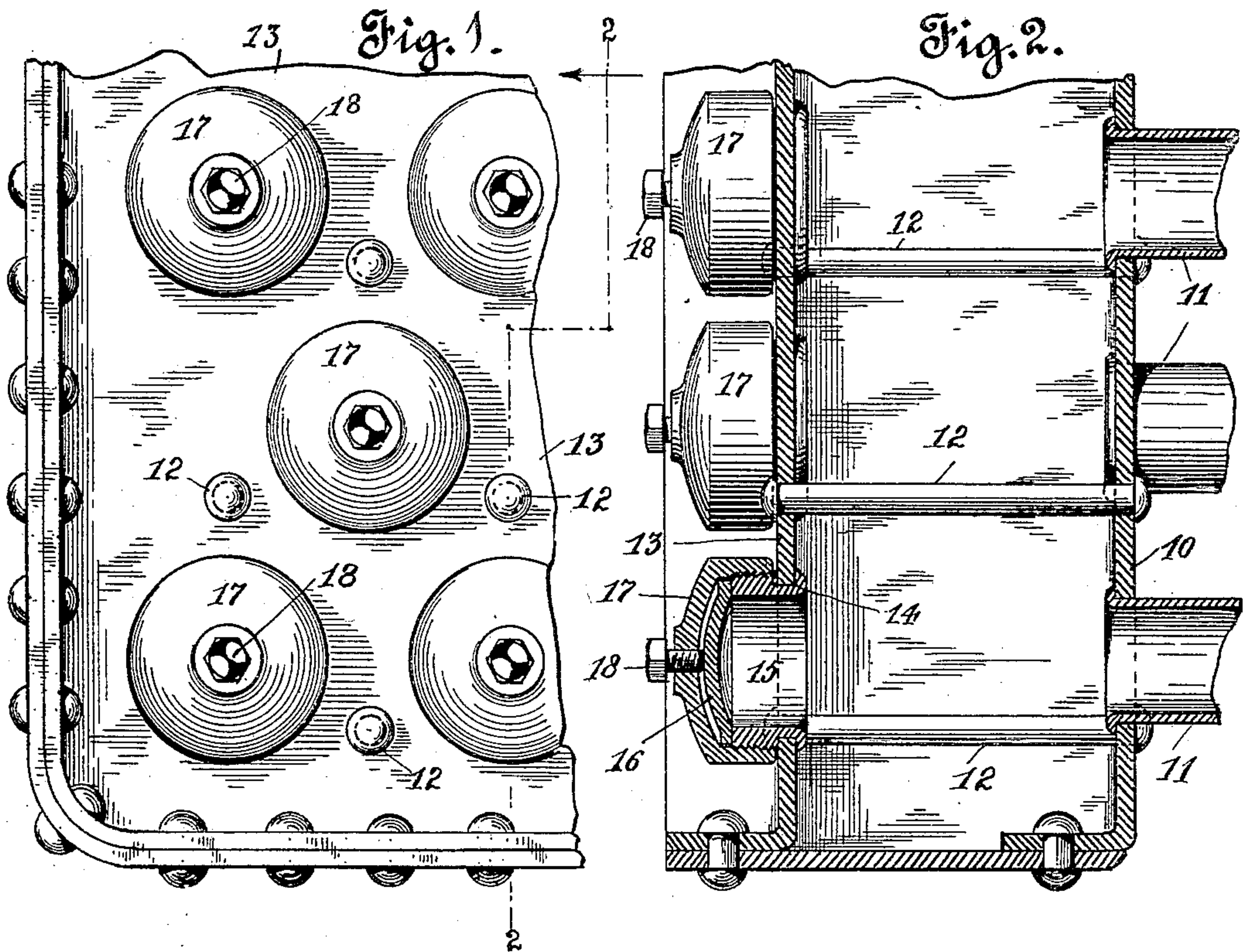


E. W. CLARK.  
WATER TUBE BOILER,  
APPLICATION FILED JAN. 15, 1908.

943,139.

Patented Dec. 14, 1909.



Witnesses.

*H. H. Fontenelle*  
S. B. Austin

Inventor,

Edward W. Clark,

By *E. D. Pham*  
Attorney.

# UNITED STATES PATENT OFFICE.

EDWARD W. CLARK, OF LOS ANGELES, CALIFORNIA.

## WATER-TUBE BOILER.

943,139.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed January 15, 1908. Serial No. 411,019.

*To all whom it may concern:*

Be it known that I, EDWARD W. CLARK, a citizen of the United States, residing at the city of Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Water-Tube Boilers, of which the following is a specification.

My invention relates to means for securing the handhole plates upon the outer surfaces of the boiler whereby access is had to the tubes for cleaning the same, and also to new and improved means for securing the tubes in both the outer and inner plates of the water legs, and communication from the interior of the tubes to the water legs. I accomplish these objects by the mechanism described herein and illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary end elevation of a boiler equipped with my improved invention. Fig. 2 is a section on the line 2—2 of Fig. 1.

In the drawings 10 is the inner plate of the water leg of a multi-tubular boiler, in which the tubes 11 are secured in the usual well known manner.

12 are stay bolts which secure the outer plate 13 of the water leg to the inner plate, all of ordinary construction.

14 are the handholes in the outer end plates through which access is had to the interior of tube 11 for cleaning the same. In these holes are secured short thimbles 15 the inner ends of which are reduced in size exteriorly and are swaged into the outer plates in the same manner as the tubes are secured to the inner plates in Fig. 2. The outer ends of these cylinders are exteriorly threaded and the ends faced. Upon the ends of these thimbles rest the handhole cover 16 which is held in place by the cover cap 17, which is interiorly threaded and screws upon the outer ends of the thimbles.

A tightening screw 18 passes in threaded contact through the cover cap, and bears upon the cover to hold the same firmly seated upon the end of the thimble. Cover 16 is also faced.

By this construction a handhole cover is provided which can be quickly put in place and as quickly removed for cleaning the tubes or repairing the same, and the maximum amount of strength is provided with the minimum amount of material. This construction of handholes and covers can be used with other boilers.

Having described my invention what I claim is:

1. In a boiler, an outer plate, having holes opposite the tubes; short thimbles swaged into the holes in said outer plate and having the outer ends thereof exteriorly threaded and of larger diameter than the hole in the plate; covers for the outer ends of said thimbles; cover caps screwed upon the ends of said thimbles; and tightening screws passing centrally through the cover caps and engaging the covers the opposed faces of said covers and thimbles being faced.

2. In a boiler, an outer surface having handholes opposite the tubes; short thimbles swaged into the holes in said outer surface and having cap engaging means on the outer ends thereof; covers for said thimbles the opposed faces of said covers and thimbles being faced; cover caps passed thereover and having means to engage the thimbles; and means carried by said cover caps to apply pressure upon the center of the covers.

In witness that I claim the foregoing I have hereunto subscribed my name this 6th day of January, 1908.

E. W. CLARK.

Witnesses:

G. E. HARPHAM,  
S. B. AUSTIN.