No. 809,941. PATENTED JAN. 16, 1906.

G. GLÖCKLER.

WATER CONDUCTOR.

APPLICATION FILED MAR. 3, 1905.

Fig. 1

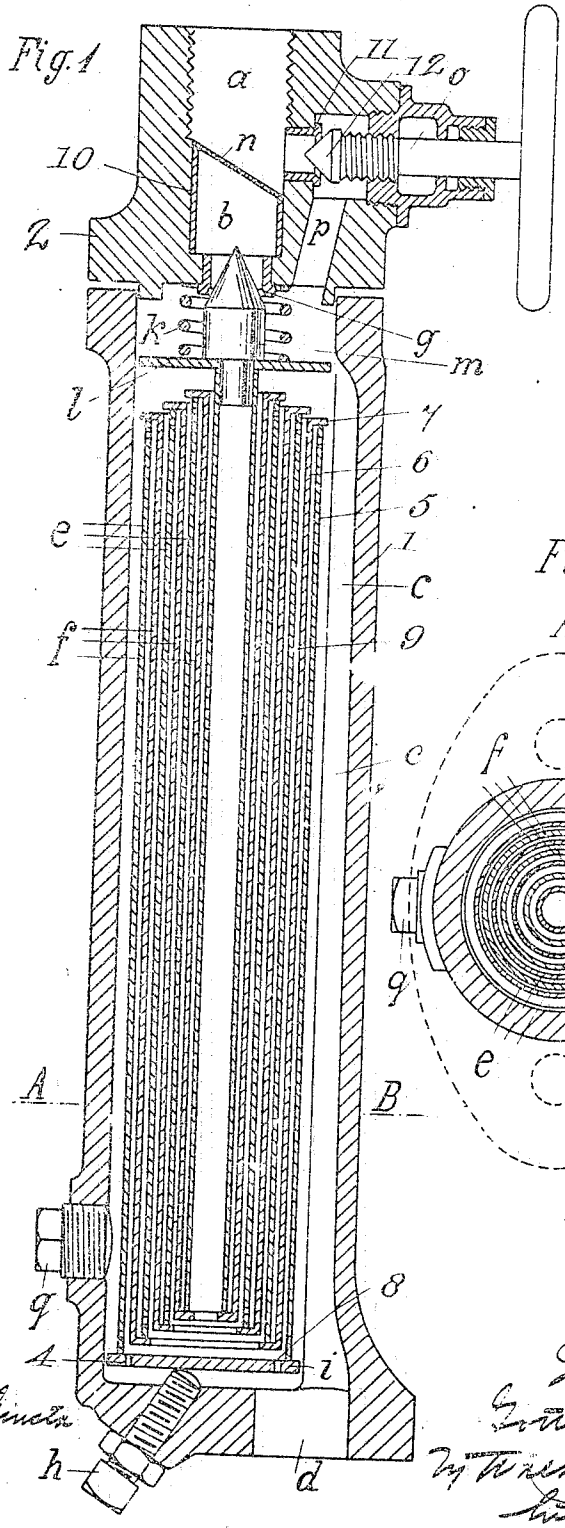
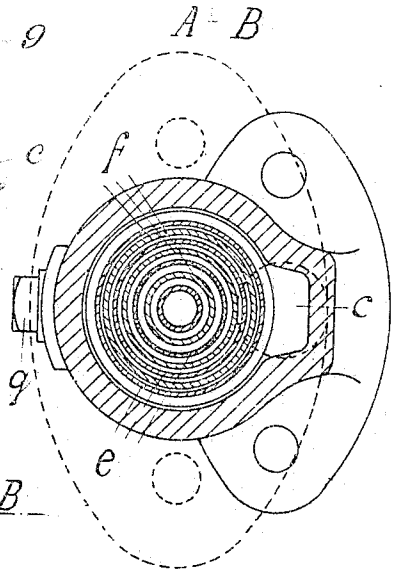



Fig. 2.




Witnesses:

Inventor:

# UNITED STATES PATENT OFFICE.

GOTTLIEB GLÖCKLER, OF STUTTGART, GERMANY.

## WATER-CONDUCTOR.

No. 809,941. Specification of Letters Patent. Patented Jan. 16, 1906.

Application filed March 3, 1905. Serial No. 248,298.

*To all whom it may concern:*

Be it known that I, GOTTLIEB GLÖCKLER, a German subject, and a resident of Stuttgart, Würtemberg, Germany, (post-office address 51 Guttenbergstrasse,) have invented certain new and useful Improvements in Steam and Water Conductors for High and Low Pressures, of which the following is a specification.

My invention relates to an automatic steam water-conductor, especially designed for use in heating systems in which hot water is used as a heating medium, although it may be used in any system in which a condensable medium, like steam, flows.

The object of my invention is to produce a simple and economical construction whereby a current of hot water is allowed to flow unimpeded through the device, but which will automatically close when steam enters it.

A further object of the invention is to produce a device which will automatically empty itself of water to prevent freezing.

With these objects in view my invention consists in the construction and combinations of parts, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal section of the device; and Fig. 2 is a cross-section of the same, taken on the line A B of Fig. 1.

