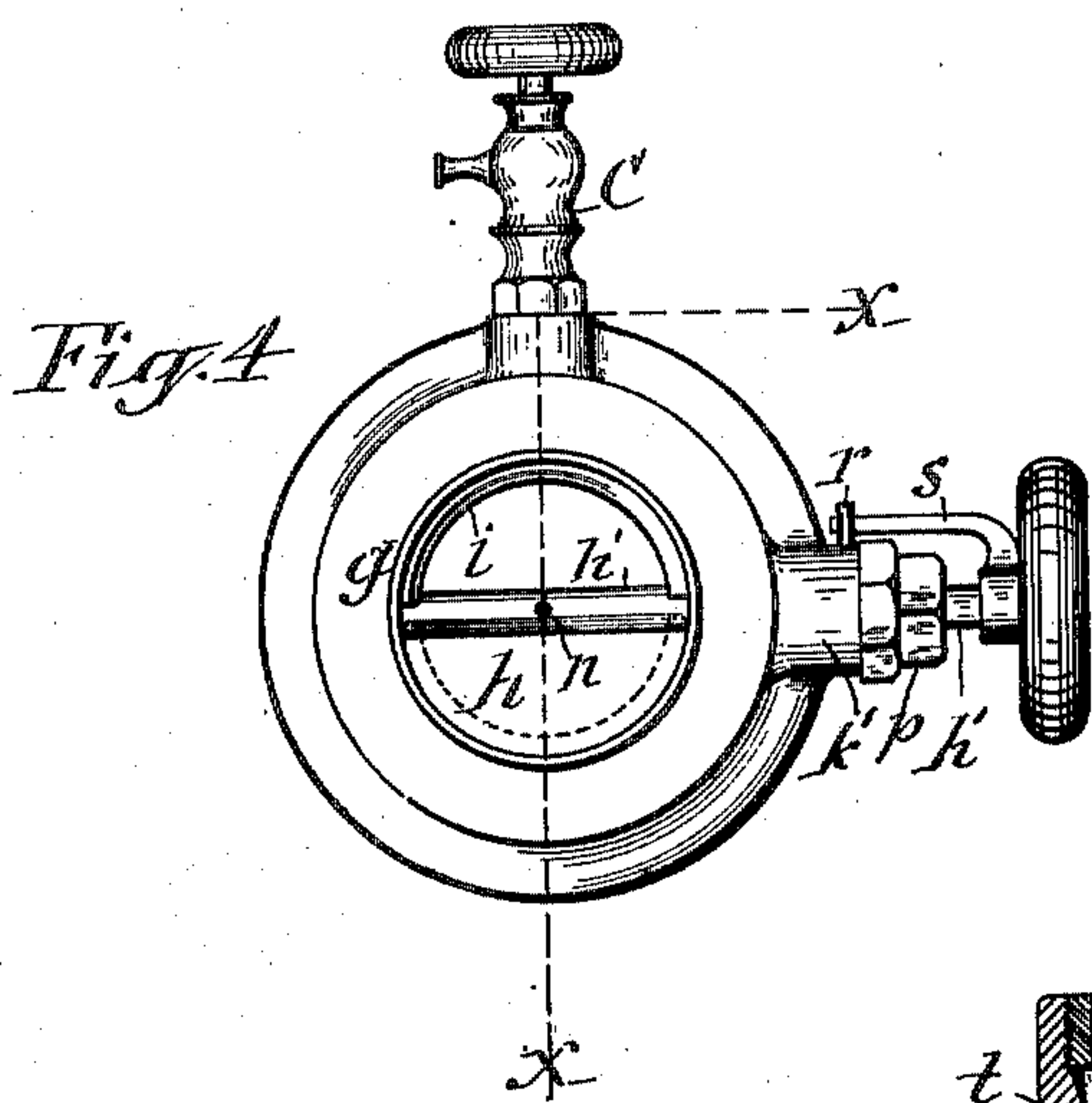
