No. 775,655. PATENTED NOV. 22, 1904.

L. M. HOOPER.

HEATER AND MIXING FAUCET.

APPLICATION FILED JAN. 15, 1903.

NO MODEL.

Fig. 1

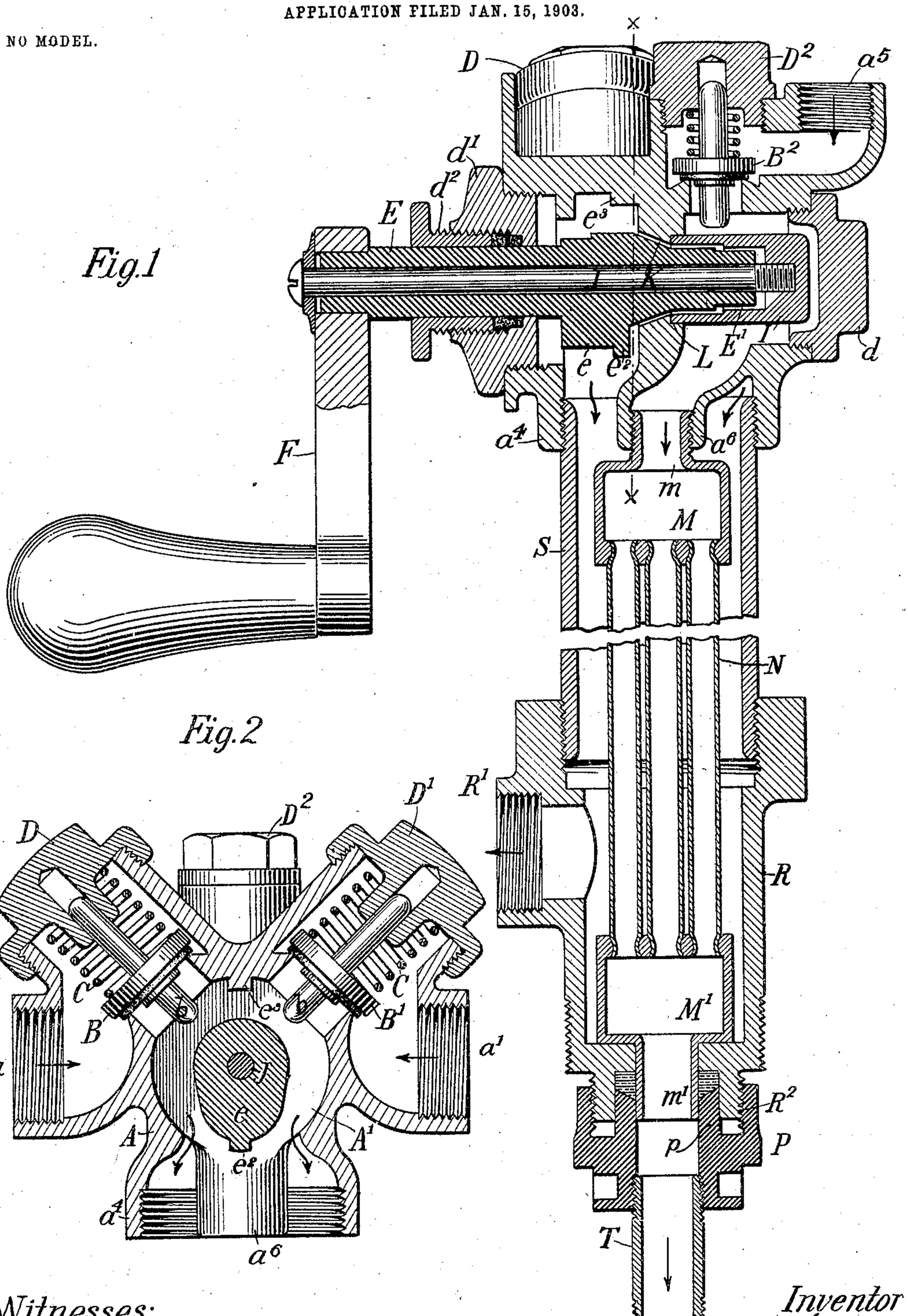

Fig. 2

Witnesses:
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No. 775,655. Patented November 22, 1904.