The device consists of a casing 1, circular in general outline, except that on one side it is expanded, as shown at *c*, for the passage of hot water without affecting the expansion-pipes. This casing 1 is provided at one end with a discharge-opening *d* and at the other end with a removable head 2, secured thereon in any desired manner. Through this head 2 is bored a passage *a*, provided, as shown, with screw-threads, whereby it may be attached to the other parts of the system.

10 represents a casing slipped into the passage *a* and provided at its top with an inclined sieve *n* for the purpose of catching any impurities carried along by the hot water. At the bottom of the device is located a plate *i*, which may be adjusted up and down by means of a screw *h*. This plate is perforated, as shown at 4, to allow any water that may be above the same to drain out. On the plate *i* is loosely mounted a brass tube 5, open at both ends.

6 represents a tube of iron or steel or some other material, which is loosely mounted on the tube 5 by means of the flange 7. The tube 6 is flanged at the bottom, as shown at 8, and on this flange rests another brass tube 9. This structure is repeated until a series of concentric tubes alternately of brass and iron or steel is formed, which acts to close the valve *m*, which has a tapered end *b* when steam passes through the apparatus by reason of the fact that brass expands under the influence of heat more than iron.

The valve *m* is mounted on the inner tube of the expansion series and is adapted to fit against a seat *g*, inserted in the head 2. *l* represents a plate fastened to the inner tube of this series, which plate serves the double purpose of deflecting the water into the passage *c* and of forming a seat for the spring *k*, one end of which rests on said plate and the other end of which bears against the he d 2; the tendency of said spring being always to keep the valve open. The head 2 is provided with a passage *p*, nearly right-angled in shape, surrounding one part of which is the valve-seat 11, with which the pointed end 12 of a valve *o* engages. This passage and valve are operated when it is desired to clean out the device by blowing steam therethrough, which of course carries with it the impurities that may have been deposited by the water on the inclined sieve *n*.

*q* represents a removable screw passing through the side of the casing 1, which is removed during the cleansing operation. After the valve *o* has been opened and steam allowed to flow through the apparatus and after the steam begins to escape freely through the opening left by the removal of the control-screw *q* the operation is stopped.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a conductor, the combination of a casing open at both ends, a valve in said casing and a thermostatic device for automatically closing said valve when the temperature rises too high, said device consisting of a series of plain cylindrical tubes and a series of cylindrical tubes arranged alternately and concentrically in relation to said first-named series, said second-named series being provided with horizontal flanges at the top and at the bottom, said flanges projecting in opposite directions, whereby both series of tubes are loosely supported in contact with each other, a support for the outer cylindrical tube of the first-named series, and means for adjusting said support, substantially as described.

2. In a steam water-conductor, the combination of a casing normally open at both ends, a valve adapted to automatically close the passage in said casing when the temperature rises too high, a spring normally holding said valve open, and a thermostatic device for automatically closing said valve when steam begins to flow through said casing, consisting of a series of plain cylindrical tubes, a second series of cylindrical tubes alternating with said first-named series, both series of tubes being arranged concentrically, said second-named series being provided with flanges at the top and bottom extending in opposite directions, said valve being connected to the inner tube of said series, a perforated plate for supporting the outer tube of said series of tubes, and a screw for adjusting said plate, substantially as described.

3. In a steam water-conductor, the combination of a casing provided with a passage therethrough, a sieve in said passage, a valve adapted to close said passage, a spring for normally holding said valve open, and a thermostatic device for automatically closing said valve when steam flows through the casing, consisting of a series of plain cylindrical tubes, a second alternately-arranged series of cylindrical tubes, said two series being composed of metals of different expansibilities under the influence of heat, said second series of tubes being provided with horizontal flanges extending in opposite directions, whereby the whole series of tubes is supported, the one upon the next, a perforated plate on which the outer tube rests, and a screw for adjusting said plate, substantially as described.

4. In a steam water-conductor, the combination of a casing provided with a passage therethrough, said passage being enlarged on one side to provide for a free flow of fluid therethrough, a valve adapted to close said passage, a spring normally holding said valve open, and a thermostatic device adapted to automatically close said valve against the tension of said spring when steam flows through said casing, said device consisting of a series of plain tubes composed of metal of one expansibility, alternating with a second series of cylindrical tubes composed of metal of a different expansibility, said second series being provided with oppositely-extending flanges at the top and at the bottom, whereby all the tubes are supported the one on the other, a perforated plate on which the outer tube rests, a screw for adjusting said plate, and a sieve located in said passage, substantially as described.

5. In a steam water-conductor, the combination of a casing provided with a passage whereby hot water may normally flow unimpeded therethrough, a sieve in said passage, a valve in said casing and adapted to close said passage, a spring normally holding said valve open, a thermostatic device for automatically closing said valve against the tension of the spring when steam enters the casing, consisting of a series of cylindrical brass tubes arranged concentrically with relation to each other, and a second series of cylindrical iron tubes provided with oppositely-projecting flanges at the top and the bottom, said iron tubes being arranged alternately with relation to said brass tubes, a perforated plate for supporting the outer brass tube, a screw for adjusting said plate, a sieve in said passage, and a control-screw in the side of the casing, substantially as described.

Signed by me at Stuttgart, this 20th day of February, 1905.

GOTTLIEB GLÖCKLER.

Witnesses:

LUDWIG SCHIMMELS,

WM. HAHN.