

No. 677,716.

Patented July 2, 1901.

G. W. THOMPSON.  
AUTOMATIC FIRE EXTINGUISHER.

(Application filed July 27, 1900.)

(No Model.)

Fig. 1.

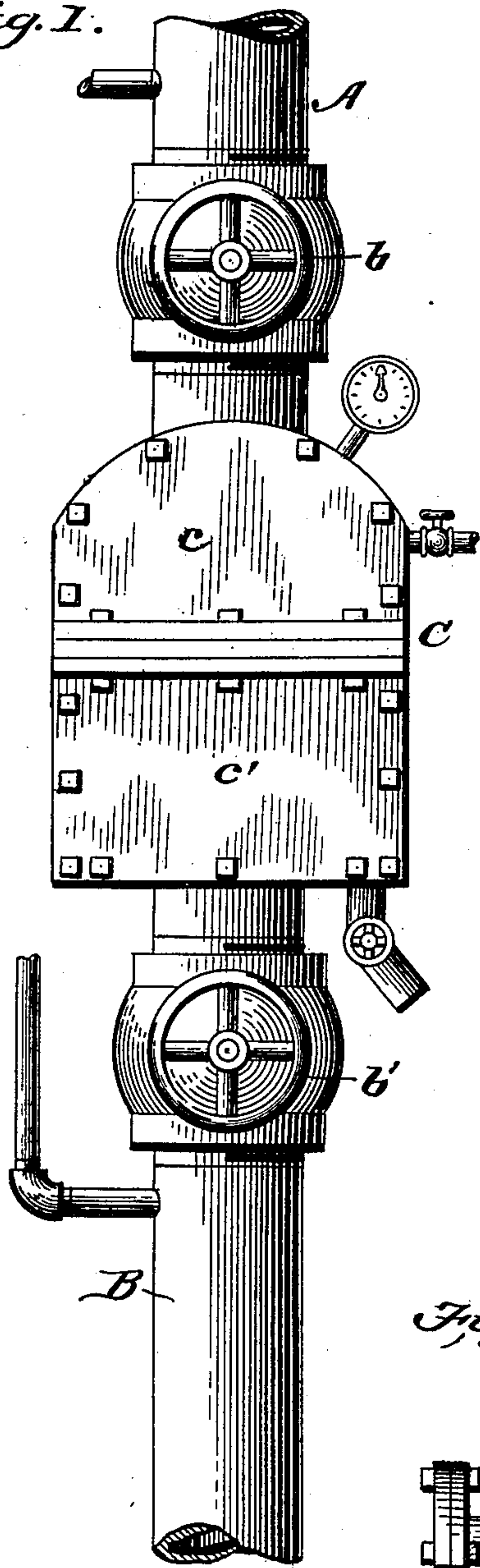


Fig. 2.

