

June 17, 1924

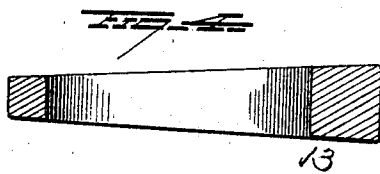
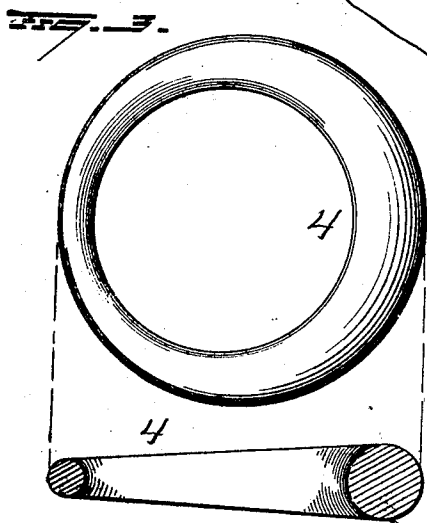
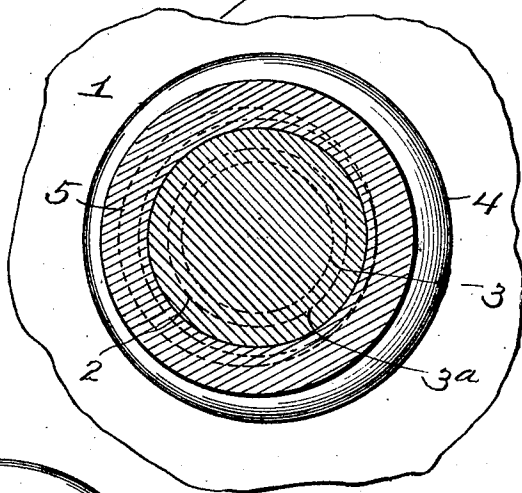
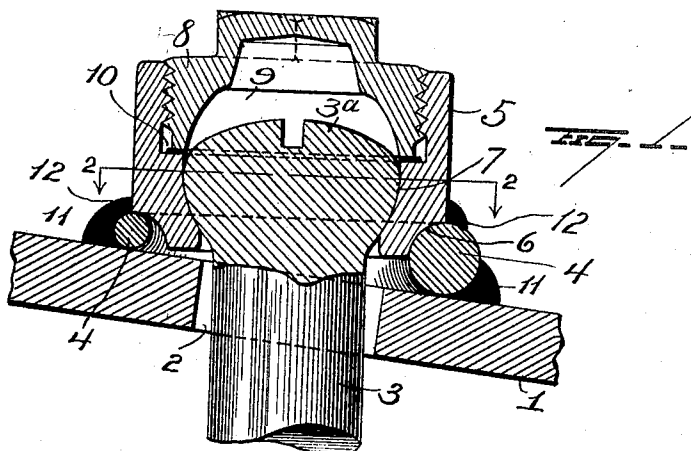
E. I. DODDS

