

No. 829,691.

PATENTED AUG. 28, 1906.

W. CLOWES.  
STEAM CONTROLLING VALVE.

APPLICATION FILED APR. 7, 1905.

2 SHEETS—SHEET 1.

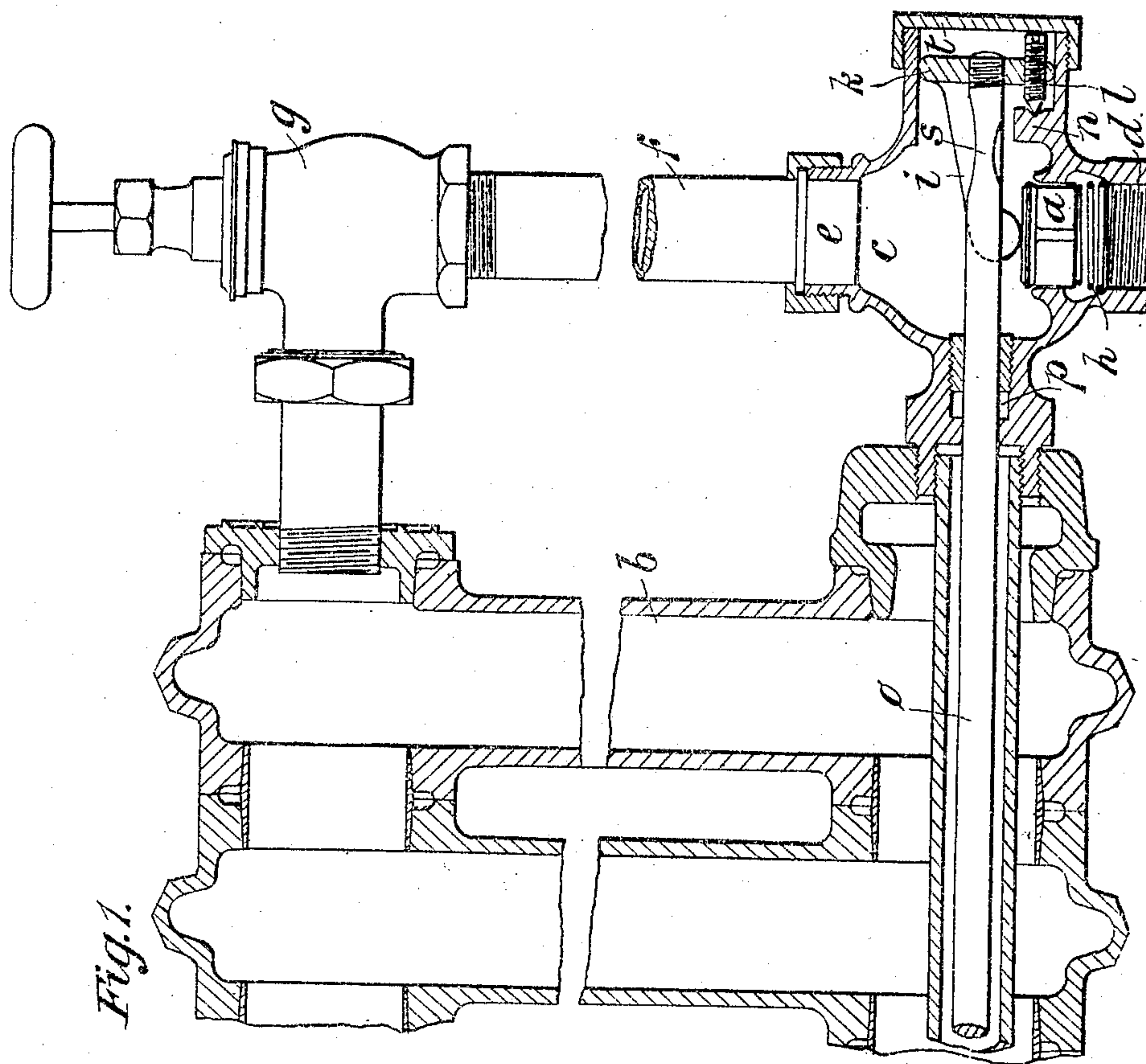
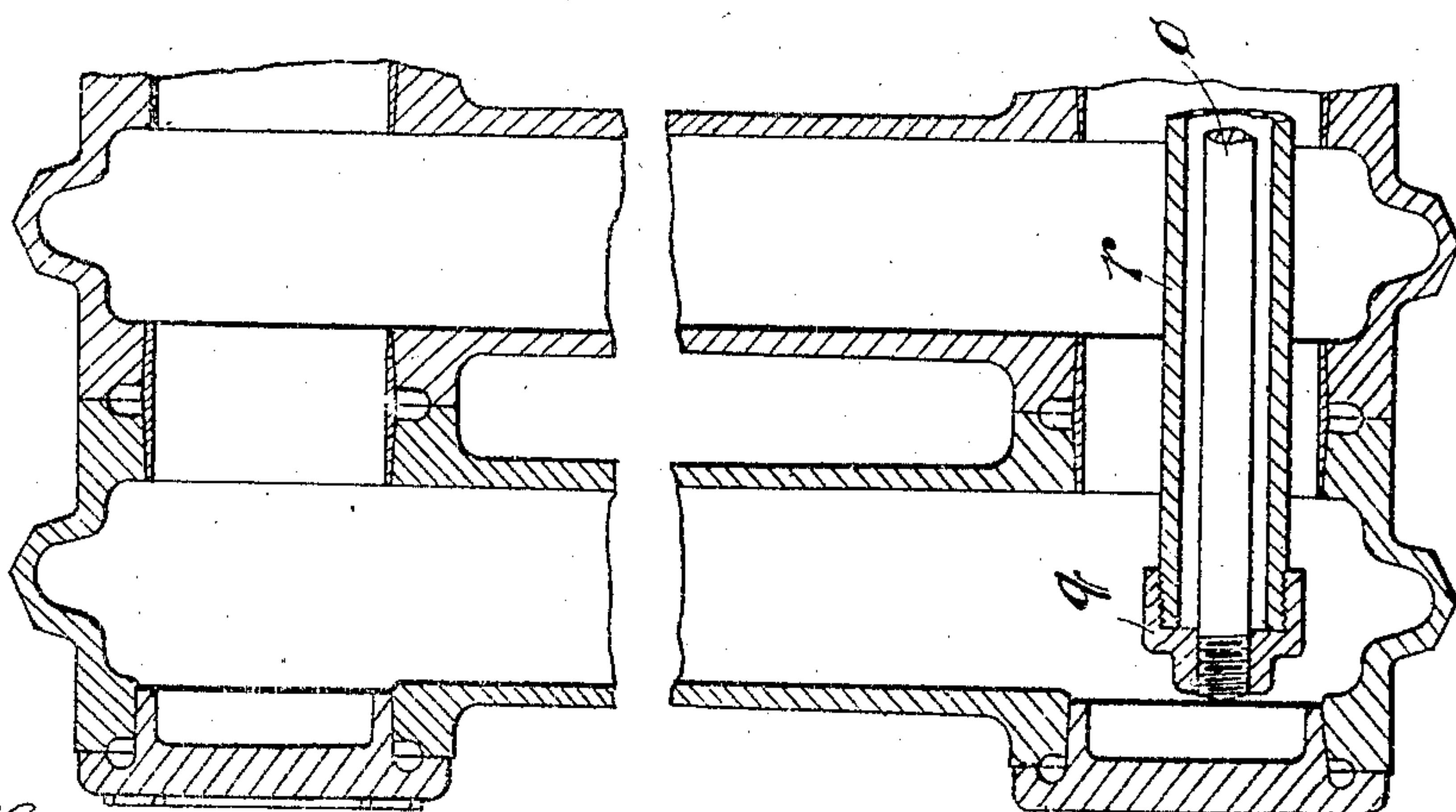


