

March 20, 1928.

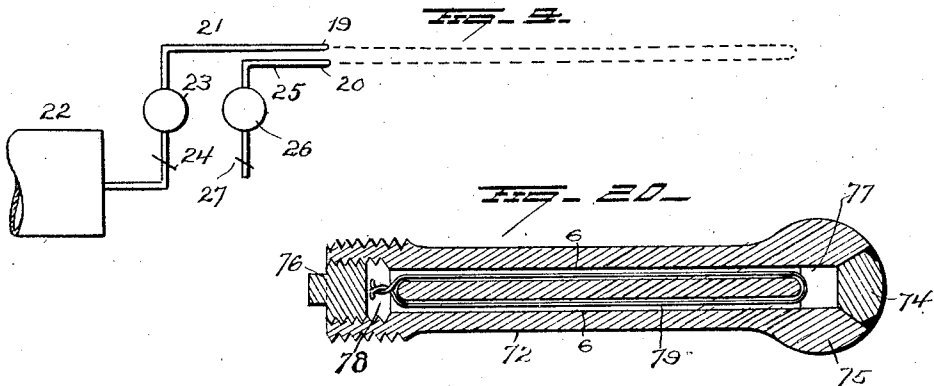
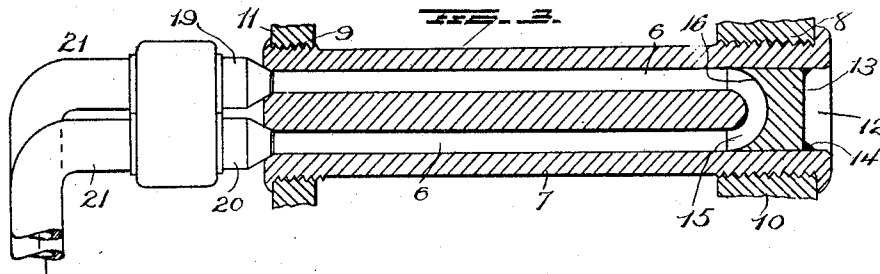
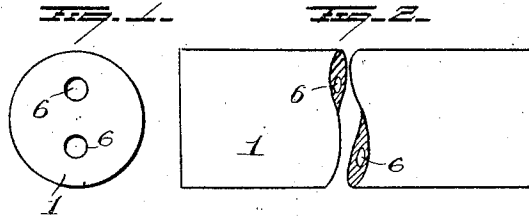
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E. I. DODDS

