

D. F. McKim,
Steam-Boiler Fire-Box.

No 85,116.

Patented Dec. 22, 1868.

Fig. 2.

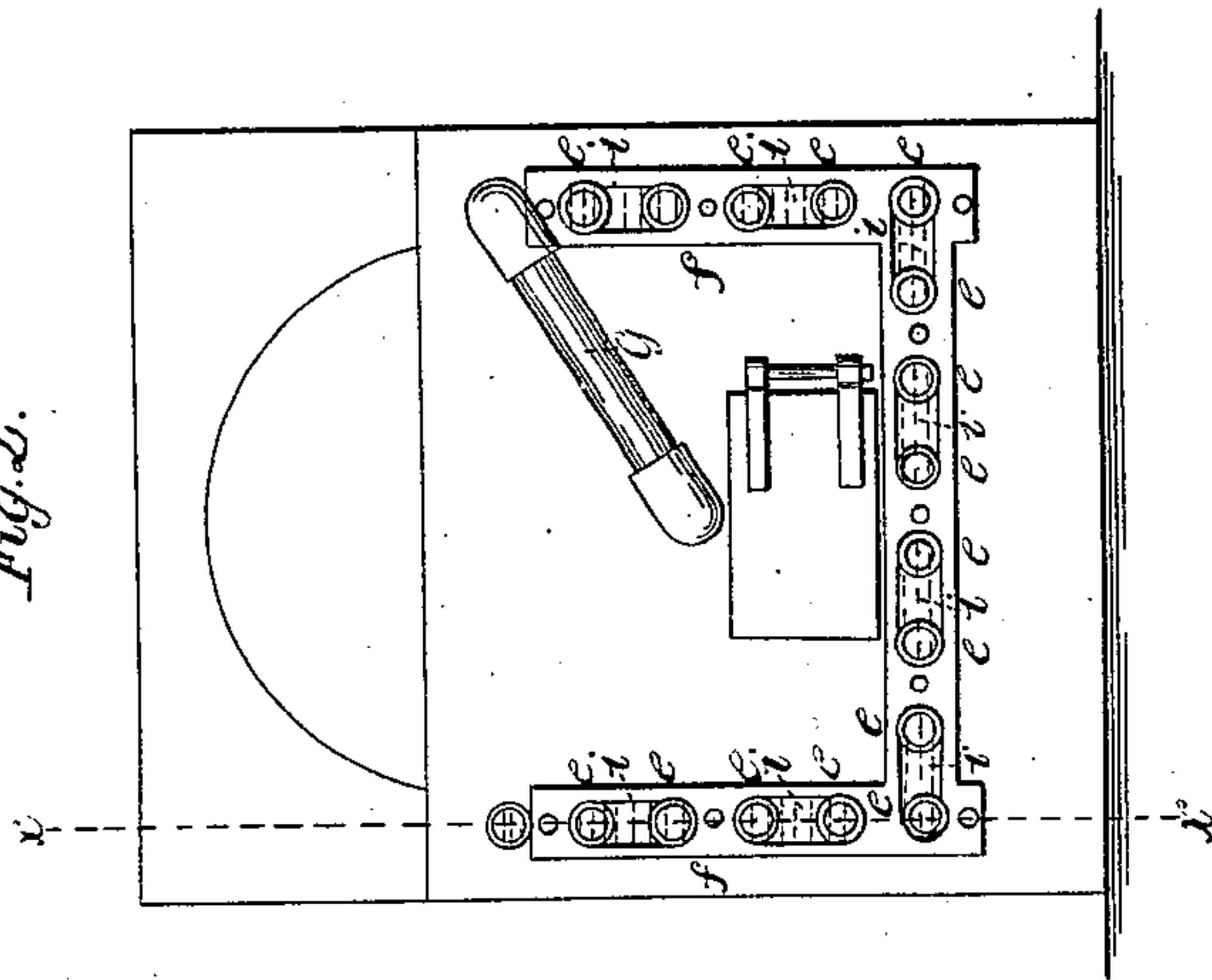
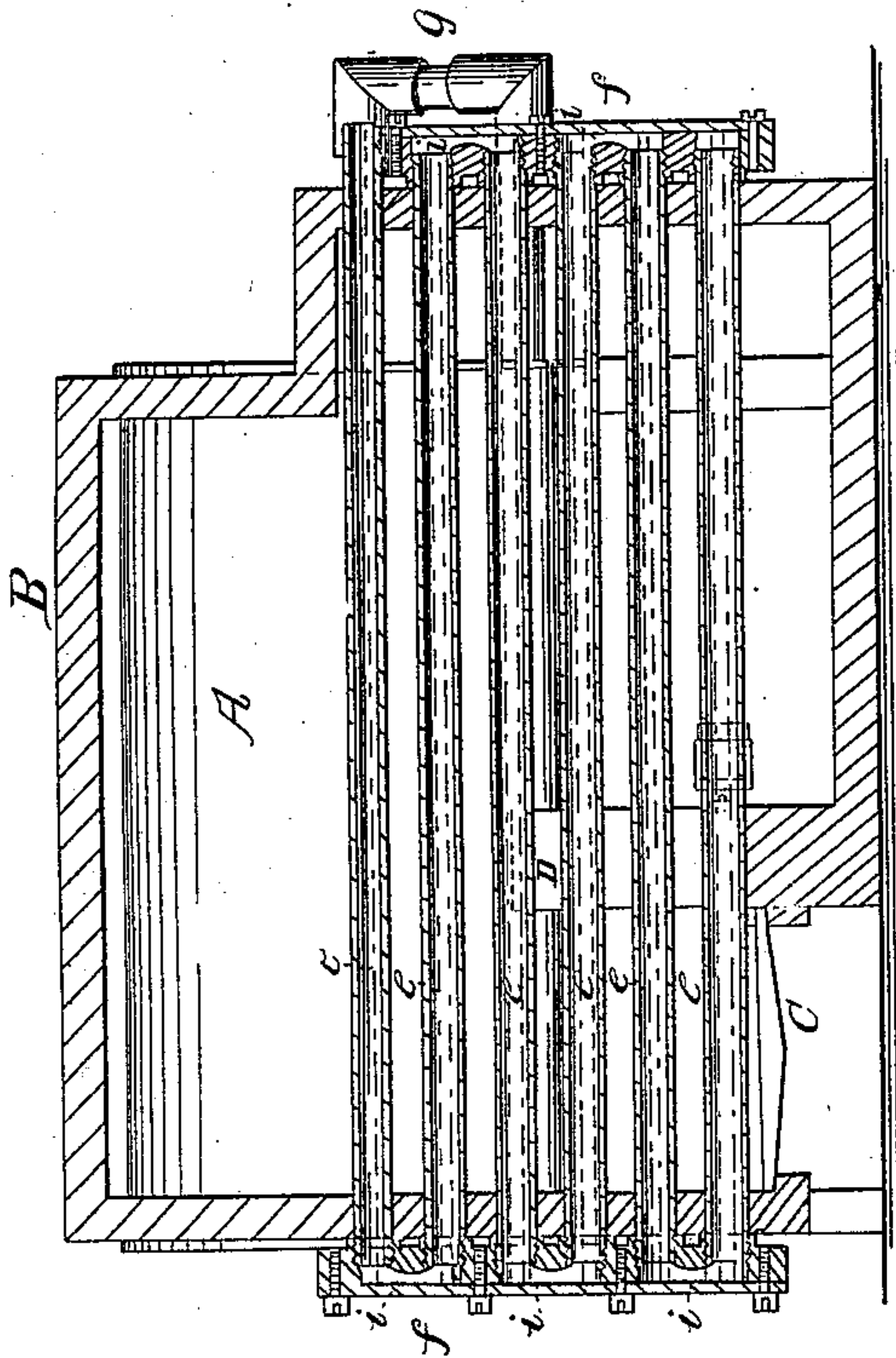