1,498,019

STAY BOLT STRUCTURE FOR BOILERS

Filed Oct. 5, 1922

3 Sheets-Sheet 1



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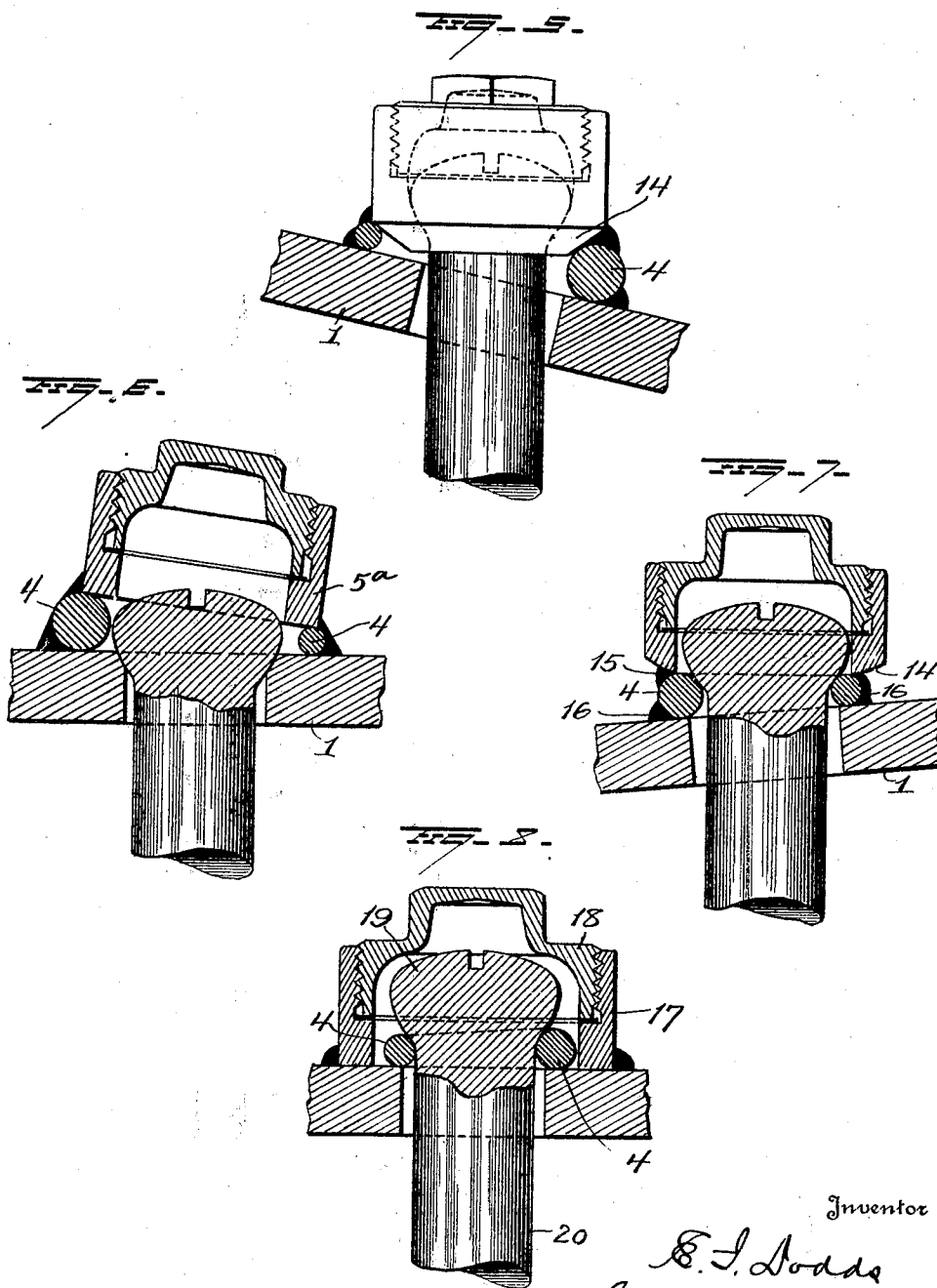
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STAY BOLT STRUCTURE FOR BOILERS

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3 Sheets-Sheet 2



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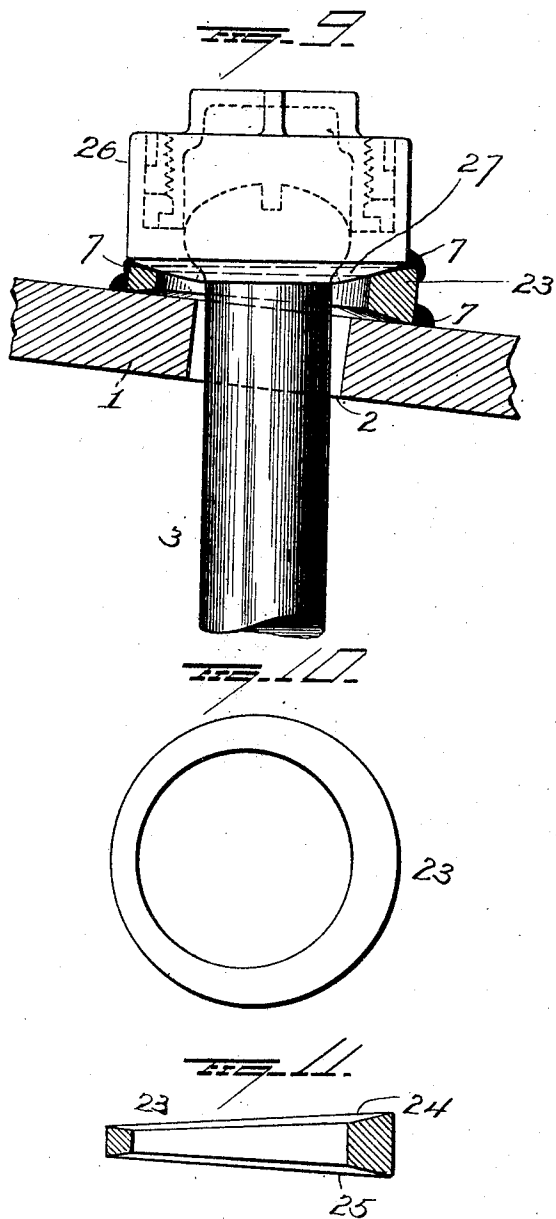
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STAY BOLT STRUCTURE FOR BOILERS

