No. 771,473. PATENTED OCT. 4, 1904.

L. M. HOOPER.

WATER MIXING AND HEATING FAUCET.

APPLICATION FILED JAN. 29, 1902.

NO MODEL.

Fig. 1.

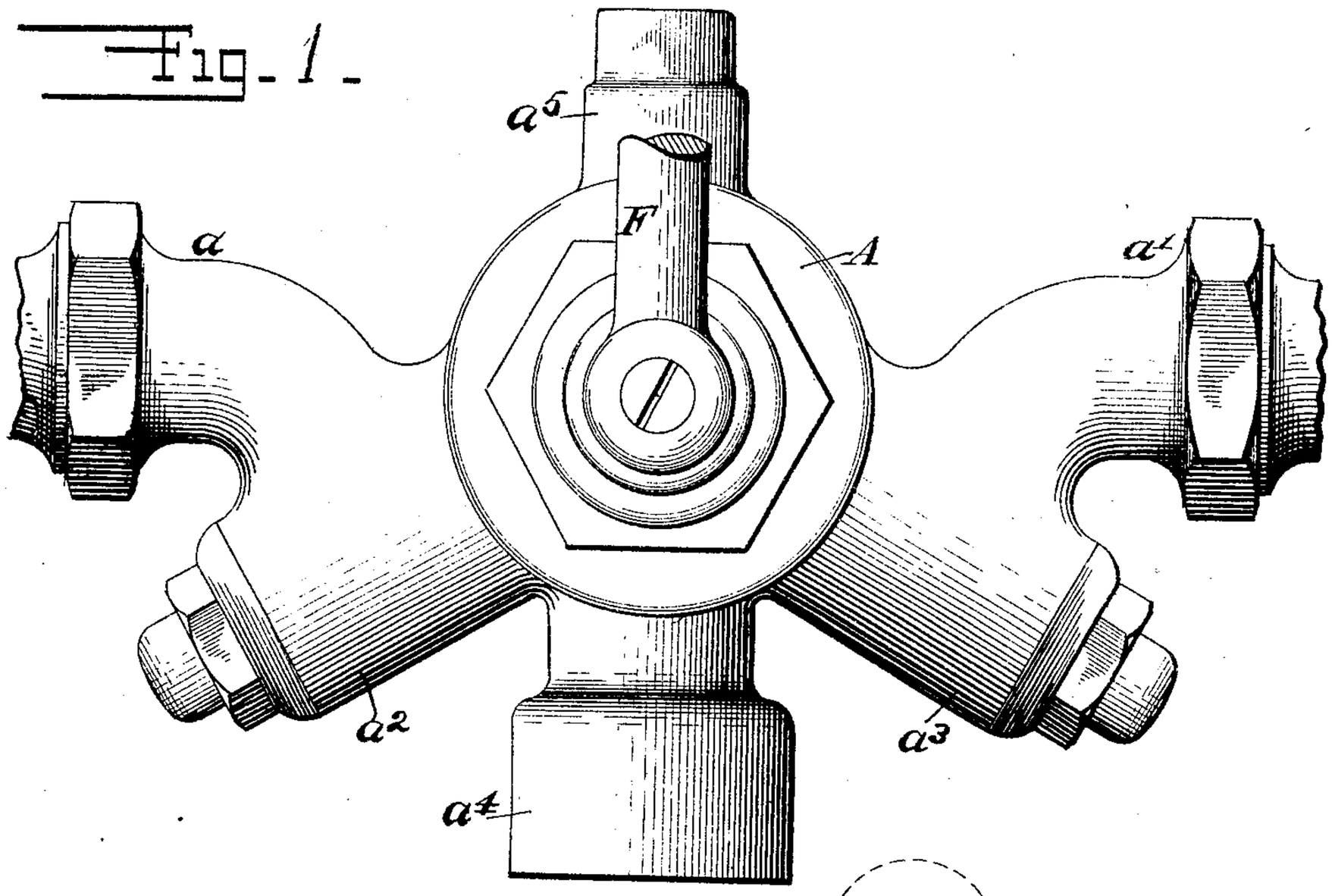
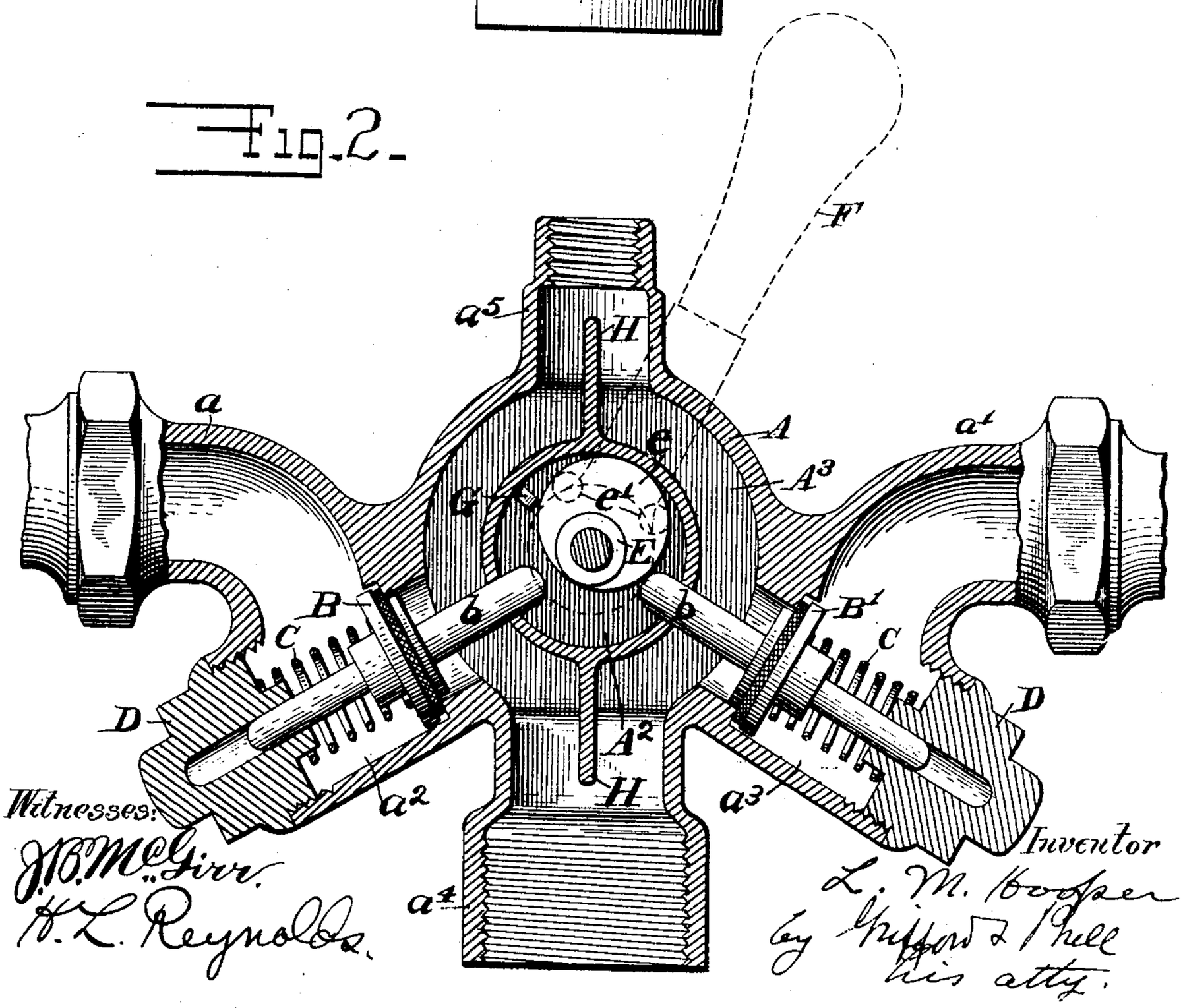