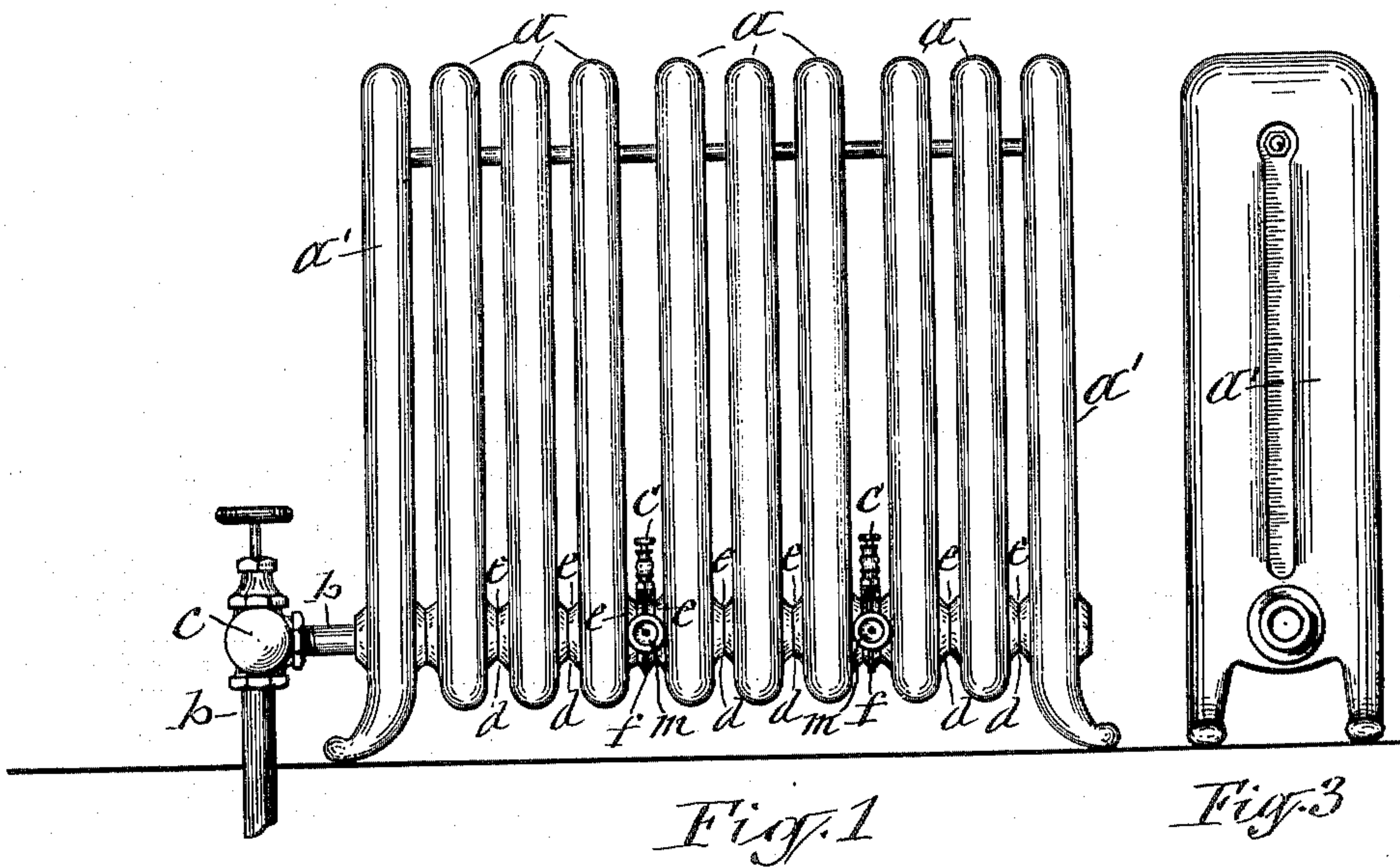
PATENTED APR. 10, 1906.

