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J. PETERS & J. COLEMAN.

BOILER STAY BOLT.

APPLICATION FILED JUNE 14, 1904.

NO MODEL.

Fig. 1.

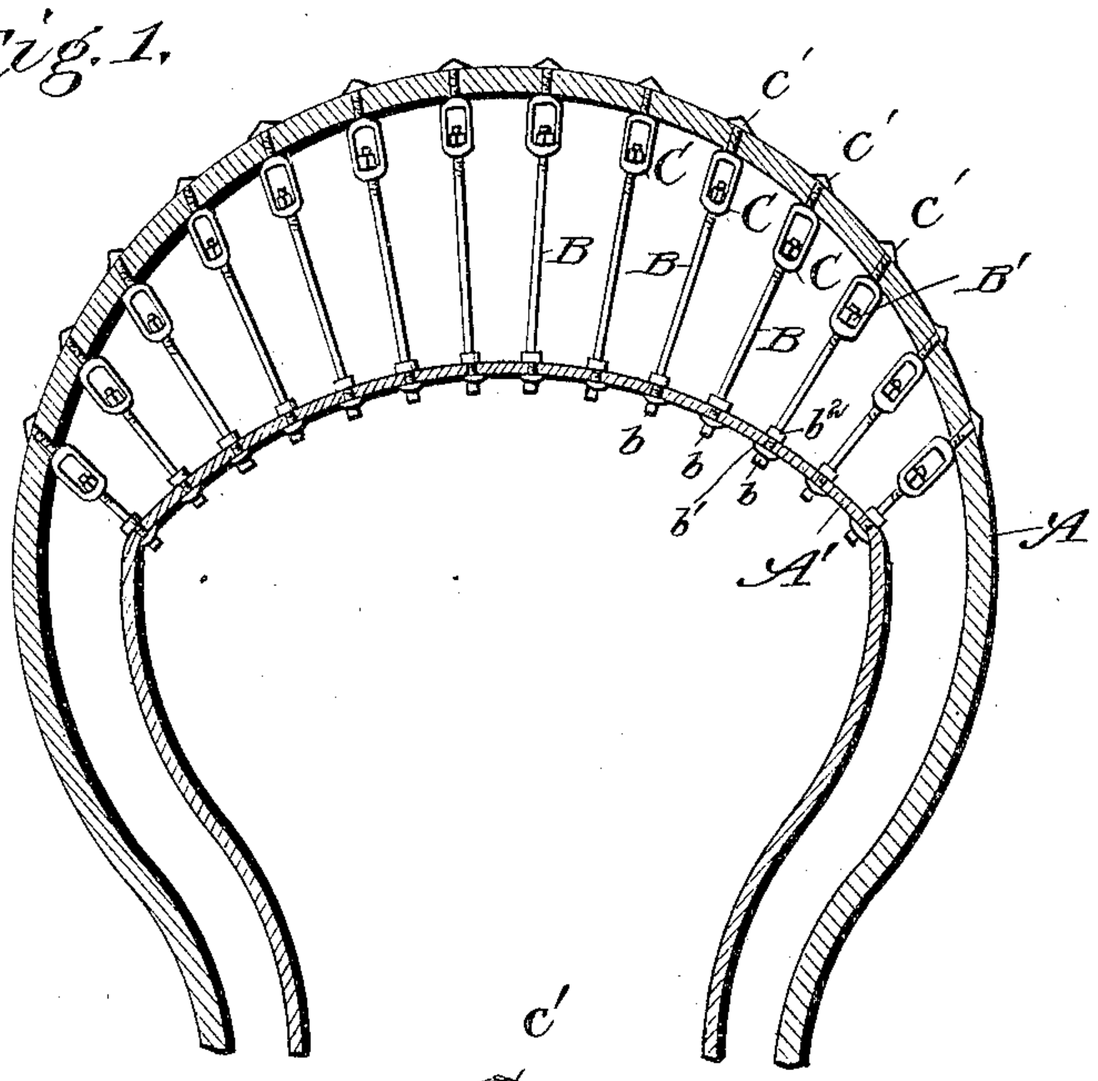
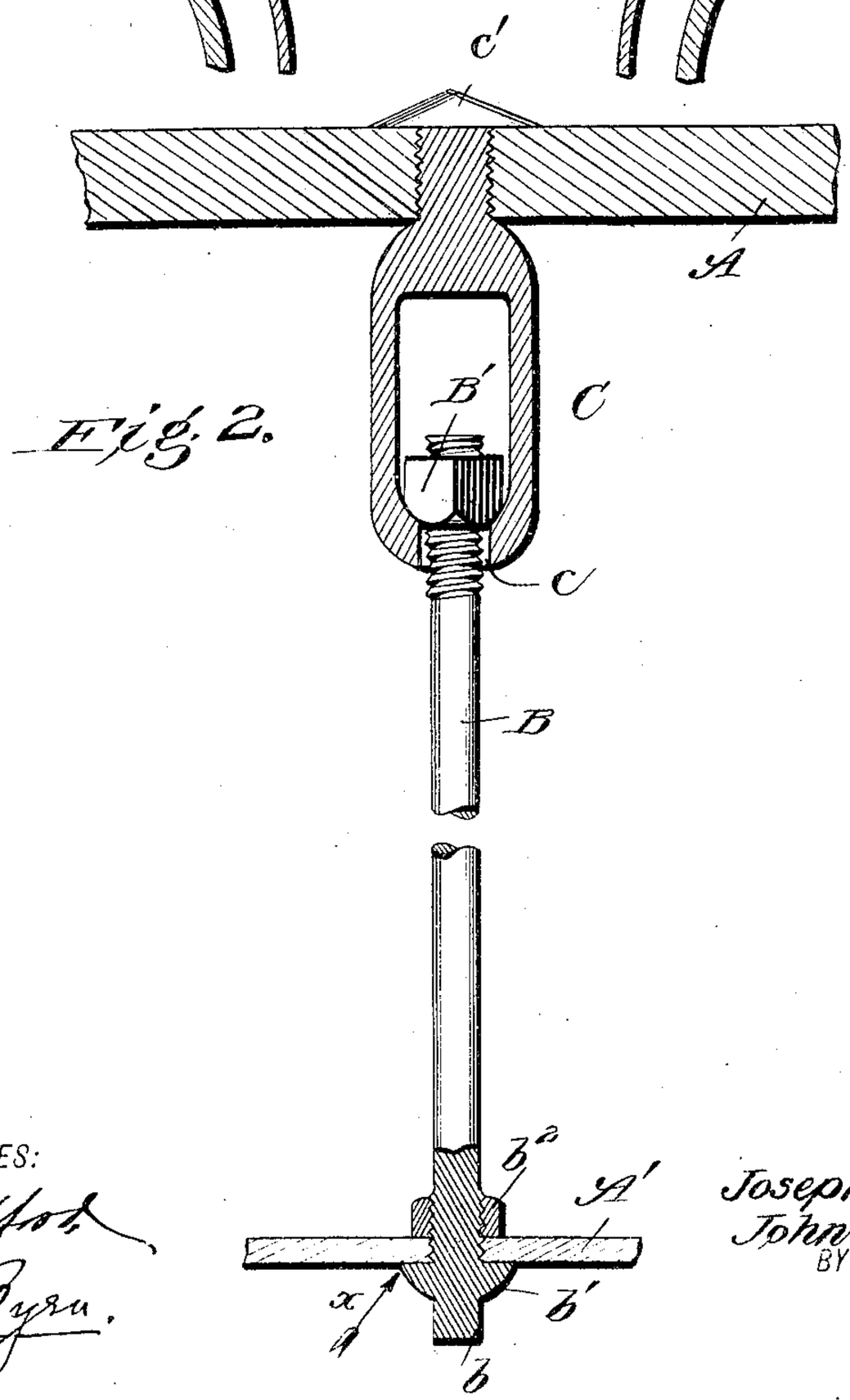


