I. S. DOWNING.

BOLT CONNECTION.

APPLICATION FILED MAY 26, 1914.

1,114,239. Patented Oct. 20, 1914.

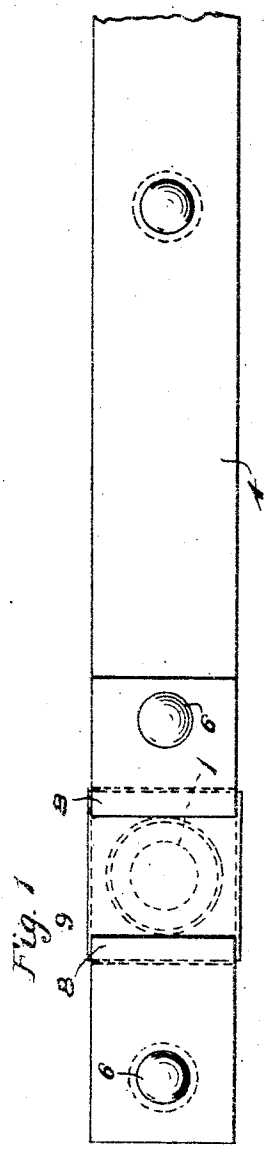


Fig. 1

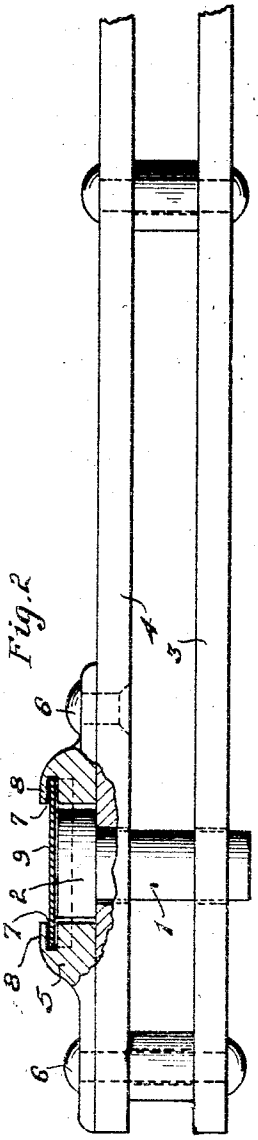


Fig. 2

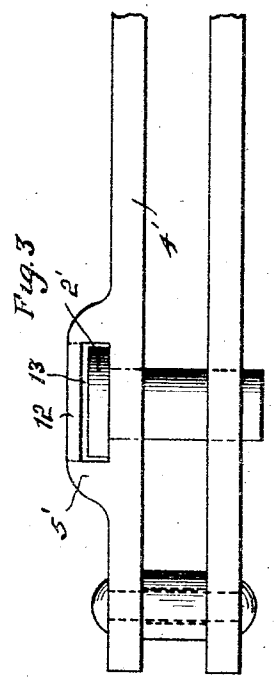


Fig. 3

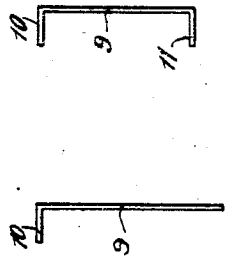


Fig. 4

Fig. 5

WITNESSES

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BOLT CONNECTION.

1,114,239. Specification of Letters Patent. Patented Oct. 20, 1914.

Application filed May 26, 1914. Serial No. 840,359.

To all whom it may concern:

Be it known that I, IRA S. DOWNING, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Bolt Connections, of which the following is a specification.

The invention relates to bolt connections, and is illustrated in connection with a brake rigging. It has for its objects the provision of an improved type of connection in which the danger of accidental removal of the bolt is eliminated and in which no machine work is required. Certain embodiments of the invention are shown in the drawings, wherein—

Fig. 1 is a side elevation of a brake rod rigging provided with my improved construction, Fig. 2 is a plan view of the construction with a portion thereof shown in section, Fig. 3 is a plan view of a modified type of construction, and Figs. 4 and 5 are detailed views of the key employed, Fig. 4 illustrating the key before bending and Fig. 5 illustrating the key after bending.

