No. 623,909. Patented Apr. 25, 1899.

F. KAEFERLE.

APPARATUS FOR MIXING COLD AND HOT WATER.

(Application filed July 23, 1898.)

(No Model.)

Fig. 1.

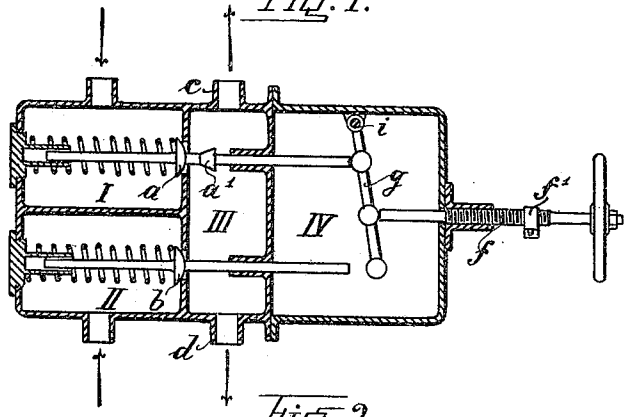


Fig. 2.

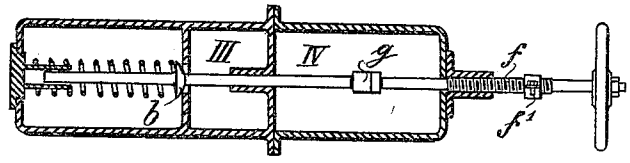
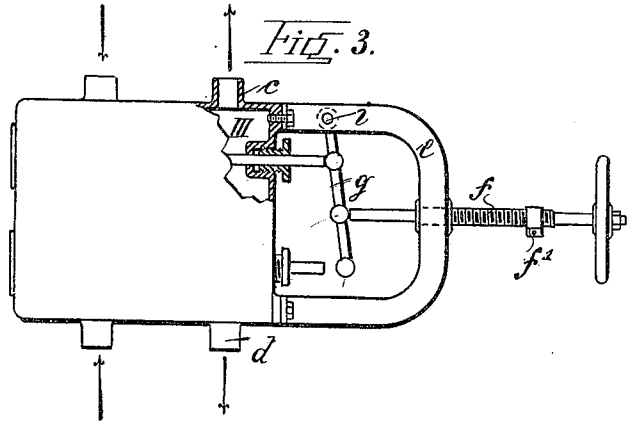


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRITZ KAEFERLE, OF HANOVER, GERMANY.

APPARATUS FOR MIXING COLD AND HOT WATER.

SPECIFICATION forming part of Letters Patent No. 623,909, dated April 25, 1899.

Application filed July 23, 1898. Serial No. 686,653. (No model.)

To all whom it may concern:

Be it known that I, FRITZ KAEFERLE, a subject of the Emperor of Germany, and a resident of Hanover, Empire of Germany, have invented a certain new and useful Improved Apparatus for Mixing Cold Water with Hot Water or Steam, of which the following is a full, clear, and exact description.

The present invention consists of an apparatus for mixing hot and cold water or cold water and steam and allowing the same to flow off to the point of utilization without there being any danger of scalding the persons using the apparatus.

In order to render the present specification more easily intelligible, reference is had to the accompanying drawings, in which similar letters of reference denote similar parts throughout the several views.

Figure 1 is a sectional plan of the device; Fig. 2, a vertical longitudinal section; and Fig. 3, a plan, partly in section, of a modified form of the apparatus.

The apparatus comprises the cold-water chamber I and the hot-water or steam chamber II, a mixing-chamber III, a spring-closed valve *a* from the cold-water to the mixing chamber, and a similar valve *b* from the hot-water or steam chamber to the mixing-chamber, said valves being both normally closed by their respective springs. The chambers I and II are each provided with hot and cold water inlets, the hot water passing to II and the cold to I. The spindles of the valves *a* and *b* extend through the wall, separating the mixing-chamber from the chamber IV, containing the valve-operating device, and the mixing-chamber is provided with an outlet *c* for the contents of the same to the shower-bath and an outlet *d* to the ordinary bath. In the chamber IV is pivotally suspended a lever *g* at *i*, said lever being adapted to swing in the path of movement of the spindles of valves *a* and *b* and being operated by means of a screw-spindle *f*, adapted to move in a threaded sleeve of the cover of the chamber IV.

The apparatus operates in the following manner: When the spindle *f* is screwed inwardly, it will push the swinging lever *g* first against the valve-spindle of the cold-water chamber and open this, thus allowing cold water to enter the mixing-chamber. On being further screwed in it will meet the spindle of the valve *b* of the hot-water or steam chamber and open this; but in any case the hot-water or steam chamber valve cannot be opened until a certain amount of cold water has passed into the mixing-chamber, so that there can be no danger of the person bathing being scalded on opening the valves. Simultaneously on closing the apparatus the hot-water or steam valve *b* will be closed first and then the valve *a* of the cold-water chamber, so that in closing the apparatus there is no possibility of scalding the occupant of the bath by hot water or steam issuing, owing to the fact that only cold water will be able to issue finally from the apparatus.

In Fig. 3 instead of a chamber IV a bow or standard *e* is provided. In order to prevent too hot a mixture from issuing from the apparatus, the spindle *f* is provided with a stop or collar *f'*, which stops the movement of the spindle inward as soon as the valves *a* and *b* have been opened far enough to allow a mixture of maximal temperature to be formed in III. If the hot water of the chamber II is not sufficiently hot to obtain or produce the required temperature, a device is employed for stopping the influx to the chamber III of the cold water after the spindle *f* has been screwed in farther. This device consists of a conical collar *a'*, attached to the spindle of the valve *a*, so that when the same is opened beyond a certain distance the collar or cone *a'* begins to close the cold-water orifice to the chamber III, the hot-water orifice being fully opened.

From the above description it will be seen that neither on opening nor on closing the valve *f* can the occupant of the bath be scalded by too hot water or steam issuing from the outlet.

I claim as my invention—

1. A mixing apparatus for cold water and hot water or steam, consisting of the combination of a cold-water chamber and a hot-water or steam chamber having each a spring-pressed valve normally closed, a mixing-chamber into which said valves open, the spindles of said valves extending through the said chamber into a fourth chamber and ending in one plane, a swinging lever suspended in said

fourth chamber and means for swinging said lever in the plane of movement of the two valve-spindles, so as to operate to open the cold-water valve first substantially as described.

2. The combination of a cold-water chamber I and a hot-water or steam chamber II, spring-pressed valve in each chamber normally closed, a mixing-chamber III into which said valves open, valve-spindles extending through said mixing-chambers and ending approximately in one and the same plane, a pivotally-suspended lever *g* to swing in a plane in which the said valve-spindle ends end and means for swinging the said lever so as to operate the cold-water-chamber valve first in the manner and for the purpose substantially as described.

3. The combination of a cold-water chamber I and a hot-water or steam chamber II each having valve *a* and *b* respectively, said valves being normally spring-closed, a mixing-chamber III communicating with the said chambers by means of said valves, valve-spindles to said valves passing through said mixing-chamber and out of the same, and having their ends ending in the same transverse plane, a pivotally-suspended lever to swing in the plane in which both the spindles lie and operate the same as specified, and a conical collar *b* on the spindle of the cold-water-chamber valve to enter and partially or wholly close the valve-opening of the said chamber when the valve has been forced open beyond a certain distance in the manner and for the purpose substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FRITZ KAEFERLE.

Witnesses:
KIRKE LATHROP,
LEONORE BASCH.