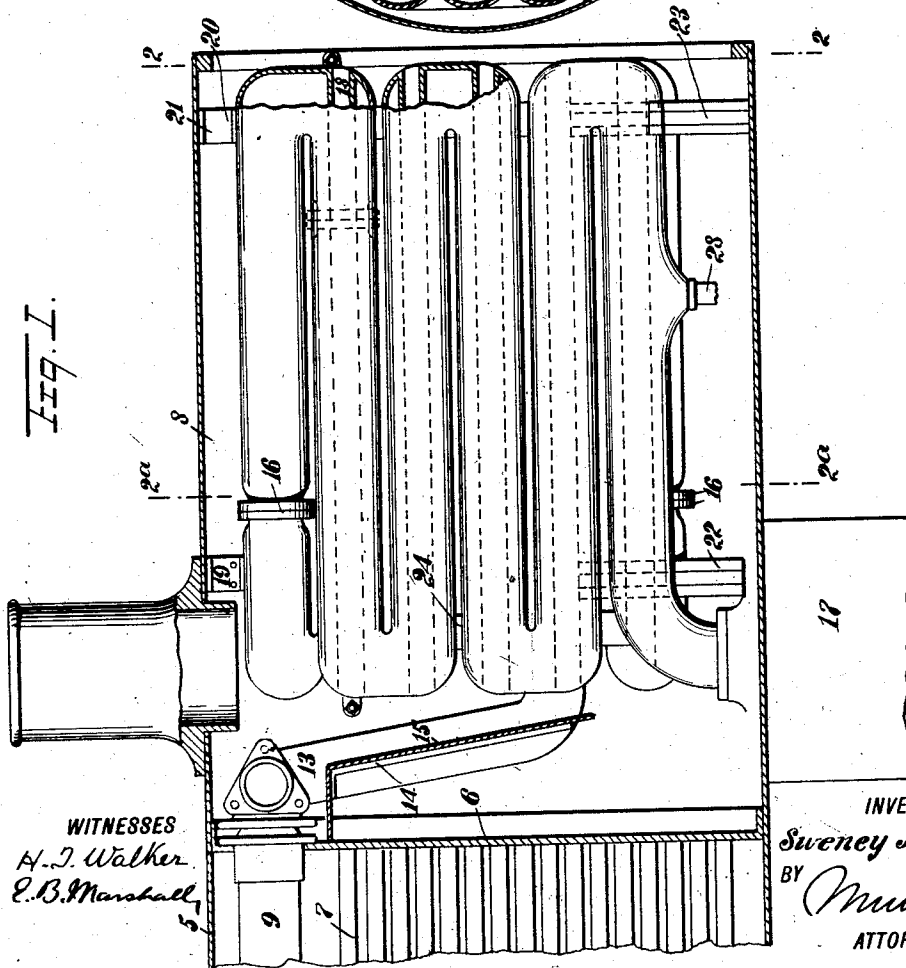
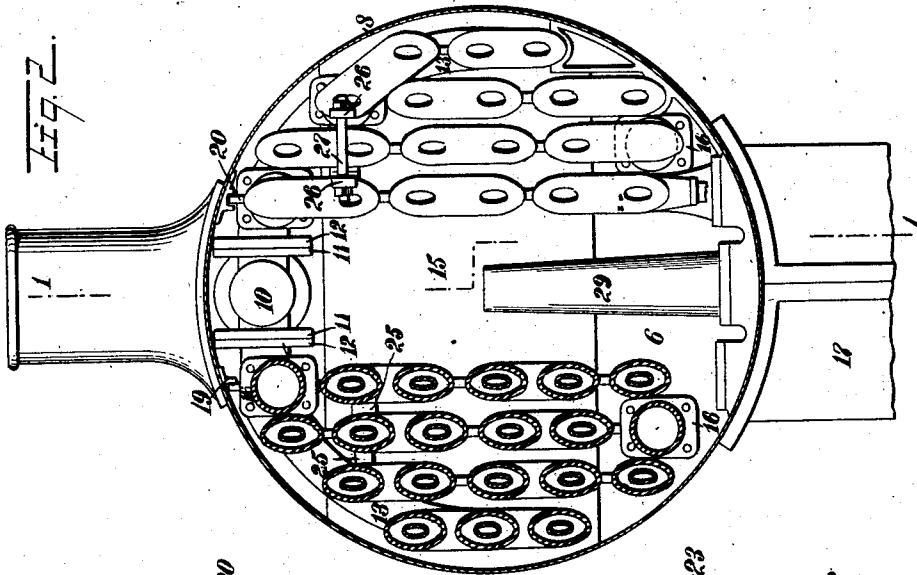


