

No. 816,101.

PATENTED MAR. 27, 1906.

H. JUNKERS.  
APPARATUS FOR PRODUCING BOILING WATER.  
APPLICATION FILED APR. 3, 1902.

Fig. 1.

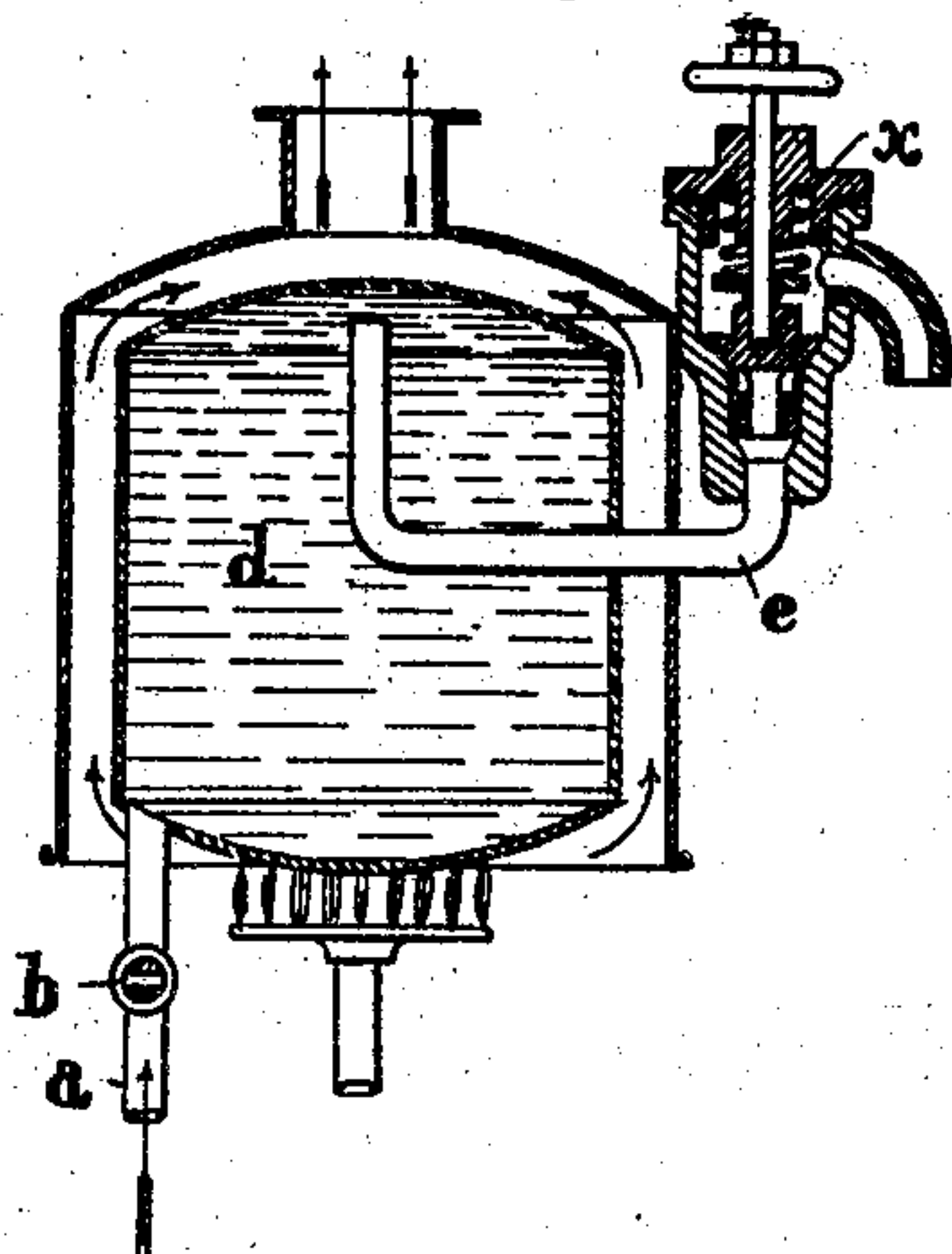
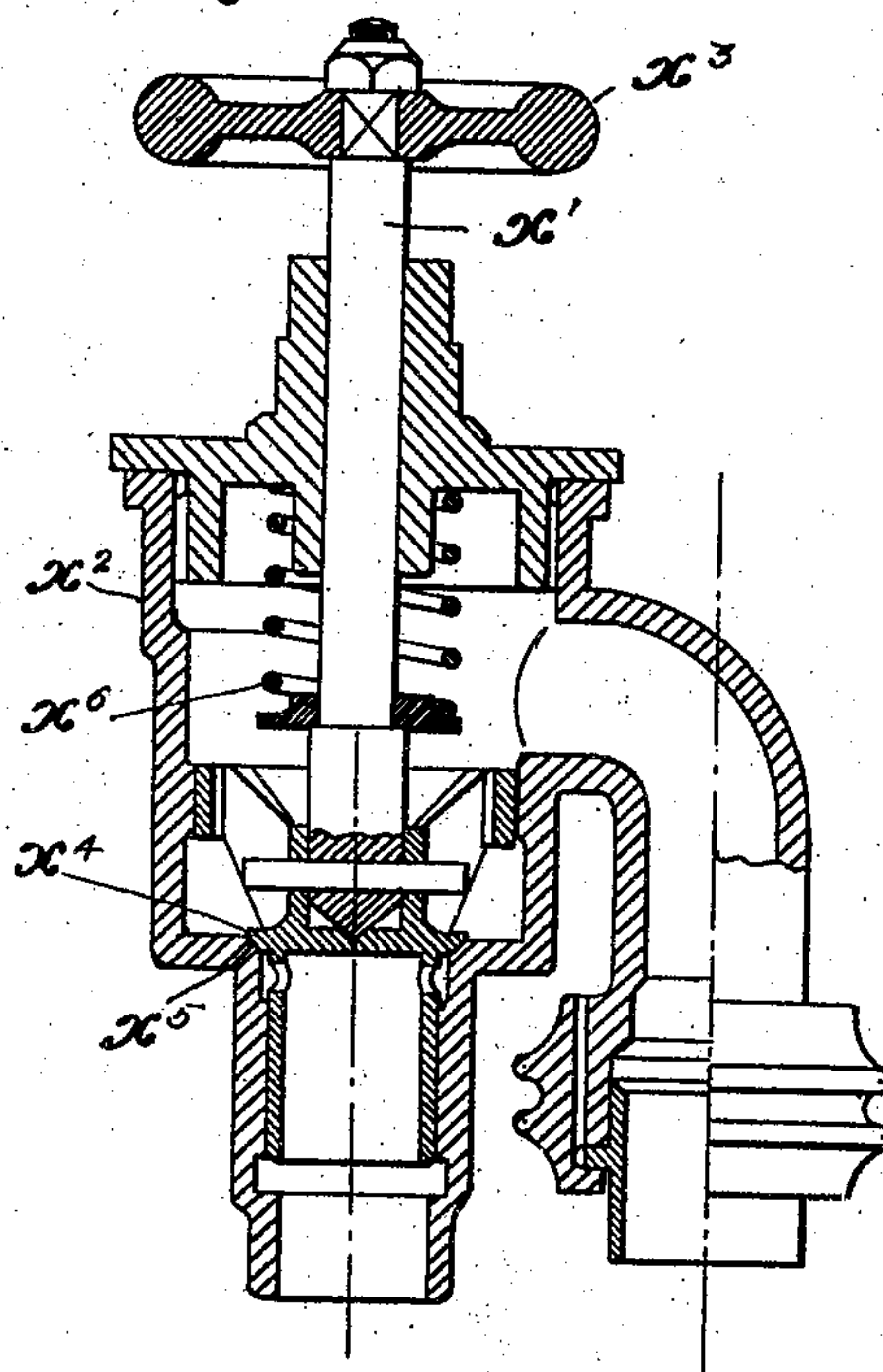


Fig. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

HUGO JUNKERS, OF AACHEN, GERMANY.

