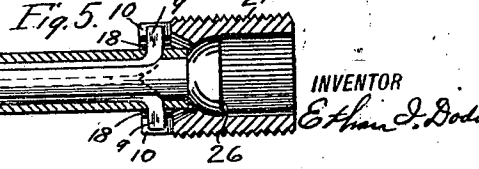
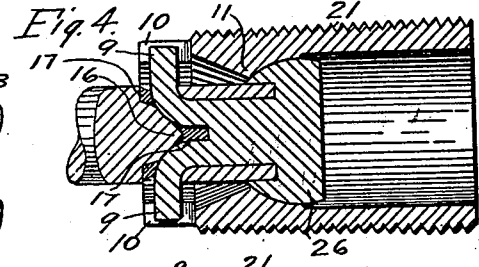
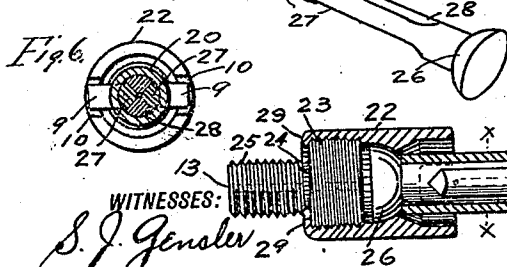
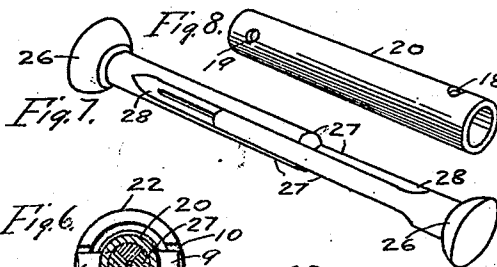
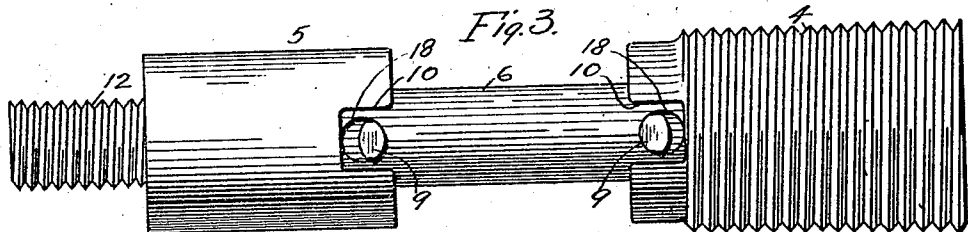
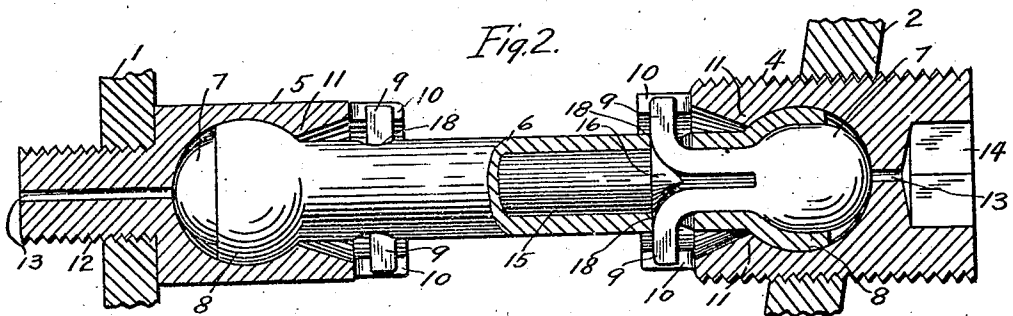
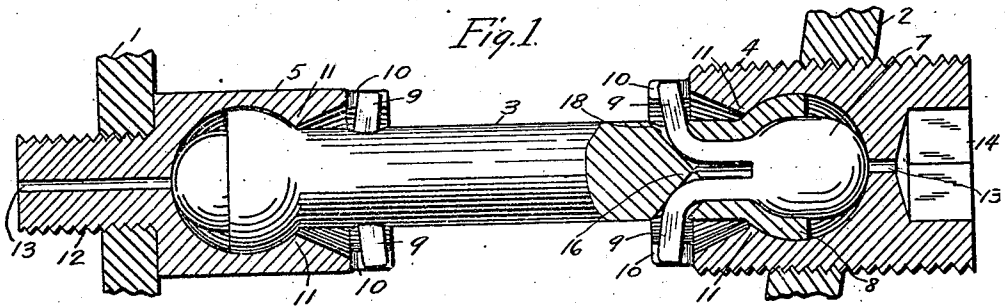


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 STAY BOLT FOR LOCOMOTIVE AND OTHER BOILERS.
 APPLICATION FILED OCT. 18, 1911.

