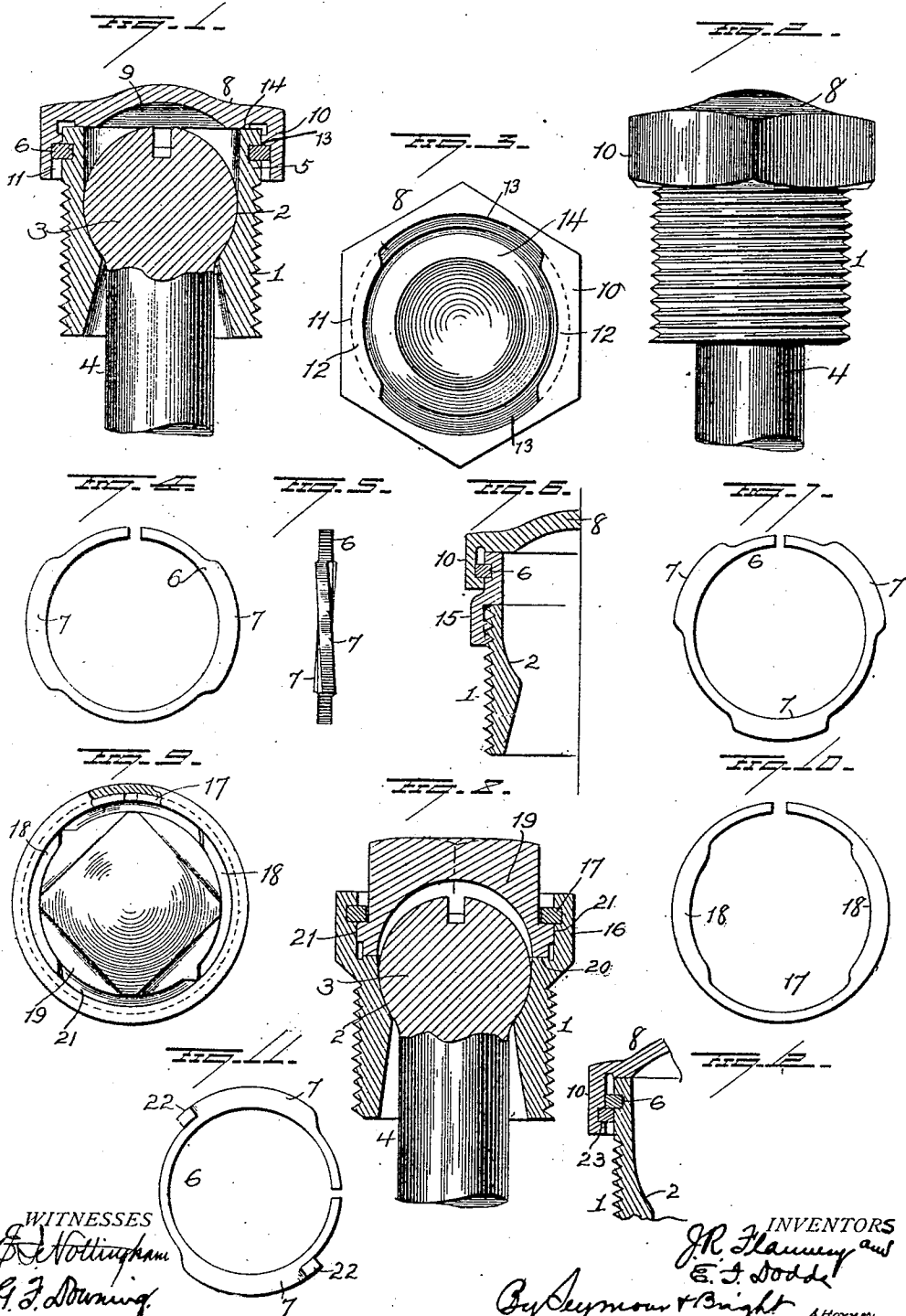


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STAY BOLT STRUCTURE.
APPLICATION FILED MAY 3, 1918.

1,295,879.

Patented Mar. 4, 1919.



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UNITED STATES PATENT OFFICE.

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STAY-BOLT STRUCTURE.

1,295,879.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN ROGERS FLANNERY and ETHAN I. DODDS, citizens of the United States, and residents of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Stay-Bolt Structures; and we 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 and more particularly to closure devices therefor,—the object of the invention being to provide simple and efficient means which will permit the cap or closure of a staybolt structure to be quickly removed and replaced, whereby access may be had promptly to the head of the staybolt for testing purposes, and to so connect the cap with the bearing that normally it shall be securely held in place.

