C. W. WALTHER.

KEY BOLT.

APPLICATION FILED NOV. 16, 1920.

1,409,626.

Patented Mar. 14, 1922.

FIG. 1.

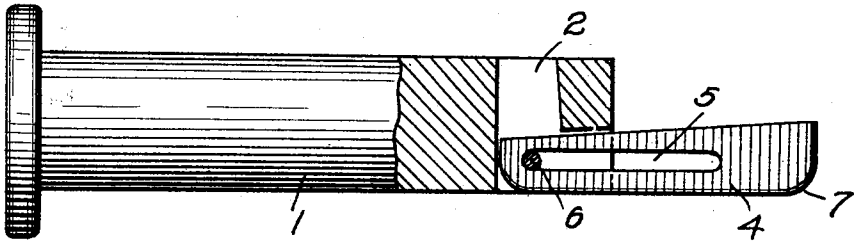


FIG. 2.

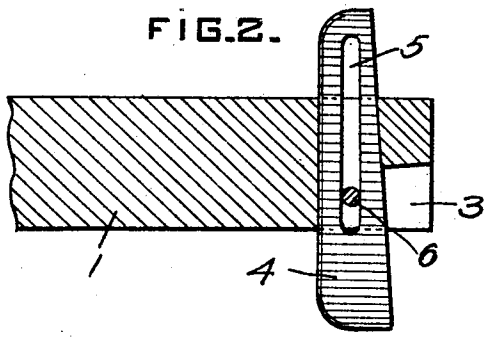


FIG. 4.

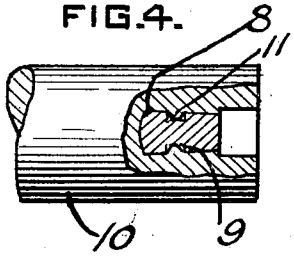


FIG. 3.

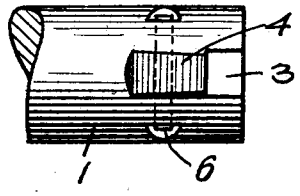
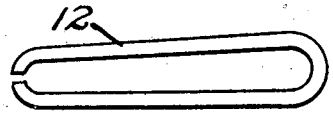


FIG. 5.



WITNESSES

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KEY BOLT.

1,409,626. Specification of Letters Patent. Patented Mar. 14, 1922.

Application filed November 16, 1920. Serial No. 424,342.

To all whom it may concern:

Be it known that I, CHARLES W. WALTHER, a citizen of the United States, and a resident of Verona, in the county of Allegheny and State of Pennsylvania, have made a new and useful Improvement in Key Bolts, of which the following is a specification.

My invention relates to removable connection pins such as are in common use in railway rolling stock brake rigging and consists of an improved keybolt.

The ordinary spring cotter for retaining connection pins, when once spread and exposed to the weather for some time, becomes difficult to remove, is likely to fracture upon straightening of the legs for removal or upon respreading after reinsertion.

Again, after removal, it is easily lost and workmen often have no extra spring cotters at hand and use a makeshift substitute which proves inadequate. Occasionally the connection pin is replaced without any retaining means being provided. The dangerous condition resulting from these practices is obvious.

The object of my invention is to provide an economical and efficient key-bolt adapted to be substituted for the usual pin and spring cotter which will eliminate the above mentioned disadvantages of the latter. This object is attained by the device shown in the accompanying drawings in which Figure 1 is in part a side elevation and in part a longitudinal section of my key-bolt when adapted to be inserted into a clevis eye or other hole; Fig. 2 is a partial section corresponding to the sectional part of Fig. 1 and showing the key in bolt locking position; Fig. 3 is a partial view of the bolt taken at right angles to the planes of Figs. 1 and 2, and Fig. 4 is a view of a modification hereinafter described and Fig. 5 is a view of a modified key.

The bolt 1 is of standard form having a cylindrical body and a flat head. Near the headless end of the bolt is a slot 2 disposed transversely of the bolt axis, tapered from one longitudinal edge to the other longitudinal edge as indicated in Figs. 1 and 2 and also tapered transversely as from top to bottom as indicated in Fig. 3.

