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J. J. SOUDER.

THREADLESS BOLT AND NUT.

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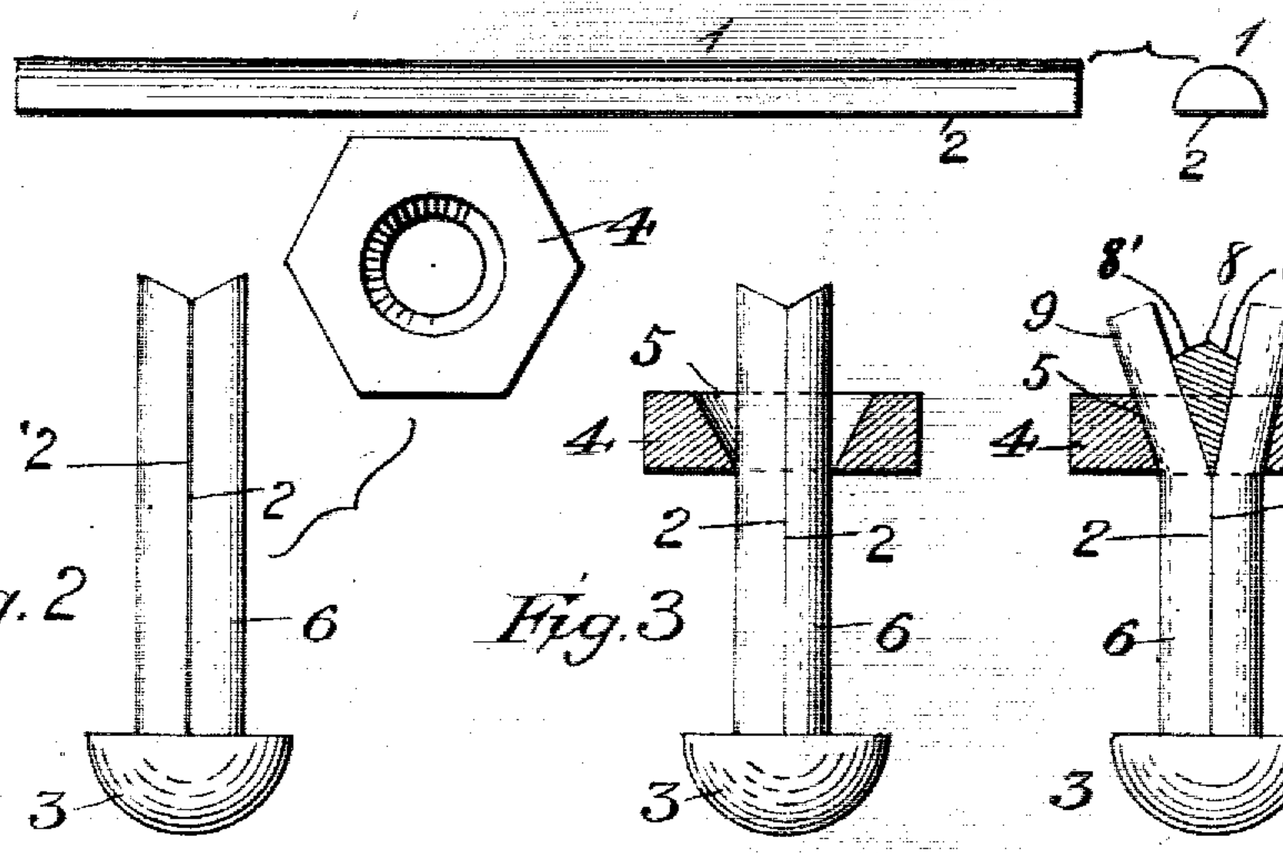


