(No Model.)

J. W. BROOK.

AUTOMATIC TEMPERATURE REGULATOR.

No. 387,208. Patented Aug. 7, 1888.

Fig. 1.

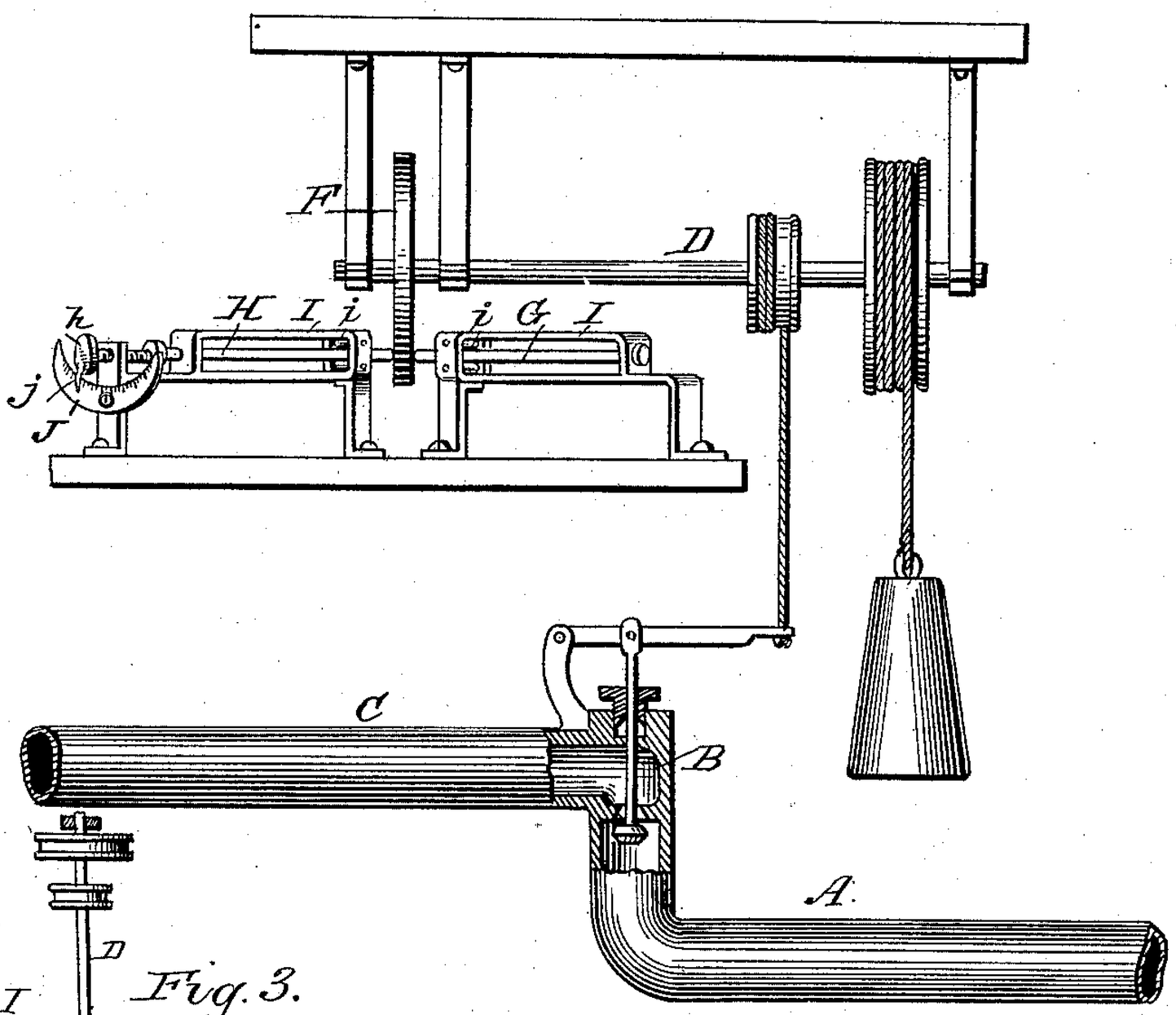


Fig. 3.

