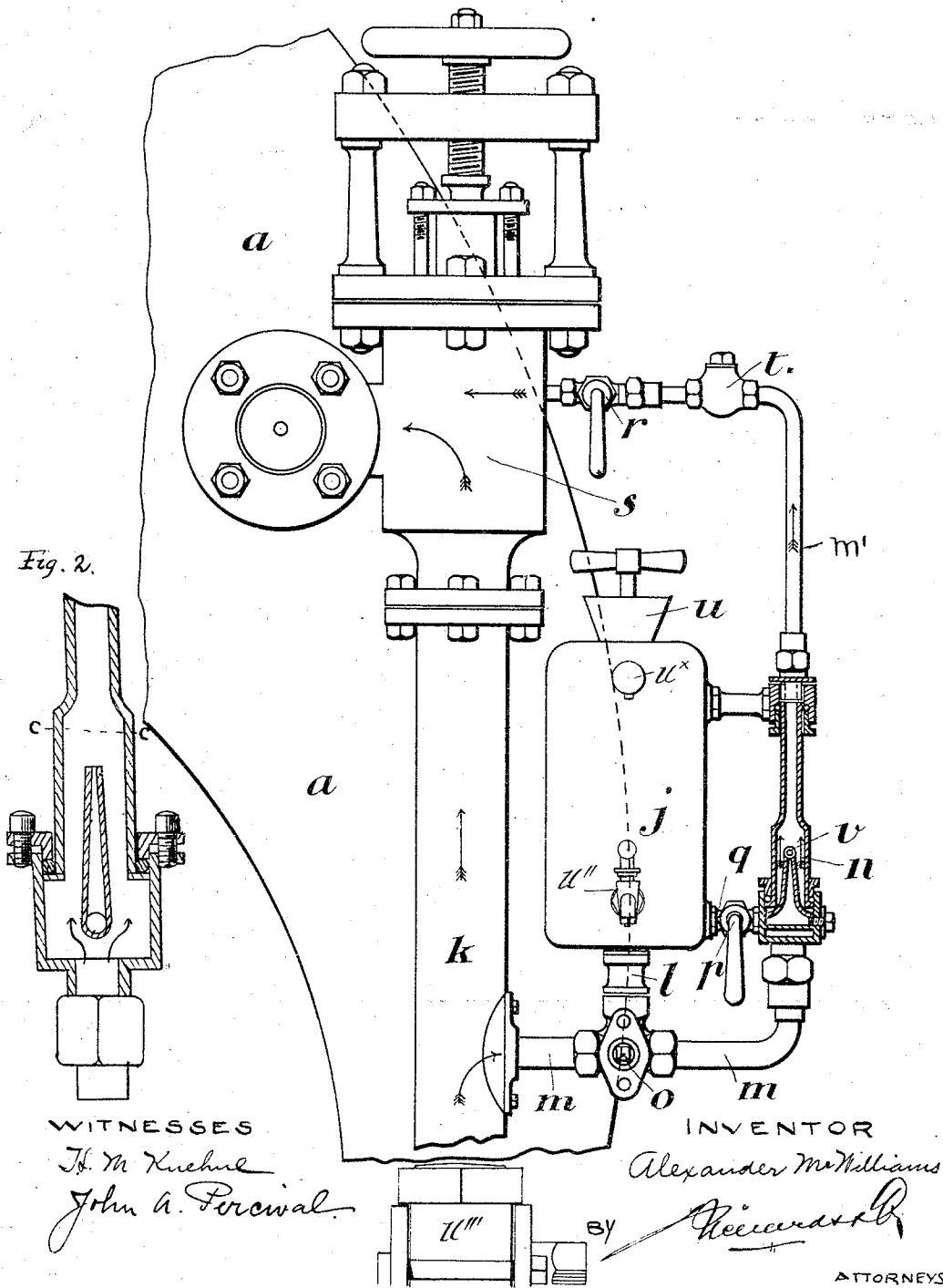


No. 778,459.

PATENTED DEC. 27, 1904.

A. McWILLIAMS.
APPARATUS FOR FEEDING ANTI-INCRUSTATION FLUID INTO BOILERS.
APPLICATION FILED APR. 27, 1903.

Fig. 1.



WITNESSES

H. M. Kuehn
John A. Percival

INVENTOR

Alexander McWilliams

BY *R. H. Richards*

ATTORNEYS

UNITED STATES PATENT OFFICE.

ALEXANDER McWILLIAMS, OF MICKLEOVER, ENGLAND.

APPARATUS FOR FEEDING ANTI-INCRUSTATION FLUID INTO BOILERS.

SPECIFICATION forming part of Letters Patent No. 778,459, dated December 27, 1904.

Application filed April 27, 1903. Serial No. 154,501.

