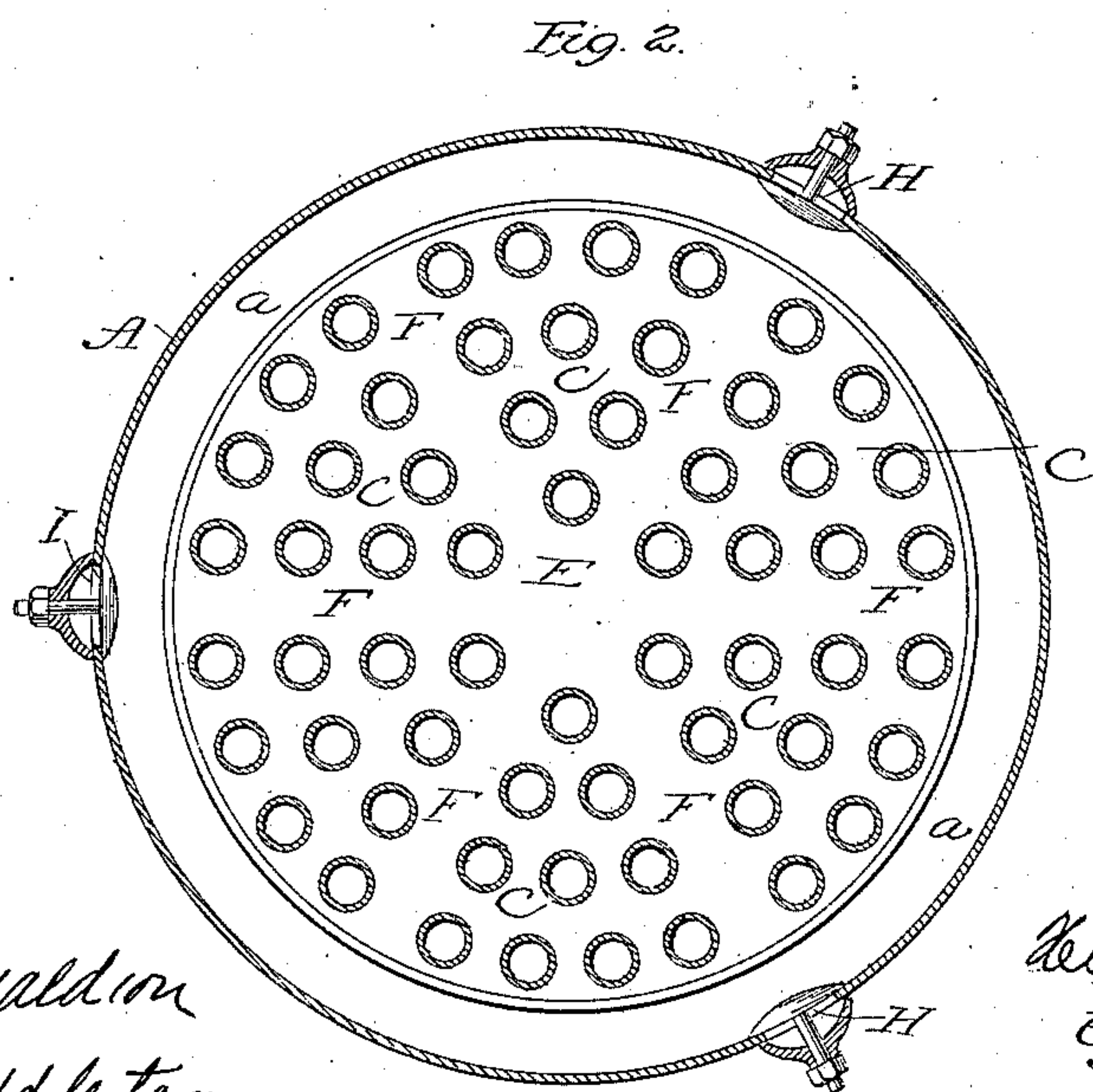
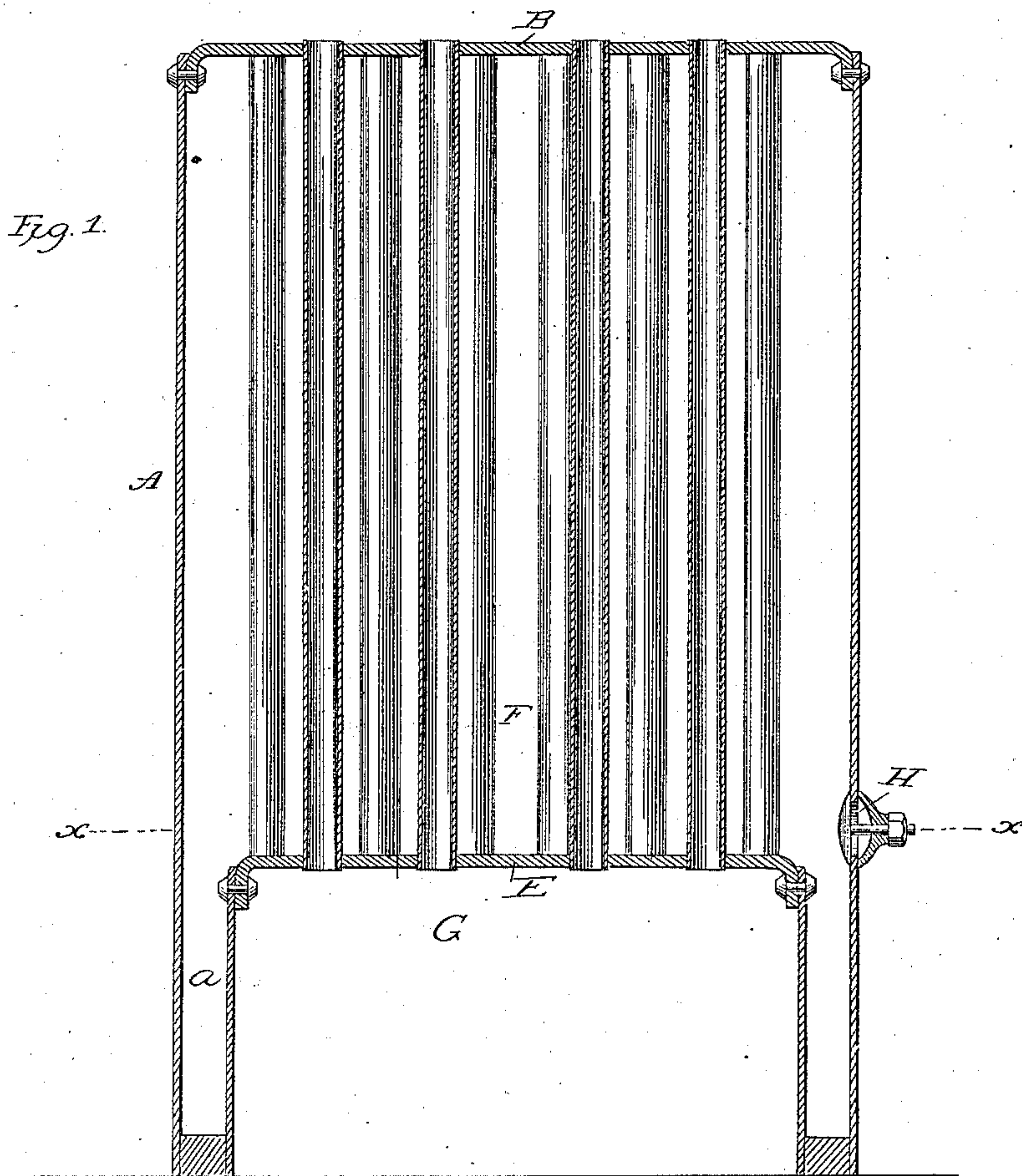