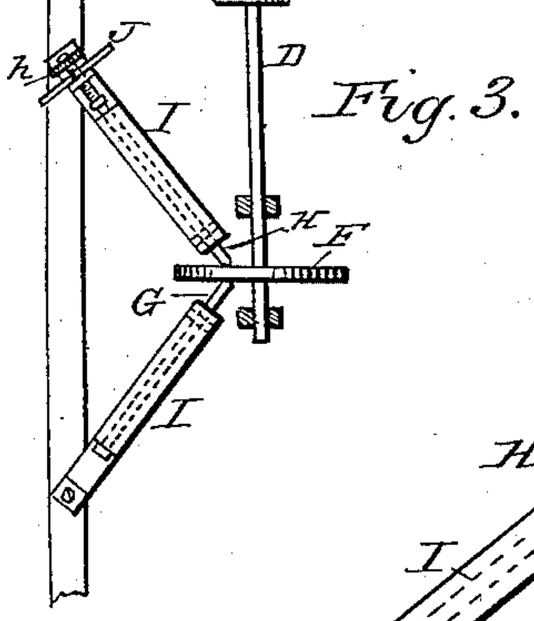


Fig. 2.

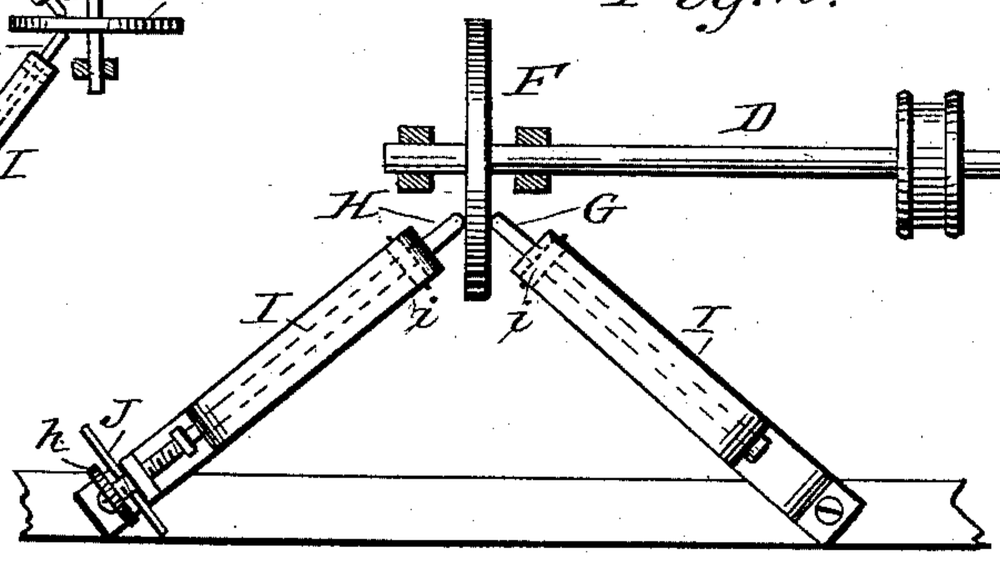
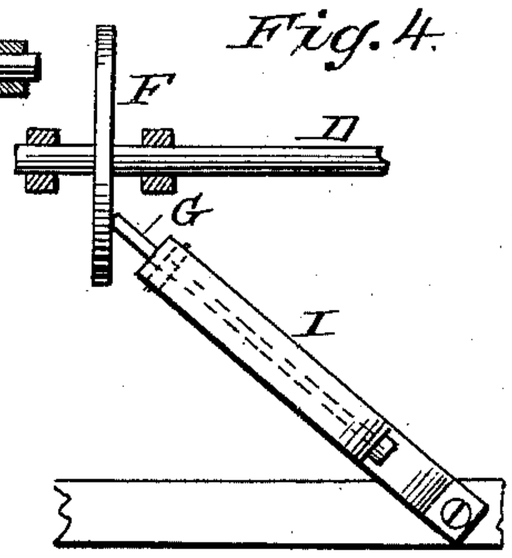


Fig. 4.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC TEMPERATURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 387,208, dated August 7, 1888.

Application filed November 26, 1886. Serial No. 220,090. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. BROOK, of Lynchburg, in the county of Campbell and State of Virginia, have invented a new and useful Improvement in Automatic Devices for Shutting Water-Cocks, Windows, &c., of which the following is a specification.

My invention is an improved device for automatically stopping the flow of water, to open or close a window or other device governing a ventilating-opening, or for operating any other device desired under the influence of variations of temperature; and the invention consists in certain features of construction and novel combinations of parts, as will be described.

In the drawings, Figure 1 is a side elevation of my improvement, parts being shown in section; and Fig. 2 is a detail plan view illustrative of the detent mechanism. Fig. 3 shows, in a somewhat diagrammatic view, a different arrangement of the shaft from that illustrated in the other figures; and Fig. 4 shows the apparatus as provided with a single rod.

The shaft D, water-pipes A C, valve B, and valve-operating connections with the shaft are covered in a separate application for patent filed of even date herewith, and I do not claim such devices in this application. I would further say that such devices may in the practice of the invention herein described be varied in the manner described in the other application aforesaid.