STAY BOLT FOR BOILERS

Filed Sept. 24, 1925

2 Sheets-Sheet 1



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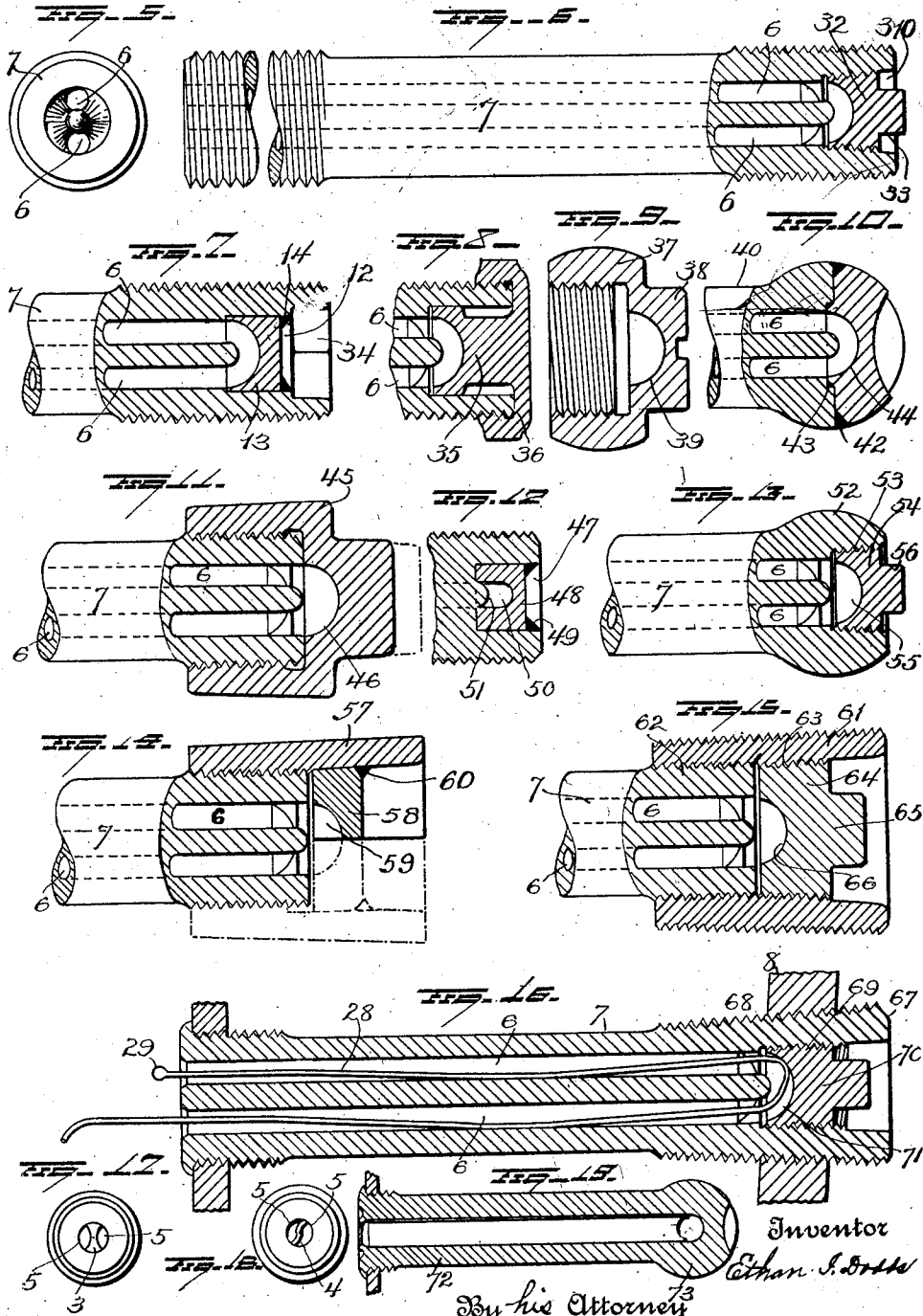
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STAY BOLT FOR BOILERS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

ETHAN I. DODDS, OF CENTRAL VALLEY, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FLANNERY BOLT COMPANY, A CORPORATION OF DELAWARE (1926).

STAY BOLT FOR BOILERS.

Application filed September 24, 1925. Serial No. 58,373.

This invention relates to improvements in staybolts for boilers,—one object of the invention being to so construct a staybolt as to facilitate the testing of the same.

5 A further object is to provide a staybolt with a plurality of tell-tale holes or passages which shall be so connected near one end of the bolt that a testing medium may be passed through one of said holes or passages
10 from one end of the bolt and caused to return through the other hole or passage to the starting end of the bolt, whereby the presence of sediment in either of said holes or passages may be detected.

15 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.

20 In the accompanying drawings,—

Figures 1 and 2 are views representing blanks.

Figure 3 is a view partly in section showing one application of my invention.

25 Figure 4 is a diagrammatic view illustrative of means employed when fluid is used as a testing medium.

Figures 5 to 20 inclusive are views showing various other forms of construction.

30 The bolt may be formed from a suitable bar of metal 1 and provided with a plurality of passages or tell-tale holes. The blank may be made interiorly with a single bore 2 which may have inserted therein, a partition such as shown at 3, Figure 17, or
35 in the form shown at 4, Figure 18,—thus forming two longitudinally extending holes or passages 5—5. The blank and therefore the bolt may have bores or passages located
40 close together, or the longitudinal holes or passages may be separated an appreciable distance from each other, as shown at 6, Figures 1, 2 and 3.

The bolt 7, Figure 3, may be formed from the blank shown in Figures 1 and 2, and may be of the rigid staybolt type having exteriorly threaded portions 8 and 9 to thread through holes in the boiler sheets 10 and 11 and may be upset or flanged at its ends.

