

No. 746,010.

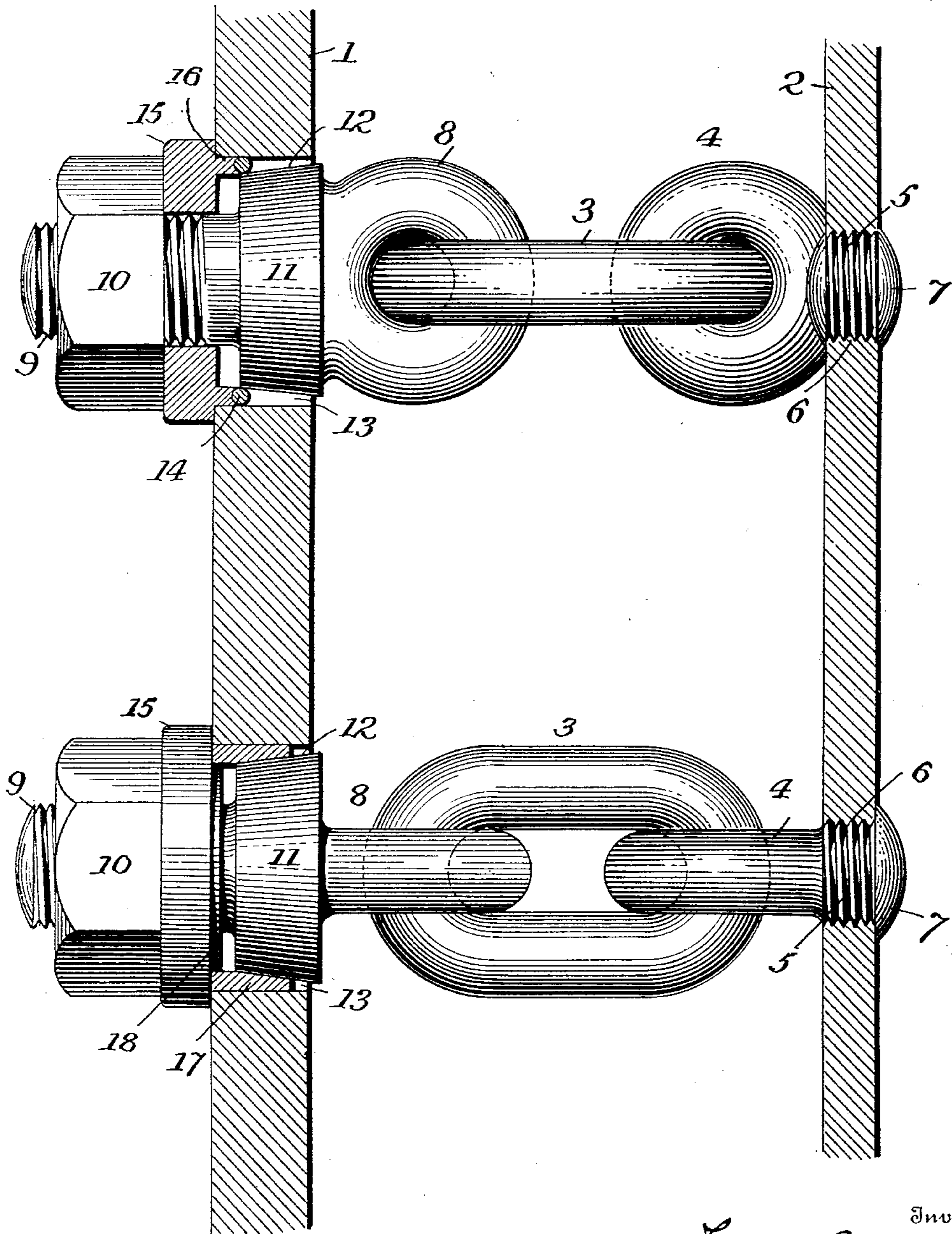
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F. BURGER.

FLEXIBLE STAY BOLT.

APPLICATION FILED FEB. 14, 1902.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

FRANZ BURGER, OF FORT WAYNE, INDIANA, ASSIGNOR OF THREE-
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FLEXIBLE STAY-BOLT.

SPECIFICATION forming part of Letters Patent No. 746,010, dated December 8, 1903.

Application filed February 14, 1902. Serial No. 94,104. (No model.)

To all whom it may concern:

Be it known that I, FRANZ BURGER, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Flexible Stay-Bolts, of which the following is a specification.

This invention relates to stay-bolts such as are used in connection with boilers, fire-boxes, and the like; and the object of the invention is to provide a simple, cheap, and effective flexible stay-bolt and one which can readily be applied and removed or adjusted; and to these ends the invention consists in a bolt embodying the various features of construction and arrangement of parts, substantially as hereinafter more fully set forth.

Referring to the accompanying drawing, there are shown two plates in section. They are shown as united by two flexible stay-bolts, both embodying the general principles of the invention, but differing from each other slightly in details.

It is well known by those skilled in the art that in the use of rigid stay-bolts they are subjected to considerable strain and are liable to be bent or their points of union with the parts to be loosened or the bolt otherwise rendered inoperative to accomplish its purposes satisfactorily; and the main object of this invention is to provide a bolt which will overcome all these disadvantages and one which will allow for expansion and change in the relations of the plates without being subjected to a bending strain or stress which would tend to destroy the effectiveness of the bolt or its fastening to the plates.