UNITED STATES PATENT OFFICE.

LOUIS M. HOOPER, OF RUTHERFORD, NEW JERSEY, ASSIGNOR TO THE J. L. MOTT IRON WORKS, A CORPORATION OF NEW YORK.

HEATER AND MIXING-FAUCET.

SPECIFICATION forming part of Letters Patent No. 775,655, dated November 22, 1904.

Application filed January 15, 1903. Serial No. 139,149. (No model.)

To all whom it may concern:

Be it known that I, LOUIS M. HOOPER, a citizen of the United States, and a resident of Rutherford, in the county of Bergen and State of New Jersey, have invented a new and Improved Heater and Mixing-Faucet, of which the following is a description.

In the accompanying drawings I have shown a heater and mixing-faucet involving my invention in the form which is at present preferred by me; but it will be understood that various modifications and changes may be made in the construction without departing from the spirit of my invention and without exceeding the scope of my claims.

The following is a description of the structure illustrated in the drawings.

Figure 1 is a vertical section through my improved heater and mixing-faucet; and Fig. 2 is a vertical section, on the line $x\ x$ of Fig. 1, of a portion of the same at right angles to the section of Fig. 1.

Referring to Fig. 2, $a\ a'$ are inlet-passages within the casing A for the conveyance of two different fluids—such, for example, as fresh and salt water. These passages are controlled by valves B and B′, seating with the pressure of the fluid, provided with springs C, pressing said valves against their seats, and with stems b, reciprocating in slots cut in the covers D and D′, which act as guides for said valves. This is a common form of valve and valve connection long known in the art and need not be further described. These valves control the flow of the fluids to a central passage A′, from which they escape through the nozzle a^4. Within the central chamber A′ is a cam e, attached to a shaft E, which engages with one or the other of the stems b of the valves B and B′, so as to successively open said valves by means of the handle F and permit one or the other of the fluids to escape.

Referring to Fig. 1, a^5 is a steam connection, and B^2 is a valve reciprocating in a slot cut in the cover D^2 and guided thereby to control the flow of steam therethrough. This valve is operated by a cam I, secured to the inner end of the shaft E. The end E′ of the shaft E is made of non-circular section, (as square, hexagonal, or octagonal,) and the cap I, a part of which constitutes the cam or eccentric by which the valve B^2 is opened, is interiorly shaped to fit over said non-circular section. The cap is secured in place by a bolt J, which lies within the central bore of the shaft E. The open end of the cap bears upon a shoulder formed on the casing at L. Where the shaft passes through the casing at this point the shaft and casing are conical, so as to form a ground or tight-fitting joint. By tightening the bolt J these surfaces are brought into close contact, so that there can be no leakage of steam from one chamber to the other. Where the valve stem or shaft E passes through the outer wall of the casing, a stuffing-box is formed by the packing-ring d^2 and the plug d'. d is a cap screwed to the casing at the opposite end of the shaft. The steam after passing the valve B^2 is discharged through the nozzle a^6, which is within the nozzle or pipe connection a^4. This nozzle a^6 is threaded to receive one of the headers used to receive the ends of the heating-pipes N. The upper header M has a thimble m at one end which screws on or is otherwise secured to the nozzle a^6. Its other head has a series of holes adapted to receive the ends of a series of heating-pipes N, and a header M′ is provided for the reception of the other ends of said pipes and is constructed like the header M, except that the thimble m' is exteriorly smooth and true, so as to form one member of an expansible or slip joint.

A section S of pipe of sufficient size to surround the heating-pipes N and the header M is secured at the discharge-opening a^4. This pipe S is secured to a header or hollow casting R, which has a side water-discharge opening R′. At its end it has a hole adapted to snugly fit over the thimble m' of the heater-header M′. It is also provided exteriorly with a threaded flange R^2, adapted to receive the threaded cap P, by which suitable packing material may be compressed about the thimble m'. I have shown the cap P as having an integral flange p, which enters the annular space between the thimble m' and the threaded

flange R^2. This flange *p* may, however, be separate from the cap P.

