

(No Model.)

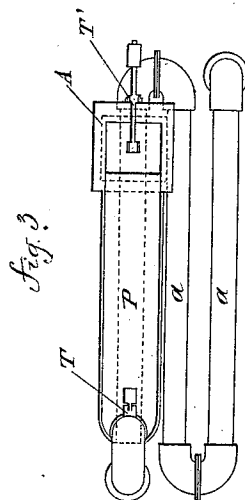
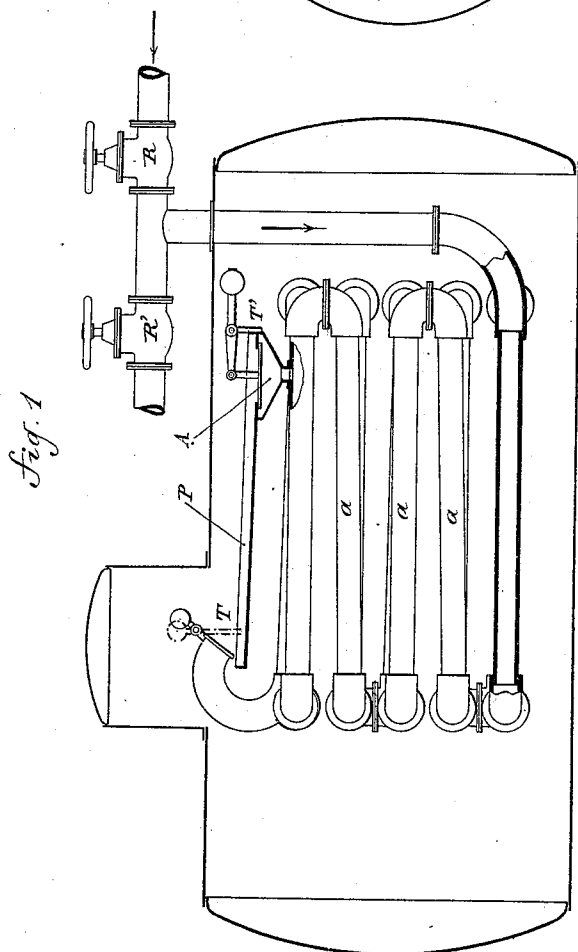
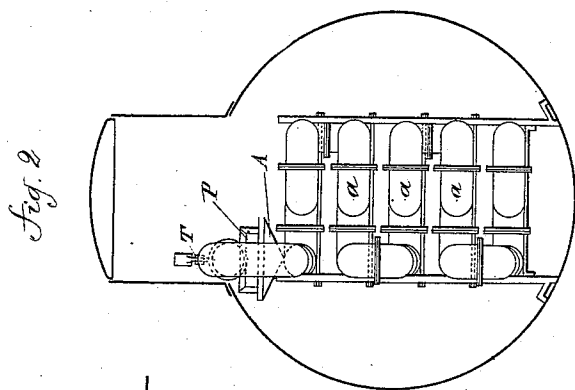
2 Sheets—Sheet 1.

J. T. C. KNIGHT.

APPARATUS FOR PURIFYING BOILER FEED WATER.

No. 510,272.

Patented Dec. 5, 1893.



Witnesses:
J. T. Chapman
Fannie Rice

Inventor,
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Attorney.

(No Model.)

2 Sheets—Sheet 2.

J. T. C. KNIGHT.

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Fig. 5

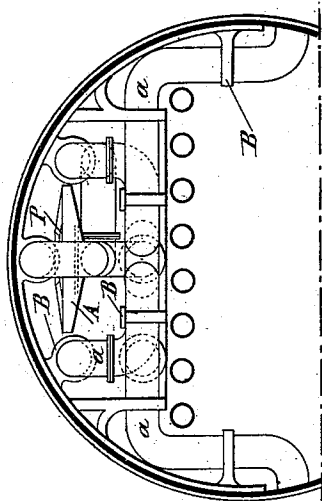


Fig. 4.

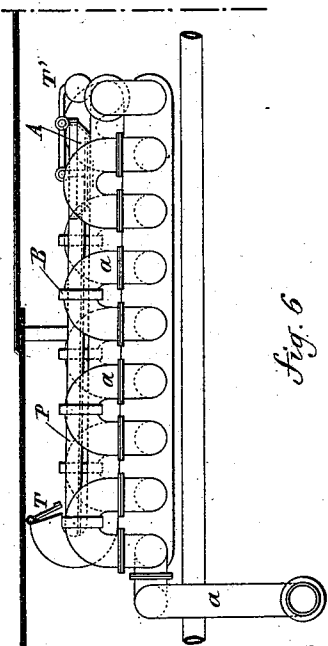
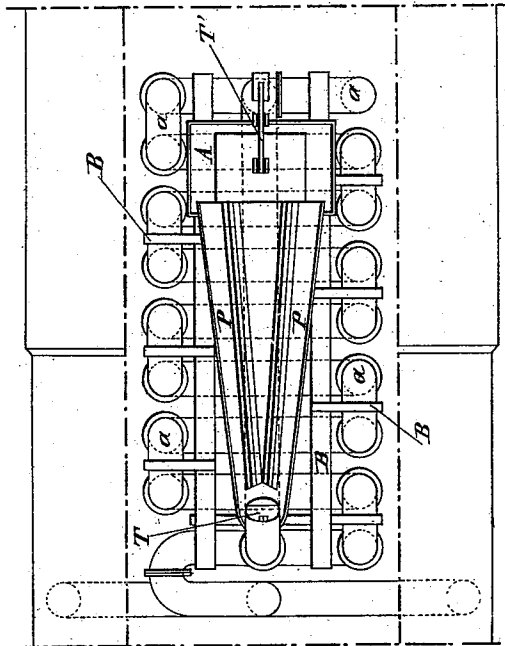