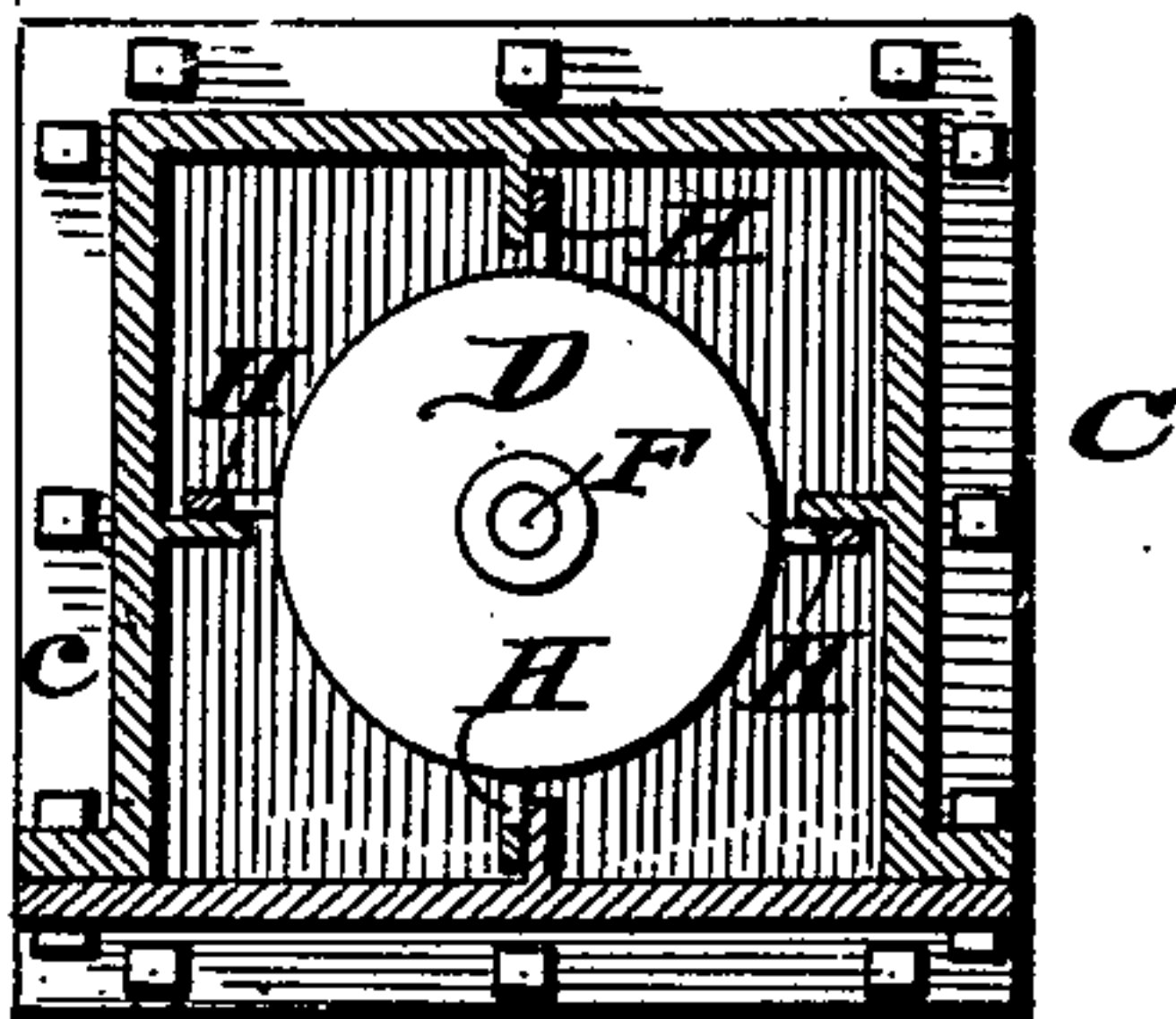


Fig. 3.