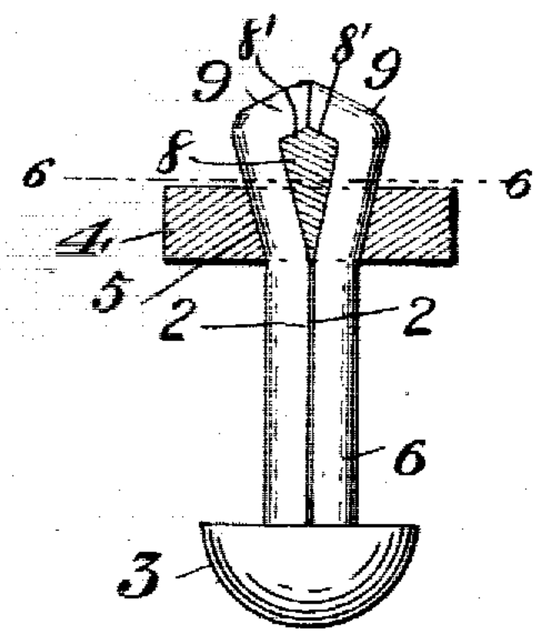
Fig. 1

Fig. 2

Fig. 3

Fig. 4.

Fig. 5.



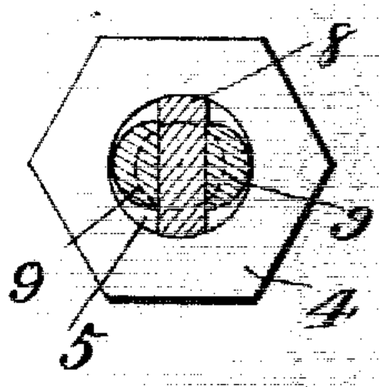
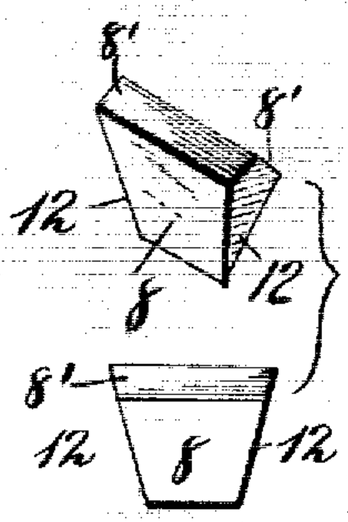


Fig. 6

Fig. 8



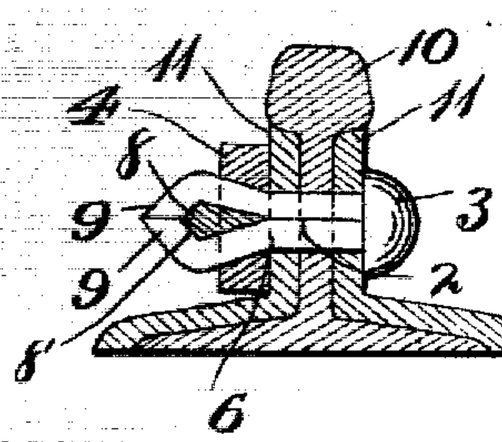


Fig. 7.

Witnesses
F. L. Ormand.
W. Parker Reinohl.

Inventor
J. J. Souder.
by D. C. Reinohl.
Attorney

UNITED STATES PATENT OFFICE.

JACOB J. SOUDER, OF WASHINGTON, DISTRICT OF COLUMBIA.

THREADLESS BOLT AND NUT.

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To all whom it may concern:

Be it known that I, JACOB J. SOUDER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Threadless Bolts and Nuts; and I 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.

My invention relates to bolts, has especial reference to that class of bolts which are devoid of screw-threads for connection with a like threadless nut, and designed for use generally in structural-iron work to take the place of bolts which are heated and one end upset, as in riveting, and for rail-joints in railroad constructions in which a lock-nut of some kind is an indispensable factor in the assemblage of the parts to prevent accidental separation of the nut from the bolt.

The object of the invention is economy, absolute security against accidental separation, and the dispensing with the necessity for heating the bolt for upsetting or riveting.

The invention consists in certain improvements in construction, which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a side view and a transverse section of the blank from which the bolt is made; Fig. 2, a side elevation and a top plan view of the bolt and its threadless nut or washer; Fig. 3, a side elevation of the bolt inserted in the washer, the latter being shown in vertical transverse section; Fig. 4, a like view showing the bolt separated at its outer end and a wedge inserted between the separated members of the shank; Fig. 5, a like view showing the outer ends of the bolt bent over the wedge; Fig. 6, a horizontal section on line 6 6, Fig. 5; Fig. 7, a vertical transverse section of a rail-joint, showing the bolt applied; and Fig. 8, perspectives of the wedge.

