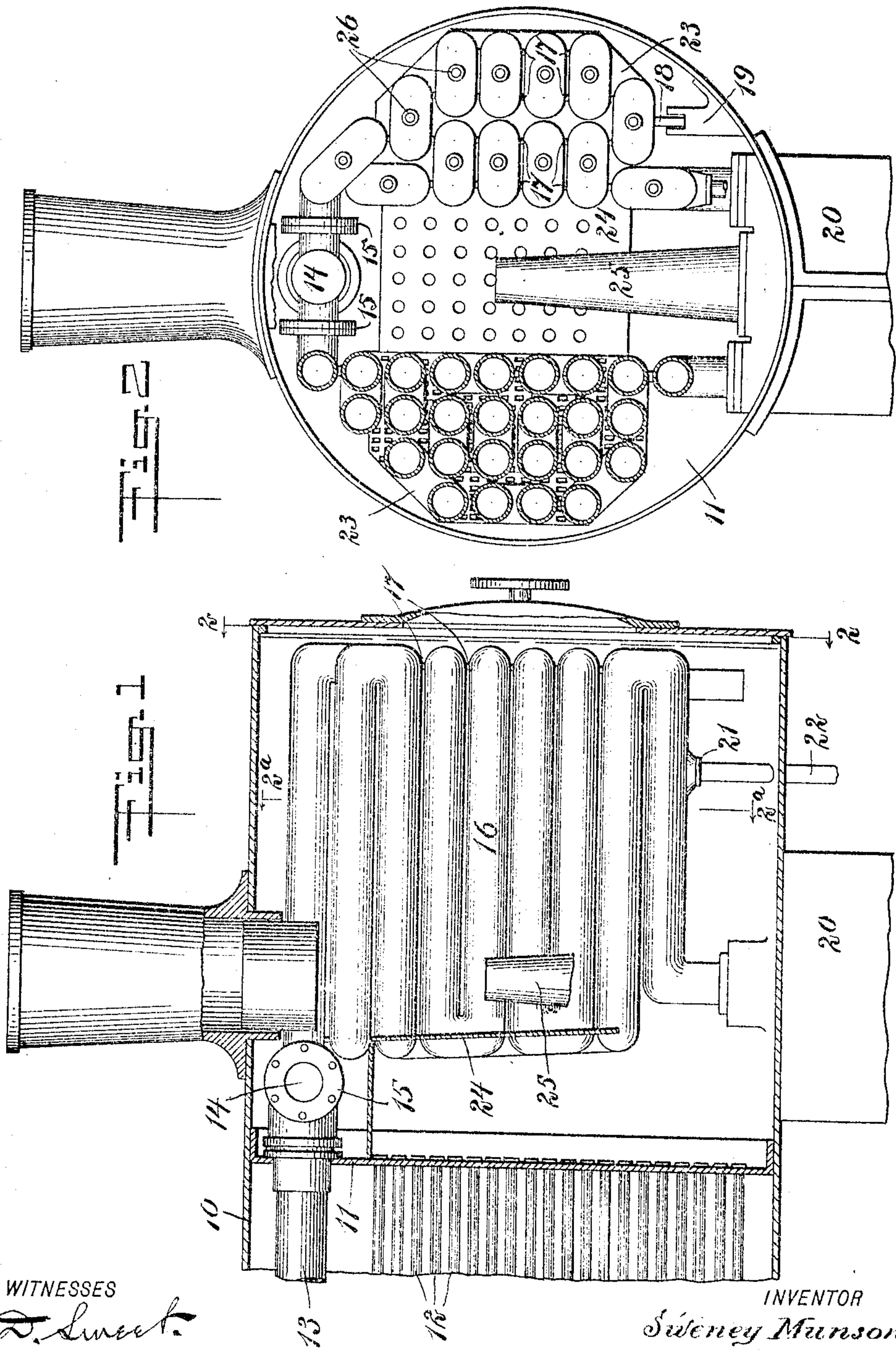


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SUPERHEATER.

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916,180.

Patented Mar. 23, 1909.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

SWENEY MUNSON, OF FOWLER, COLORADO.

## SUPERHEATER.

No. 916,180.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed August 24, 1908. Serial No. 449,958.

*To all whom it may concern:*

Be it known that I, SWENEY MUNSON, a citizen of the United States, and a resident of Fowler, in the county of Otero and State of Colorado, have invented a new and Improved Superheater, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in superheaters, and more particularly to that type of superheater disclosed in my prior patent, No. 861,137, granted July 23, 1907.