Fig. 1.



Witnesses  
J. M. Kichue  
John A. Percival

Inventor  
Walter Clowes  
By Richard J. [Signature]  
ATTORNEYS

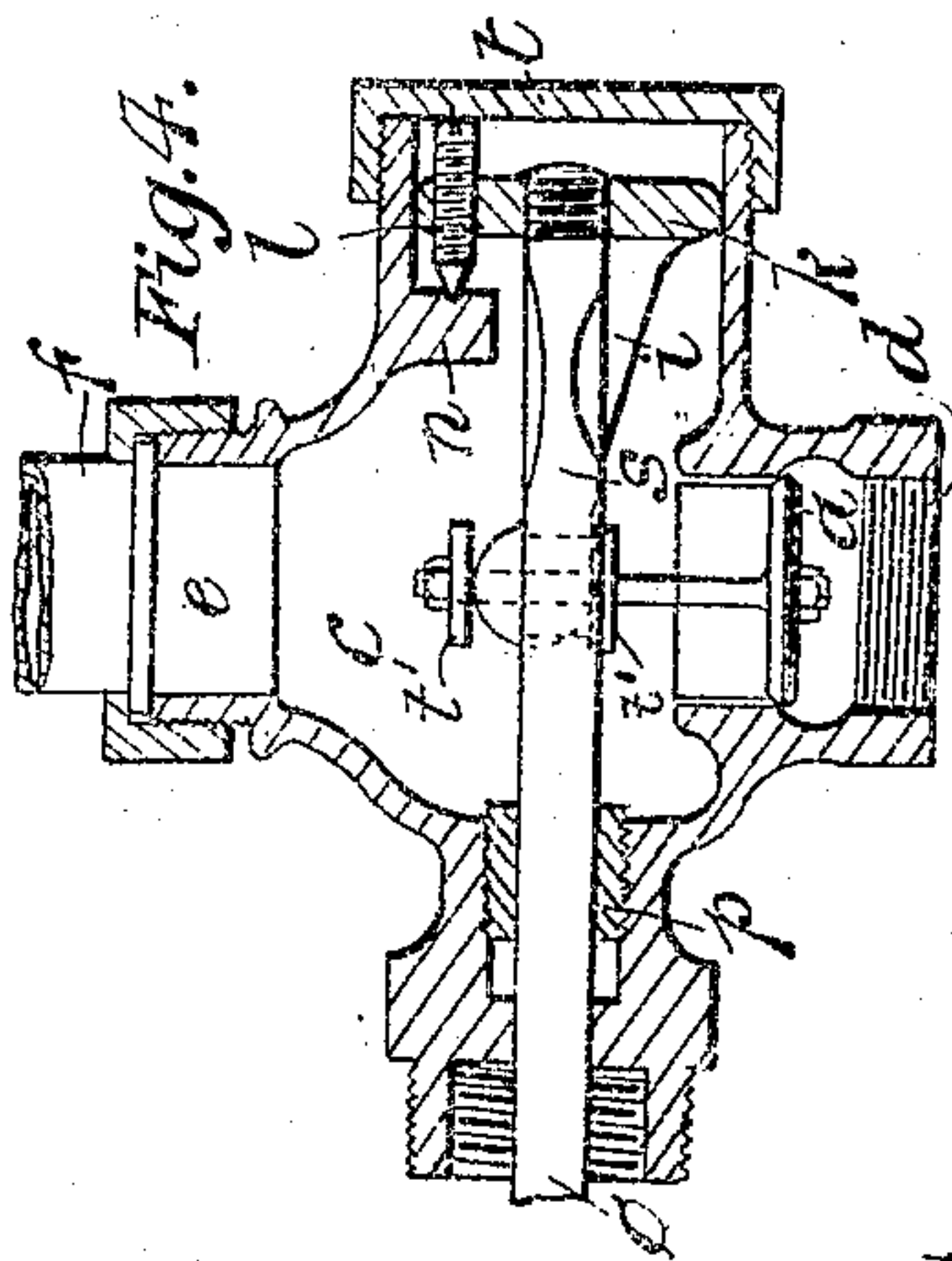
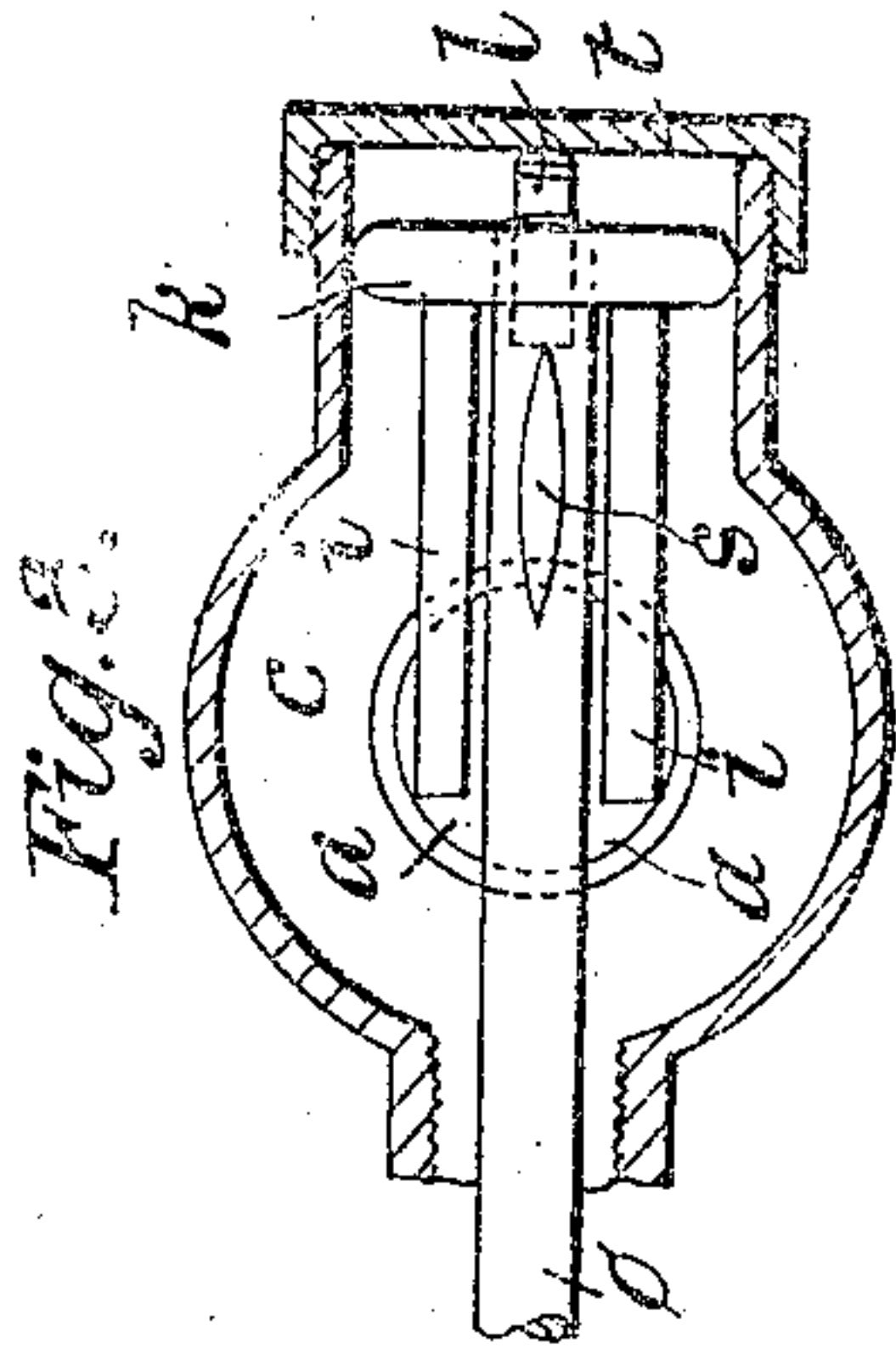
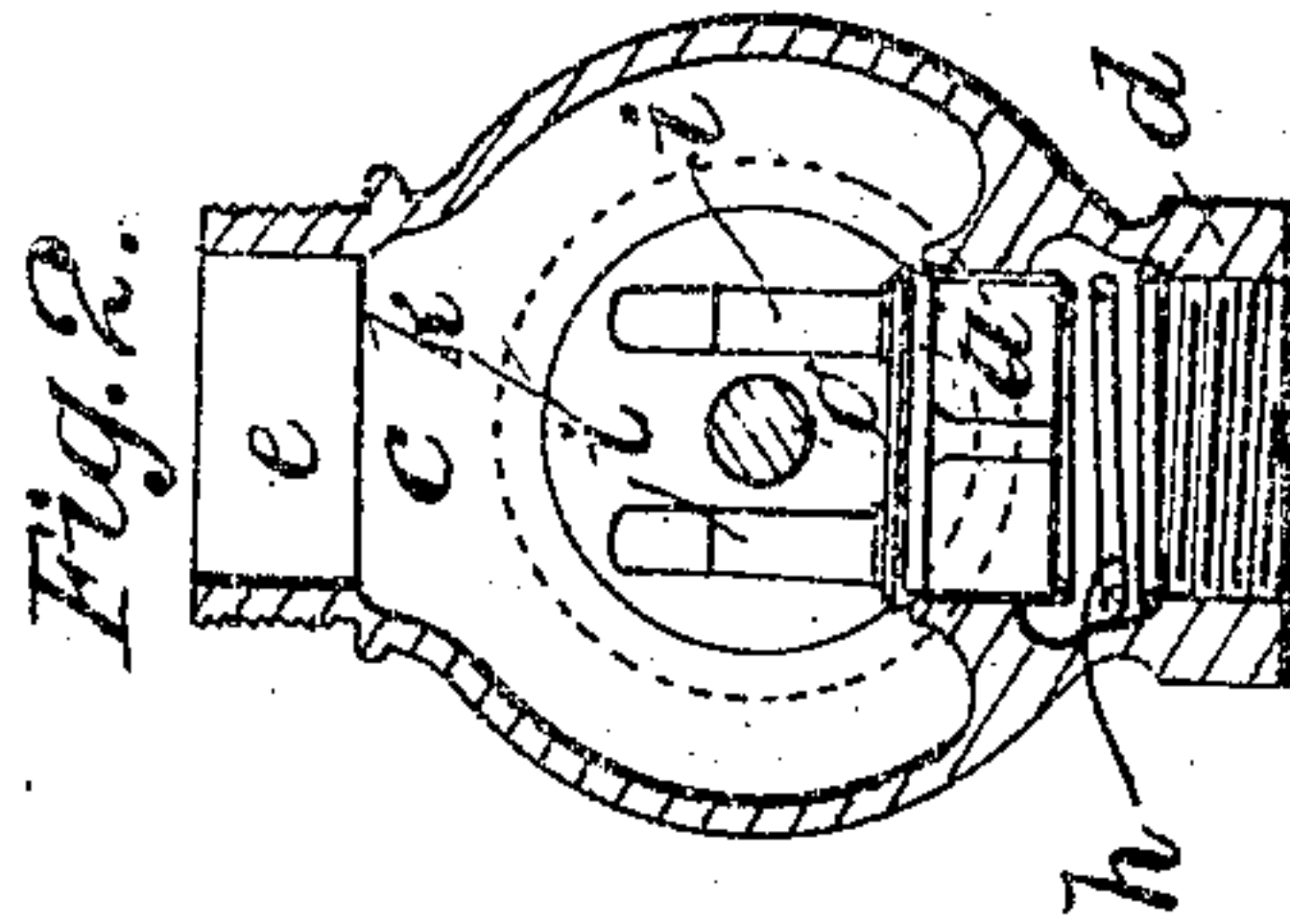
No. 829,691.