With this 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 longitudinal sectional view of a staybolt structure showing an embodiment of our invention; Fig. 2 is a side elevation; Fig. 3 is a bottom plan view of the cap; Fig. 4 is a plan view of the locking ring; Fig. 5 is an edge view of the locking ring, and Figs. 6, 7, 8, 9, 10, 11 and 12 are views showing various modifications.

1 represents a bearing sleeve having a curved face 2 therein which serves as a bearing for the rounded or spherical head 3 of a "flexible" staybolt 4. The bearing sleeve may be threaded exteriorly to facilitate its connection with a boiler sheet and said sleeve may be extended somewhat outwardly beyond its threaded portion, as indicated at 5. This bearing sleeve extension is provided exteriorly with a circumferential groove to receive a split locking ring 6 and the latter is made with laterally projecting segmental lugs or shoulders 7 which are twisted so that they will be diagonally disposed and form cams. In Figs. 4 and 5 of the drawing we have shown the split locking ring as having two diametrically opposite cam lugs or

shoulders 7, but if desired, a greater number of such lugs or shoulders may be provided,—three being shown in Fig. 9.

A cap 8 is provided for closing the end of the bearing sleeve and may be made with a convex central portion whereby ample clearance space 9 will be formed for the head of the staybolt. The cap or closure 8 is made with a peripheral flange 10 adapted to encircle the extension 5 of the bearing sleeve 1. The cap flange 10 is provided interiorly with a groove 11 and the lower wall of this groove is cut away, whereby segmental flanges or shoulders 12 are formed,—the upper wall of said groove forming an annular shoulder 13. The cap 8 is also provided interiorly with an annular shoulder 14 which normally seats on the end of the extension 5 of the bearing sleeve.

In applying the cap to the bearing sleeve, the flange 10 of said cap will be placed over the extension 5 of the sleeve so that the cam lugs or shoulders 7 on the locking ring will pass through the recesses between the segmental flanges or shoulders 12, which latter will then be disposed in a plane behind that of the locking ring. By now turning the cap a limited distance, the segmental shoulders 12 will engage the cam lugs or shoulders 7 of the locking ring and bind tightly against the same,—at the same time pressing the cap tightly against its seat on the bearing sleeve. It is apparent that by giving the cap a slight turn in the reverse direction (the flange of said cap being made with a hexagonal or other angular external configuration for the accommodation of a wrench), said cap will be unlocked and may be quickly removed to expose the head of the staybolt for testing purposes. It will be seen also that the cap may be equally as quickly replaced and securely clamped to the bearing sleeve.

Instead of making the extended portion 5 of the bearing sleeve as an integral part of the latter, said extension may be made as a separate member 15 and internally threaded as shown in Fig. 6 screwed onto the body of the bearing sleeve.

In the form of the invention shown in Figs. 8, 9 and 10 the bearing sleeve 1 is made with an annular extension 16 and provided internally with a groove to receive a split locking ring 17 having inwardly pro-

jecting cam shoulders 18; as shown in Fig. 10. The cap or closure 19 in this form of the invention enters the annular extension 15 of the bearing sleeve and rests on a seat 20,—said cap being also provided with lateral segmental shoulders 21 which will become disposed in a plane behind that of the locking ring when the cap is in place. The cap 19 may be made angular exteriorly for the accommodation of a wrench.

If desired, the metal of the locking ring may be bent laterally to form stops 22 at one end of each of the cam shoulders to engage the segmental shoulders 21 on the cap as shown in Fig. 11 and thus limit the turning movement of said cap.

Instead of providing the flange of the cap shown in Fig. 1 with integral segmental shoulders 12, a split ring 23 having internal shoulders may be inserted in a groove in the inner wall of the said cap flange, as shown in Fig. 12.

Other changes may be made in the details of construction of our invention without departing from the spirit thereof or limiting its scope and hence we do not wish to restrict ourselves to the particular details herein set forth, except as pointed out in the appended claims.

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

1. In a staybolt structure, the combination of a bearing sleeve member and a cap member, one of said members having seg-

mental shoulders, and a split ring carried by the other member and having cam shoulders to engage said segmental shoulders.

2. In a staybolt structure, the combination of a bearing sleeve member and a cap member, one of said members provided with segmental shoulders, and the other member having a circular groove, and a split locking ring mounted in said groove and having cam shoulders to engage said segmental shoulders.

3. In a staybolt structure, the combination of a bearing sleeve member having a circular external groove, a split locking ring mounted in said groove and having lateral cam shoulders, and a cap member provided with a flange portion to encircle said bearing sleeve member and provided with internal segmental shoulders to engage said cam shoulders.

4. In a staybolt structure, the combination with a bearing sleeve and a cap, each having a grooved wall, of a split ring disposed in the groove of one of said parts and having cam projections entering the groove of the other part and adapted to engage a wall thereof.

In testimony whereof, we have signed this specification in the presence of two subscribing witnesses.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."