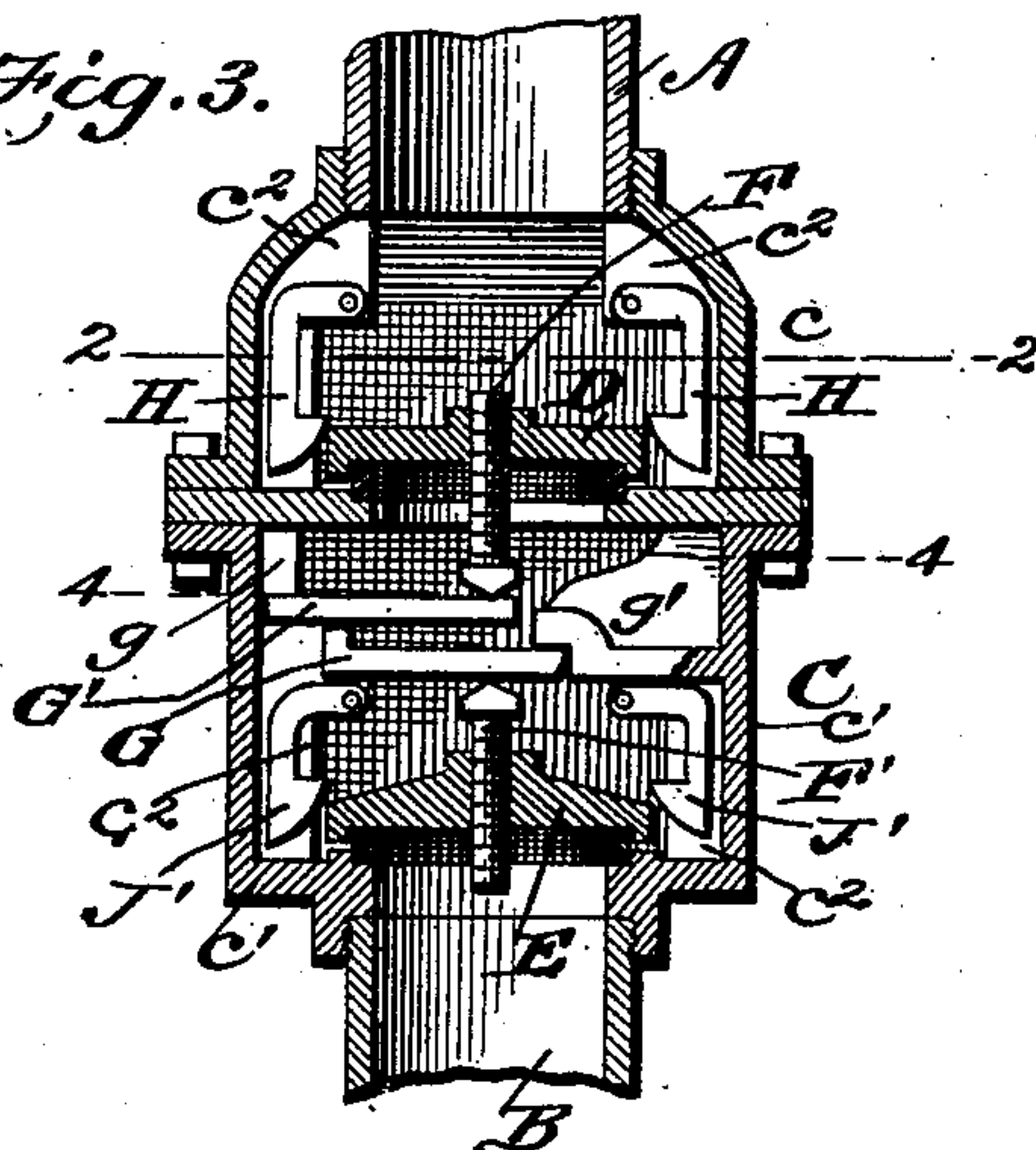


Fig. 4.