J. V. WASHBURNE.

RADIATOR.

APPLICATION FILED FEB. 17, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

H. H. Fulmer
J. J. Laess

Fig. 6

INVENTOR

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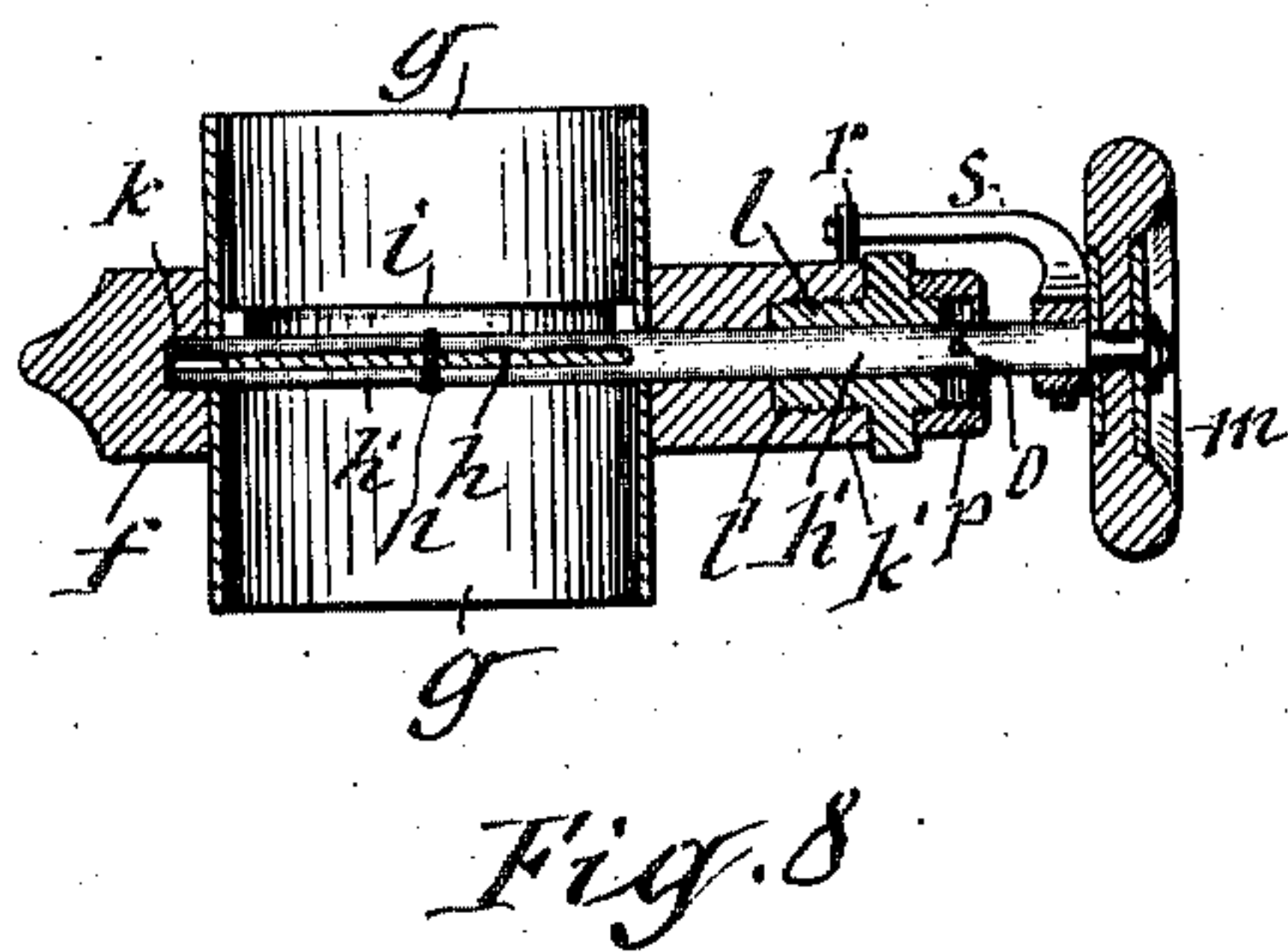
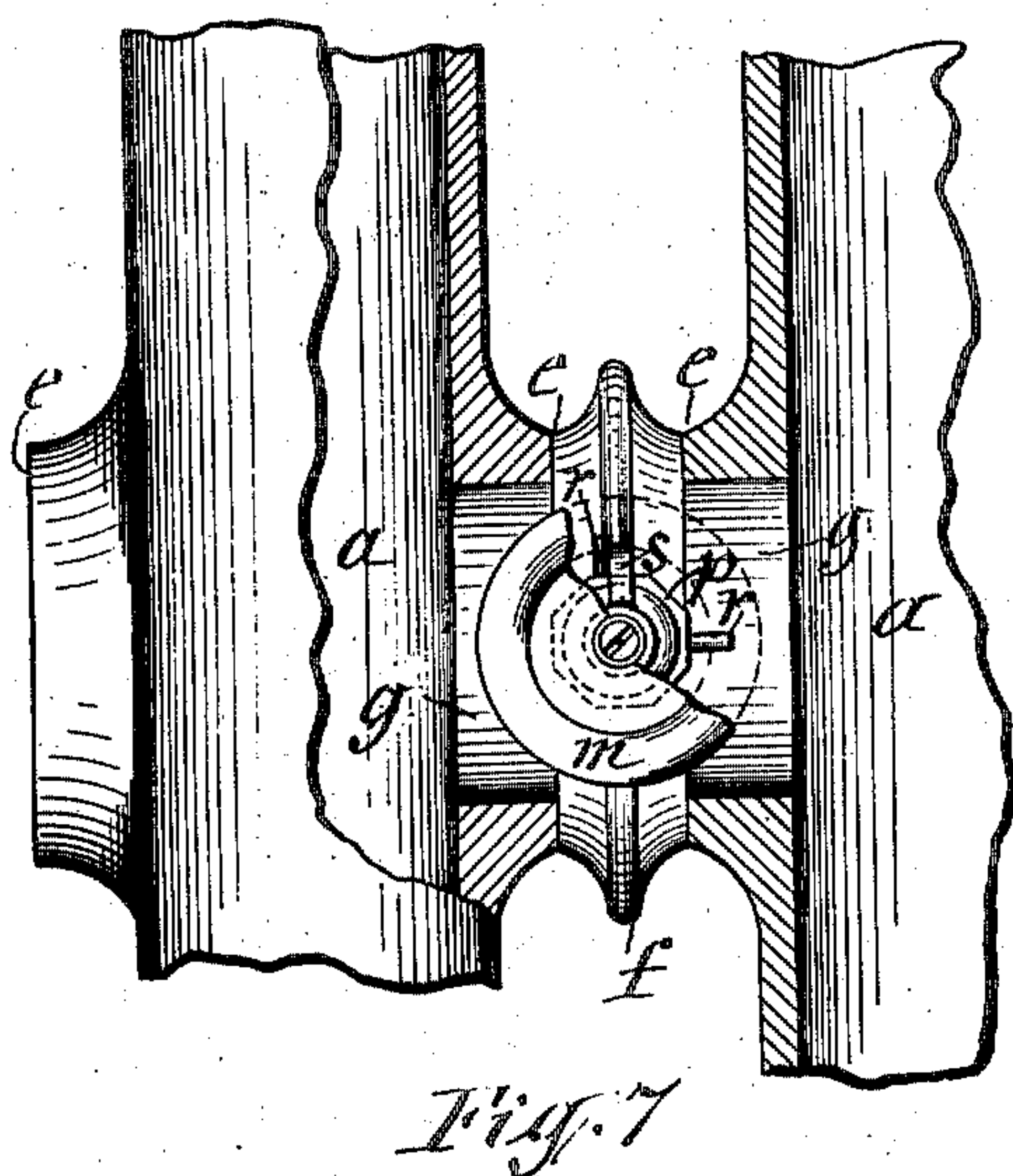