The special object of my invention is to avoid leakage of steam from the superheater, by eliminating the separate tubes and the front and rear headers shown in said patent.

In my present invention I form the larger section of the superheater of a cast coil pipe forming a zig-zag or circuitous passage, with the minimum number of joints. In superheaters formed of separate pipes or tubes having their ends threaded into headers, steam is liable to escape at any one of the large number of joints should the said joint become loose through contraction and expansion of the metal under changes of temperature, or by a jar, blow, or undue strain. Furthermore, the steam in passing through a large number of substantially parallel pipes, travels at a comparatively low rate of speed, whereas by forming the entire section of the superheater of one continuous pipe, the steam is more effectively superheated.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a longitudinal section through the smoke-box of a boiler having my improved superheater mounted therein; and Fig. 2 is a transverse section through the smoke-box, the major portion of said section being taken on the line 2—2 of Fig. 1, and the left-hand portion of said section being taken on the line 2<sup>a</sup>—2<sup>a</sup>.

The specific boiler and smoke-box illustrated in the accompanying drawings is substantially the same as that illustrated in my prior patent above referred to, and includes a tubular shell 10 having a boiler head 11 to which the boiler tubes 12 are secured, and having a dry steam pipe 13 in the upper portion of the boiler above the tubes. The steam pipe 13 extends through the boiler head and terminates in a T 14

having flanges 15 adapted to be secured to the separate sections of the superheater.

Each section of my improved superheater is formed of a single casting 16 so formed as to provide one continuous conduit arranged in zig-zag or circuitous form. The separate portions of the casting adjacent the bends in the conduit at the front end of the smoke-box are connected together by lugs 17 which serve to support each bend upon the one below. One of the lowermost bends of the casting at the front end of the smoke-box is provided with a lug 18 adapted to be received within a support 19 rigidly secured to the wall of the smoke-box. The casting at the upper end of the conduit is rigidly bolted to the corresponding flange 15 of the T 14, while at the lower end of the casting the end of the conduit is rigidly bolted to the cylinder saddle 20. Adjacent the lower end of the conduit, said conduit may be provided with a small recess or projection 21 upon its under side, to which may be connected a conduit 22 leading to the exterior of the smoke-box and serving to draw off any water condensing within the superheater, substantially as shown in my previous patent. The separate bends at the rear end of the superheater are connected together and held rigid in respect to each other by a web 23 cast integral with the conduit. This web is preferably perforated to permit a portion of the smoke to pass therethrough into direct engagement with the body portion of the superheater.

In connection with the superheater I preferably employ a draft plate 24 substantially as shown in my previous patent, but if desired, perforated to permit the passage of a portion of the smoke therethrough.

The steam escape nozzle 25 is preferably extended to a considerably greater height than the nozzle shown in my previous patent, and I eliminate the petticoat pipe there shown.

As a convenience in casting, and to permit of the removal of the cores from the interior of the conduit, the latter at each of the bends at the rear end, may, if desired, be provided with a threaded aperture closed by a suitable plug 26 after the core has been removed. These plugs may if desired, be removed to facilitate the cleaning of the interior of the conduit.

This superheater can also be used in stationary boilers by making the superheating



casting 16 conform to the shape of the smoke box or chamber, be it square or round, and by providing a flange cast on each end 15 to which the steam pipe that comes from the dome of the boiler and the one that goes to the engine may be connected. In stationary boilers, it will only be necessary to use one casting 16, and of course it is obvious that the casting can be made in any number 10 of shapes desirable and still not depart from the spirit of the invention as shown in the drawing.

Having thus described my invention, I claim as new, and desire to secure by Letters 15 Patent:

1. A superheater, comprising similar sections spaced apart, each of said sections comprising a single coil of cast pipe, the bends of the coil adjacent one end thereof being 20 spaced apart and supported by lugs integral therewith, and the separate bends adjacent the opposite end being supported and spaced apart by a perforated web integral therewith.

25 2. In a device of the character described,

the combination of a pair of superheating sections secured in the smoke box, one on each side thereof, each consisting of a plurality of pipes extending longitudinally of the smoke-box, means connecting said pipes in 30 series to form a continuous channel, and webs integral with the said connecting means at the ends of said pipes adjacent the flue-sheet extending transversely of said air-spaces, suitable connection for passing steam 35 through said sections, and a baffle extending transversely of the smoke-box between the rear ends of said sections and coacting with their webs to prevent the gases of combustion entering the smoke-box through the 40 flue-sheet from passing directly and freely to the smoke-stack opening.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SWENEY MUNSON.

Witnesses:

F. M. WEILAND,  
J. S. SOLSETH.