Fig. 2.



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UNITED STATES PATENT OFFICE.

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WATER MIXING AND HEATING FAUCET.

SPECIFICATION forming part of Letters Patent No. 771,473, dated October 4, 1904.

Application filed January 29, 1902. Serial No. 91,703. (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 Water-Mixing Faucet, of which the following is a full, clear, and exact description.

My invention relates to an improvement in faucets of that kind in which by means of a single lever or handle water or other fluids—for example, hot and cold water—may be drawn either separately or mixed together.

In the accompanying specifications I will describe and in the accompanying drawings I have illustrated one form of my invention and that the form at present preferred by me.

Referring to the drawings, Figure 1 is an elevation, and Fig. 2 is a sectional view, of a faucet involving my present invention.

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

The casing A is provided with inlet-passages *a* and *a'* for the separate supply connections usually for hot and cold water. The casing has a central annular chamber A^3 for the reception of the flow from both passages *a* and *a'*.

A^2 is an inner chamber within which is the shaft E and cam *e*, by which the two valves B and B' are opened. The two valves B and B' control, respectively, the inlet-passages *a* and *a'* and seat with the pressure or toward the chamber A^3. They are also pressed toward their seats by springs C, surrounding their stems *b*. The stems *b* are in the construction shown utilized as valve-guiding members in conjunction with suitable holes formed in the casing or in members secured to the casing, and also in conjunction with holes formed in the circular partition or diaphragm H'. The outer end of this stem is shown as supported and guided within a hole in a plug or cap D, which when removed permits removal of the valve. The exact form of valve used is, however, immaterial.

E is a shaft which passes through the central chamber A^2 and has thereon a cam or eccentric *e*, which when the shaft is turned is adapted to successively engage the inward projections of the valve-stems *b b* or any other convenient member forming a part of or secured to the valve, thus in succession forcing each valve off its seat to permit the fluid controlled thereby to pass. The two valves are in substantially the same radial plane, but separated by a considerable angle, so that one of the valves will be widely or completely open before the other valve commences to open. In further rotation of the shaft and eccentric a second valve opens and the first valve closes, the closing movement of the first valve overlapping the opening movement of the second valve, so that for a considerable time both valves are open and the delivery is a mixture of both fluids. The first valve closes before the end of the swing of the lever, so that at the end of the movement liquid is supplied only through the second valve. There is thus a period at one end of the swing of the handle when liquid is supplied through one valve only, a period at the other end of the swing when liquid is supplied through the other valve only, and an intermediate period when liquid is supplied through both valves, the proportions flowing through each depending upon the position of the handle and the relative openings of the two valves. It is thus possible to draw all cold water, all hot water, or a mixture of hot and cold water. I prefer to make the connections so that the cold water supplied through the valve B' is turned on first and so that at the opposite end of the swing of the lever the hot-water valve B will not be completely closed, thus necessitating the swinging of the handle backward to its initial position to entirely stop the flow of water. The effect of this is to reduce the danger of accidental scalding.

e' represents pins carried by the eccentric *e*, and G is a stop attached to the casing with which these pins engage, limiting the swing of the eccentric and requiring it when water is not flowing always to be in substantially the same initial position, so that on turning the handle the cold-water supply will necessarily open first.

I have shown two discharge-pipes a^4 and a^5, so that the water may be discharged in either of two directions—as, for instance, directly

into a bath-tub or to a shower-bath. When a plurality of discharge-passages are employed, each should be of course controlled by a separate valve of any convenient type.

H H are diaphragms or partitions attached to the casing and separating the supply from the valves B and B′ until they are directed into substantially parallel courses, whereby the interference between streams issuing at different pressures or velocities is diminished.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a mixing-valve the combination of a receiving-chamber, a plurality of inlet-passages and valves controlling the flow therethrough, said passages and the stems of said valves being radially arranged with reference to said receiving-chamber, a central chamber within said receiving-chamber, a cam within said central chamber by which said valves are controlled and a partition or diaphragm separating said fluids until they are traveling in parallel lines.

2. A mixing-valve comprising a casing containing a central chamber, an annular chamber surrounding said central chamber, a plurality of supply connections communicating with said annular chamber and a partition or diaphragm separating the fluids until they are traveling in parallel lines.

3. A mixing-valve comprising a casing containing a central chamber and an annular chamber surrounding said central chamber, two supply connections communicating with the annular chamber, a valve controlling each supply connection and having a stem extending within the inner chamber, and a cam within the inner chamber adapted to successively engage said valve-stems to open the valves.

4. A mixing-valve comprising a casing containing two supply-openings, a common discharge-opening, a central chamber and an annular chamber surrounding the central chamber and communicating with the supply and discharge openings, a valve controlling each supply-opening, a cam within the central chamber adapted when turned to successively open each valve, and a partition or diaphragm separating the different supplies until they reach the discharge-opening.

5. A mixing-valve comprising a casing containing two supply-openings, a common discharge-opening, a central chamber and an annular chamber surrounding the central chamber and communicating with the supply and discharge openings, a valve controlling each supply-opening, a member extending from each valve to within the central chamber and a cam within said central chamber adapted, as turned, to successively engage said members to open their respective valves.

6. A mixing-valve comprising a casing containing two supply-openings, a common discharge-opening, a central chamber and an annular chamber surrounding the central chamber and communicating with the supply and discharge openings, a valve controlling each supply-opening, a member extending from each valve to within the central chamber, a cam within said central chamber, adapted, as turned, to successively engage said members to open their respective valves, and a partition separating the two supplies on their way to the discharge-opening.

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