

(No Model.)

F. SAXON.
BOILER.

No. 495,841.

Patented Apr. 18, 1893.

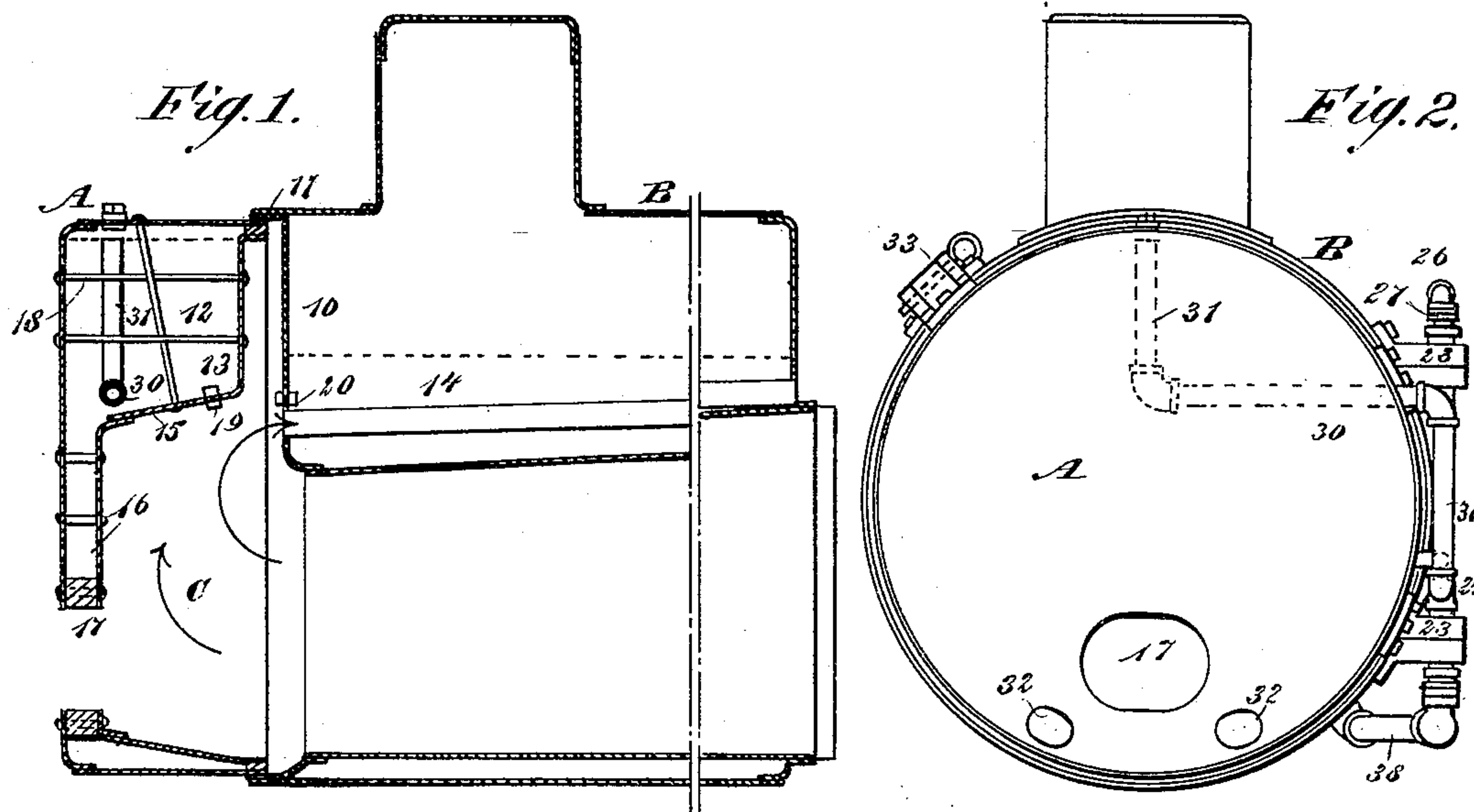
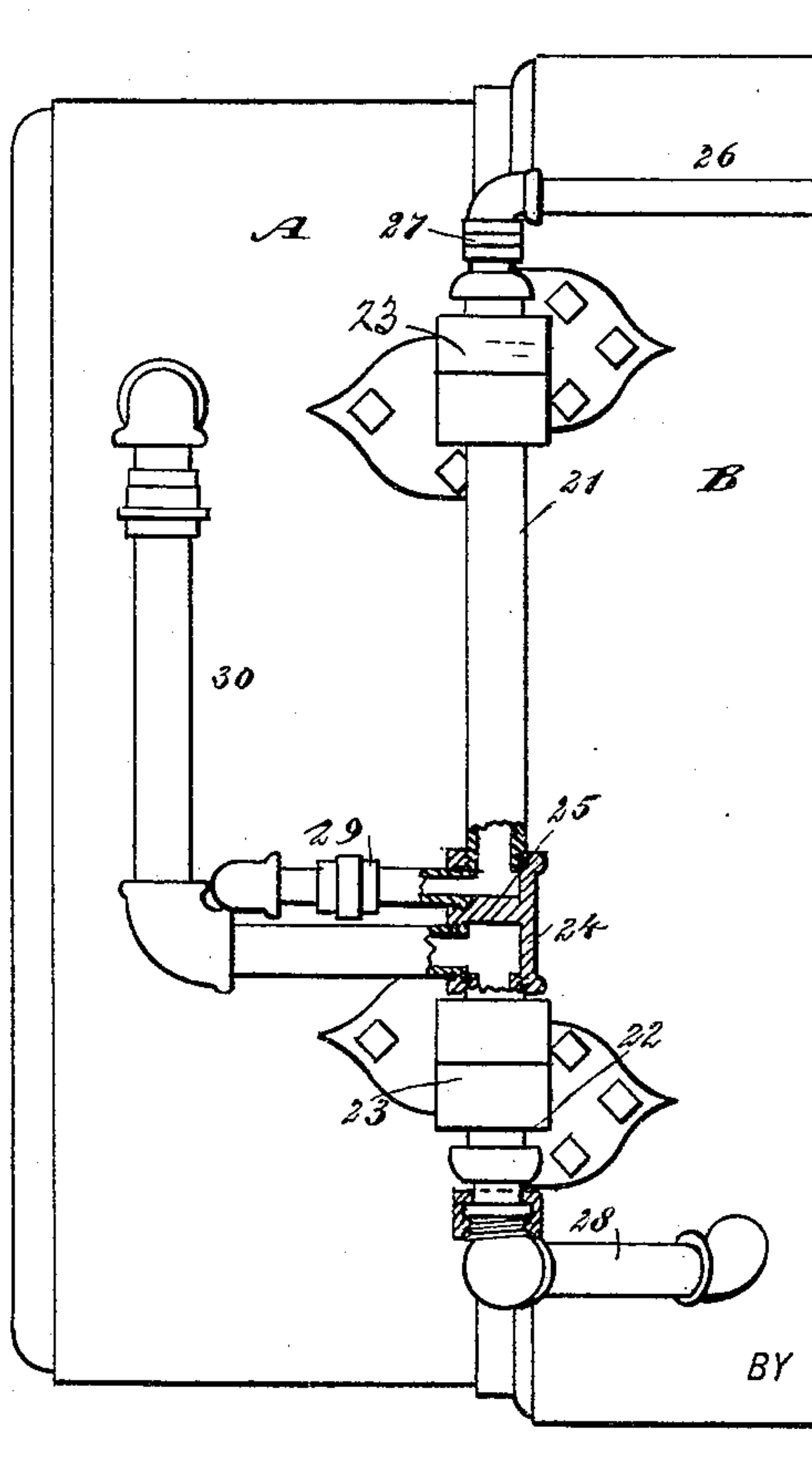


