

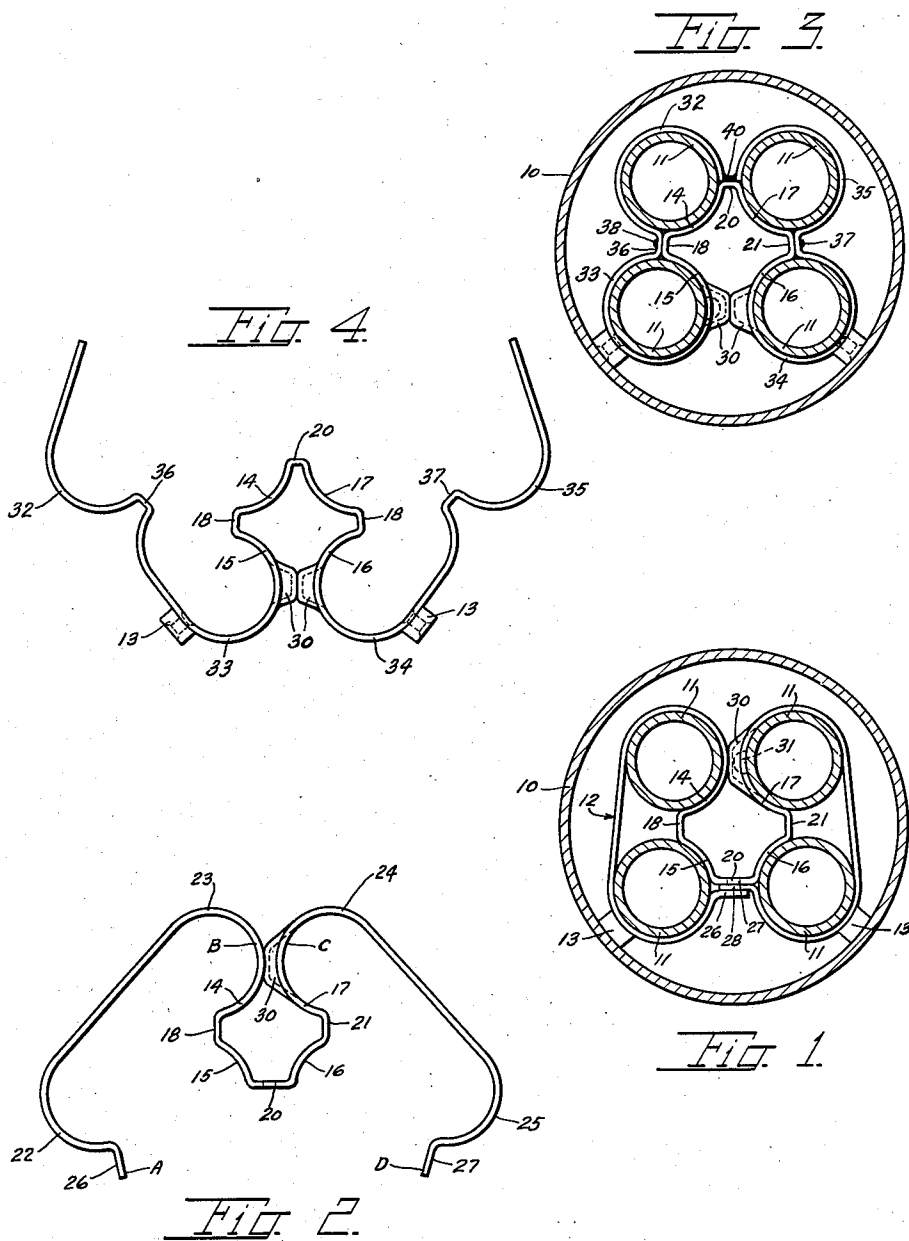
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UNITARY TUBE SUPPORTING BAND

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UNITARY TUBE SUPPORTING BAND

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4 Claims. (Cl. 248-49)

The present invention relates to improvements in tube supports and particularly in supports for superheater tubes located in the flues of a fire tube boiler.

The invention is concerned primarily with improvements in the type of tube band and support utilized to support and space two pairs of tubes in parallel relation in a flue of a fire tube boiler such as that shown in La Porte Patent 1,363,520, issued December 12, 1920. Essentially the invention consists in so bending and shaping a single strip of metal that a support of this type may consist of a unitary tube spacing element and band rather than of separate attached parts.

In the drawing:

Figure 1 is a transverse sectional view through a boiler flue illustrating an improved tube band and support embodying the invention as utilized in conjunction with superheater tubes grouped about the axis of the flue;

Figure 2 shows the support before its application to the tubes; and

Figures 3 and 4 are views similar to Figures 1 and 2, respectively, illustrating a modified form of support.

In Figure 1 the numeral 10 designates a flue of a smoke tube boiler in which are located two pairs of superheater tubes 11 disposed in parallel relation and grouped about the longitudinal axis of the flue. The superheater tubes 11 are supported in the flue by means of a band and support which is designated as a whole by the numeral 12 and provided with bearing lugs 13 resting on the inner surface of flue 10 at its bottom.