Fig. 2.



WITNESSES:

Fred. D. Bradford.

Edw. W. Byrn.

INVENTORS

Joseph Peters.

John Coleman.

BY Munn & Co.

ATTORNEYS

No. 770,651. Patented September 20, 1904.

UNITED STATES PATENT OFFICE.

JOSEPH PETERS AND JOHN COLEMAN, OF EL PASO, TEXAS.

BOILER STAY-BOLT.

SPECIFICATION forming part of Letters Patent No. 770,651, dated September 20, 1904.

Application filed June 14, 1904. Serial No. 212,547. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH PETERS and JOHN COLEMAN, citizens of the United States, residing at El Paso, in the county of El Paso and State of Texas, have invented a new and useful Improvement in Boiler Stay-Bolts, of which the following is a specification.

Our invention is in the nature of a novel form of steam-boiler stay-bolt designed to connect the crown-sheet of the fire-box with the outside shell of the boiler; and it consists in such construction of stay-bolt and the combination of the same with the crown-sheet and boiler-shell as will secure a strong connection of these parts, which will compensate for expansion and contraction and be capable of adjustment, and which will also facilitate the making of repairs and the tightening up of the stay-bolts against leakage, as will be hereinafter fully described with reference to the drawings, in which—

Figure 1 is a vertical cross-section taken through the boiler-shell and furnace fire-box, showing the stay-bolts in place. Fig. 2 is an enlarged sectional view of one of the stay-bolts and its connection.

In the drawings, A represents the outer shell of the boiler, and A′ the inner shell, forming the crown-sheet of the fire-box.

B C are the two parts of the stay-bolt. The part B is a bolt of suitable length having at its lower end a round flanged head b', provided with a square terminal projection b. Just above the flanged head b' the shank of the bolt is screw-threaded, and this screw-thread is embraced by a screw-threaded sleeve b^2, between which and the flanged head b' the crown-sheet A′ is clamped and held with a steam-tight joint. The function of the sleeve is threefold. In the first place it forms one jaw of the clamp between which the crown-sheet is held. In the second place it houses and completely protects the threads of the bolt which are inside the water-space from being rusted and encrusted with deposits, and thus maintaining these threads bright and clean, so that when the sleeve is removed the bolt B may be screwed out through the intermeshing threads of the crown-sheet without mutilating the threads or weakening of the bolt at this point. In the third place the sleeve b^2 forms a backthrust-bearing for the calking-tool in tightening up leaks around the head b'. This calking-tool in being driven by the hammer-blows in the direction of the arrow x, Fig. 2, finds the resistance of the sleeve b^2 above the crown-sheet and allows the sharp edge of the flange b^2 to be spread and tightened against the crown-sheet, whereas if the sleeve were not there these blows of the calking-tool would bend upwardly the edges of the crown-sheet and increase the leakage. In this connection it will be understood that it is necessary that the sleeve b^2 must hug the bolt closely clear down to the crown-sheet, and thus completely fills the angle between the crown-sheet and the sides of the bolt.

At the upper end of the bolt there is formed a screw-thread, and this is provided with a half-round nut B′, which is received between the two branches of a yoke C, which has an opening c at its lower end large enough to allow the screw-threaded end of bolt B to pass freely through it, but smaller than the half-round nut B, which rests in a seat in the lower end of the yoke and forms a sort of ball-and-socket joint. The upper end of the yoke C is formed with a screw-threaded stem which is screwed into a screw-thread of the boiler-shell and is upset on the outside by riveting to form the external head c'.

The object of this two-part stay-bolt is to allow for expansion and contraction between the crown-sheet and boiler-shell and also permits an adjustment of the stay-bolt to increase or diminish its length, as circumstances may require. It also avoids the breaking off of the upper screw-threaded end of the stay-bolt when the latter is screwed directly into the boiler-shell, the yoke being permanently fixed in the boiler-shell and the bolt portion B being detachable therefrom. It also avoids the necessity of having an absolutely accurate alinement between the screw-threaded hole in the boiler-shell and that of the crown-sheet.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A two-part stay-bolt, one part being adapted to be rigidly connected to one wall

and the other part to the other wall, and the two parts being connected together at an intermediate point with a loose take-up connection substantially as described.

2. A two-part stay-bolt, one part being made as a yoke adapted to be rigidly secured in one wall and the other part being made as a headed bolt adapted to be rigidly secured in the other wall, the yoke being formed with a longitudinal opening and a round interior seat and the bolt being formed with a screw-threaded end which passes into the longitudinal opening of the yoke and carrying a nut with a round bearing against the yoke-seat substantially as described.

3. The combination with a steam-boiler crown-sheet; of a stay-bolt having a flanged head *b'* and a screw-threaded shank, a screw-threaded sleeve fitting the threads of the shank and clamping the crown-sheet between it and the flanged head and completely filling the angular space between the crown-sheet and the shank of the bolt for the purpose of resisting the strain of the calking-tool and for housing and protecting the screw-threads substantially as described.

4. A two-part stay-bolt comprising a bolt portion having at one end a flanged head a screw-threaded shank and a screw-threaded sleeve encompassing the shank and also a screw-threaded upper end with a half-round nut, and a yoke portion having a longitudinal opening receiving the half-round nut at one end and a screw-threaded stem at the other end adapted to be turned into and riveted in the boiler-shell substantially as described.

JOSEPH PETERS.
JOHN COLEMAN.

Witnesses:
FRANK CANN,
J. H. RUSSELL.