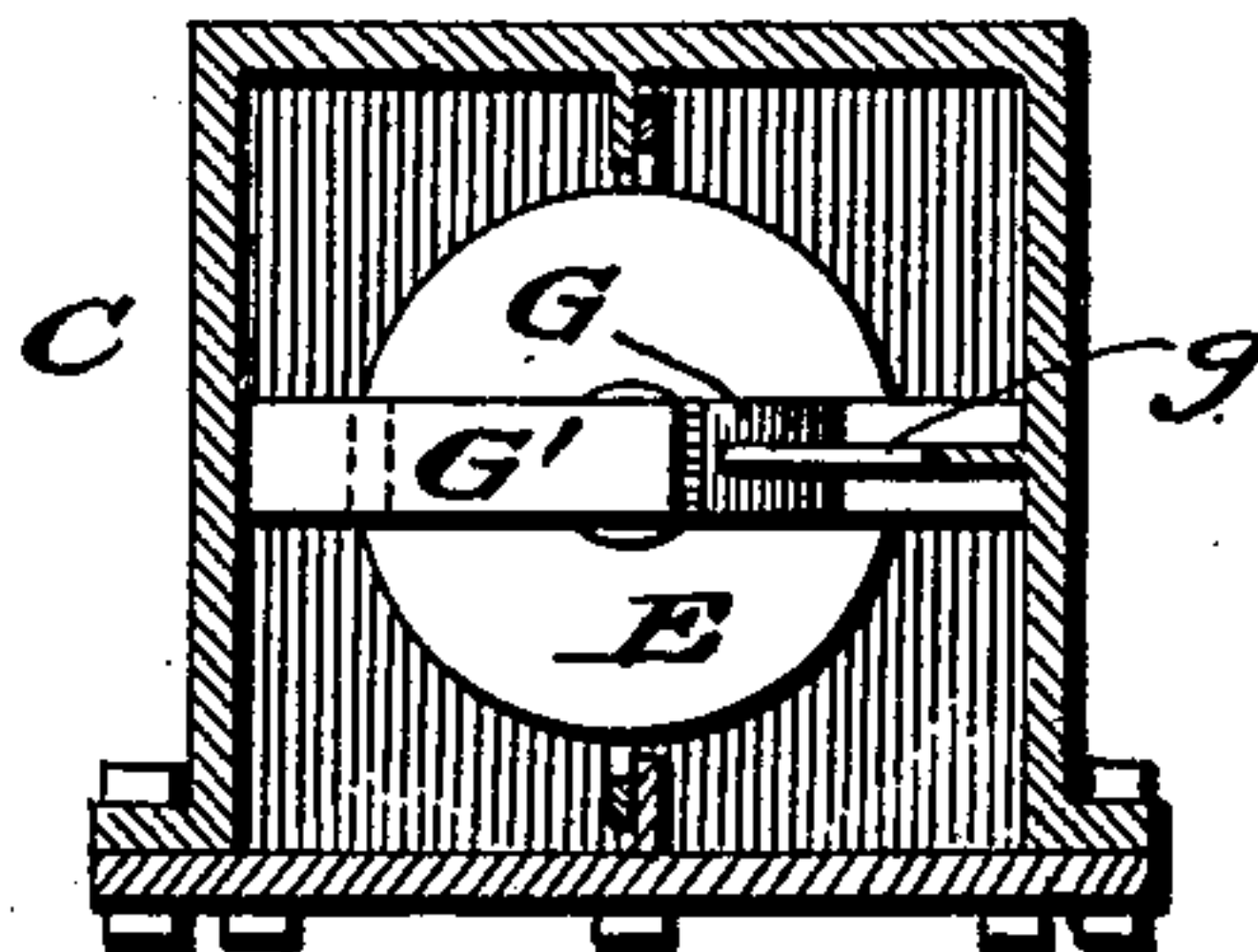
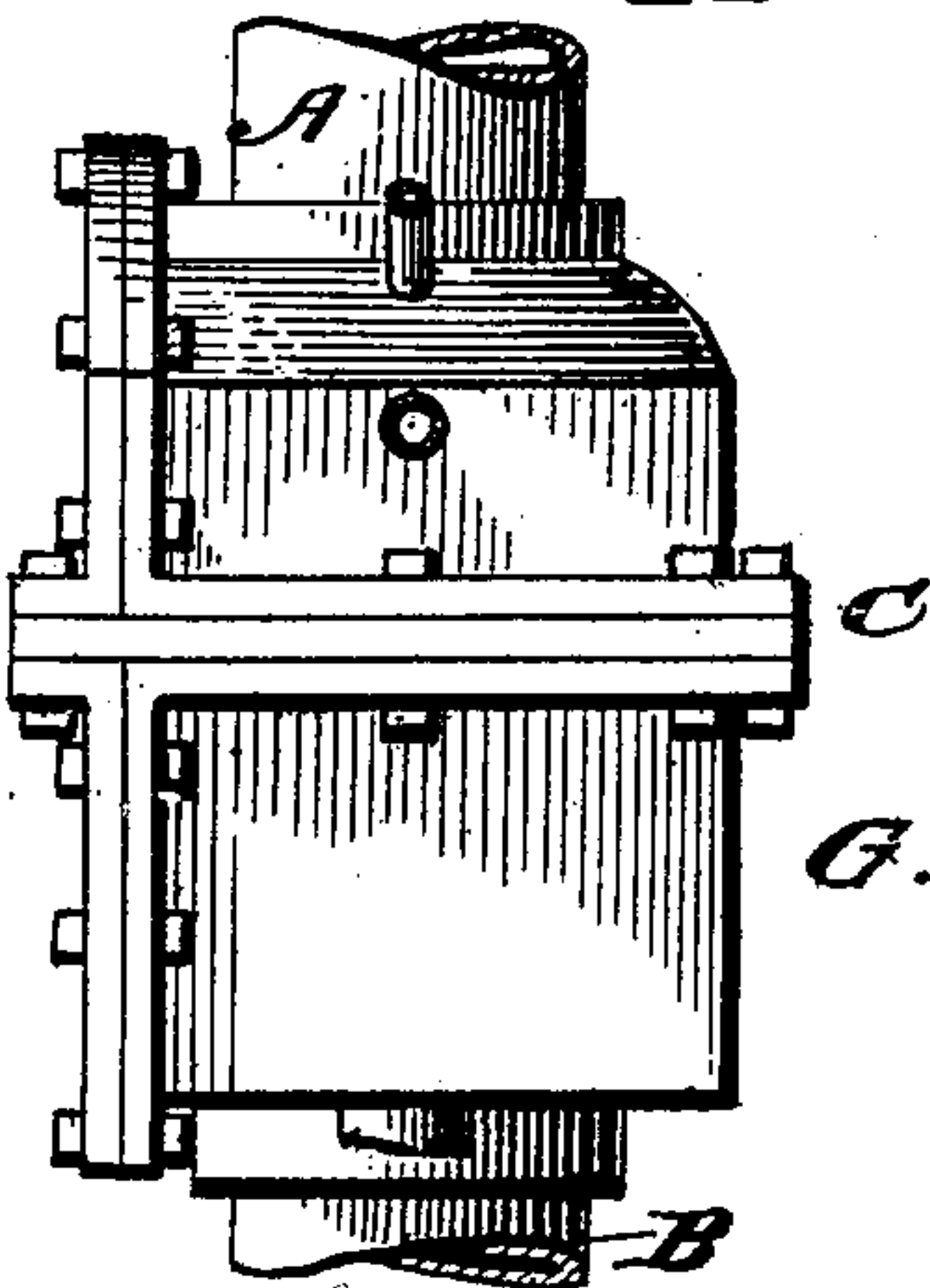