1,061,274.

Patented May 13, 1913.



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STAY-BOLT FOR LOCOMOTIVE AND OTHER BOILERS.

1,061,274.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed October 18, 1911. Serial No. 655,433.

To all whom it may concern:

Be it known that I, ETHAN I. DODDS, a resident of Central Valley, in the county of Orange and State of New York, have invented a new and useful Improvement in Stay-Bolts for Locomotive and other Boilers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a partial longitudinal section through a bolt in position, of one form of bolt embodying my invention. Fig. 2 is a similar view of a slightly modified form. Fig. 3 is a plan view of the bolt shown in Fig. 2. Fig. 4 is a sectional view of one end of a bolt of modified form. Fig. 5 is a partial sectional view through another modified form of bolt. Fig. 6 is a sectional view on the line X—X of Fig. 5. Fig. 7 is a perspective view of the two connecting members of the device shown in Fig. 5, and Fig. 8 is a perspective view of a tube shown in the construction illustrated in Figs. 5 and 6.

My invention relates to an improvement in stay bolts which extend from the fire box sheet to the outside boiler sheet, through the water and steam space, and are connected to both of the sheets by means of a screw threaded connection on the end or connecting members of a bolt.

The object of my invention is to provide a stay bolt that will yield at both ends to compensate for the expansion and extraction of the boiler sheets.

Another object of my invention is to provide a stay bolt of this character which is cheap of construction, which can readily be assembled, and which can be secured in its position by means of a wrench applied to one end thereof.

The precise nature of my invention will be best understood by reference to the accompanying drawings which will now be described, it being premised, however, that various changes may be made in the details of construction and general arrangement of the parts, without departing from the spirit and scope of my invention as defined in the appended claims.

In the drawings, the numerals 1 and 2 designate the boiler sheets which are to be connected to each other by means of the bolt.

3 designates the body of the bolt which is secured to the connecting members or caps 4 and 5, the cap 4 being screw threaded on its periphery, while the cap 5 is provided with a screw threaded stem 12. These caps 4 and 5 are provided with slots 10 which are adapted to receive the projecting members from the bolt to rotate the cap 5 when the cap 4 is rotated.

In the construction shown in Fig. 1, the ends of the body 3 are bored out to form sockets and the bottoms of said bored-out portions are conical, as indicated at 16. 18 are openings extending through the walls of the sockets at the bottoms thereof and parallel with the conical bottoms 16; one of the walls of said openings being on a line with the bottoms 16. Each of the caps 4 and 5 is provided with a socket of hemispherical shape, which opens into a conical opening at the ends of said socket members, and 11 are shoulders between the socket and the conical or flared openings. Seated within the socket in each of the caps 4 and 5 is a member 7 having an elongated head and legs 9. 13 designates tell-tale openings through the caps 4 and 5, and 14 designates a wrench seat in the cap 4.

The parts are assembled in the following manner: The legs of the members 7 are inserted into the bores at its ends of the body 3; and the ends of the member 3, together with the members 7 are then inserted into their respective caps 4 and 5; pressure is then applied to the ends of the caps to move them toward each other, during such movement the legs 9 will be spread out in a radial direction by engagement with the conical surfaces 16 and the inner faces of the heads of the members 7 will expand the ends of the member 3 in a manner shown in Fig. 1 of the drawings; the ends of the legs 9 passing into the recesses 10.

In Fig. 2 I show a construction similar to that shown in Fig. 1, with the exception that I use a tube 6 for the body of the bolt, which is provided with openings 18 similar

to the openings 18 in Fig. 1, and mounted within the tube 6 is a rod 15 which is provided with conical ends for spreading the members 9 in a manner similar to the conical bottom of the openings in the member 3 of Fig. 1.