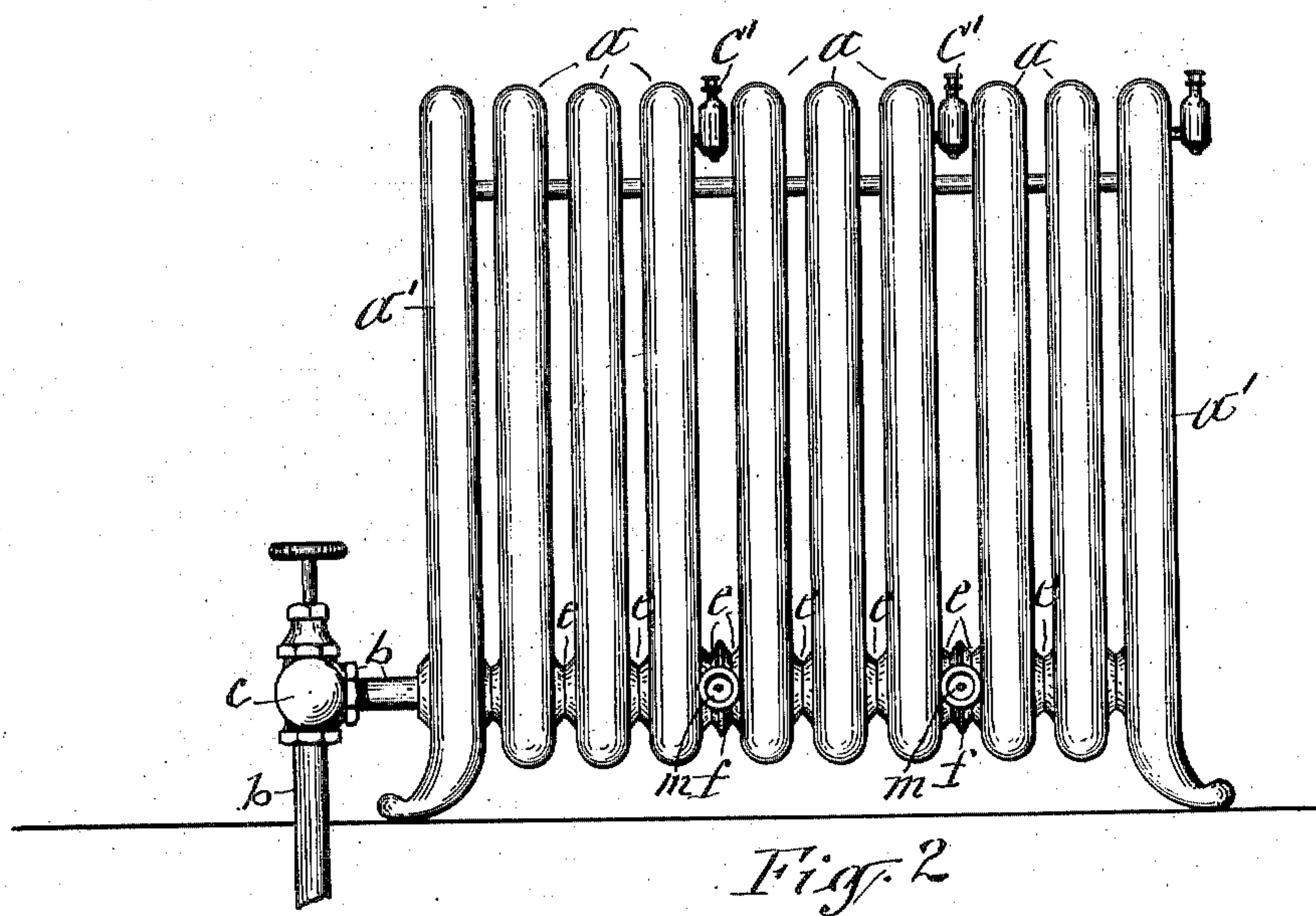
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2 SHEETS—SHEET 2.