Fig. 1.



Witnesses:
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United States Patent Office.

D. F. McKIM, OF AUSTIN, NEVADA.

Letters Patent No. 85,116, dated December 22, 1868.

IMPROVEMENT IN FEED-WATER HEATERS FOR STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, D. F. McKIM, of Austin, in the county of Lander, and State of Nevada, have invented a new and useful Improvement in Steam-Generators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in steam-generators; and

It consists in the heads, which close the ends of the water-pipes, constructed with detachable covers, and arranged upon the outside of the boiler, and with reference to the side and bottom water-pipes, as will be hereafter more fully described.

Figure 1 represents a vertical longitudinal section of the generator, through the line *x x* of fig. 2.

Figure 2 is a view of the back end of the generator.

Similar letters of reference indicate corresponding parts.

A represents a steam-boiler, of ordinary construction, enclosed in the arch B.

C represents the fire-grate.

D is the bridge-wall.

On each side of the boiler, extending its whole length, and past each of its heads, and underneath the boiler, back of the bridge-wall, a series of tubes, *e*, is placed, which are attached to heads, *f*, in such a manner that a continuous channel for the feed-water is formed from the place of its entrance until it is discharged into the boiler by the pipe *g*.

The heads *f*, to which the tubes are attached, are

cut out, and a cavity formed between alternate pairs of tubes, so that communication is made between the tubes, and a continuous channel is formed for the water, as seen in the drawing.

The water is introduced at the arrow, fig. 1, and is forced through the tubes, on one side of the boiler, and into the horizontal tier of tubes beneath the boiler, (back of the bridge-wall,) which are arranged in the same manner as those on the side, and already described.

From the horizontal tier of tubes it is forced into the vertical tier on the other side, where its course is upward until it reaches the pipe *g*, which conducts it into the boiler.

The heads *f* are made with detachable caps or covers, which can be readily removed when it is necessary to clean the tubes.

The slots or cavities in the heads, between the tubes, by which the channel is made continuous, are marked *i*.

By this arrangement, the heat, which would otherwise be absorbed by the walls of the arch, is absorbed by the water, and conveyed to the boiler, thus greatly economizing fuel, and adding vastly to the steam-generating power of the boiler.

I claim as new, and desire to secure by Letters Patent—

The heads *f*, constructed with detachable covers, arranged upon the outside of the boiler, and with relation to the side and bottom pipes *e*, as herein shown and described.

D. F. McKIM.

Witnesses:

WM. TOWLE,

D. W. WELTY.