No. 810,632. PATENTED JAN. 23, 1906.

J. P. FAHERTY & J. H. M. BLACKFORD.

BOILER ATTACHMENT.

APPLICATION FILED JUNE 17, 1904.

Fig. 1.

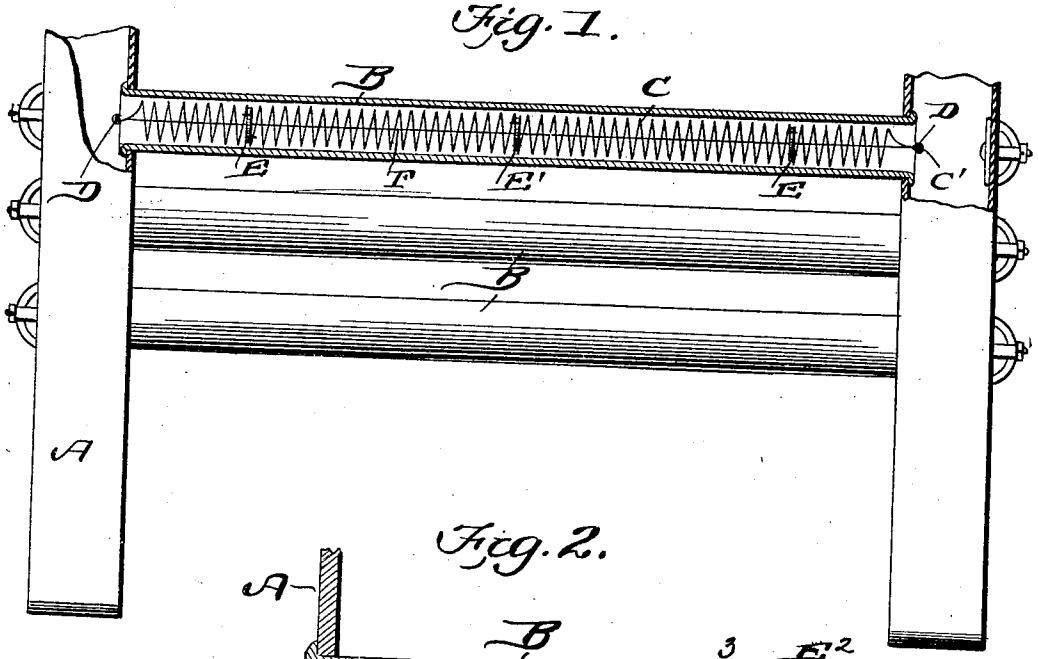


Fig. 2.

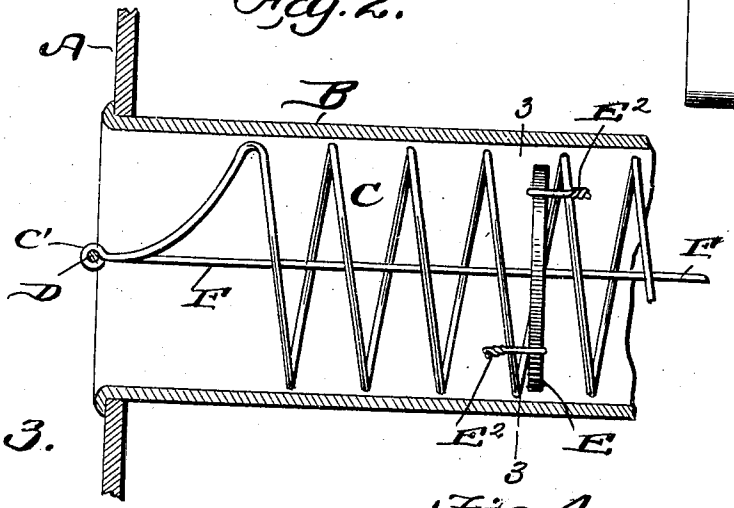


Fig. 3.

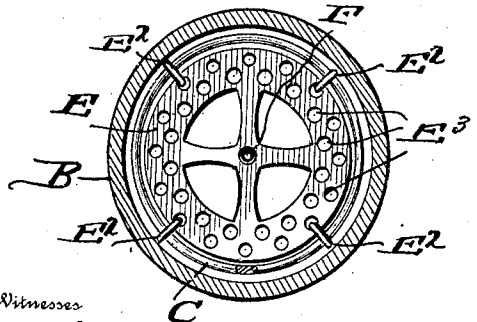
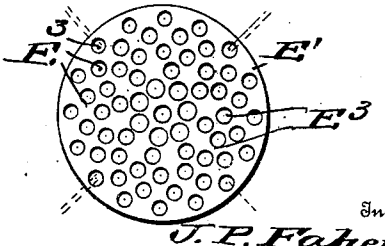


Fig. 4.