To the shaft I secure a friction plate or disk, F, by holding which plate the shaft will be locked from turning. To this end—that is, the holding of the friction-plate—I provide the rods G and H, bearing at their adjacent ends on opposite sides of the friction-plate. Normally these rods bear so tightly against the plate as to prevent its turning under its rotary tendency; but when under a low temperature the rods contract, their adjacent points are drawn away from the friction-plate and the latter is free to turn, such operation in the construction shown effecting a closure of the valve and a shutting off of the water or the desired movement of the other device it may be desired to operate.

The rods are usually supported as shown, one, G, being fixed in position, and the other, H, being adjustable by means of a set-screw, *h*, so it may be set toward and from the friction-plate to cause the said plate to be properly clamped between the rods. It will be seen that the rod G operates as a bearing and might in the broad principles of the invention be substituted by a fixed bearing; but it is preferred to use the rod as shown, for the reason that thereby the contraction of said rod under the influence of cold co-operates with that of the adjustable rod H.

In the construction shown it will be seen that the detent-rods G H are arranged at such angles to the friction-plate that they operate as friction-pawls, permitting the rotation of the friction-plate in that direction in which it is turned in the revolution of the shaft necessary to set same to secure the valve, window, or other device in its normal position, but which rods will normally bind against the plate and prevent its rotation in the reverse direction. However, it will be seen that under the influence of cold the rods G and H, or, when but one rod is used, as shown in Fig. 4, the rod H will contract and draw away from the friction-plate, and the latter and its shaft will be permitted to rotate under the influence of its driving-force. While it is preferred to provide means for adjusting one of the rods G H, manifestly they both may be fixed at their outer ends. These rods G and H may be of metal, or, if desired, of other suitable material. To secure them properly in position, I prefer to provide guides I, in which the rods G and H move longitudinally, and said guides are shown as provided with anti-friction bearings *i* for the rods, so the latter may freely contract and expand under variations in temperature.

In operation it will be seen the valve or other device will be held open in ordinary weather, but on a considerable fall in temperature will be closed by means of its connection with the shaft when the friction-plate is released by the contraction of the rod. Manifestly when the plate is of sufficient rigidity a single rod may be employed without a bearing on the opposite side of the plate, and the arrangement of a single rod to bear on the edge instead of against the side of the plate would involve no departure from the broad principles of my invention. By means of the set-screw *h* the rod H may be set to release the plate at any desired temperature, and it is preferred to provide the

set-screw with a pointer, *j*, registering along a graduated scale, J, in order that it may be determined with accuracy at what degree of heat the friction-plate will be released.

Manifestly the shaft may be arranged vertically with the friction-plate or disk horizontal, and the detent-rods arranged one above and the other below the said plate, as shown in Fig. 3.

Having thus described my invention, what I claim as new is—

1. In an apparatus substantially as described, the combination, with a friction-plate, of a longitudinally-contractible rod bearing at one end thereagainst and adapted to be contracted under the influence of cold, whereby said plate may be normally held by the said rod, but will be released on a considerable fall in temperature, substantially as set forth.

2. In an apparatus substantially as described, the combination, with a friction-plate, of a longitudinally-contractible detent-rod arranged to bear at one end against said plate, and a screw for adjusting said rod, substantially as set forth.

3. A friction-plate movably supported combined with a longitudinally-contractible detent-rod arranged to bear at one end against said plate and located at an angle to said plate, substantially as described, whereby to operate as a friction-pawl, as and for the purposes specified.

4. The combination, with a friction-plate, of rods arranged on opposite sides thereof and having their inner or adjacent ends set to bear against the friction-plate, substantially as set forth.

5. The combination of the friction-plate, the detent-rods, and the guide-frames I, having anti-friction bearings for said detent-rods, substantially as set forth.

6. The combination of the friction-plate, the rod bearing thereagainst, the set-screw, and a pointer, and scale whereby to determine at what degree the plate will be released, substantially as set forth.

7. In an automatic apparatus substantially as described, the combination, with a friction-plate having a flat side, of a longitudinally-contractible rod bearing at one end tightly against the flat side of said plate, all substantially as and for the purposes specified.

8. In an automatic apparatus substantially as described, the combination of a shaft, connections between said shaft and the device to be operated, a friction-plate fixed to said shaft, and a longitudinally-contractible rod bearing at one end tightly against said plate and adapted to be contracted under the influence of cold, whereby said plate and shaft may be normally held by the rod, but will be released on a considerable fall in temperature, substantially as set forth.

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