(No Model.)

B. W. DE COURCY.

KEY FOR BOLTS, &c.

No. 255,843. Patented Apr. 4, 1882.

Fig. 1.

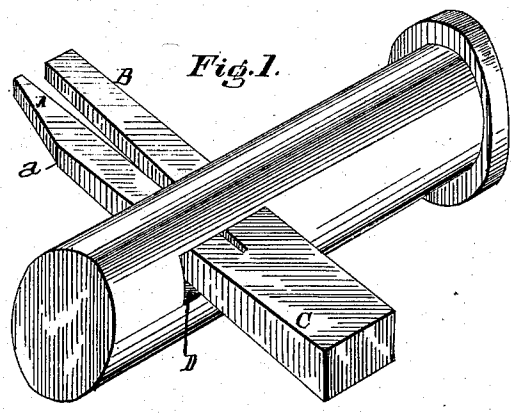


Fig. 2.

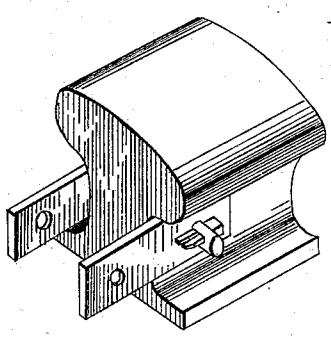


Fig. 3.

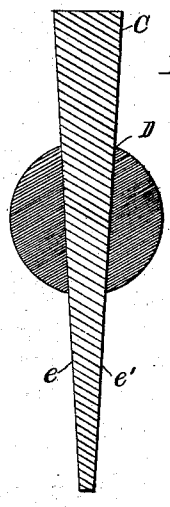
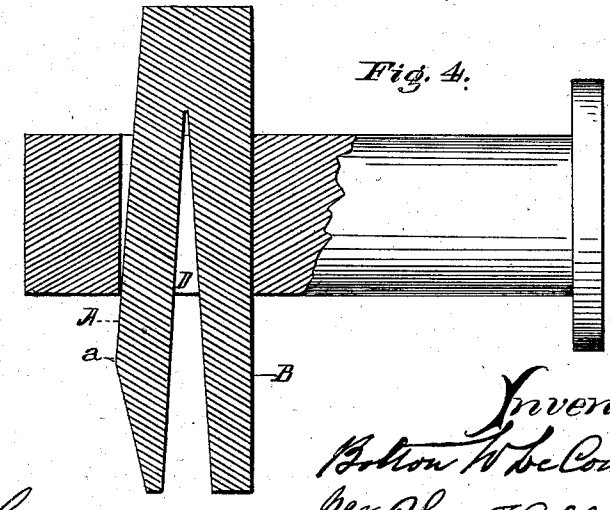


Fig. 4.



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UNITED STATES PATENT OFFICE.

BOLTON W. DE COURCY, OF WINCHESTER, ASSIGNOR OF ONE-HALF TO JAMES C. ERNST, OF COVINGTON, KENTUCKY.

KEY FOR BOLTS, &c.

SPECIFICATION forming part of Letters Patent No. 255,843, dated April 4, 1882.

Application filed December 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, BOLTON W. DE COURCY, of the town of Winchester, in Clark county, and State of Kentucky, have invented certain new and useful Improvements in Keys for Bolts and like articles, of which the following is a specification.

The object of my invention is to provide a device which will hold a bolt or similar article firmly in place, and which, while performing this function of a nut, unlike the nut, is not liable to become loosened. This object I accomplish by a key of peculiar construction.

In the accompanying drawings, Figure 1 is a perspective view of a bolt provided with my improved key. Fig. 2 represents a bolt with my key in one of its most useful applications—viz., in securing two fish-plates to a railroad-rail. Fig. 3 is a cross-section of bolt and key. Fig. 4 is a longitudinal section of the key and of a portion of the bolt, the rest of the bolt being left unsectioned.

The key consists of a body, C, provided with two legs, A and B, separated by a wedge-shaped interspace. The two faces *e e'* of the key taper toward each other as they approach the point, as shown in Fig. 3, and the slot D in the bolt is shaped so that the key fits snugly within the slot, as shown in the same figure. The two outer edges of the key taper toward the head C, so that they are closer together at the head than at the widest part of the distended legs, as shown in Fig. 4. The leg A is also beveled from the line *a* toward the joint or end of the leg A, as shown in Fig. 4. The widest portion of the key, which is at line *a*, is preferably somewhat wider than the slot D, as shown in Fig. 4.