WITNESSES:

G. H. Fulmer?
J. J. Laass.

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UNITED STATES PATENT OFFICE.

JAMES V. WASHBURNE, OF SYRACUSE, NEW YORK.

RADIATOR.

No. 817,287.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed February 17, 1905. Serial No. 245,988.

To all whom it may concern:

Be it known that I, JAMES V. WASHBURNE, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Radiators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to devices applied to steam and hot-water radiators for the purpose of controlling the circulation of steam or hot water, so as to cause it to pass either through the entire extent of the radiator or only through a portion thereof, and thus vary the radiation of heat in accordance with the different temperatures desired to be derived from the radiator.

The object of the invention is to attain the aforesaid effect by simple, convenient, and efficient means which are readily applied to a radiator of the class in which the radiator is composed of a series of separate loops communicating directly with each other at their lower ends; and to that end the invention consists in the novel construction and combination of parts hereinafter described, and as illustrated in the accompanying drawings, in which—

Figures 1 and 2 are front elevations of radiators embodying my invention. Fig. 3 is an end view of the radiator. Fig. 4 is an enlarged detached face view of the cut-off valve. Fig. 5 is a transverse section on the line X X in Fig. 4. Fig. 6 shows a modification of Fig. 5. Fig. 7 is an enlarged front view of the connection of the cut-off valve to the radiator-loops shown partly in section, and Fig. 8 is a sectional detail view of the cut-off valve. The cut-off valve shown in the last two figures is deprived of the air-vent and is designed to be used on radiators which have the usual automatic vent attached to the top of the radiator, as shown in Fig. 2 of the drawings.

Similar letters of reference indicate corresponding parts.

a a' represent the radiator-loops, which are disposed side by side in a row and may be of any desired form and adapted for the reception of either steam or hot water, more especially steam.

b denotes the steam or water induction pipe, which communicates with one of the end loops *a'* through the side of the lower end thereof and is provided with a suitable valve

c for controlling the influx of the steam or hot water.

Each of the intermediate loops *a a* is provided in opposite sides of its lower end with ports *d*, by which it communicates with the adjacent loops. Each port is surrounded by an annular external face *e* to form a closely-fitting seat for a collar *f*, which is interposed between the ports of two adjacent loops *a a* and is provided with nipples *g g*, which are inserted into said ports and form tubular couplings leading from port to port. Said nipples may be formed integral with the collar, as represented in Fig. 6 of the drawings, or formed of protruding ends of a tube passing through the collar, as shown in Fig. 5 of the drawings.

h represents the cut-off valve, which is of the form of a disk, located between the inner ends of the two nipples *g g* and closes on semi-circular seats *i i* on the interior of the tube.

h' is the valve-stem, which is detachably secured diametrically across the disk valve *h* and pivoted at one end in a socket *k*, formed in the collar *f*, and passes with its opposite end through the collar and through a sleeve *l*, screwed into a socket *l'* in a boss *k'*, formed on the exterior of the collar. A suitable handle *m* is attached to the outer end of the valve-stem for moving the valve to and from its closing position. I preferably bifurcate the inner end portion of the valve-stem and insert the disk valve *h* in the bifurcation and fasten it to the stem by means of a removable pin *n* passing transversely through said parts. The object of said detachable connection of the valve to its stem is to allow the valve-stem to be withdrawn from the valve when the latter requires repairs or renewal. To prevent accidental withdrawal of the valve-stem, I attach thereto a laterally-projecting lug or pin *o*, adjacent to the outer ends of the sleeve *l* and covered by a cap *p*, screwed onto the said sleeve, as shown in Fig. 8 of the drawings. To guard against excessive torsional strain on the valve-stem and at the same time enable a person to ascertain the position of the valve *h*, I provide the boss *k'* with two stud-pins *r r* or other suitable stops and attach to the outer end of the valve-stem a dependent *s*, which comes in contact with the said stops in turning the valve to its open and closed positions.