PATENTED AUG. 28, 1906.

W. CLOWES.  
STEAM CONTROLLING VALVE.

APPLICATION FILED APR. 7, 1905.

2 SHEETS—SHEET 2.



Witnesses  
J. M. Kuehn  
John A. Percival.

Inventor  
Walter Clowes  
By *Richard E. [Signature]*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

WALTER CLOWES, OF WALTHAMSTOW, ENGLAND, ASSIGNOR TO ROBERT ERNEST ATKINSON, OF LEICESTER, ENGLAND.

## STEAM-CONTROLLING VALVE.

No. 829,691.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed April 7, 1905. Serial No. 254,366.

*To all whom it may concern:*

Be it known that I, WALTER CLOWES, a subject of the King of Great Britain and Ireland, residing at 33 Chestnut avenue, Wood street, Walthamstow, Essex, England, have invented new and useful Improvements in Connection with Steam-Controlling Valves, of which the following is a specification.

This invention relates to valves for controlling the supply of steam or other fluid to radiators, steam-traps, or similar apparatus in heating systems of either vacuum or pressure type and for other steam employment purposes, and more particularly to the type of valve which is automatically operated by a thermostatic device within or upon the radiator or other apparatus.

The object of the invention is to provide a valve of the type referred to which is of very simple construction and which can be initially set or regulated and when so set cannot be tampered with by an unauthorized person.

The invention briefly consists in connecting one member of a thermostat, which is influenced by the heat of the radiator, to a pivoted member adapted to bear against a valve, so that movements of the thermostatic member cause movements of the pivoted member which permit or cause the valve to open or close, means being provided to allow of adjustment, as hereinafter more particularly described.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of a radiator with the invention applied thereto. Fig. 2 is a cross-sectional elevation of the valve-casing with the valve shown in position. Fig. 3 is a longitudinal sectional plan of the valve-casing with the valve in position. Fig. 4 is a longitudinal sectional elevation of a modified arrangement of valve.