50 The bores or passages in the bolt extend from one end of the latter approximately to the other end thereof, or both ends of said bores or passages may terminate short distances from respective ends of the bolt, as

shown in Figure 20. In the form of invention shown in Figure 3, the bores or passages 6 extend from one end of the bolt and terminate at their other ends inwardly of the opposite end of the bolt and at the latter end of the bolt, a larger bore 12 is formed. In this bore 12, a plug 13 is inserted and may be held securely therein by a weld 14. The inner end of this plug is provided with a curved groove 15 which connects the two bores or passages 6, and the curved wall 16 of said groove serves to deflect a testing medium and cause the same readily to pass from one bore or passage to the other. In Figure 3, the plug 13 is located entirely within the bore 12 but if desired the plug
70 may be caused to entirely fill said bore 12 and its inner end may be made to abut against a shoulder as shown in Fig. 7.

The testing medium employed may be air, water or a flexible device. In Figures 3 and 4, I have illustrated means whereby a fluid, such as air or water, may be used. These means may comprise nipples 19—20 to be applied to the open ends of the bores or passages. The nipple 19 may be connected by a pipe 21 with a source of fluid supply, such as a tank or a pump illustrated diagrammatically at 22,—a gage 23 and a valve 24 being interposed in the pipe connection 21. The nipple 20 may have connected therewith, a pipe 25 having interposed therein a gage 26 and a valve 27. With such arrangement, fluid may be caused to pass through one of the passages 6 and return through the other passage 6 in the bolt, finally escaping through the pipe 25 and any desired pressure may be maintained by manipulation of the valves 24—27, the pressure being indicated on the gages 23—26.

Instead of using fluid as a testing medium, I may employ a flexible wire 28 preferably having a small knob or enlargement 29 at one end, as shown in Figure 16. It is apparent that when the flexible device or wire 28 is passed through one of the bores or passages 6, its end 29 will engage the curved wall in the groove of the plug and be thereby directed toward the other bore or passage 6, so that by continued pressure, the wire can be caused to pass through the other bore or passage 6, as clearly illustrated in Figure 16.

In the construction shown in Figures 5

and 6, the bore 310 corresponding to the bore 12 in Figure 3, is made somewhat tapering and threaded to receive an exteriorly threaded plug 32 having a wrench engaging portion 33. In Figure 7, the bolt is provided at one end with an angular wrench receiving socket 34 and inwardly of this socket, the bore portion 12 is located to receive the plug 13 which is welded in place as indicated at 14.

In Figure 8, the plug member 35 is shown integral with a cap or closure 36, the flange of which is threaded interiorly to engage the exterior thread at one end of the bolt.

In Figure 9, a cap or closure 37 is shown to screw onto one end of the bolt and this cap or closure is made with an enlargement 38 having an interior curved recess 39 corresponding in function to the curved groove or recess 15 of the plug 13. In this form, the part which directs the testing medium from one passage to the other in the bolt, is formed as an integral part with a cap or closure for the bolt.

In Figure 10, I have shown a portion of a bolt 40 of the flexible staybolt type having a rounded head which, as shown in Figure 10, is made in two parts welded together as at 42—43 and in the outer portion of said rounded head, a curved groove 44 is formed to connect the passages 6 in the bolt.

In Figure 11, a cap or closure 45 is screwed onto the end of the bolt and provided with a curved groove or recess 46 which functions the same as the groove or recess 15 in Figure 3 and the groove or recess 39 in Figure 9, or the groove or recess 44 in Figure 10.

In Figure 12 is shown one end portion of a rigid bolt having a recess 47 corresponding to the bore 12, Figure 3, and in this recess, the plug 48 is located and welded as at 49,—said plug having a curved groove 50, one wall of which is formed by projection 51 integral with the bolt between the passages 6 therein. The construction shown in Figure 12 is similar to that shown in Figure 3, but in Figure 12, the section is taken at right angles to the section shown in Figure 3.

In Figure 13 is shown a bolt of the flexible type having a rounded head 52 provided with a threaded socket 53 to receive a threaded plug 54,—the latter having a curved groove 55 corresponding in function to the groove 15 in Figure 3. The plug 54 may be provided with a wrench engaging head 56.