Referring to the accompanying drawing, 1 and 2 represent portions of two plates, which may be the plates of a steam-boiler or fire-box or similar device where it is desirable to apply a stay-bolt. The stay-bolt comprises, essentially, a link 3 and means for connecting the link to the side plates 1 and 2, and these means are preferably made adjustable. In the present instance there is connected with the link on one side an eyebolt 4, the eye of which preferably fits closely but loosely one end of the link 3. This eyebolt is provided with some means for attaching it to one of the side plates, and in the present instance

this means consists of a screw-threaded stem 5, which is adapted to be screwed into a screw-threaded opening 6 in the inner side plate 2 and be secured in position in some suitable way—as, for instance, by the flattening of the end of the stem, as at 7—whereby the eye is practically riveted and fixedly secured to the inside plate. Connected also to the link in the present instance is another eyebolt 8, and, as before, the eye thereof preferably fits the link closely but loosely, and this eyebolt is provided with means for securing it to the other side plate 1 and preferably being adjustably secured thereto. Thus in the present instance the eyebolt is provided with a screw-threaded stem 9, adapted to receive some securing means, as a nut 10. Interposed between the stem and the eye is a collar 11, preferably formed integral with the eyebolt and stem and also preferably having tapering sides, as 12.

In order to be able to insert the flexible stay-bolt and to get access to the same, the opening 13 in the side plate 1 (which is usually the outer plate) is of a diameter sufficient to permit the passage of the link 3 and its connecting devices, and the collar 11 is made of a size to approximately close said opening when in position.

In order to secure the eyebolt to the plate 1, so as to make a steam-tight joint, some sort of packing is inserted between the collar and the inner face of the opening 13, and in the present instance there is shown, in connection with one of the eyebolts, a ring 14, which may be of metal, such as copper or other equivalent material, and which is adapted to fit the annular space between the opening and the collar and to be secured therein, so as to make a steam-tight joint. While this may be accomplished in various ways, it is preferable to provide a washer 15, adapted to loosely fit the stem 9 and preferably provided with a projection or rim 16, which fits relatively snugly in the opening 13 in the plate and bears upon the packing-ring 14.

In the form of joint shown at the bottom of the figure the construction of the parts is practically the same as in the form shown in the upper part, except that instead of a round packing 14 the packing 17 is cylindrical in

shape and preferably tapering in cross-section and, as before, conforms substantially to the annular space between the collar 11 and the inside of the opening 13. In this form also the washer 15 is of a slightly-different shape, so as to adapt it to the different-shaped packing, and in this instance it is provided with a shoulder or projection 18, adapted to fit within the cylindrical packing 17. With this construction it is manifest to those skilled in the art that the flexible stay-bolt can readily be applied to unite the plates of a boiler, fire-box, or the like, and the whole stay-bolt can be introduced through the opening 13 and the stem 5 of the eyebolt 4, secured to the inner plate 2, and then by applying the packing 14 or 17 and placing the washer in position the eyebolt 8 may be secured to the plate 1 in a manner to form a steam-tight joint by forcing the packing tightly in position between the collar 11 and the inside of the opening 13 by tightening the nut 10 or otherwise.

When the parts are in position, it will be seen that there is a flexible connection between the two plates which will permit buckling or expansion of one or the other of the plates without tending to destroy the effectiveness of said bolt, and there will be no substantial lateral or torsional strain upon the bolt which would tend to loosen the joints, and the stay-bolt can be adjusted to accommodate itself to variations in the distance between the two side plates. Moreover, with this construction it will be seen that by removing the nut, washer, and packing the eyebolt 8, for instance, can be pushed into the space between the plates and allowed to hang therein supported by the other eyebolt, as 4, and this will permit the cleaning in any suitable way of the space between the plates, and the bolt can then be again adjusted and fixed in position to perform its ordinary functions. In other words, the opening 13 under these conditions may practically form a number of hand-holes, by means of which access can be obtained to parts of the boiler or fire-box which are ordinarily practically inaccessible.

Without limiting the invention to the pre-

cise construction herein shown and described, what is claimed is—

1. A flexible bolt, comprising a link and two eyebolts connected therewith, the eyebolts being provided with threaded stems, substantially as described.

2. The combination with side plates having openings, of a flexible stay-bolt comprising a link, eyebolts connected to the link and having threaded stems, one of the eyebolts having a collar, a packing, and means for securing the packing between the collar and the opening in one of the plates, substantially as described.

3. The combination with side plates having openings, of a flexible stay-bolt comprising a link; eyebolts having stems adapted to be secured to the openings in the plates, one of the eyebolts being provided with a collar, a packing interposed between the collar and the opening in one of the plates, a washer having a projection bearing on the packing, and a nut for securing the parts in position, substantially as described.

4. The combination with side plates, of a stay-bolt comprising a link and eyebolts flexibly connected thereto, each eyebolt having a threaded stem, and means for connecting said stems to the side plates, substantially as set forth.

5. The combination with side plates having opposing openings one of which is threaded, of a stay-bolt comprising a link and eyebolts flexibly connected thereto, each eyebolt having a threaded stem and one of said stems being screwed into the threaded opening and the other stem extending through the opposite opening, and a nut on the latter stem to clamp the stay-bolt in position, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANZ BURGER.

Witnesses:

O. ERVIN,
GEO. K. TORRENCE.