As illustrated in Figs. 1 and 2, the bolt employed has a shank 1 and a head 2, the shank 1 fitting in perforations in the bars 3 and 4 and the head 2 fitting in a circular recess in the member 5. In the particular form of design illustrated the member 5 is held in place by the bolts 6, although this is not essential as the part 5 may be made integral with the bar 4, such construction in a modified form being illustrated in Fig. 3. The member 5 is provided with slots 7 and with the overhanging lips or key retaining means 8. The key 9 is preferably made of sheet metal having one end bent as indicated at 10 in Fig. 4. After the key has been pushed into position as indicated in Fig. 1 its lower end is bent over as indicated at 11 in Fig. 5. When in this position of use, the key 9 lies between the head 2 of the bolt and the key retaining means 8, thus preventing the outward movement of the bolt. The movement of the bolt in the reverse direction is of course prevented by reason of the engagement of the head of the bolt with the side of the bar 4. When it is desired to remove the bolt one of the ends 10 or 11 can be easily bent outwardly thus permitting the key to be removed. When the ends of the key are in the position illustrated in Fig. 5 all danger of accidental removal of the bolt is eliminated.

Fig. 3 illustrates a modification of the invention in which the bar 4' is provided with an integral member 5' corresponding in function with the member 5 in the construction of Fig. 2. This member 5' is provided with a passage 12 large enough to permit the head 2' of the bolt to be slid therethrough. When the head 2' is in the position illustrated in Fig. 2 a key similar to the key 9 can be inserted in the slot 13, and when the other end of the key has been bent outward as indicated in Fig. 5 the key is prevented from moving in either direction. It will be seen that the arrangement in Fig. 3 accomplishes substantially the same result as that accomplished by the construction of Fig. 2, the only difference being that the member 5' is integral with the bar 4' instead of separated therefrom and in that only a portion of the metal of the member 5' opposite the head of the bolt 2' is cut out thus differing from the construction of Fig. 2 wherein all of the metal between the lips 8 is removed. The key employed in both types of construction is preferably of the bendable type as illustrated in Figs. 4 and 5, but this is not essential and other types of keys might be employed, the only requirement being that the arrangement be such that when in position the accidental removal of the key is avoided. The advantages of my construction with respect to its security, simplicity, and cheapness will be readily apparent to those skilled in the art.

What I claim is:—

1. In combination with a perforated member, a headed bolt extending through the member and having its head in contact with the side of the member, key retaining means adjacent the outer face of the head, a key extending across the outer face of the head and fitting the said means, and means on the key whereby its accidental withdrawal is prevented.

2. In combination, a member having a bolt opening, a headed bolt lying with its shank in said opening and with its head against the side of the member, a key retaining means including a slot at the head of the bolt, and a bendable key lying in the said slot and extending across the outer face of the head of the bolt.

3. In combination, a member having a bolt opening, a headed bolt lying with its shank in said opening and with its head against the side of the member, a key re-

taining means including a slot at the head of the bolt, a key lying in said slot and extending across the outer face of the head of the bolt, and means for holding the key against removal.

4. In combination, a member having an opening for the shank of a bolt and a larger opening at the end of the first opening for the head of the bolt, a headed bolt lying with its shank in the first opening and its head in the second opening, key retaining means carried by the member on the outer side of the bolt head, and a key fitting slidably between such means and the outer face of the head of the bolt.

5. In combination, a member having an opening for the shank of a bolt and a larger opening at the end of the first opening for the head of the bolt, a headed bolt lying with its shank in the first opening and its head in the second opening, key retaining means carried by the member on the outer side of the bolt head, and a key fitting slidably between such means and the outer face of the head of the bolt, such key being bendable so that its end may be bent to prevent the accidental removal of the key.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

IRA S. DOWNING.

Witnesses:
L. F. MALCOLM,
L. F. DIECKMANN.