(No Model.)

H. GRIMM.  
STEAM BOILER.

No. 307,295.

Patented Oct. 28, 1884.



Attest  
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J. L. Middleton

Inventor  
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Attys.



# UNITED STATES PATENT OFFICE.

HENRY GRIMM, OF QUINCY, ILLINOIS.

## STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 307,295, dated October 28, 1884.

Application filed June 26, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY GRIMM, of Quincy, in the county of Adams and State of Illinois, have invented a new and useful Improvement in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improvement in boilers, whereby free and easy access may be had into the interior of the same and the sediment or scale removed therefrom.

My invention relates more particularly to that class of boilers known as "vertical," in which the fire-tubes run vertically from a crown-plate situated directly over the fire-box. In this form of boiler the mud or sediment from the water, collecting upon the head or crown-plate, forms a thick non-conducting covering upon the same, which not only retards the process of heating and reduces the efficacy of the boiler, but by reason of the corrosive action it exerts upon the metal causes leakage at the pipe-joints and renders the boiler liable to explosion.

To provide a simple and effective arrangement whereby the head or crown-plate may be cleaned and kept free from sediment or scale is the object of my invention.

To this end my invention consists in, first, the peculiar arrangement of the fire-tubes in groups, whereby passages are formed between the tubes extending across the crown-plate in different directions, and of sufficient width to admit any desired form of scraper or brush for the purpose of cleaning; second, in forming in the side of the boiler and in line with the said passages hand-holes for the admission of the brush or scraper.

In the drawings I have shown only one way of grouping the pipes, although obviously the form and number of groups may be greatly varied without departing from the spirit of my invention, it being only essential that the passages be formed as before stated.

The accompanying drawings show, in Figure 1, a central vertical section through the boiler, and in Fig. 2 a central horizontal section through the same on line *x x* of Fig. 1.

In the drawings, A is the boiler, having the head B riveted or secured thereto in the usual way. The fire-box G is situated within

the lower portion of the boiler, extending up within the same, so as to form an annular water-space, *a*, between the shell of the boiler and that of the fire-box, thus exposing the largest possible amount of heating-surface to the water. A crown or head-plate, E, covers the fire-box and forms one of the heads of the boiler, being secured by rivets to the fire-box shell. The fire-tubes extend vertically from the crown-plate E to the upper head, B, of the boiler, being secured in each in the ordinary manner.

In order to provide for the cleaning of the crown-plate, the pipes are arranged in groups *c c*, as shown in Fig. 2, passages or channels F F being thus formed between the said groups and extending across the crown-plate, so that a scraper or brush may be admitted between the tubes to free the plate from all sediment or scale. In line with the passages and the upper surface of the crown-plate, hand-holes H H are formed in the shell of the boiler, of sufficient size to conveniently admit a scraper or other cleaning-instrument. They may be kept closed by any suitable plates and nuts, so as to form water-tight joints.

It is not essential that the pipes be grouped with the regularity shown in the drawings, nor that the passages be made to run through the center of the boiler; but the arrangement of the pipes may be such as will form passages to one side of the center, running in any direction, so that the surface of the crown-plate may be left clear to any desired extent.

A hand-hole may be formed at either end of each passage, if desired.

Having described my invention, what I claim is—

In a boiler, the combination of the fire-tubes arranged in groups so as to form passages or channels between the same, and the hand-holes formed in the boiler-shell and in line with the said passages, substantially as described.

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

HENRY GRIMM.

Witnesses:

VALENTINE KOUDER,  
GEO. A. BINKERT.