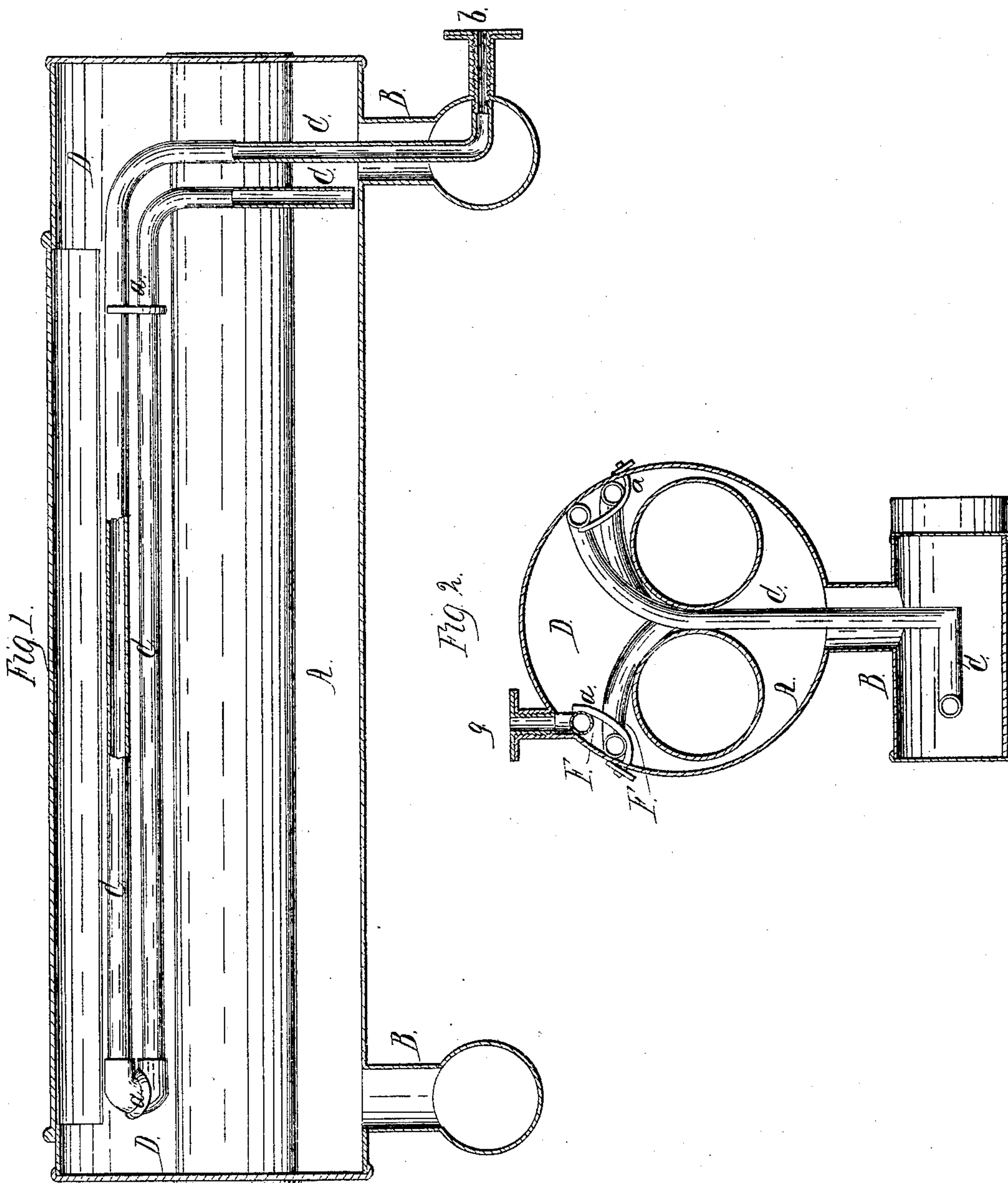


T. Snowden,
Steam-Boiler Water-Feeder,
Nº 27,743, Patented Apr. 3, 1860.



UNITED STATES PATENT OFFICE.

THOMAS SNOWDON, OF PITTSBURG, PENNSYLVANIA.

IMPROVED FEED-WATER ARRANGEMENT FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 27,743, dated April 3, 1860.

To all whom it may concern:

Be it known that I, THOMAS SNOWDON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Feeding Water to Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical longitudinal section of my invention applied to a steam-boiler, and Fig. 2 is a vertical transverse section of the same in the line *x x*.

Similar letters of reference in each of the several figures indicate corresponding parts.

The object of my invention is to prevent boilers being injured by the feed-water, which is always at a lower temperature than the boiler-plates, coming in immediate contact with the iron or shell of the boiler, by which the iron is contracted by the lower temperature of the feed-water and frequently to such a degree that the sheets are torn asunder at the rivet-holes.

It is the universal practice on our Western steamers to supply the water through the stand-pipes at the aft end of the boilers, the water entering at the bottom of the boilers. The temperature at which it is supplied to boilers varies from 100° to about 200°, while the temperature of the boilers ranges from 350° to about 365°, being the temperature due to a pressure of steam from one hundred and thirty to one hundred and fifty pounds to the square inch. Thus the temperature of the bottom sheets is brought down by the supply-water coming in contact therewith, and as a matter of course a contraction of the iron follows, while the upper part of the boilers and the flues are held to the expansion due to the temperature of the steam within them. This is not only a great trouble and expense to the engineers and owners of steamboats, but has, as I have no doubt, been the cause of serious accidents and loss of life.

The nature of my invention consists in locating a feed-water pipe within the boiler, and having one end of said pipe communicate with the feed-pump or doctor and the other end dip down into the water-space of the boiler.

By this invention the feed-water is heated within the boiler in its passage through the

pipe or pipes before it empties into the water-space. Thus the disastrous consequences which result from introducing water of a lower temperature than the boiler-plates are prevented.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings two modes of connecting the pipes with the feed-pump or doctor are shown. One is so arranged as to feed through the stand-pipe, while the other feeds at a point near the top of the boiler.

A represents an ordinary boiler with stand-pipes B B.

C is a pipe leading up through the stand-pipe and taking a course horizontally in the steam-space D to the forward end of the boiler, and there taking a turn and extending back to near the rear end of the boiler and dipping down vertically until it comes within a short distance of the bottom of the boiler, as represented. This pipe is supported by brackets *a a*, and connects with a pipe leading to the feed-pump by means of a hollow flanged tube, *b*, which has a screw-thread cut on it.

F represents the pipe arranged for receiving the water near the top of the boiler through an opening, *g*, instead of through the stand-pipe.

By my invention it will be seen that the feed-water in passing into the water-space is exposed directly to the heat of the steam or water in the boiler before it discharges into the water-space, and therefore the heating of the water is accomplished very effectually and with great economy of heat, also with much less expense for apparatus than is incurred with those arrangements which bring the steam out of the boiler into a separate chamber to heat the feed-water.

What I claim as my invention, and desire to secure by Letters Patent, is—

Locating a feed-water pipe within the steam-space of the boiler and having one end of said pipe communicate with the feed-pump or doctor and the other end dip down into the water-space, as and for the purposes set forth.

THOMAS SNOWDON.

Witnesses:

BENJ. CRAWFORD,

REDMOND J. GRACE.