C represents a suitably-constructed vent-valve for escape of air entrapped in the radi-

ator. The case of this valve is attached to the collar *f* in a suitable position to afford ready access to said valve, which communicates with the interior of the nipple-tube through a channel *t*, extending through the collar *f* and through the side of the tube *g*, which may be either integral with the collar *f*, as shown in Fig. 6, or consist of a separate piece, as shown in Fig. 5 of the drawings, which is a transverse section of Fig. 4. I do not, however, limit myself to the use of the vent-valve *C* constructed and applied as aforesaid, inasmuch as the usual and well-known vent-valve *C'* may be attached to the loop *a*, as shown in Fig. 2 of the drawings.

The salient feature of the invention consists in the combination, with the series of loops communicating with each other through tubular couplings detachably connecting said loops, of a similar coupling interchangeable with the other couplings and a cut-off valve in said interchangeable coupling, thus allowing the radiator to be divided into sections of any desired proportion.

What I claim as my invention is—

1. A radiator composed of a series of loops provided with corresponding ports, tubular couplings detachably connected to said ports, a similar coupling interchangeable with the other couplings, and a cut-off valve disposed in the said interchangeable coupling as set forth.

2. The combination with two adjacent radiator-loops communicating with each other through ports in the sides thereof, of a collar interposed between the loops and provided with nipples inserted in the ports, and a cut-off valve disposed in said collar as set forth.

3. The combination with two adjacent radiator-loops communicating with each other through ports in the sides thereof and provided with annular external faces surrounding the ports, of an interposed collar seated on said faces, a tube passing through the collar and into the ports, and a cut-off valve disposed in the tube central of the plane of the collar and having the valve-stem passing through said collar as set forth and shown.

4. The combination with two adjacent radiator-loops communicating with each other through ports in the sides thereof, and provided with annular external faces surrounding the ports, of an interposed collar seated on said faces, a tube passing through the col-

lar and into the ports, a disk valve disposed in said tube, semicircular valve-seats on the interior of the tube at opposite sides of the disk valve, the valve-stem secured diametrically across said disk valve and pivoted to the collar and having one end extending through the collar and provided with means for turning it as set forth.

5. The combination with two radiator-loops disposed side by side and communicating with each other through ports in the sides thereof and provided with annular external faces surrounding the ports, an interposed collar seated on said faces, a tube passing through the collar and into the ports, a disk valve disposed in said tube central of the plane of the collar, a bifurcated valve-stem embracing the valve diametrically and detachably secured thereto, one end of said valve-stem pivoted in the aforesaid collar and the opposite end extending through the collar, a sleeve secured to the collar and embracing the valve-stem, a lug projecting from the side of the valve-stem at the outer end of the sleeve, and a cap connected to the sleeve, said cap and sleeve receiving between them the aforesaid lug as and for the purpose set forth.

6. The combination with two adjacent radiator-loops communicating with each other through ports in the sides thereof, of a collar interposed between the ports and provided with nipples inserted into said ports, a cut-off valve between said nipples and having the valve-stem extending radially through the aforesaid collar, and a vent-valve attached to said collar and communicating with the interior of one of the nipples as set forth and shown.

7. The combination with two adjacent radiator-loops communicating with each other through ports in the sides of the loops, a collar interposed between the ports, a tube extending through said collar and into the ports, a disk valve in the tube and having its stem extending radially through the collar, a detent attached to the valve-stem, and stops on the collar limiting the movement of the detent as and for the purpose set forth.

JAMES V. WASHBURNE.

Witnesses:

J. J. LAASS,
L. H. FULMER.