In accordance with the invention the supporting band 12 consists of a single metallic strip formed substantially midway of its length, i. e. in the section designated B-C, with several arcuate portions 14, 15, 16 and 17 adapted to contact inwardly facing parts of the tube surfaces and intervening flat portions 18, 20 and 21 extending generally normal or perpendicular to the tube surfaces so that the flat portions 18 and 21 each space one tube of the lower pair from a tube of the upper pair and the flat portion 20 spaces the two tubes of the lower pair from each other. The two end sections A-B and C-D of the strip are shaped at 22, 23, 24 and 25 to extend partially about outwardly facing surfaces of the tubes 11 while its extreme end portions 26 and 27 lie adjacent to one of the flat tube-spacing portions of the support. As illustrated in Figs. 1 and 2 the end portions 26 and 27 of the strip lie in overlapping relation to

each other alongside the flat portion 20 of the spacer element of the tube supporting band and are attached to the latter by spot welding or riveting as indicated at 28.

Where the supporting band extends between the two tubes 11 of the upper pair the strip is formed between its side edges with a protuberance 30 on its outer face which contacts a portion of the band extending about the opposite tube 11 to space these two tubes apart. This protuberance may be formed, for example, by creating a depression in the inner face of the strip at this portion. Such a depressed protuberance also serves to enclose and protect a button 31 attached to the outer surface of the tube and serving to limit the movement of the supporting band longitudinally of the tubes.

The form of the supporting band illustrated in Figs. 3 and 4 is generally similar to that described above but has those portions 32, 33, 34 and 35 contacting the outwardly facing parts of the tube surfaces extended to complement those designated 14, 15 and 16 which contact inwardly facing portions of the tube surfaces so as to substantially completely encircle the tubes. The band portions 32, 33, 34 and 35 are separated by flat portions 36 and 37 which lie alongside the flat portions 18, 21 of the intermediate part of the strip and are secured thereto by spot welds 38. This form also differs from that illustrated in Figs. 1 and 2 in that the extreme end portions 26, 27 of the strip abut against the tube spacing portion 20 of the metal section of the strip and are riveted or welded thereto at 40.

It will be seen that in both forms of the invention illustrated in the drawing and described above the tube supporting band is shaped and formed from a single metallic strip with the result that the construction of bands of this type is simplified and they may be more cheaply manufactured.

What I claim is:

1. A band for parallel superheater tubes grouped about the axis of a boiler flue comprising a single metallic strip formed substantially midway of its length with several spaced arcuate portions engaging inwardly facing parts of the tube surfaces and with several intervening flat portions extending generally normal to the tube surfaces to space them apart, the two end sections of said strip extending partially about outwardly facing surfaces of said tubes with the extreme end portions of said strip lying alongside and parallel with one of the flat, tube spacing portions of the mid-section of said strip; and

means securing said end portions to said spacing portion.

2. A band for parallel superheater tubes grouped about the axis of a boiler flue comprising a single metallic strip formed substantially midway of its length with several spaced arcuate portions engaging inwardly facing parts of the tube surfaces and with several intervening flat portions extending generally normal to the tube surfaces to space them apart, the two end sections of said strip being formed with arcuate portions contacting outwardly facing tube surfaces and intermediate flat portions lying parallel to the flat tube spacing portions of the middle section of said strip and the extreme end portions of the strip being positioned adjacent one of said tube spacing portions of the middle section of the strip; means securing the flat portions of the end and middle sections of said strip to each other; and means securing the extreme end sections of said strip to the adjacent part of said middle section.

3. A band for parallel superheater tubes grouped about the axis of a boiler flue comprising a single metallic strip formed substantially midway of its length with several spaced arcuate portions engaging inwardly facing parts of the tube surfaces and with several intervening flat portions extending generally normal to the tube surfaces to space them apart, the two end sec-

tions of said strip being formed with arcuate portions contacting outwardly facing tube surfaces and intermediate flat portions lying parallel to the flat tube spacing portions of the middle section of said strip and the extreme end portions of the strip being positioned adjacent one of said tube spacing portions of the middle section of the strip; and means securing the extreme end sections of said strip to the adjacent part of said middle section.

4. A band for two superposed pairs of parallel tubes consisting of a single metallic strip formed substantially midway of its length with four spaced arcuate portions engaging inwardly facing surfaces of said tubes and with three intervening flat portions extending generally normal to the tube surfaces, two of said flat portions spacing one tube of each pair from a tube of the other pair and the third flat portion spacing the two tubes of one pair from each other, the two end sections of said strip extending about outwardly facing tube surfaces with the extreme end portions of said strip lying adjacent said third flat portion of the middle section of the strip; means securing said end portions to said flat portion; and one or more boss-like projections located on said strip adjacent its middle section for spacing the two tubes of the other pair from each other.

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