Slot 2 is spaced from the end of the bolt and a longitudinal slot or groove 3 in the side of the bolt runs parallel with the bolt axis and extends from one end of slot 2 to the end of the bolt. The width of groove 3 approximates the width of slot 2 and its depth approximates the depth of slot 2.

Co-operating with bolt 1 is a key 4 tapered from end to end and from one side to the opposite side to correspond to the tapers of slot 2, and having a length sufficient to extend substantially beyond each side of bolt 1 when seated in the tapered slot as is indicated in Fig. 2.

The key 4 is slotted at 5 and a pin 6 is positioned transversely of slots 2 and 3 near their intersection and passes through key slot 5 thereby securing the key in assembly with bolt.

By suitably proportioning slots 2, 3 and 5 and key 4 the latter is adapted to pivot on pin 6 when withdrawn as far as possible as indicated in Fig. 1. The slotted pivotal movement provided thereby permits the key to be substantially alined with the bolt so as to permit passage of bolt and key through the same diameter of hole that would admit the bolt alone and then to be turned at right angles to the bolt axis and to be moved transversely of the latter. The outer corner 7 of key 4 is preferably rounded to prevent catching when the bolt and key are being inserted through a hole.

The doubly tapered slot and key provide a secure holding means for the latter. The transverse taper prevents any yielding of the wider edge of the key and a single tap on the larger end of the key firmly locks the key in position. When it is desired to remove the bolt, the smaller end of the key is hammered and the grip of the tapered surfaces loosened, thereupon the key may be withdrawn, turned on pin 6 and the bolt removed.

With the bolt and key in position to be inserted in a hole and with the groove 3 facing upwardly, the key will be held in alinement and the bolt can be manipulated by the head without the key interfering with its movement. Upon rotation of the bolt after insertion, the large end of the key, being unsupported, will drop, positioning the key transversely of the bolt, so that it may be easily driven into bolt retaining position. This feature is advantageous when the keybolt is being used in close quarters. Fig. 4 illustrates a modification in which pin 6 is eliminated. The key 8 instead of being slotted as at 5 is provided with grooves or

recesses 9. When the key is assembled with bolt 10 the latter is prick punched to provide key retaining tits 11. This construction is simpler than that of the preferred form, but open to the objection that after complete assembly, the key cannot be disassembled except by chiseling tits 11 while pin 6 affords means for removing and replacing key 4 as often as desired.

Either of the above described constructions are adapted for economical production by drop forging operations while Fig. 5 shows a modified form of key 12 produced by bending of round or square stock to the shape illustrated. This key, having the longitudinal taper only, will not be as firmly or easily secured in locking position but will, nevertheless, form a serviceable retaining element. It will be understood that, key 4 will be secured if provided with a single taper only, although the double taper is more desirable and functions more efficiently.

These and other modifications of my device, without departure from its spirit, are contemplated by me in its commercial development.

I claim:

1. A key-bolt comprising a bolt having a tapered slot extending transversely of the bolt and spaced from one end thereof, and a tapered pin pivotally and slidably mounted in said slot.

2. A key-bolt comprising a bolt having a tapered slot extending transversely of the bolt, and a tapered pin pivotally and slidably mounted in said slot.

3. A key-bolt comprising a bolt provided with a transverse slot spaced from the end of the bolt, a slot extending from one end of said transverse slot to the end of the bolt, a key adapted to enter said slots, provided with a slot, and a pin located near the intersection of the slots in said bolt and extending through said key slot.

4. In combination, a bolt having a double tapered, four walled, transverse slot adjacent one end thereof, a key tapered to correspond with said slot and itself provided with a longitudinal slot, and means co-operating with the slot of said key for pivotally securing the same to said bolt.

5. In combination, a bolt having a transverse slot tapered from end to end and from one side to the opposite side and a similarly tapered pin pivotally and slidably mounted in said slot.

In testimony whereof, I have hereunto subscribed my name this 28th day of October, 1920.

CHARLES W. WALTHER.