## APPARATUS FOR PRODUCING BOILING WATER.

No. 816,101.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed April 3, 1902. Serial No. 101,239.

*To all whom it may concern:*

Be it known that I, HUGO JUNKERS, a subject of the German Emperor, residing at Aachen, Germany, have invented certain new and useful Improved Apparatus for Producing Boiling Water, of which the following is a specification.

This invention relates to an improved apparatus for producing boiling water.

In the accompanying drawings, Figure 1 is a diagrammatic vertical central section showing one embodiment of my invention, and Fig. 2 is an enlarged vertical central section of an automatic spring-loaded valve such as is shown in Fig. 1.

In the delivery-pipe there is a loaded automatic valve which provides back pressure equivalent to the pressure of the superheated water set up by the heating and superheating of the said water and prevents, on the one hand, the vaporization of the superheated water and, on the other hand, by automatically opening prevents overstepping of this pressure. The possibility of overstepping this pressure occurs during the increase in volume of the water caused by heating. The loaded automatic delivery-valve allows this water of expansion to escape, and thus obviates the danger of the apparatus being burst thereby. It thus serves to some extent as a safety-valve and as a draw-off valve simultaneously, and since it always comes into operation both when water is drawn off and when the water of expansion escapes the danger of setting fast and jamming, which occurs in ordinary safety-valves, which only open under exceptional circumstances, is obviated. Boiling water is drawn off by opening a cock or valve arranged in the supply-pipe, since the higher pressure in the water-supply pipe then overcomes the resistance of the loaded automatic delivery-valve and cold water runs in at the bottom, while the hot water runs out at the top.

Figure 1 shows, by way of example, an apparatus heated by gas for carrying this method into practice.  $a$  is the water-supply pipe, provided with the water-valve  $b$ ;  $d$ , the vessel completely filled with water, from the top of which vessel when the valve  $b$  is opened the water flows out through the delivery-pipe  $e$ , at the same time overcoming the resistance in the loaded automatic valve  $x$ , which is mounted in the pipe  $e$ . A gas-burner is shown, by way of example, as the

heater, the eduction-pipe for the products of combustion being arranged around the vessel  $d$ . In this apparatus the spindle  $x'$  of the valve  $x$  is extended through the casing  $x^2$ , as shown in Fig. 2, and is provided at its outer end with a hand-wheel  $x^3$  or the like, so that during the work the disk  $x^4$  of the valve can be lifted from its seat  $x^5$ , against which it is normally held by the spring  $x^6$ , in order that impurities may be removed, and the disk can be ground on its seat, so as to insure the formation of a fluid-tight joint.

It will be observed that the reservoir  $d$  will contain a comparatively large body of water when the capacity of the inlet and outlet pipes is considered, and it is thus possible to maintain almost constantly a large supply of hot water, which can be drawn from whenever desired.

I am aware that it has heretofore been proposed to run water through a spiral passage for the purpose of heating it and to provide the inlet-pipe to said passage with a valve for controlling the flow of water therethrough and also to provide an open stand-pipe leading from the passage to permit the escape of steam generated in said passage. Such device, however, is not capable of heating and keeping heated a large body of water for use when required and is primarily designed only for the purpose of heating a current of water as it flows through the passage, said passage being of little, if any, more transverse area than the inlet or outlet pipe.

What I claim is—

An apparatus for producing boiling water consisting of a closed reservoir filled with water having a supply-pipe entering its lower end, a discharge-pipe leading from its upper end, a valve in the supply-pipe, a loaded automatic valve in the discharge-pipe, and means for heating the water, the arrangement being such that the automatic valve operates as a safety and delivery device and the inlet-valve operates to govern the flow to and to discharge the water from the reservoir through the delivery-pipe, substantially as described.

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

HUGO JUNKERS.

Witnesses:

JOHN B. ADAMS,  
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