

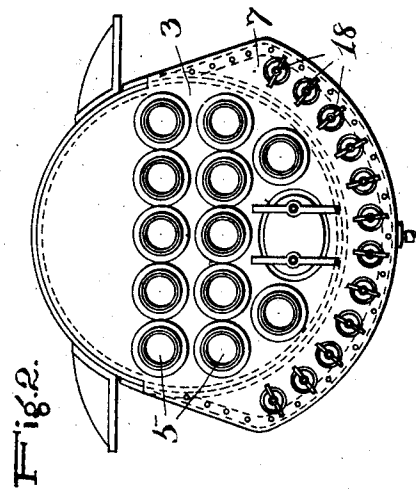
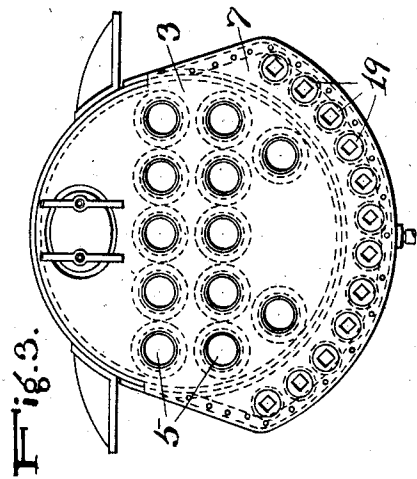
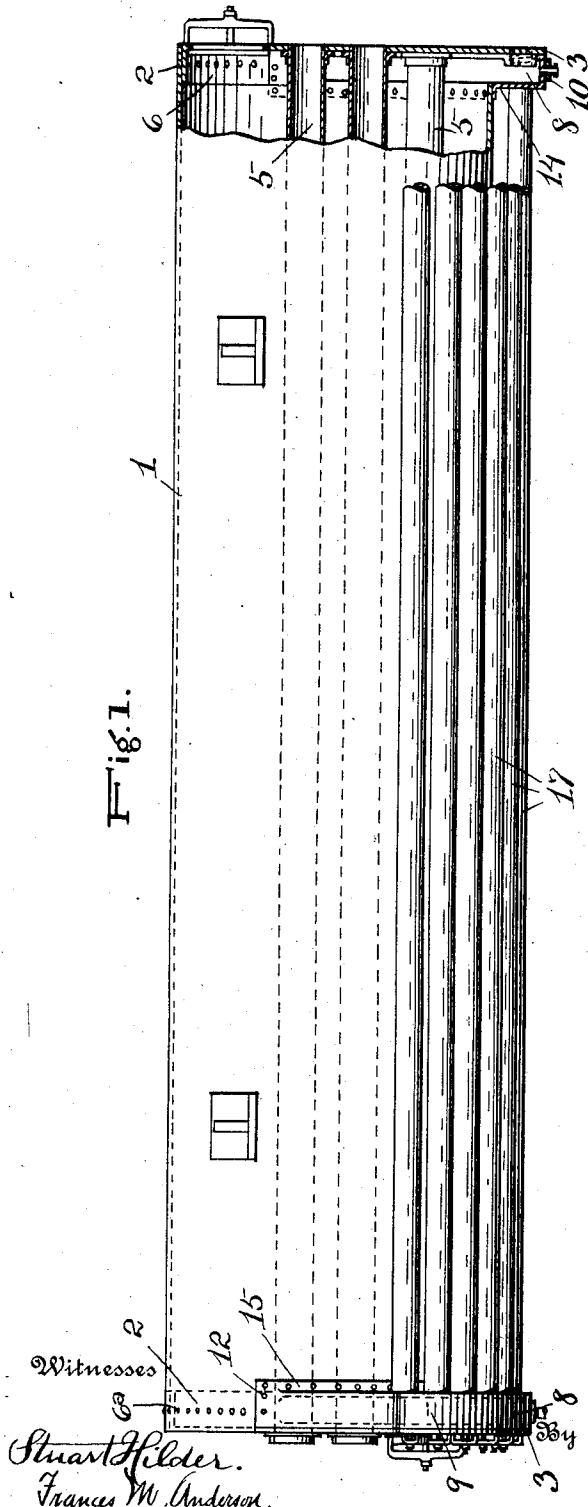
M. F. KENNEN.
STEAM BOILER.