The bolts above described are placed in position by first passing the member 5 through the opening in the sheet 2 and engaging the threads in the plate 1 by means of the threads 12, and by engaging the threads on the member 4 to the threads in the opening through the plate 2 and by rotating the member 4, the member 5 is moved to its proper position by means of the engagement of the legs 9 to the side walls of the recesses 10.

In Fig. 4 I have shown a construction similar to that shown in Fig. 1, with the exception that I provide a head 26 which engages the face of the projection 11, while the end of the body of the bolt passes into an annular recess in the front portion of said head.

In Figs. 5 to 8, I have shown a bolt which comprises a tube 20 having openings 18 at one end which are diametrically opposite to each other and similar openings at the other end which are at right angles to the other openings. 26—26 are the heads of the bolt which are provided with legs 27—27 and 28 are inclined faces at the junction of the legs on each of said members. 21 and 22 designate the connecting members, the member 21 being provided with screw threads on its periphery while the member 22 is connected to a plug by means of a screw threaded engagement 23 with the head thereof, and extending outwardly from said head is a screw-threaded projection 25. This device is assembled in the following manner: The legs 27 of the members are passed through the outer ends of their respective caps into the tube 20 which is placed between the caps. The members are then forced toward each other, the inclined faces force the ends of the legs 27 outwardly through the respective openings 18 and 19 and into the recesses 10 in the caps 21 and 22. The threaded head of the plug is then inserted in the cap 22, and the outer edge of the plug is peened over as indicated at 29 to retain the plug in its position.

The advantages of my invention result from the provision of a semi-universal stay bolt, in which the securing caps are connected to the body of the stay bolt by means of members having flexible legs, which are spread to secure the body of the bolt to the connecting members; further, from the provision of a head which is adapted to spread the ends of the bolt within a recess in the connecting caps.

I claim.

1. A stay bolt having hollow ends, con-

necting caps on the ends of said stay bolts, and securing heads having legs passing through openings through the ends of the bolt for connecting the bolt to said caps; substantially as described.

2. A stay bolt having hollow ends, connecting caps on the ends of said stay bolts, and securing heads having legs passing through openings through the ends of the bolt for connecting the bolt to said caps and into recesses in said caps; substantially as described.

3. A stay bolt having hollow ends, a connecting cap on each end thereof having a spherical recess, a head within the recess of each cap, said heads having diverging legs passing through openings in said bolt for connecting the members to each other; substantially as described.

4. A stay bolt having hollow ends, there being lateral openings extending through the walls of said hollow ends, a connecting member on each end of the bolt having a spherical recess, transverse recesses in the ends of said caps, and a head within the recess of each cap and within the hollow ends of the bolt, said head having legs extending through the openings in the ends of the bolt and into the recesses in said caps; substantially as described.

5. A stay bolt having an opening through each of its ends, a connecting cap movably mounted on each end of said bolt, and a securing member at each end of the bolt, each of said securing members having a leg extending through one of the openings, said members being arranged to secure the ends of the bolt to the connecting caps; substantially as described.

6. A stay bolt having a body portion and a securing cap connected to each of its ends, there being an opening through each end of the said bolt, connecting members for connecting the ends of the bolt to the caps, and a leg on each of said connecting members extending through the openings to secure said member to the bolt; substantially as described.

7. A stay bolt with a body portion having an opening at each end thereof, lateral openings extending through the walls of the bolt and communicating with the first mentioned opening, a securing cap on each end of the bolt, said securing caps having vertical recesses, a member having a head in each of said recesses and extending into the opening in that end of the bolt, and legs connected to said head extending through the walls on the end of the bolt; substantially as described.

8. A stay bolt having connecting members at each end thereof connected by means of a ball and socket joint, each of said connecting members having a socket, the ends of the bolt being expanded within the socket

members, a ball member within each socket member and the end of the bolt; substantially as described.

9. A stay bolt having connecting members at each end thereof connected by means of a ball and socket joint, each of said connecting members having a socket, the ends of the bolt being expanded within the socket

members, a ball member within each socket member and the end of the bolt, and means 10 for connecting the bolt and socket members against rotation; substantially as described.

ETHAN I. DODDS.

Witnesses:

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M. FRIEDMAN.