Reference being had to the drawings and the designating characters thereon, the numeral 1 indicates a blank cut from a bar or rod of merchantable rolled iron half round in transverse section, cut to proper length to be folded upon itself with the flat sides 2 of the blank adjacent, as shown. One end of the folded blank is then upset and the head 3 formed thereon in a suitable die. The bending of the blank and the heading of the bolt may be done under one heating of the blank by the use of a suitable bending-machine and dies. The bolt thus constructed is provided with a solid head integral therewith and separated unwelded members extending from the head in parallel planes normally in engagement with each other and in which the longitudinal fibers of the metal are separated in the transverse center of the bolt from the head to the end of the bolt.

In the use of the bolt for structural-iron work the separation of the members of the body of the bolt to the head by the wedge causes the bolt to fill the holes in the flanges of structural iron and produce a solid joint which will respond to the test of the hammer of the inspector and assure him of the bolts having filled the holes in the flanges, which frequently do not register perfectly.

4 indicates a threadless nut or washer, preferably made of malleable cast-iron and provided with a conical or tapering walled opening 5, the small end of which is of a diameter approximately the same as the diameter of the shank 6 of the bolt, while the upper end of the opening is slightly larger to provide for the expansion of the bifurcated shank in the washer, as shown in Figs. 4, 5, and 7.

8 indicates a key or wedge, preferably of malleable cast-iron, but may be made of wrought-iron and formed in a suitable die.

The parts to be secured having been properly assembled the bolt is applied cold by inserting it through the holes provided for the purpose and the bolt driven "home," when a sledge or other implement is held against the head of the bolt to secure it against displacement, while the free end of the bolt has its members 9 9 separated by a suitable tool and the wedge inserted, when the ends 9 9 are bent back upon the wedge, as shown in Fig. 5. A blow is then struck with a hammer or sledge upon the end of the bolt, which will set the ends of the bolt and drive the wedge 8 into the nut, or a swaging-tool may be applied thereto and under a heavy blow of a hammer or sledge the parts of the bolt set, and the parts to be secured are closely drawn together.

In the illustration of an application of the invention shown in Fig. 7, 10 indicates the rail, and 11 11 the fish-plates.

The uses of the bolt are unlimited and when properly applied the parts form an ef-

fectual nut-lock, in that the nut or washer 4 is secured against accidental displacement.

If it is desired to remove the bolt, the ends 9 9 may be separated by a suitable wedge-shaped tool, the wedge 8 removed, and the ends 9 9 bent to their original position on the shank 6, when the washer 4 may be removed from the shank of the bolt.

The wedge 8 is preferably provided with oppositely-inclined surfaces 8′ 8′, which are engaged by the ends 9 9, as shown, and facilitate the removal of the nut from the bolt, and has inclined ends 12 12 and is of a length slightly in excess of the opening 5 in the washer 4, so that there can be no lateral movement of the bolt in the washer.

The ends 9 9 may be drawn together over the wedge 8 by the use of a pair of tongs preparatory to the swaging to effectually set the parts.

The bolt and washer constructed and applied as described does away with skilled labor in the erection of structural-iron work now required to rivet the parts together, and thereby reduces the cost of labor.

Having thus fully described my invention, what I claim is—

1. An improved article of manufacture, a bolt provided with a solid head integral therewith and having separate unwelded members extending from the head in parallel planes normally in engagement with each other, and in which the longitudinal fibers of the metal are separated in the transverse center of the bolt from the head to the end of the bolt.

2. A threadless bolt having a solid head and members extending therefrom in parallel planes normally in engagement with each other and separable at their outer ends, a threadless nut surrounding said members, and a wedge between the members extending into the nut and covered by said members.

3. A threadless bolt having a solid head and members extending therefrom in parallel planes normally in engagement with each other and separable at their outer ends, a nut having a threadless conical opening therein, and surrounding the bolt, a wedge between the outer ends of the bolt, extending into the nut and inclosed by said outer ends of the bolt engaging the wedge.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB J. SOUDER.

Witnesses:

D. C. REINOHL,

W. PARKER REINOHL.