APPLICATION FILED SEPT. 22, 1911.

Patented Sept. 3, 1912.

2 SHEETS—SHEET 1.

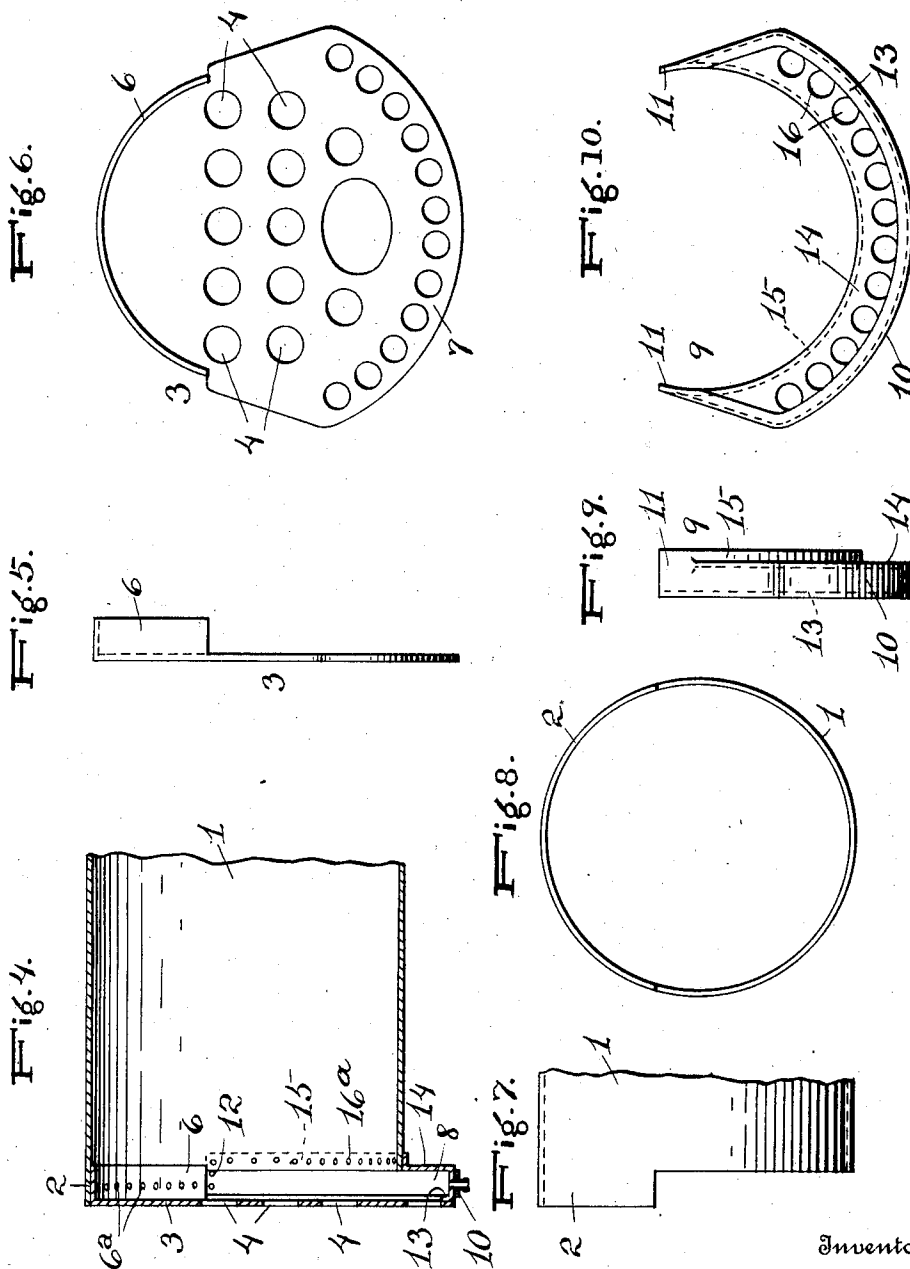
1,037,776.



Inventor

Michael F. Kennen.

E. W. Anderson & Son
his Attorneys



Witnesses
Stuart Hilder.
Frances M. Anderson.