S. MUNSON.
SUPERHEATER.

APPLICATION FILED JULY 3, 1909.

1,011,475.

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UNITED STATES PATENT OFFICE.

SWENEY MUNSON, OF FOWLER, COLORADO.

SUPERHEATER.

1,011,475.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed July 3, 1909. Serial No. 505,880.

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.

My invention relates to improvements in superheaters, and it has for its object to improve the constructions shown in my prior patents, No. 861,137 of July 23, 1907 and No. 916,180 of March 23, 1909, by providing the superheater coils in sections, which are secured together, thus lessening the cost of construction, the coils being also so constructed that the steam will be heated more quickly than in the previous constructions.

Another object of the invention is to provide supports for the superheater and coils which will permit of their expansion and contraction.

Still other objects of the invention will appear in the following complete description.

In this specification I will describe the preferred form of my invention, it being understood that the scope of the invention is defined in the appended claims.

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 all the views.

Figure 1 is a sectional view on the line 1—1 of Fig. 2; 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 being taken on the line 2^a—2^a of Fig. 1.

By referring to the drawings it will be seen that the boiler 5 with its head 6 and the usual tubes 7, as well as the smoke box 8, are in accordance with the description appearing in my previous patents, and it therefore appears to be unnecessary for me to describe these parts in detail. The dry steam pipe 9 extends through the head 6 and is connected with a T 10, which has outer flanges 11 at its opposite terminals, which engage outer flanges 12 at the upper terminals of the pipes 13, the flanges 11 and 12 both being secured together in order to make a tight joint between the T 10 and the pipes 13, which are curved to conform with the contour of the smoke box 8 and which are disposed downwardly. The inner sides

of the pipes 13 have ribs 14 to which are secured a draft plate 15, the draft plate 15 having its lower terminal disposed at a distance from the bottom of the smoke box 8, and having its upper terminal bent substantially parallel with the top of the smoke box 8 and projecting rearwardly until it meets the head 6 of the boiler 5. Each of the pipes 13 is preferably integral with the first section of the superheater coil at its respective side of the smoke box. These superheating coils have bent portions so that each coil is disposed back and forth longitudinally of the smoke box in four columns, the pipe being oval in cross section, but each section in the coil having its terminals annular in cross section, there being outwardly disposed annular flanges 16 at the terminals, which are secured together so that when arranged in place, each of the coils of pipe forms a continuous conduit from the T 10 to the cylinder saddle 17. Disposed in the straight portions of the coils are tubes 18, which are oval in cross section to conform with the inner contour of the coils, and are spaced from the inner walls of the pipe forming the coils, the tubes 18 having their peripheries secured to openings in the outer bent portions of the pipe forming the coils so that while steam may pass through the coils, the steam may be superheated from within the coils as well as from without.