The pipe T, by which the steam or the water condensed in the heater may be conveyed away, is secured to the cap P, and turning this pipe has no effect upon the heating-pipes N.

The construction above described would be used for such purposes as where fresh and salt water were to be supplied and it was desired to be able to heat the supply in either case. The time of application of the steam would depend upon the shape of the cam which operated the steam-valve by suitably shaping the cam *e* in ways now well known to the art. The period of opening of the two valves B and B′ may be made to overlap so that a mixture of fresh and salt water may be, if desired, drawn.

e^2 is a projection carried by the cam *e*, and e^3 is a stop with which said projection engages. Said stop limits the throw of the cam and prevents the operation of the other valve within the chamber A′ until the cam is first brought back to its initial position.

Having thus described a structure embodying my invention in the form at present preferred by me, what I claim as new, and desire to secure by Letters Patent, is—

1. In a heater the combination with a valve-casing having a supply connection and a valve controlling said connection, of a valve-operating shaft extending through the casing, said shaft and casing having contacting surfaces which are surfaces of revolution, a valve-operating cap or cam having non-rotative engagement with the end of the shaft, and also having a rotating thrust-bearing upon the casing, and means for drawing and holding said parts together.

2. The combination with a valve-casing having therein two receiving-chambers, each having a supply connection and a valve controlling said connection, of a valve-operating shaft extending through the wall between said chambers, said shaft and casing having contacting surfaces which are surfaces of revolution, a valve-operating cap or cam within one of said chambers having non-rotative engagement with the end of the shaft, and also having a rotative thrust-bearing upon the casing, and means for drawing and holding said parts together.

3. The combination with a valve-casing having therein two receiving-chambers each having a supply connection and a valve controlling said connection, of a valve-operating shaft passing through the wall between said chambers, said shaft and wall having contact-surfaces which are surfaces of revolution, an operating cap or cam adapted to operate one valve and having non-rotative engagement with the end of said shaft and bearing against one side of the wall, and a locking-bolt passing through the shaft and screwing into said cap or cam.

4. A valve-casing with two separate chambers separated by a partition, a supply-inlet to each of said chambers controlled by a valve, a valve-operating shaft extending through said partition and an eccentric on each side of said partition carried by said shaft for operating said valves.

5. A valve-casing with two separate chambers separated by a partition, a supply-inlet to each of said chambers controlled by a valve, a valve-operating shaft extending through said partition and an eccentric on each side of said partition carried by said shaft for operating said valves and means for preventing said shaft turning automatically.

6. A valve-casing with two separate chambers separated by a partition, a supply-inlet to each chamber controlled by a valve, a valve-operating shaft with contacting surfaces on each side of the partition, such surfaces being surfaces of revolution with means for drawing the two parts of the shaft together against said partition so as to make a tight joint and secure sufficient friction to prevent the shaft turning automatically.

7. A valve-casing with two separate chambers separated by a partition, two supply-inlets to one of said chambers and one supply-inlet to the other, said supply-inlets being controlled by suitable valves, a valve-operating shaft with contacting surfaces, on each side of the partition, such surfaces being surfaces of revolution with means for drawing the two parts of the shaft together against said partition so as to make a tight joint and secure sufficient friction to prevent the shaft turning automatically.

8. A valve-casing with two separate chambers separated by a partition, a supply-inlet to each chamber controlled by a valve, a valve-operating shaft, a stop limiting the revolution of said shaft, said shaft being provided with contacting surfaces on each side of the partition, such surfaces being surfaces of revolution with means for drawing the two parts of the shaft together against said partition so as to make a tight joint and secure sufficient friction to prevent the shaft turning automatically.

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

L. M. HOOPER.

Witnesses:
W. H. FRANKLIN,
M. F. KETCHEM.