By

Michael J. Kennen
E. W. Anderson & Son
his Attorneys

UNITED STATES PATENT OFFICE.

MICHAEL F. KENNEN, OF NEWPORT, KENTUCKY.

STEAM-BOILER.

1,037,776.

Specification of Letters Patent.

Patented Sept. 3, 1912.

Application filed September 22, 1911. Serial No. 650,852.

To all whom it may concern:

Be it known that I, MICHAEL F. KENNEN, a citizen of the United States, resident of Newport, in the county of Campbell and State of Kentucky, have made a certain new and useful Invention in Steam-Boilers; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a side view of my steam boiler, partly broken away. Fig. 2 is an end view of the boiler. Fig. 3 is a view of the same from the opposite end. Fig. 4 is a central longitudinal section of one end portion of the boiler, with the fire tubes and the water tubes omitted. Fig. 5 is a detail side view of one of the end tube sheets of the boiler. Fig. 6 is a detail rear view of the same. Fig. 7 is a side view of one end portion of the boiler shell. Fig. 8 is an end view of the same. Fig. 9 is a detail side view of one of the water legs. Fig. 10 is a detail front view of the same.

The invention has relation to steam boilers, and it consists in the novel construction and combinations of parts, as hereinafter set forth.

In the accompanying drawings, illustrating the invention, the numeral 1 designates a horizontal steam boiler, the tubular shell of which is provided at each end thereof with an upper arcuate extension 2.

3 is the tube sheet at each end of the boiler, perforated at 4, 4 for the fire tubes 5, 5 and having an upper arcuate cylindrical projection 6 engaging within and riveted to said extension 2 at 6, 6, said tube sheet having a lower arcuate plane projection 7 forming the outer wall of an arcuate water leg 8 at each end of the boiler.

9 is an arcuate angle strip at each end of the boiler, having a cylindrical arcuate portion 10 forming the bottom wall of the water leg, having angularly bent upward and inward extending plane ends 11, 11 extending toward each other tangential with relation and riveted to the extension 2 of the boiler shell at 12, 12, said portion 10 having

an upward extending right-angle flange 13 riveted to the plane projection 7 of the tube sheet; the water leg being made complete by an arcuate plane portion 14 of said angle strip, forming the inner side of said water leg and having a right-angle cylindrical flange 15 riveted to the boiler shell at 16^a.

The angle-strips 6, 6 of the water legs are provided with an arcuate series of perforations 16, 16 into which are expanded the ends of a single arcuate series of water tubes 17, 17 communicating with said water legs and having a slight drop from one end to the other, so that the tubes will drain properly. As commonly made with a boiler of ordinary size, the arcuate depending water legs will not extend out from the boiler proper more than twelve inches. The single arcuate series of water tubes will guard the shell of the boiler at the bottom where it is most exposed to the flames from the furnace, and will provide considerable additional water heating surface. The forward water leg is preferably provided with a series of hand holes and closure plates 18, in line with the water tubes, and the aft water leg is provided with a series of screw plugs 19, in line with the water tubes.

The upward and inward extending ends of the downwardly and laterally spread angle-strip rest upon the cylindrical projection 2 of the boiler shell, with which they have a rivet connection, and serve to relieve the rivet connections of the angle strip with the boiler shell proper and with the end tube sheet, of the strain of support of the series of water tubes, and at the same time a greater number of water tubes is enabled to be used, the lateral spread of said series being greater than the diameter of the cylindrical boiler shell.

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

In a horizontal fire tube boiler, a cylindrical boiler shell, a downwardly and laterally spread depending water leg at each end of said shell having an inner arcuate flange of length greater than a semi-circle and extending at each side above the axial plane of and riveted to said shell, and an arcuate series of water tubes connecting the

water legs, said series having a lateral spread greater than the diameter of said shell, and said water legs having upward and inward extending converging end walls
5 engaging and riveted to the upper lateral portions of said shell, whereby the rivet connections between the water legs and the boiler are relieved of the strain of support

of the water legs and of the series of water tubes.

In testimony whereof I affix my signature, in presence of two witnesses.

MICHAEL F. KENNEN.

Witnesses:

HENRY L. ROCKEL,
CHRISTIAN TIEMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."