In the construction shown in Figure 14, a tapering sleeve 57 is shown, a portion of the interior of this sleeve being threaded to screw onto the bolt 7. Within the projecting unthreaded portion of this sleeve, a member 58 is inserted and provided with a curved groove 59 which serves to connect the passages 6 in the bolt. This member 58

serves the function of the plugs shown in other views and also as a closure for the end of the bolt. The plug or member 58 may be secured within the sleeve 57 by a weld 60 or said plug or member may be made integral with the sleeve.

In the construction shown in Figure 15, a sleeve 61 is employed and threaded exteriorly to engage a similarly threaded wall in the opening of a boiler sheet. The sleeve 61 is also threaded interiorly as at 62 to screw onto the end of the staybolt and it is also screw threaded interiorly as at 63 for the accommodation of an exteriorly threaded plug or closure 64 having wrench engaging head 65 located in the other portion of the sleeve. The inner end of the plug or closure 64 is provided with a curved groove or recess 66 which serves to connect the bores or passages 6 in the bolt.

In the construction shown in Figure 16, one end portion of the bolt is made flaring as at 67 and this flaring portion is threaded externally as at 68 to screw through the boiler sheet 8 and it is also threaded interiorly as at 69 to receive the exteriorly threaded portion of a plug or closure 70, the inner end of which latter is provided with a groove 71 to connect the passages 6 in the bolt.

The bolt 72 shown in Figure 19 is of the flexible staybolt type having a rounded head 73 and having a bore which is divided by a partition such as shown at 4, Figure 18 or 3, Figure 17, to provide two passages which are connected in the headed end of the bolt by the end portion of the large bore 2 which terminates within said headed portion of the bolt.

Figure 20 also shows a staybolt of the flexible staybolt type having a plug 74 welded in an opening in the head 75 of the bolt and also provided with a plug 76 threaded into the other end of the bolt. The bores 6 in the bolt terminate short distances from the respective plugs 74 and 76 so that spaces 77 and 78 are provided which serve as connecting means for the two bores or passages. When the bolt is thus constructed, the testing medium may consist of a wire 79 having its ends connected together so that it may be moved through the respective passages and the spaces 77 and 78 connecting said passages. When this bolt is to be inspected, the operator or inspector may remove the plug 76 and thus gain access to the testing wire 79.

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

1. A staybolt having a plurality of longitudinal passages side by side and in communication at their inner ends and receiving testing means.

2. A staybolt having a plurality of longi-

5 longitudinal side by side passages for testing means, said passages extending into but not through one of the end portions of the bolt and in communication at the latter end portion of the bolts.

10 3. A staybolt having a head at one end and having a plurality of longitudinal side by side passages for testing means extending into but not through the head of the bolt and in communication within the head.

15 4. A staybolt having a head, the latter consisting of a plurality of members secured together, said bolt having a plurality of longitudinal passages for testing means and extending through at least one of the secured members of the head, but terminating and being connected within said head.

20 5. A staybolt formed from a single blank having a plurality of longitudinal side by side passages for a testing medium, said passages being connected at one end.

6. A staybolt for boilers having a plurality of connected longitudinal side by side passages for a testing medium.

25 7. A staybolt having a plurality of passages open at one end and connected adjacent the other end of the bolt.

8. A staybolt having a plurality of passages accessible at one end of the bolt, and

deflecting means connecting said passages 30 adjacent the other end of the bolt.

9. A staybolt having a plurality of passages, and a closure for said passages at one end of the bolt, said closure having a passage connecting the passages in the bolt. 35

10. A staybolt provided with a plurality of longitudinal passages, and a closure adjacent one end of the bolt and having a curved groove connecting said passages.

11. A staybolt having a bore, means dividing said bore to provide two longitudinal passages, and a closure adjacent one end of the bolt and having a passage establishing communication between said longitudinal passages. 40

12. A staybolt having two longitudinal passages, and a plug having a groove connecting said passages. 45

13. A staybolt having two longitudinal passages, and a plug in one end portion of the bolt and having a groove with a curved base, the grooved plug serving to connect said passages and to provide deflecting means for a testing medium from one passage to the other. 50

In testimony whereof, I have signed this specification. 55

ETHAN I. DODDS.