To all whom it may concern:

Be it known that I, ALEXANDER McWILLIAMS, a subject of the King of Great Britain and Ireland, and a resident of Mickleover, in the county of Derby, England, have invented a certain new and useful Apparatus for Feeding Anti-Incrustation Fluid Into Boilers, (for which I have applied for a patent in Great Britain, said application being numbered 381 and dated January 7, 1903,) of which the following is a specification.

The objects of my invention are to provide an improved device or apparatus that will admit of boiler fluid of any kind (hereinafter referred to as the "fluid") for softening the water and preventing incrustation, being passed therein while under full pressure of steam, so that either a regular or intermittent flow of fluid may be passed into the boiler and mixed with the water, and so insure the greatest possible benefit being derived from the fluid, or any given quantity may be fed to the boiler at any desired intervals, a further object of my invention being to provide a sight-feed in connection with such apparatus or device, as hereinafter described.

Referring to the drawings, which form part of this specification, Figure 1 is a front elevation, partly in section, of my invention; and Fig. 2 a section through the nozzle.

In the application of my invention a portion of the front end of the boiler is indicated by the letter *a*.

The fluid vessel *j* is arranged separately from the feed-pipe *k*, to which it is connected by means of a branch pipe *l* and the main connecting-pipe *m*. Said pipe *m* extends from the feed-pipe forward and upward to the sight-feed or gage-glass *n*, which is arranged adjacent to the vessel *j* and is connected thereto by a pipe *g*, pipes *m* and *m'* connecting the sight-feed or gage-glass with the feed-pipe *k*, pipe *m'* being connected to the said feed-pipe *k* at a point above the feed-valve *s*. At the junction of the two pipes *l* and *m* is a three-way cock *o*. There is also a cock *p* on the pipe *g*. Above the gage-glass on the pipe *m'* is preferably arranged another regulating-cock *r*. A back-pressure valve *t* is provided in the pipe *m'* for trapping the water therein.

The top of the fluid vessel is provided with any suitable feeding-orifice *u* and an air-cock *u^x* and drain-cock *u''*, to be regulated as desired. The air-cock, in conjunction with the cock *p* on the pipe, connecting the fluid vessel with the sight-feed tube will regulate the quantity of fluid drawn in with each stroke of the feed-pump. When feeding continuously, the cock *o* on the branch below the fluid vessel is closed against any downward feed of fluid through the pipe *l*, while the cocks *p* and *r* and the air-cock are opened. The delivery-nozzle *v*, through which the fluid passes in the gage-glass, is preferably arranged so as to project upwardly through the center of the gage-glass, so that the water coming from the main feed-pipe passes all round it, as shown by the arrows, at each stroke of the feed-pump or as the water is injected into the boiler, and thus a certain quantity of fluid is sucked or drawn from the nozzle and thoroughly mixed with the feed-water.

The apparatus may be worked either with or without steam from the boiler.

When used for feeding occasional quantities of fluid to the boiler, the fluid-regulating cock *p*, between the fluid vessel and sight-feed, is closed. Also the cock *o*, a lower valve *u'''* on the feed-pipe, and the feed-valve *s* are closed. The vessel is then filled or partly filled with fluid and the feeding-orifice tightly closed. The cock *o* on the branch pipe *l* below the vessel is then opened to allow the fluid to descend and to pass to the feed-pipe and into the boiler with the feed-water when the feed-valve *s* is opened. This may be done daily or as required.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device for feeding anti-incrustation fluid to boilers, in combination with the boiler-feed pipe, a receptacle, a sight-feed communicating therewith, pipes connecting said sight-feed with the feed-pipe and a pipe *l* connecting said receptacle with the said connecting-pipes, said pipe *l* being independent of the sight-feed.

2. In a device of the class described, in combination with the boiler-feed pipe, a recepta-

cle, a sight-feed, means of communication between said sight-feed and the receptacle, pipes connecting the sight-feed with the boiler-feed pipe, and means for connecting the receptacle
5 with the boiler-feed pipe, said means being independent of the sight-feed, substantially as described.

3. In a device of the class described, in combination with the boiler-feed pipe, a receptacle, a sight-feed, a nozzle therein, a pipe connecting said nozzle with the receptacle and
10 pipes connecting the sight-feed with the feed-pipe.

4. In a device of the class described in combination, the feed-pipe, a receptacle, a sight-feed, a nozzle therein, a pipe connecting said

nozzle with the receptacle, a valve in said pipe, pipes connecting the sight-feed with the feed-pipe, a pipe *l* connecting the lower part of the receptacle with said connecting-
20 pipes, a three-way valve at the junction of said pipe *l* and the connecting-pipes and means for preventing the flow of water in the feed-pipe said means being situated below the junction of the connecting-pipes. 25

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

ALEXANDER McWILLIAMS.

Witnesses:

H. SWINDELL,

A. F. RICHARDSON.