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

ETHAN I. DODDS, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO FLANNERY BOLT COMPANY, OF PITTSBURGH, PENNSYLVANIA.

STAY-BOLT STRUCTURE FOR BOILERS.

Application filed October 5, 1922. Serial No. 592,544.

To all whom it may concern:

Be it known that I, ETHAN I. DODDS, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Stay-Bolt Structures for Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in staybolt structures for boilers and more particularly to means whereby the installation of the bolt mountings may be facilitated.

In the installation of bearing devices for the heads of staybolts, where said bearing devices are adapted to have initial universal adjustment and to be subsequently welded to the outer boiler sheet, it has been proposed to provide a seat in the wall of the boiler sheet for such bearing member and to effect proper alignment of the sleeve with a bolt opening in the inner sheet (which may be disposed at an angle to the plane of the outer boiler sheet) with the use of a centering or holding-on tool, and after proper alignment for the bolt shall have been effected, the initially movable or adjustable bearing member was welded to the outer boiler sheet.

One object of my present invention is to provide simple and efficient means whereby a bearing member may be quickly and accurately positioned on an outer boiler sheet so that it shall be substantially parallel with the plane of an inner boiler sheet which may be disposed at an angle to the outer sheet to position the bearing member in proper alignment with a bolt hole in the inner sheet to accommodate the staybolt.

A further object is to provide means for the purpose above stated, which shall obviate necessity for milling or otherwise forming a seat for the bearing member in the wall of the outer boiler sheet.

A further object is to provide an adjustable supporting member to facilitate the positioning of a bearing member for a staybolt on an outer boiler sheet.

With these and other objects in view, the invention consists in certain novel features of construction and combinations of parts

as hereinafter set forth and pointed out in the claims.

In the accompanying drawings:

Figure 1 is a sectional view illustrating an embodiment of my invention.

Figure 2 is a horizontal sectional view on the line 2—2 of Figure 1 with the weld omitted.

Figure 3 represents the adjustable supporting ring and,

Figures 4 to 11 inclusive, illustrate various modifications.

The outer or roof sheet of a boiler is represented at 1 and provided with an opening 2 for the accommodation of a staybolt 3, said opening being cylindrical in form, having a straight wall extending from one face to the other of the sheet, except in the construction shown in Figure 6, in which a portion of the wall of the opening is formed to provide a seat for a bolt-head.

It may be assumed that the inner boiler sheet (not shown) is disposed at an angle to the plane of the outer boiler sheet 1 and it is desirable that the staybolt 3 shall project from the inner boiler sheet at right angles to the latter. In order that this may be accomplished and at the same time provision be made for properly mounting the headed outer end of the bolt without necessity for milling or otherwise cutting the sheet to provide a seat for the bearing means, I provide a ring or annular supporting member 4 on which a bearing sleeve or housing member 5 may be mounted in such manner that it will be disposed in a plane substantially parallel with the inner boiler sheet. The ring 4 is so formed that it shall have a gradually increasing diameter from one point in both directions to a diametrically opposite point and thus the said ring is approximately wedge-shaped in general form.

The sleeve or bearing member 5 is provided exteriorly near its bottom with an annular groove 6 which is curved transversely to seat on the ring or supporting member 4 as indicated in Figure 1, and in the embodiment of the invention shown in Figures 1, 2 and 3, the said ring is circular in cross-section. The bearing sleeve 5 is provided interiorly with a curved seat 7 for the head 3^a of the staybolt. The bearing sleeve is also threaded internally for the accommodation of an externally threaded cap or

closure 8,—the latter being formed with a clearance space 9 and between said cap or closure and a shoulder formed within the bearing sleeve, a gasket 10 may be disposed.