Fig. 5.



WITNESSES:

*M. S. Rhoads*  
*Amos W. Hart*

INVENTOR

*G. W. Thompson*  
BY *Munn & Co.*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

GEORGE WILSON THOMPSON, OF NASHVILLE, TENNESSEE.

## AUTOMATIC FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 677,716, dated July 2, 1901.

Application filed July 27, 1900. Serial No. 25,052. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE WILSON THOMPSON, residing at Nashville, in the county of Davidson and State of Tennessee, have invented a new and Improved Automatic Fire-Extinguisher, of which the following is a specification.

My invention is an improvement in stationary fire extinguishers and alarms in which air and water pipes are distributed throughout a building and provided with sprinklers that may be opened manually or automatically when subjected to a comparatively low degree of heat.

The invention relates more particularly to the mechanism for automatically operating the valves that control admission of water to such pipes, the latter being normally filled with air under a predetermined degree of pressure, which being lowered by opening one or more sprinklers the aforesaid mechanism opens the water-supply valve and allows water to flow into and fill the air-pipes and discharge from such sprinklers as were previously opened.

It is the object of my invention to provide a simple but sensitive and perfectly-reliable valve-controlling mechanism that can be adjusted to operate under any fixed water-pressure, so that the invention is adapted for structures of any height. The mechanism may be set to operate—i. e., to turn on water—at any determined variation between the air and water pressure in the respective pipes, and the water may thus be caused to discharge at the location of the fire.

The details of construction, arrangement, combination, and operation of parts are as hereinafter described.

In the drawings, Figure 1 is a front or side view of the preferred form of my apparatus, excluding the alarm attachment. Fig. 2 is a horizontal section on line 2 2 of Fig. 3. Fig. 3 is a vertical section of the air and water valve mechanism. Fig. 4 is a horizontal section on line 4 4 of Fig. 3. Fig. 5 is a side view of the valve-case at right angles to that shown in Fig. 1.

As shown in Fig. 1, the air-pipe A and water-pipe B are connected by a box or casing C, in which trip-valve mechanism is located, as shown in Figs. 2, 3, and 4. Stop-cocks *b*

and *b'* are applied, respectively, to the pipes A and B above and below said box or casing C.

The pipe A forms in practice a part of a system extending throughout a building and is provided at different points, more especially in rooms and halls, with branches *a*, having sprinklers or other suitable thermostatic attachments adapted to open or release automatically when the heat rises to a predetermined degree. I may in some cases also adapt them to be opened manually. The said pipe A is normally charged with air under pressure. The water-pipe B extends, in practice, to a suitable source of supply, so that there is a certain degree of pressure maintained therein.

