Feb. 18, 1947. C. M. OVERTON 2,415,905

METAL LOCK

Filed Jan. 28, 1944

Fig. 1

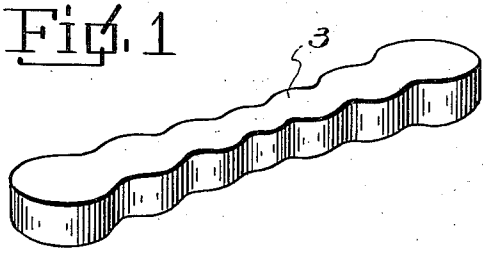


Fig. 2

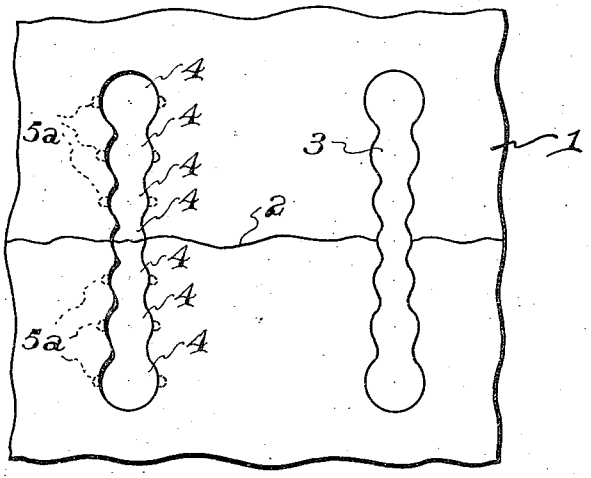
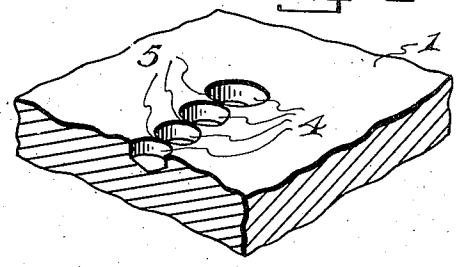


Fig. 3



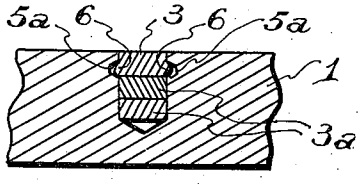


Fig. 4

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METAL LOCK

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1 Claim. (Cl. 189—36)

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The invention relates to metal locks of the type used transversely across a crack in a metal article for strengthening the article and preventing progression of the crack, or spreading thereof, and has for its object to form the lock with sides having reverse curves, decreasing in diameter towards the center so that the lock is narrower at its center where it crosses the casting crack for positively wedging the parts when the lock is placed in a similarly shaped recess in the casting.

A further object is to undercut the side walls of the recess in the casting particularly where a three tier assembly is used so that the top lock, when driven into position will spread into the undercut for positively holding the assembly in position.

A further object is to provide a method of preparing a casting and keying the same across a crack, comprising first drilling a plurality of closely placed apertures across a crack with the apertures increasing in diameter from the crack outwardly and then cutting the webs between the apertures to form an elongated chamber for the reception of similarly shaped keys, undercutting the walls of the recess after some of the keys have been placed in position so that parts of the final key will be spread into the undercut for positively locking the parts together.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:

Figure 1 is a perspective view of the key.

Figure 2 is a plan view of a casting or other metal article to be repaired by one or more keys extending across the crack.

Figure 3 is a perspective view showing the initial step in forming the key way.

Figure 4 is a detail sectional view taken on line 4—4 of Figure 2.

Referring to the drawing the numeral 1 designates a metallic article to be repaired and 2 a crack therein, the opposite sides of the crack are to be tied together by one or more transverse keys 3. It is to be understood that any number of keys may be used in superimposed relation.

In preparing the key ways the member 1 is provided with a plurality of bored apertures 4 in slightly spaced relation as shown in Figure 3, thereby leaving thin webs 5 therebetween. The bored apertures 4 increase in diameter from the crack 2 outwardly, and after all of the borings are made the webs 5 are chiseled away to form an elongated recess as shown at the left of Figure 2 with its sides in the form of reversed and compound bends. It will be noted that the width of

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the recess increases from the crack outwardly, therefore when similarly shaped keys 3 are driven into the recess, there is a positive interengaging of the sides of the keys with the sides of the recess, consequently spreading of the crack 2 is positively prevented.

Where the casting is thick, and the crack deep a plurality of keys, as shown in Figure 4, are used, and the apertures 4 drilled deep. In this case the lower keys 3a are driven into position and following this operation the side walls of the recess are undercut as shown at 5a, and then the top key 3 is driven into the recess by percussive blows so it will spread as at 6 into the undercuts 5a which are positioned in the portions of the reverse curves which extend outwardly from the recess, thereby positively locking the outer key 3 in position so it can not become displaced incident to crack spreading strain or use of the repaired article.

From the above it will be seen that a repair key is provided for cracks in metal articles, which is simple in construction, positively keyed in position, and so shaped that the crack can not open. It will also been seen that by the particular method of preparing the recess the operations can be carried out by boring steps, thereby eliminating grinding of the walls of the recess as is now the common difficulty experienced with straight wall keys.

The invention having been set forth what is claimed as new and useful is:

A repair key for a cracked metallic article and extending across said crack, said key being disposed in an elongated recess extending across the crack, the walls of said recess being formed from contiguous reverse bends and increasing in width from the crack outwardly, a key conforming to the shape of the recess and having a driven fit into the recess and into engagement with all of the reverse bends of the recess, spaced under cuts in opposite walls of the recess and in the outwardly extending portions of the reverse bends which extend outwardly from the recess, said key having portions extending into the under cuts and forced therein when the key is driven into the recess.

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