5 When the ring or support 4 is placed on the boiler sheet and the bearing sleeve 5 mounted thereon, said bearing sleeve may be easily and quickly adjusted to a position
10 parallel with the plane of the inner boiler sheet, by turning the ring or support 4 in one direction or the other and when it shall have been so positioned that its opening will be in alignment with the hole in the inner boiler sheet through which the inner end of
15 the staybolt is screwed, the said ring or supporting member will be permanently secured to the outer boiler sheet by means of a weld indicated at 11 and the sleeve or bearing member will be permanently secured to the
20 ring or supporting member by means of a weld indicated at 12. The staybolt 3 may now be passed through the bearing member to the inner boiler sheet and secured to the latter and the cap 8 may then be screwed into
25 the sleeve or bearing member over the head of the bolt.

Instead of making the ring or support circular in cross-section, I may provide a ring or support 13 having flat upper and lower
30 faces so that said ring will be angular in cross-section, as indicated in Figure 4.

Instead of making the sleeve or bearing member 5 with a seat which is curved transversely, as shown in Figure 1, for the accommodation of the ring or support 4, I may
35 provide the sleeve or bearing member with a beveled face 14 (straight transversely) as shown in Figure 5.

The sleeve member 5^a may, if desired, be
40 not provided with either a transversely curved or straight beveled face, but the bottom of said sleeve member may be mounted directly upon the ring or support as indicated in Figure 6 and the bolt head mounted
45 on a seat 1^a in the boiler sheet at the opening therein.

In Figure 7 I have shown the bottom portion of the sleeve or bearing member provided with a beveled face 14 extending
50 transversely upwardly and outwardly, and the sleeve or bearing member resting upon the ring or support 4 at the inner edge of such beveled portion,—a weld 15 being disposed between said beveled portion of the sleeve and the supporting ring and a similar
55 weld 16 being disposed between the supporting ring and the boiler sheet.

In Figure 8, I have shown a sleeve or housing 17 welded to the outer boiler sheet and provided with a removable cap or closure 18 and in this construction the wedge-
60 ring 4 is disposed between the rounded head 19 of a staybolt 20 and the outer face of the boiler sheet. In this construction the ring

4 need not be welded to the boiler sheet but
it may be readily adjusted to insure proper
alignment of the bolt with the hole in the
inner boiler sheet which receives it.

In Figures 9, 10 and 11, a supporting ring
23 is shown as having beveled outer and inner
70 faces 24—25 and the bottom of the bearing sleeve or member 26 is formed with a transversely curved face 27 to rest on said ring.

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

1. A supporting and adjusting member for use in a staybolt structure, said member having wedge shape and providing opposed
80 seats to engage, interchangeably, a housing member or staybolt head and a boiler sheet.

2. The combination with a boiler sheet having a bolt opening and a staybolt having a head for connection with the boiler sheet,
85 of an initially adjustable housing member for the bolt head, a wedge-shaped member interposed between said housing member and the boiler sheet, and means securing said wedge-shaped member to the housing
90 and to the boiler sheet.

3. In a staybolt structure, the combination with a boiler sheet having an opening, of a bearing member, a staybolt having its head
95 mounted in said bearing member, and a wedge-shape supporting and adjusting member made annular in form and disposed between said bearing member and the boiler sheet and welded to both.

4. In a staybolt structure, the combination with a boiler sheet having a bolt opening, of a bearing member having an external
100 seat at its inner end, an annular wedge-shape supporting and adjusting member disposed between said seat and the outer face
105 of the boiler sheet, means securing said member to the boiler sheet, means securing said member and the bearing member together, and a staybolt having a head mounted in said bearing member.

5. In a staybolt structure, the combination with a boiler sheet, a bearing member for the head of a staybolt, and a staybolt
110 having a head mounted in said bearing member, of a curved wedge member initially adjustable between the bearing member and boiler sheet, and means securing said curved wedge member in place.

6. Supporting and adjusting means for the bearing member of a staybolt structure,
120 consisting of a curved wedge-shape member, said member also having wedge shape in cross section from its inner edge outwardly.

In testimony whereof, I have signed this
specification.

ETHAN I. DODDS.