The box or casing C is made in two rectangular sections *c* and *c'*. These sections open into each other and into the pipes A and B. Section *c* contains the air-valve D, and the lower section *c'* contains the water-valve E. The valve D seats upon a gasket and covers an opening in a partition forming the bottom of section *c*, and valve E is similarly seated at the bottom of section *c'* and covers the top of pipe B.

The air-valve D has a central vertical screw-stem F, and the water-valve E has a similar screw-stem F'. These screw-stems are in vertical alinement, and their conical heads bear upon horizontal levers G and G', which are arranged one under the other and fulcrumed on each other and also on opposite projections *g g'* of the casing C. By rotating and thus adjusting the screw-stems F and F' they may be made to bear upon the levers G G', as required. By using levers G' of different lengths the point of contact or fulcrum of the lever G on the upper lever G' will be changed with the like alteration of the leverage, so that the amount of air-pressure required to resist the water-pressure will be varied correspondingly.

There are four webs *c<sup>2</sup>* in the upper part of casing-section *c*, which are set around the valve D and project inward over the same, so that they prevent the valve closing the entrance to the air-pipe as the valve rises. They also serve as points of attachment and support of four pendent hooks H, whose free ends rest against the sides of the valve when closed. When the valve D rises, the hooks H swing under it by gravity, and thus pre-



vent it reclosing. Thus the apparatus operates automatically and with certainty and high efficiency. The lower valve E is similarly caught and held suspended by hooks J'.

- 5 If now a sprinkler-head in an apartment be opened, either manually or by effect of abnormal heat, the air-pressure in pipe A and its connections will be instantly lowered, so that when reduced to less than ten pounds the  
10 water becomes the stronger force, pushing up the valves *e* and D and fulcrum-levers G and G'. The entire operation is immediate without chattering or possibility of reclosing the valves save manually. Thus water is admitted from pipe B into pipe system A in full  
15 force and volume, driving out the contained air and escaping at such sprinkler head or heads as may be open.

Usually in other air and water pressure  
20 systems of this class the flow is slow at first, the releasing-valve often chattering and tending to reclose. In my system there is no possibility of reclosing except manually, no chattering, and a full volume of water is admitted  
25 instantly.

To prepare the apparatus for operation, the air-valve D is set in place, after which air-pressure is applied by opening cock *b*. Then the water-valve E and the levers G and G'  
30 are set in place, the screws F and F' being turned up to press the fulcrum ends of said levers against their respective points of contact, after which water is admitted by opening the cock *b'*. The valve and lever adjustment are  
35 duly inspected and fully tested before the face-plates of the casing-sections are bolted in place.

What I claim is—

1. In a stationary fire-extinguisher, the  
40 combination with air and water pipes, and a connecting casing or box, of two valves, arranged therein, for normally closing the respective pipes, and movable vertically, and

levers fulcrumed and interposed between the valves, and having adjustable bearings  
45 for contact with said levers, substantially as shown and described.

2. In a stationary fire-extinguisher, the combination with air and water pipes and a connecting casing or box, of valves ar-  
50 ranged in the latter and normally closing the respective pipes, interposed levers and screw-stems working in said valves and bearing on the respective levers, as shown and described.

3. In a stationary fire-extinguisher, the combination, with the air and water pipes and connecting-casing having interior pro-  
55 jections in its upper portion which serve as valve-stops, of a valve arranged in the latter, 60 and gravity-hooks hung over the valve so that their free beveled ends are in the path of the vertical movement of said valve for automatically engaging it as it rises, and holding the same suspended in contact with  
65 the said projections or stops, as shown and described.

4. In a stationary fire-extinguisher, the combination, with air and water pipes and the connecting-casing having webs project-  
70 ing in the upper portion of its chamber, of a valve arranged in the casing, hooks pivoted to and pendent from said webs and having beveled ends lying in the path of the valve and thus adapted to ride over the valve as it  
75 rises and engage the same to hold it suspended against the webs, which thereby serve as stops, as shown and described.

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

GEORGE WILSON THOMPSON.

Witnesses:

M. F. ROONEY,  
T. J. MOONEY.