Fig. 3.



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FRANK SAXON, OF WORTHINGTON, MINNESOTA.

BOILER.

SPECIFICATION forming part of Letters Patent No. 495,841, dated April 18, 1893.

Application filed March 24, 1892. Serial No. 426,279. (No model.)

To all whom it may concern:

Be it known that I, FRANK SAXON, of Worthington, in the county of Nobles and State of Minnesota, have invented a new and useful
5 Improvement in Boilers, of which the following is a full, clear, and exact description.

My invention relates to an improvement in boilers, especially return flue boilers for road or traction engines, or engines for agricultural purposes, and the object of the invention is to provide a front extension to the boiler which will act in a manner to save the flame sheet and also that portion of the flue sheet of the boiler above the water line.

15 It is another object of the invention, by means of the extension to supply hot water through it constantly to the interior of the main boiler, and to so construct the extension that it may be hinged to the main portion of the boiler so that the interior thereof may be disclosed when required, and whereby the hinge employed to connect the front or extension with the main body of the boiler will be the supply and discharge pipes. Thus the extension, whether closed or open, will not interfere with the passage of water from the extension to the main boiler.

Another object of the invention is to so locate the discharge pipe in the front or extension that when the boiler is placed in an inclined position the water will not discharge itself altogether from the extension or front into the main boiler; and a further object of the invention is by the addition of the front or extension to the boiler to obtain a maximum of the heat in a return fire tubular boiler.

40 The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the
45 views.

Figure 1 is a partial, vertical longitudinal section through a boiler having the invention applied thereto. Fig. 2 is a front elevation of the improved boiler; and Fig. 3 is a side elevation of the front portion of the improved boiler.

The extension A, of the boiler B, is located

at the front, and is of less diameter than the diameter of the front portion of the boiler, the extension being made of such size that its inner end will fit within the shell of the boiler projecting beyond the flue sheet 10, the projection of the shell being designated as 11 in the drawings. The extension is provided with a circular water chamber 12, and this chamber is produced by forming within the extension an inner head 13, which extends downward from the top of the extension parallel with the flue sheet of the boiler above the fire tube 14, as shown in Fig. 1. The partition is then carried diagonally downward to form a flamesheet 15, and thence vertically downward producing a water leg 16; and around the opening 17, formed in the front or outer face of the extension and adapted to be covered by a suitable door, the lower portion of the partition extending to the inner edge of the shell thereof. Thus a circular water chamber is formed, of greater width at the top than intermediate of the top and bottom, this difference in width being created in order to form within the chamber a combustion chamber C, as is likewise shown in Fig. 1; and the walls of the water chamber are braced by a series of tie rods 18, arranged in any approved manner, and in the flame sheet 15 of the boiler, a plug 19, is located, while a plug 20, is also placed in the flue sheet of the boiler. These plugs are hollow and filled with a fusible metal, so that in the event of low water the fusible metal melts, and the remaining water and steam in the boiler will then be discharged upon the fire and extinguish it.

The front or extension has a hinge connection with the main body of the boiler, and this connection is effected jointly through the medium of the vertical portions of the water supply tube 21 and discharge tube 22, as the knuckles 23 of the hinges are connected one knuckle with the main body of the boiler and the other with the extension, the pipes or tubes passing through the knuckles as shown best in Fig. 3.

The vertical sections of the supply and of the discharge tubes or pipes are connected preferably to the lower hinge through the medium of a union coupling 24, this coupling being divided into an upper and a lower compartment through the medium of a central

partition 25, the compartments being independent; and the lower end of the upper tube, which is the supply tube, has a swivel connection with the upper end of the union coupling, while the upper end of the discharge tube, which is the lower tube, is connected in like manner with the lower end of said coupling, as is likewise best shown in Fig. 3.

Above the upper hinge of the front, the supply tube 21, is connected by a pipe 26, with a pump, or with any apparatus capable of supplying water to it, the connection between the pipe 26 and the tube 21 being a swivel one, and in the drawings is represented as effected by a union 27. The vertical portion of the discharge pipe or tube has also a swivel connection with the lower horizontal branch 28, the said branch leading into the main body of the boiler. Water is supplied to the chamber 12 in the front or extension by a branch supply pipe 29, connected with the upper compartment of the coupling union 24, and with the water chamber 12 in the extension, at or near the center of one side.

