June 11, 1946. V. TRIBUSON 2,401,988

STEAM BOILER

Filed May 24, 1944

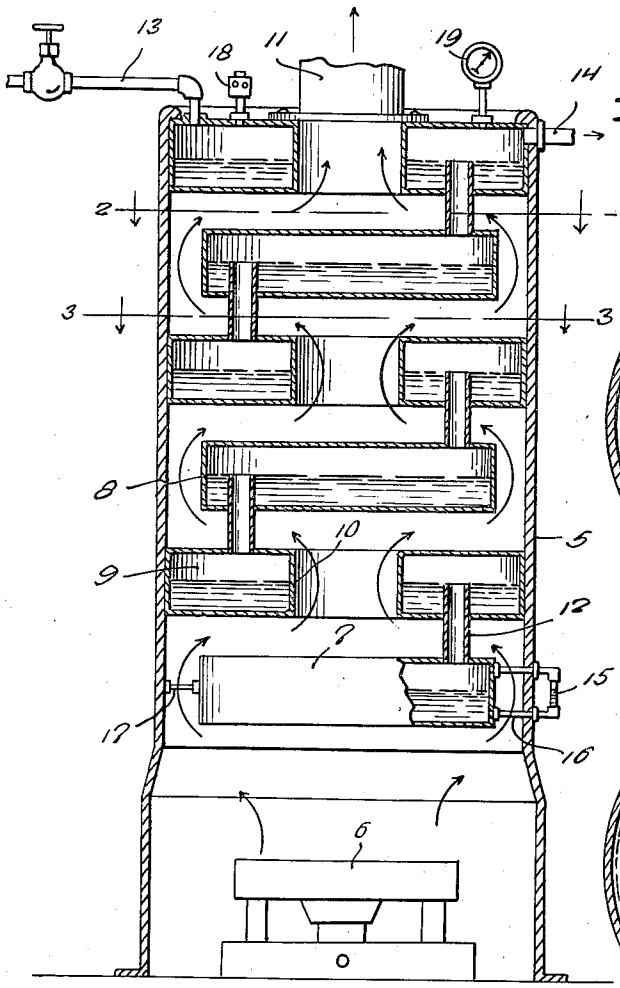


Fig. 1.

Fig. 2.

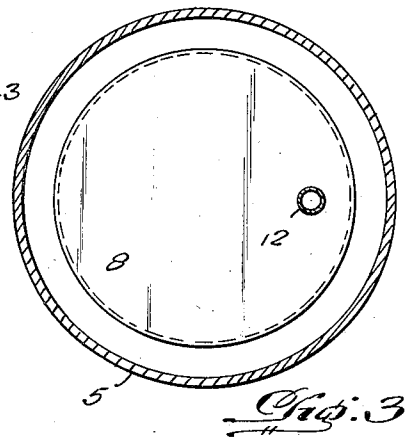


Fig. 3.

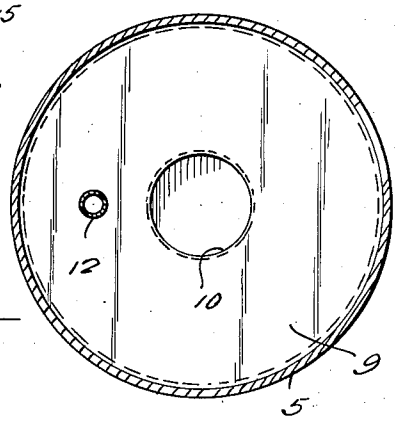
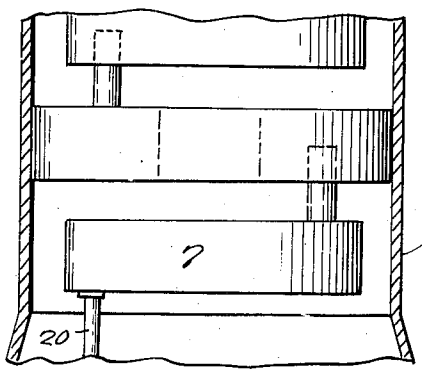


Fig. 4.



Inventor
Victor Tribuson,

By McMorrow & Berman

Attorneys

Patented June 11, 1946 2,401,988

UNITED STATES PATENT OFFICE

2,401,988

STEAM BOILER

Victor Tribuson, Norwood, Mass.

Application May 24, 1944, Serial No. 537,085

3 Claims. (Cl. 122—214)

1

The present invention relates to new and useful improvements in steam boilers designed for heating purposes, and including a casing in which a plurality of flat circular steam generating drums are mounted in vertically spaced relation and connected to each other to individually generate steam therein for distribution in a circulation system.

An important object of the present invention is to provide pipes connecting the adjacent steam generating drums in a manner so that water is pocketed in the bottoms of the drums for generating steam therein which is conveyed to an adjacent upper drum above the level of the water contained in the latter.

A further object is to provide a steam boiler of this character of simple and practical construction, which is efficient and reliable in performance, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a vertical sectional view through the boiler.

Figures 2 and 3 are transverse sectional views taken, respectively, on the lines 2—2 and 3—3 of Figure 1.

Figure 4 is a fragmentary vertical sectional view showing the boiler constructed for use as a water heater.

Referring now to the drawing in detail, and first with respect to the form of the invention illustrated in Figures 1 to 3, inclusive, the numeral 5 designates the boiler casing in the lower portion of which an oil burner 6 or other heating unit is positioned.