In order not to complicate the construction, I do not propose to dispose the tubes 18 in the portions of the pipe forming the coil which have the joints, which are connected by the flanges 16. Each of the coils of pipe is firmly secured to the smoke box at its top by means of a plate 19, which is secured to the arch of the smoke box and to the upper rear straight portion of the coil of pipe. Each of the upper forward portions of the coils of pipe have lugs 20, which engage a guide 21 secured to the arch of the smoke box. At their bottom the coils of pipe are supported on brackets 22 and 23, which have arms shaped to receive the portions of the pipe and to support them without being fastened thereto. It will be seen by this construction that each of the coils of pipe is secured only at its rear at the top to the arch of the smoke box, and at its bottom at the connection with the cylinder saddle 17. The pipe may therefore expand and contract as the temperature in the smoke box varies.

Each of the straight sections of the pipe forming each of the coils is supported at one end by the bent portion, which connects it with the straight portion by the pipe disposed therebelow, and at the other end is supported by a lug 24, which engages the said under portion. In this way the straight portions of the pipes are supported one above the other, the lowermost portions being supported on the brackets 22 and 23. The three inner columns at each side are separated from each other at their top by lugs 25, and the two outer columns of each of these three columns have projecting lugs 26 with orifices therein through which are disposed bolts 27, which connect the columns together and hold them in position. Adjacent the lower portion of the pipe forming each of the coils, there is a conduit 28, which may be used to draw off water which may condense in the coils.

A steam escape nozzle is shown at 29 in Fig. 2 of the drawings.

The superheater may be used in stationary or marine boilers by making the coils conform to the shape of the smoke box or chamber, and it will be understood that other constructional changes may be made in the device without departing from the scope of the invention.

The sections of the superheating coils may be constructed so that their terminals will abut at convenient places which may be either along their straight or at their curved portions.

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

1. In a superheater a smoke box, a coil pipe made up of horizontally disposed sections which have their terminals secured together end to end, both terminals of the coil pipe being disposed near the bottom of the said smoke box, one of the said terminals being secured to the bottom of the smoke box, the coil pipe being secured at its top to the smoke box at one point, means for holding the portions of the coil pipe relatively to the neighboring portions of the pipe, disposed at the side of the first-mentioned portions, and guides for the said horizontal sections, which permit the expansion and contraction of the pipe horizontally.

2. In a superheater a smoke box, two coils of pipe disposed in the smoke box, one at each side, two pipes in the smoke box leading downwardly and communicating with the two coils of pipe respectively, and a

draft plate secured to the two pipes and disposed therebetween, from one pipe to the other, and in the same direction therewith.

3. In a superheater, a smoke-box, two pipes disposed in the smoke-box, one at each side, the pipes having portions bent so that they are disposed back and forth in the smoke-box, the principal portions of the pipes being straight, the bodies of the pipes being oval in cross section and being made up of sections which have their terminals disposed at the straight portions of the pipes, the terminals being annular in cross section, the layers of the pipes being spaced apart, means for supporting the pipes which will permit of their expansion and contraction, two additional pipes in the smoke-box leading downwardly and communicating with the first-mentioned pipes respectively, and a draft plate secured to the two additional pipes and disposed therebetween from one pipe to the other.

4. In a superheater a pipe with portions bent so that it is disposed back and forth in substantially straight parallel divisions, lugs secured to neighboring portions of the pipe by which they are held spaced from each other to permit of it being heated under the most efficient conditions, lugs with orifices secured to and projecting from portions of the pipe in different divisions, a bolt disposed in the orifices by which the divisions of the pipe are held relatively to each other, and guides for the pipe, which will permit of its expansion and contraction.

5. In a superheater a pipe having bent portions and disposed back and forth in substantially straight lines, in a plurality of parallel divisions, a smoke box surrounding the pipe, the pipe being secured relatively to the smoke box at one point, guides connected with the smoke box, which support the pipe and permit of its expansion and contraction, lugs secured to neighboring portions of the pipe by which they are held apart, lugs with orifices secured to and projecting from portions of the pipe in different divisions, and a bolt disposed in the orifices by which the divisions are held relatively to each other to permit the pipe to expand and contract as one unit.

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

SWENEY MUNSON.

Witnesses:

ARTHUR L. MUNSON,
FRED H. KISSLING.