Water is fed from the water chamber of the extension to the discharge pipe 22, through the medium of a supply branch 30, which is connected with the lower compartment of the coupling union 24, the said supply branch extending across the outer face of the extension, thence upward horizontally within the water chamber thereof, and again vertically upward, forming a stand pipe 31, as shown in Fig. 1, the said stand pipe at its top being but slightly spaced from the upper wall of the extension. Thus it will be observed that the water line which is to be established in the extension is considerably higher than that to be maintained in the main boiler, the two water lines being indicated by dotted lines in Fig. 1.

The front of the extension is usually provided with hand holes 32, for cleaning the interior thereof, and a latch 33 of any approved construction is adapted to lock the extension to the shell of the main boiler. This lock or latch is usually made at the side opposite that at which the hinge is located and near the top. It will be understood that by entering the inner end of the extension within the front of the shell of the main boiler, this portion of the shell will maintain the burden of the weight of the extension and thus relieve the hinges from undue strain, thus necessitating only a simple form of lock or latch.

It will be observed that when the extension is attached to the boiler, the flame sheet 15, is effectually protected, and likewise the flue sheet 10, and that water is first supplied to the extension where it becomes heated, and when the extension chamber has been filled it flows through the stand pipe 31 and through the discharge pipes 30 and 28 into the boiler in a heated condition; and it will be likewise observed that in the event the boiler is standing upon an incline, or is being carried up

or down a hill, the water in the extension chamber can not possibly leave it to such an extent as to dangerously expose its walls to heat, and that a certain per-cent only of the water will pass from the extension chamber to the main body of the boiler when the supply of water to the extension has been shut off.

The prime object to be attained by my invention is to provide a maximum amount of heating surface, and to economize in fuel.

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

1. The combination, with a boiler, of an extension located in front of the flue sheet, the said extension being provided with an interior water chamber extending from top to bottom, the said chamber being circular and of less diameter at its central portion than at the top whereby a combustion chamber is formed, a stand pipe located within the water compartment of the extension, a pipe connection between the stand pipe and the water receiving section of the boiler, and a water supply connected with the water chamber of the extension, as and for the purpose set forth.

2. The combination, with a boiler, of an extension located in front of the flue sheet and combustion chamber, the said extension being provided with a water chamber extending from top to bottom, of less diameter at its central portion than at the top, forming an interior compartment adapted as an extension of the combustion chamber of the boiler, a tubular hinge connection between the extension and the boiler, a portion of the tubular hinge being adapted to convey water to the extension of the boiler and another portion to conduct water from the extension to the main boiler, substantially as and for the purpose set forth.

3. The combination, with a boiler provided with a projected flange at its front, of an extension located at the front, fitting within the flange and extending outwardly therefrom, the said extension being provided with an interior circular water compartment extending from top to bottom and from side to side, the said water compartment being of less diameter at its central portion than at its upper end, forming an interior combustion chamber adapted as a continuation of that of the boiler, hinges connecting the extension with the main boiler, the pintles of which hinges consist of tubes, one tube being provided with a swivel connection at one end with a water-supply apparatus, and connected at its opposite end with a branch leading into the water chamber of the extension, the other pintle tube having a swivel connection at one end with a discharge pipe leading into the boiler and connected at its opposite end with a stand pipe located within the water chamber of the extension, all combined to operate substantially in the manner and for the purpose specified.

4. The combination with a boiler, of an ex-

tension provided with a circular water chamber extending from top to bottom and of less diameter at the central portion than at the top, thereby forming a combustion chamber, the said extension being hinged to the boiler by the supply and discharge pipes thereof, substantially as described.

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5. The combination with a boiler, of an extension provided with a circular water chamber extending from top to bottom and of less

diameter at the center than at the top thereby forming a combustion chamber, the said extension being hinged to the boiler by the supply and discharge pipes thereof, substantially as described.

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Witnesses:

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