Fig. 6



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UNITED STATES PATENT OFFICE.

JAMES THOMAS CHARLES KNIGHT, OF PARIS, FRANCE, ASSIGNOR TO THE SOCIÉTÉ KNIGHT DE KERPEZDRON ET GIBAUT, OF SAME PLACE.

APPARATUS FOR PURIFYING BOILER-FEED WATER.

SPECIFICATION forming part of Letters Patent No. 510,272, dated December 5, 1893.

Application filed August 8, 1890. Serial No. 361,450. (No model.) Patented in France December 28, 1889, No. 202,841; in Belgium July 7, 1890, No. 91,170; in Switzerland July 11, 1890, No. 2,406; in Germany July 16, 1890, No. 56,730, and in England July 17, 1890, No. 11,172.

To all whom it may concern:

Be it known that I, JAMES THOMAS CHARLES KNIGHT, of Paris, France, have invented certain new and useful Improvements in Apparatus for Purifying Boiler-Feed Water, (for which I have obtained Letters Patent in France, dated December 28, 1889, No. 202,841; in Germany, dated July 16, 1890, No. 56,730; in Great Britain, dated July 17, 1890, No. 11,172; in Belgium, dated July 7, 1890, No. 91,170, and in Switzerland, dated July 11, 1890, No. 2,406,) of which the following is a specification.

This invention has reference to apparatus for purifying the feed water of steam boilers, the said apparatus being placed in the boiler itself and the feed water being forced through the same.

In the accompanying drawings Figure 1 is a longitudinal section of a steam boiler fitted with the improved water purifying apparatus. Fig. 2 is a transverse section. Fig 3 is a plan of the purifier. Figs. 4, 5 and 6 represent a modification of the apparatus adapted to a locomotive boiler.

Referring first to Figs. 1, 2 and 3 the purifier is composed of a number of superposed tubes *a* connected at the ends by elbows or bends and held together by stays. The feed water supply pipe is connected to the bottom tube and the top tube, which is fitted with a flap or valve *T*, discharges the water upon an inclined plate *P* which is submitted to contact with the steam. The feed water on being forced into the purifier is immediately raised to a higher temperature and owing to a well known law, the salts with which it is charged become precipitated in the tubes. The water thus deprived of its salts or of a great portion thereof passes down the inclined plate *P* and becomes completely purified by depositing thereon the light matters it contains. At the lower end of the inclined plate is a trough or receiver *A* fitted with a flap or valve *T'* and having an outlet by which it can be put into communication with one of the upper tubes of the purifier. When it is

required to discharge or purge the apparatus of the calcareous or other matters the feed or supply cock *R* is closed and a purge cock *R'* on a branch of the feed pipe opened. The upper flap or valve *T* of the purifier will therefore close while the flap or valve *T'* to the receiver *A* at the bottom of the inclined plate will be open. The calcareous and other matters will thus be driven out by reason of the boiler pressure.

The purifier represented in Figs. 4, 5 and 6 as adapted for locomotive boilers has the same parts as those above described but the tubes are not superposed.

What is claimed, and desired to be secured by Letters Patent, is—

1. In apparatus for purifying boiler feed water, the combination with a number of tubes fitted in the boiler and connected so as to form one continuous tube communicating with the boiler feed pipe, of an inclined plate in the boiler steam space upon which said continuous tube discharges the water and of a trough or receiver at the bottom of said inclined plate and having an outlet by which it can be put into communication with said continuous tube, substantially as and for the purpose set forth and shown.

2. In apparatus for purifying boiler feed water, the combination of the continuous tube *aa* in the boiler and connected with the boiler feed pipe, the feed cock *R* on said pipe, the purge cock *R'* on a branch of said pipe, the flap or valve *T* to the continuous tube *a*, the inclined plate *P*, the flap or valve *T'* and the receiver *A* with an outlet by which it can be put into communication with the continuous pipe *a*, all substantially as and for the purpose set forth and shown.

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

JAMES THOMAS CHARLES KNIGHT.

Witnesses:

ALPHONSE GRÜNFELDER,
R. J. PRESTON.