Positioned in the casing are a plurality of steam generating drums 7 of disc form and including drums 8 of a diameter less than the internal diameter of the casing 7 and spaced from the walls of the latter and drums 9 which are of a diameter substantially equal to the internal diameter of the casing and snugly fitted on the inside of the casing.

The drums 8 and 9 are vertically spaced apart with one of the drums 8 positioned lowermost and one of the drums 9 positioned uppermost and the remaining drums alternately arranged in the casing. The drums 9 are formed with a central opening 10 whereby circulation of the products

2

of combustion from the burner is effected by passing upwardly around the drums 8 and horizontally between the spaced drums to the opening 10 in the drum 9 and upwardly through the latter in a tortuous passage to the flue 11 connected to the central opening 10 of the uppermost drum 9. The drums 8 form baffles around which the products of combustion are diverted.

The adjacent drums are connected by pipes 12 having their lower ends connected to the top of a lower drum and projecting upwardly through the bottom of an adjacent upper drum and terminating substantially equidistantly between the top and bottom walls of the said upper drum.

A water supply pipe 13 is connected to the top of the uppermost drum by means of which water may be supplied thereto and which will overflow through the pipe 12 into the adjacent lower drum, the projecting upper end of the pipe 12 thus forming a pocket in the bottom of each of the drums for collecting and retaining water therein while the upper portion of the drum above the level of the water constitutes a steam generating chamber. A steam discharge pipe 14 is connected to the uppermost drum above the level of the water therein.

A water gage 15 is positioned on the outside of the casing 5 and connected to the lowermost drum so that after the drums have been substantially half filled with water, the supply of water may then be cut off, whereby a steam chamber will be provided in the upper portion of each of the drums.

The pipe 16 providing a connection between the lowermost drum and the water gage may serve to support one side of the lowermost drum 8 and a brace 17 is provided for supporting the opposite side of said drum.

The uppermost drum is provided with a safety valve 18 and also with a pressure gage 19.

The steam discharge pipe 14 may also be used as a return pipe for condensation from the steam circulation system whereby it will be apparent that after the lower portions of the drums have been supplied with water and the burner 6 operated so as to generate steam in the upper portions of the drum, the steam will circulate upwardly through the respective drums and out through the pipe 14 to a suitable steam circulation system and products of condensation may be returned through the pipe 14.

In Figure 4 of the drawing I have illustrated the invention adapted for use as a water heater by connecting a water supply pipe 20 to the bottom of the lowermost drum 7 and by means of

which the drum may be completely filled with water which, upon being heated, will rise for circulation through the drums and out through the pipe 14. When using the boiler as a water heater, the pipe 13 is either closed by a suitable valve or disconnected, as desired.

It is believed the details of construction and manner of operation and advantages of the device will be readily understood from the foregoing without further detailed explanation.

Having thus described the invention, what I claim is:

1. A steam boiler comprising a vertical casing having a heating element in its lower portion, a plurality of horizontally disposed, flattened drums positioned in vertically spaced-apart relation to each other in the casing, the same including alternately arranged drums of large and small diameters, said drums of large diameter fitted marginally against the walls of the casing without opening therebetween but each drum of large diameter having a central, tubular-walled opening extending vertically therethrough, and said drums of small diameter having their marginal walls spaced from the walls of the casing to provide vertical openings therebetween, means for connecting the adjacent drums to provide a water space of definite area in the lower portion of each drum and a steam space also of definite area in the upper portion of the drums and providing communication between the steam spaces of the several drums, said drum connecting means comprising open-ended tubes connected communicably in the top walls of the respective drums and above the steam spaces of the drums, the upper ends of said tubes extending to the plane of the highest water level of the respective water spaces of the drums, a water inlet for the uppermost drum, a steam outlet for the steam space of the uppermost drum, said uppermost drum having a pressure gauge and a safety valve, and an externally readable gauge for indicating the level of water in the lowermost drum.

2. A steam boiler comprising a vertical casing having a heating element in its lower portion, a plurality of horizontally disposed, flattened drums positioned in vertically spaced-apart relation to each other in the casing, the same including alternately arranged drums of large and small diameters, said drums of larger diameter fitted marginally against the walls of the casing without opening therebetween but each drum of larger diameter having a central tubular-walled opening extending vertically therethrough, and said drums of small diameter having their marginal walls spaced from the walls of the casing to provide vertical openings therebetween, means for connecting the adjacent drums, said means comprising open-ended tubes, each tube being interposed between a pair of adjacent drums with the lower end connected to the top of the lower of said pair of drums and the upper end extending through the bottom of the upper of said pair of drums and terminating at a point above said bottom, an inlet means leading to one of said drums, and an outlet means leading from one of said drums.

3. A steam boiler comprising a vertical casing having a heating element in its lower portion, a plurality of horizontally disposed, flattened drums positioned in vertically spaced-apart relation to each other in the casing, the same including alternately arranged drums of large and small diameters, said drums of larger diameter fitted marginally against the walls of the casing without opening therebetween but each drum of large diameter having a central tubular-walled opening extending vertically therethrough, and said drums of small diameter having their marginal walls spaced from the walls of the casing to provide vertical openings therebetween, means for connecting the adjacent drums, said means comprising open-ended tubes, each tube being interposed between a pair of adjacent drums with the lower end connected to the top of the lower of said pair of drums and the upper end extending through the bottom of the upper of said pair of drums and terminating at a point above said bottom, a water inlet leading into the lowermost drum, and a water outlet leading out of the uppermost drum, whereby all of the drums may be entirely filled with water to be thus heated and dispensed through the outlet of the uppermost drum.

VICTOR TRIBUSON.