The method of operation is as follows: The key is inserted in the slot D, there being sufficient spring to the two legs of the key to permit them to be approximated while the widest part of the key at line *a* is being forced through the slot. That portion of the key which is at line *a* having been passed through the slot, the key is pushed forward until its beveled faces *e e'* are in apposition with the beveled faces of the slot D, as shown in Fig. 3. The legs A and B have now again separated to almost their whole extent, being so constructed that when in place the spring action of the legs keeps the leg A pressed against the edge of slot D. It will also be seen that to withdraw the key it is necessary to again approximate the legs A and B. An ordinary jar or shock, such as the key would be subjected to in machinery or when applied to railroad-rail, as will be described farther on, cannot accomplish this. Moreover, besides the shape of the key passively preventing its withdrawal, the spring action of the legs tends directly to force the key more deeply into the slot. Hence, the legs preventing its withdrawal and the beveled faces *e.e'* preventing its further entrance into the slot, the key is held securely in place.

One of the most useful applications of my key is illustrated in Fig. 2, where, as shown, two fish-plates, E E', are joined to a rail, F, by a bolt passing through the plates and the web of the rail in the usual way, and secured in position by my key in place of a nut. The distance between the inner edge of the slot and the head of the bolt is a little less than the distance between the two outer faces of the two fish-plates. By this arrangement the key bears against the face of the fish-plate instead of the inner edge of the slot and the two fish-plates are held in close contact with the web of the rail. When the distance between the slot and bolt-head is greater than the distance between the outer faces of the fish-plates, one or more washers are placed between the bolt-head and the adjacent fish-plate, in this way bringing the key to bear against the fish-plate. By having the leg B press firmly against the fish-plate the fish-plates and web of the rail are held as firmly together as if a nut had been screwed to the end of the bolt. Moreover, the jarring of trains cannot displace the key, so that the latter takes the place of nut and nut-lock.

This key is much more readily applied than a nut, and can be more cheaply constructed than any nut and nut-lock whose place it supplies. This key and its bolt is applicable (as is already evident from the foregoing description) to unite the fish-plates and two adjacent rails of what is known as a "joint," and the shape and extended bearing of the key and the size of the bolt are such that one such bolt and key

will efficiently perform the duties of two of the ordinary bolts employed with nuts to secure the fish-plates and rail together. Thus where heretofore four bolts—viz., two bolts to secure the two fish-plates to one rail and two more bolts to secure said fish-plates to the adjacent rail—have necessarily been employed, only two of the keys herein described and bolts mentioned to accompany each of said keys need be used—viz., one bolt and key to secure the fish-plates and one rail together and another bolt and key to secure the adjacent rail and fish-plate. Thus I am also enabled to dispense with the making of two extra holes in each fish-plate and one extra hole in each rail.

When desired, the bevel shown on the edge of leg A between line *a* and the point of leg A may be dispensed with, the edge being between said line and point, being made parallel to the edge of leg B, or being extended in the plane of the rest of the edge of leg A. Such modifications will not interfere with the operation or utility of the main feature of my invention.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. A bolt-key which performs the functions of a nut and nut-lock.

2. A key consisting of body C and legs A and B, constructed substantially as described.

3. A key whose faces *a a'* are beveled toward the point, and whose edges are beveled toward the head and provided with spring-legs A B, substantially as and for the purposes specified.

4. A key consisting of a head or solid end and spring-legs A B, and whose faces *a a'* are beveled toward the points of the legs, and whose edges are beveled toward the head, excepting the edge of leg A, from the line *a* to the point of said leg, which latter edge is beveled toward the said point, substantially as and for the purposes specified.

5. In combination with a key having beveled faces, as *a a'*, and beveled edges, substantially as described, and spring-legs A B, the bolt having a slot of such a size and having sides so beveled as to receive the key and allow the faces *a a'* of the latter to snugly fit against said sides after the widest portion of the key has passed through said slot, substantially as and for the purposes set forth.

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