B. BROIDO.

MEANS FOR SECURING PIPES TO HEADERS.

APPLICATION FILED JULY 28, 1920.

1,363,713.

Patented Dec. 28, 1920.

2 SHEETS—SHEET 1.

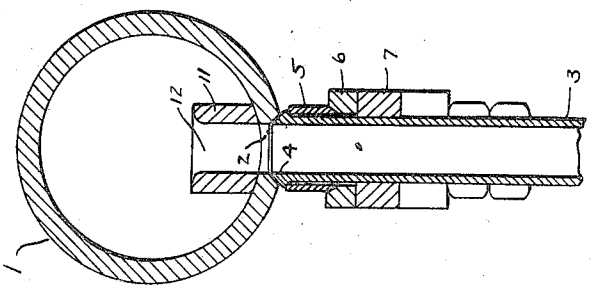


FIG. 2

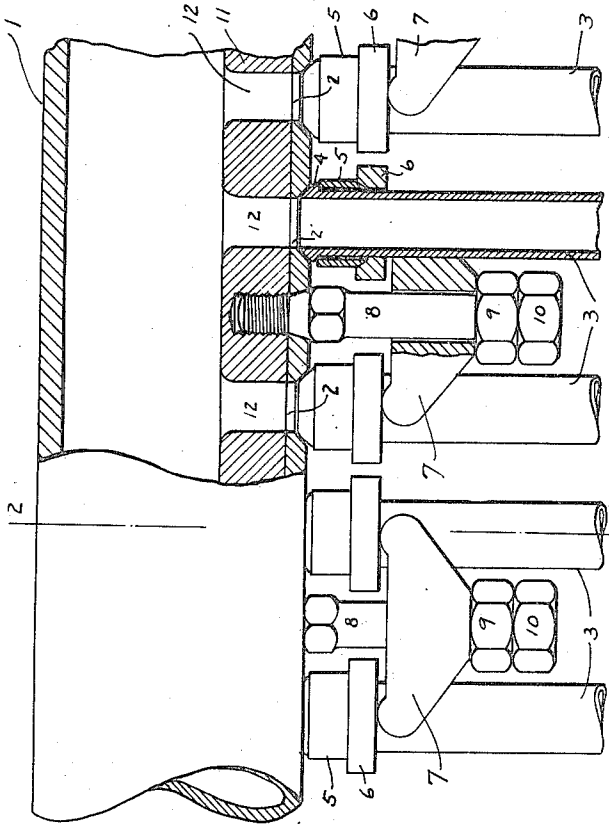


FIG. 1

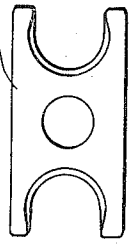


FIG. 3

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By HIS Attorney O. V. Thiele

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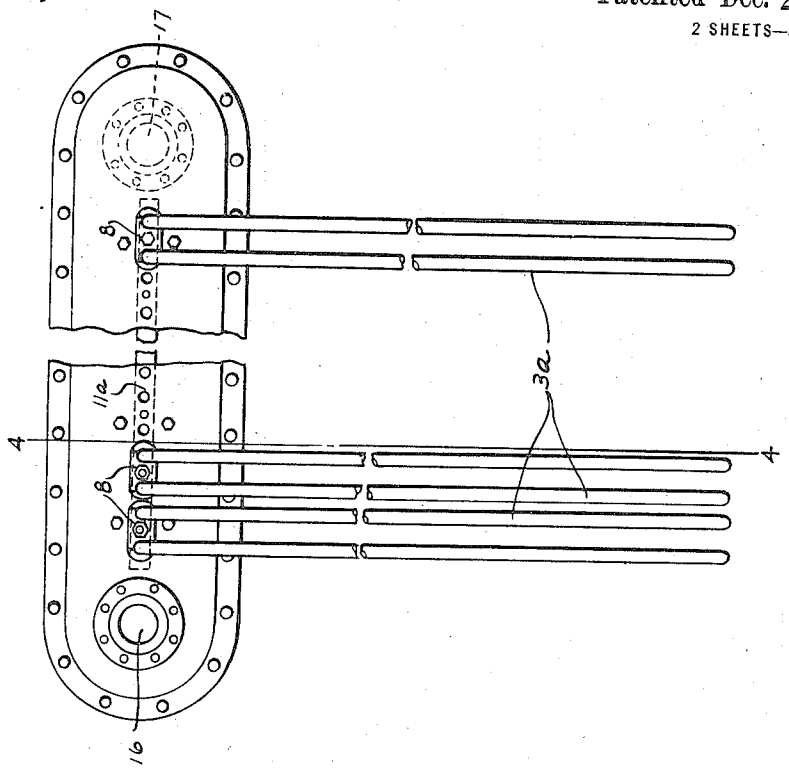


FIG. 5

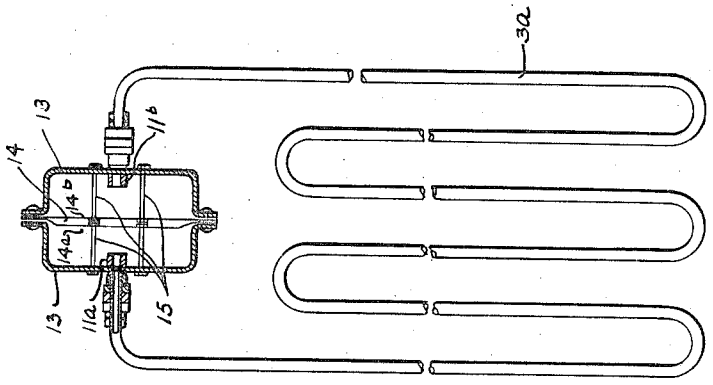


FIG. 4

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UNITED STATES PATENT OFFICE.