Witnesses

M. D. Blondel

Clarence Shaw

Inventors

J. P. Faherty.

J. H. M. Blackford,

By O'Meara & Brock

Attorneys

UNITED STATES PATENT OFFICE.

JOHN P. FAHERTY AND JOSEPH H. M. BLACKFORD, OF DUQUESNE, PENNSYLVANIA.

BOILER ATTACHMENT.

No. 810,632. Specification of Letters Patent. Patented Jan. 23, 1906.

Application filed June 17, 1904. Serial No. 213,023.

To all whom it may concern:

Be it known that we, JOHN P. FAHERTY and JOSEPH H. M. BLACKFORD, citizens of the United States, residing at Duquesne, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Boiler Attachment, of which the following is a specification.

This invention is a device adapted to be used in connection with tubular boilers for the purpose of preventing the incrustation or forming of scale upon the interior of the water-tubes.

Another object of the invention is to provide a device for removing the scale which will be operated by the agitation due to the circulation of boiling water; and the invention consists, essentially, in arranging a spiral spring within the water-tube so that when the water circulates therethrough the agitation of the boiling water will cause the spiral spring to shake or agitate or vibrate and coming in contact with the inner sides of the tube will remove all scale therefrom.

The invention consists also in arranging retarding devices upon the spiral spring in order to cause the water to produce a greater vibration of the said spring.

The invention consists also in certain details hereinafter fully described, and pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a sectional elevation showing the practical application of our invention. Fig. 2 is a detail view showing in section one end of a water-tube, the end of the spiral spring being shown in elevation. Fig. 3 is a sectional view on the line 3 3 of Fig. 2, and Fig. 4 shows a slightly-modified form of retarding-disk.

Referring to the drawings, A indicates the legs of a water-tube boiler, and B the water-tubes connected thereto.

C indicates a spiral spring, preferably made from galvanized wire and of a size to fit loosely within the water-tubes, as most clearly shown in Figs. 1 and 2. This spring may extend entirely through the water-tube from end to end, or it may extend from the end to a point about midway the length of the tube. The spring may be secured in any suitable manner, and in the drawings we have shown a pin D passing through an eye C′, formed upon the end of the spring, said pin resting against the end of the water-tube.

A spring constructed and arranged as herein shown and described will have a vibratory motion within the tube produced by the agitation of boiling water circulating therethrough, and in addition to this vibratory motion the said spring will also have an expansive and contractive motion, so that the coils of the spring will not only strike against the walls of the water-tube, but will also have a scraping action thereon, so that the scale or incrustation will be scraped off, thereby preventing the water-tubes becoming impaired, as occurs whenever the scale is permitted to remain. For the purpose of obtaining a more violent agitation and longitudinal movement of the coils of the spring we arrange retarding rings or disks E and E′, which are connected to the coils by means of wires E^2, passing through the rings or disks and twisted around the coils of the spring, as most clearly shown in Fig. 2. These rings or disks E and E′ are formed with perforations E^3, so that the free circulation of the water through the water-tubes is only very slightly impeded. In fact, its passage is only interrupted sufficiently to produce the necessary agitation of the spring within the tube.

It will thus be seen that we provide an exceedingly-cheap and highly-efficient means for preventing the incrustation, as before mentioned, of scale upon the water-tubes of boilers.

If desired, a wire F may be arranged centrally and longitudinally within the coil wire, the ends of said wire F being connected to the cross-pins D, and it will also be noted that the said longitudinal wire F passes centrally through the retarding-disks.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination with a water-tube, of a spiral spring arranged within the tube, and perforated disks carried by the said spring.

2. The combination with a tube, of a spiral spring arranged in and extending substantially the length of the tube, and perforated disks carried by and arranged within the spirals of the spring.

3. A boiler attachment comprising a spiral spring adapted to be arranged in the water-

tube of a boiler, a wire arranged centrally and longitudinally within the spring, means for connecting said wire at the ends of the tube, and perforated disks connected to the spring, said wire passing through the centers of the disks.

4. The combination with a water-tube, of the spirally-coiled wire arranged therein, means for securing the ends of the wire at the ends of the tube, and the perforated disk connected to the wire intermediate its ends, for the purpose described.

J. P. FAHERTY.
J. H. M. BLACKFORD.

Witnesses:
FRED. GERDTS,
HUGH Y. BOYCE.