In carrying out the invention according to one mode, and as illustrated in Figs. 1 to 3, a valve *a* is automatically operated by a thermostatic device in the radiator *b* to control the supply of steam or other heating fluid thereto. The valve is contained within a casing *c*, having an inlet branch *d* for connection to the main and an outlet branch *e* for connection to the radiator—for example, by a pipe *f*—on which may be fitted an ordinary stop-valve *g* to permit of the radiator being shut off by hand if it is not required

when other parts of the heating system may be in use. The valve *a* in the example shown in Figs. 1 to 3 opens under steam-pressure, the opening being facilitated by a spring *h*. The valve *a* is controlled by a pivoted member comprising an arm or arms *i*, which have rounded ends adapted to bear on the valve *a*, the arm or arms *i* being formed in one with or are secured to a disk *k*, adapted to pivot on a fulcrum-pin *l*, which is made adjustable, being screwed through the disk *k* and having a slot or other means to facilitate adjustment. The pin *l* bears on a lug *n*. Attached to the disk *k* of the pivoted member is an iron rod *o*, which passes through a gland *p* and thence into the radiator, being connected at its opposite end, as by a nut *q*, to the free end of a copper tube *r*, the opposite end of which is secured to the radiator either directly or as shown through an extension of the valve-casing *c*, which is screwed into the radiator.

The rod *o* has a narrow neck *s* near the disk *k*, or is similarly formed to render it flexible at that part to enable the disk to tilt or pivot on the fulcrum-pin *l*. The iron rod *o* and copper tube *r* form the thermostat which controls the valve *a*, it being understood that as the rod and tube are made of materials having different coefficients of expansion when the temperature within the radiator is high the tube *r* in expanding at a much greater rate than the rod *o* exerts a pull on the latter which in turn pulls on the disk *k*, tilts it, and causes the arms *i* to press the valve *a* to its seat and stop or reduce the inflow of steam or other fluid.

When the radiator cools down, the tube *r* contracts and the rod *o* tilts the disk *k* in the opposite direction to withdraw the arms *i* from the valve *a*, which immediately opens under the influence of the spring *h* and the steam-pressure and admits a further supply of steam. The reduced portion *s* renders the rod *o* sufficiently flexible to permit of a rigid connection between the rod and disk. The valve may be adjusted or set initially by the pin *l*, being screwed in or out. In the example shown the pin *l* is only accessible when a cover *t* is removed, so that tampering with the valve is prevented, but in a case where it is desired that the pin shall be accessible from the exterior it may be passed through a suitably-packed opening in the cover.

When a valve *a* is used which opens against



the steam or other fluid pressure, the fulcrum-pin *l* may be arranged on the opposite side of the disk *k*, as shown in Fig. 4. In this case the ends of the arms *i* may bear on collars *t'* 5 on the valve-spindle, so that as the thermostat tilts the disk in one direction or the other the valve is pushed off or pulled toward its seat. The ends of the arms *i* may as in the previous case bear directly on the valve *a* 10 and the steam-pressure alone or with a spring be relied on to close the valve as the arms recede.

The disposition of the automatic valve, form of thermostat, and use and form of a 15 stop-valve may all be varied to suit the type of radiator or heating system to which the invention is to be applied.

The improved valve may be employed for controlling fluid to or from a radiator, steam- 20 trap, or any other similar apparatus, subject to change of temperature.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An automatic fluid-controlling device, 25 comprising a thermostat consisting of a copper tube and an iron rod connected together at the one end, the other end of the tube being rigidly connected to a valve-casing and the corresponding end of the rod passing 30 through a gland in said casing, a disk screwed on the end of the rod, a fulcrum-pin screwed through said disk, two arms extending from the disk and a valve controlled by said arms, substantially as hereinbefore set forth.

2. An automatic fluid-controlling device, 35 comprising a thermostat consisting of a copper tube and an iron rod connected together at the one end, the other end of the tube being rigidly connected to a valve-casing and the corresponding end of the rod passing 40 through a gland in said casing, a disk screwed on the end of the rod, a narrow neck on the rod near the disk, a fulcrum-pin screwed through the disk, two arms extending from the disk and a valve controlled by said arms, 45 substantially as hereinbefore set forth.

3. An automatic device for controlling the supply of fluid to a radiator or like heating apparatus comprising a thermostat consist- 50 ing of a copper tube and an iron rod connected together at the one end, the other end of the tube being rigidly connected to a valve-casing and the corresponding end of the rod passing through a gland in said casing, a disk 55 screwed on the end of the rod, a fulcrum-pin screwed through said disk, two arms extending from the disk a valve controlled by said arms, and a removable cover on the casing, substantially as and for the purposes herein- 60 before set forth.

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

WALTER CLOWES.

Witnesses:

ALBERT E. PARKER,  
FRANCIS J. BIGNELL.