BENJAMIN BROIDO, OF NEW YORK, N. Y., ASSIGNOR TO LOCOMOTIVE SUPERHEATER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

MEANS FOR SECURING PIPES TO HEADERS.

1,363,713. Specification of Letters Patent. Patented Dec. 28, 1920.

Application filed July 28, 1920. Serial No. 399,622.

To all whom it may concern:

Be it known that I, BENJAMIN BROIDO, a citizen of the United States, and resident of New York, N. Y., have invented certain new and useful Improvements in Means for Securing Pipes to Headers, of which the following is a specification.

This invention relates to superheaters and other structures wherein tubular elements are secured to headers.

According to very common practice in the art of steam superheating, the ends of the tubular elements are secured to the headers by means of double-ended clamps. Each of these clamps has a central opening through which extends a bolt which draws the clamp toward the header. The two ends of the clamp are forced or perforated and each embraces a pipe whose end is of an enlarged external diameter. This enlarged head of each pipe is thus clamped against the header, openings through the header wall establishing communication from its interior to the pipes. Ordinarily a washer is interposed between the clamp and each enlarged pipe head.

The construction thus briefly described is well known. It is shown in the drawings of the present case in a slightly modified form. When it is attempted to use commercial steel tubing for headers, or when it is desired to use a pressed steel or other header with comparatively thin walls, some difficulty is experienced in the use of these clamping means; and it is the object of the present invention to make this desirable construction available with such headers.

In the drawings, Figure 1 shows in lateral elevation, portions being sectioned on a central plane, a portion of a header and the attached element ends according to my invention; Fig. 2 shows a section on line 2—2 of Fig. 1; Fig. 3 is a top view of the clamp employed; Figs. 4 and 5 show the invention applied to another form of header, Fig. 5 being a lateral elevation, and Fig. 4 a section on line 4—4 of Fig. 5. These last two figures are on a somewhat smaller scale.

Referring first to Figs 1 to 3, the header 1 is of circular cross-section, the material used being steel piping. Through its walls extend the alined holes 2, 2 through which the element ends 3, 3 communicate with the interior of the header.

Each element end has its tip upset, as at 4, a collar 5 bearing against the under side of the upset portion. The washer 6 transmits the pressure from the clamp 7 to the collar. The clamp 7 is pulled in the direction toward the header by means of the stud-bolt 8 and the nut 9. 10 is a lock nut.

The clamp is conveniently formed with forked ends as clearly shown in Fig. 3, a pipe lying between each pair of forks.

The wall of the pipe is too thin to secure the stud-bolt 8 in it; and even if this difficulty were overcome, the pressure exerted by the pipe ends against the pipe would be sufficient to deform the pipe, so that when the nut on one bolt is pulled up to tighten its two element ends, the next adjacent element ends are apt to be loosened.

These difficulties are obviated by my device. A bar 11 of steel or other appropriate material is placed in the header in the position apparent from the drawing. The side of the bar in contact with the inner wall of the header is given an appropriately curved shape to insure good contact with it. Holes 12, 12, corresponding in size and location to the holes 2, 2 of the header wall, extend through the bar. The stud-bolts 8 extend through the header wall and screw into the bar.

In the drawing the holes in the header wall through which the bolts 8 extend are shown conical, and the corresponding portion of the bolt itself is shaped to correspond. Leakage between the contacting surfaces of the two is thus prevented; but some other means to accomplish this may obviously be used.

By my device the stud-bolts 8 are secured firmly, deformation of the header wall and consequent leakage trouble is avoided, and the construction is an inexpensive one.

It is obvious that the bar 11 need not be continuous from one end of the header to the other, but may be divided into two or more sections if desired.

In the form illustrated in the figures so far described, the header is shown of cylindrical form, the material being, as stated, commercial tubing. My invention also makes available the use of other light forms of headers, such as illustrated in Figs. 4 and 5. Here the header is shown as made up of the two halves 13—13, each trough-shaped, and the two riveted together along their

edges. The hollow interior is separated into "saturated" and "superheated" chambers by the wall 14. This wall is preferably double, being made up of sheets 14^a and 14^b. Stays 15 prevent deformation of the chamber walls. 16 and 17 are connections for supplying and withdrawing steam.

The superheater units 3^a each have one end secured to one chamber of the header and the other end to the other chamber. The bars 11^a and 11^b lie opposite the two rows of element ends, and have screwed into them the studs 8, 8. These studs draw the clamps and element ends toward the header in the way described in connection with the first form.

Obviously more than one row of element ends may be secured to each chamber, if desired.

What I claim is:

1. In apparatus of the class described the combination of a header with a relatively thin wall; a relatively heavy bar in contact with the inside of the header wall, there being two holes extending through the wall and the bar; two pipe ends each with an enlarged head on its end engaging one of the holes through the wall; and means to force said heads against the holes comprising a clamp engaging each of the pipe ends, said clamp having a central aperture, and a stud-bolt extending through the aperture and the wall and into the bar.

2. In apparatus of the class described, and in combination, a cylindrical header with a relatively thin wall; a relatively heavy bar in contact with the inside of the header wall, there being a series of alined holes through the wall and the bar; a plurality of pipe ends each with an enlarged head on its end engaging one of the holes through the wall; a plurality of clamps each engaging a pair of pipe ends and each provided with a central aperture; a stud-bolt extending through each aperture and through the wall and into the bar; and a nut engaging the end of each bolt and its clamp.

3. In apparatus of the class described the combination of a header having a relatively thin wall, the wall having a hole through it, a pipe with an enlarged head on its end engaging the hole, a bar in contact with the inner wall of the pipe opposite the hole, a clamp pressing the enlarged head against the hole, and a stud extending through the wall and into the bar to draw the clamp against the head.

BENJAMIN BROIDO.