W. E. AYLOR AND M. RAUH.

COTTER KEY.

APPLICATION FILED AUG. 8, 1919.

1,336,498. Patented Apr. 13, 1920.

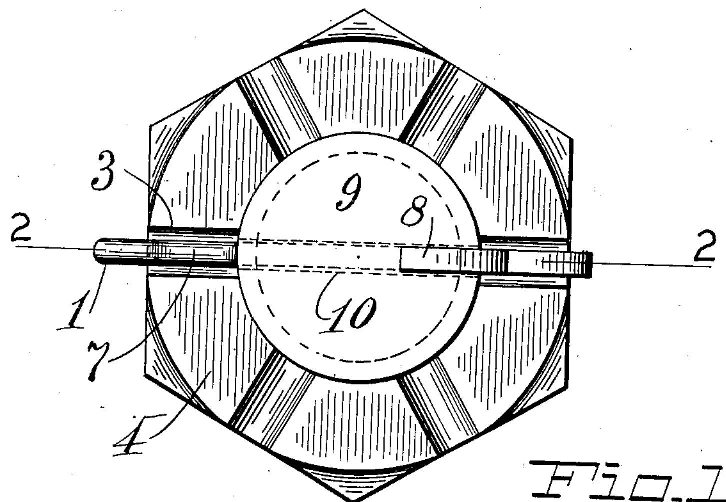

Fig. 1.

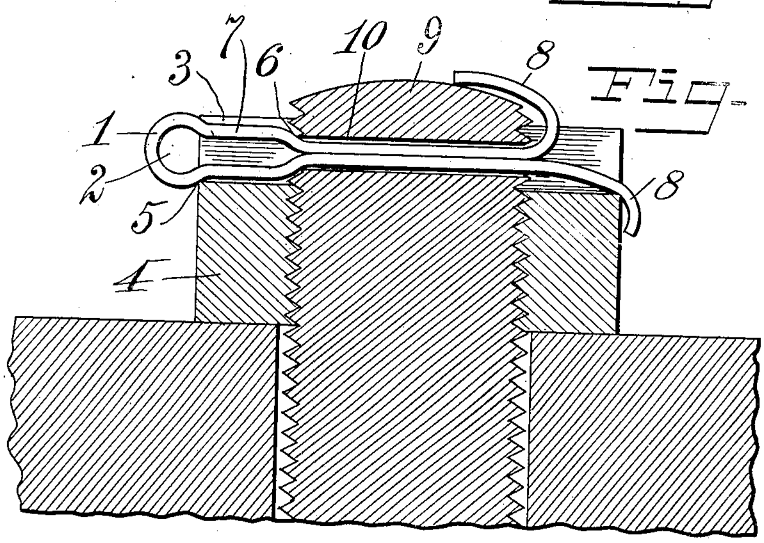

Fig. 2.

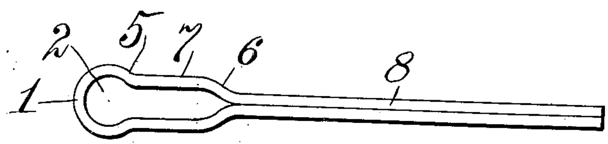

Fig. 3.

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COTTER-KEY.

1,336,498. Specification of Letters Patent. Patented Apr. 13, 1920.

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To all whom it may concern:

Be it known that we, WILLIAM E. AYLOR and MILTON RAUH, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cotter-Keys, of which the following is a specification.

This invention relates to a new article of manufacture in the form of a cotter key. Heretofore, as we are advised, cotter keys have not been made so much with a view to facilitating their ready extraction from the holding or locking positions as to the obtainment of other advantages. They have been commonly so constructed as to make their extraction or withdrawal from the parts a very difficult and tedious task. Especially is this true where cotter keys are used in connection with what is known as the castle nut, a form of nut largely used in automobile construction. Such form of nut has a series of radial openings extending inwardly from the sides thereof and through one of which the key is inserted on one side, caused to pass through an opening in the bolt and emerge through an opening on the other side of the nut where the ends of the key are turned to hold the same in position. Owing to the formation of cotter keys as heretofore made, there is more or less difficulty experienced in extracting or removing them, due to the fact that the head or eye end of the key becomes almost if not quite wholly concealed in the opening in the nut, thus rendering it difficult to get hold of the head of the key to withdraw it when it is desired to remove a nut. Modern conditions of manufacture in many lines have rendered the use of the old conventional form of cotter pin or key very objectionable on account of the inability to quickly remove them when such becomes necessary. For example, in air ship construction as well as automobile work, where the numerous removal of cotter pins or keys has become so necessary as to require some special means for extracting them, and yet, owing to the difficulty due to said keys entering the openings in the nuts to too great an extent, due in turn to the form of the cotter key, much annoyance is still experienced in their extraction or removal.

In view of the above well understood conditions, it is the object of our invention to provide a special form of cotter key which prevents too great an entrance of the key into the openings in the nut and bolt, to the end that the eye in the cotter key lies in an exposed position on the side of the nut to admit of being engaged by a suitable implement by which it may be readily extracted.

Preceding a more particular description of our invention, reference is made to the accompanying drawings in general terms.

Figure 1 is a top plan view of a common form of hexagon nut, otherwise termed castle nut, engaging a bolt and the two held together by means of our improved cotter key.

Fig. 2 is a vertical section on the line 2—2 of Fig. 1.

Fig. 3 is a view of the improved cotter key.

In a more particular description of our invention reference is made to the drawings where the same reference characters will denote the same or corresponding parts. As there shown the head —1— or the eye end of the cotter key is of an elongated form, the opening therein having two diameters of width. This is essential in order to preserve the well defined eye —2— in which the extracting implement engages to pull the key from its position in the nut and bolt. In order to prevent the key from entering so far into one of the openings —3— in the nut —4— that the said eye would be wholly or partly concealed, shoulders —5— and —6— are formed in the head to limit the penetration of the key. These shoulders are formed in the making of the key and is done by spreading the limbs or prongs —8— of the key in two approximately parallel sides —7— —7—, the initial bend of which forms the shoulders —6— and the final bends in which form the shoulders —5— from which points the stock continues in the formation of the eye portion of the key. When the cotter key thus formed is inserted a sufficient distance into the openings in the nut and bolt to perform its function of holding the parts, the ends of the prongs —8— are bent. In this position, it will be seen the shoulders —6— abut with the bolt at the entrance to the opening —10— therein, and one of the shoulders —5— abuts with the lower edge of the entrance of the opening —3— in the nut. There is then left exposed at one side of the nut the eye of the cotter key, in a position to be engaged by a suitable extracting implement by which the key may be re-

moved quickly and with comparatively little effort.

So far as we are aware no attempts have heretofore been made to construct cotter pins or keys in a way to facilitate their ready extraction or removal. As has been stated, modern advancement in many lines of mechanical development requires more of the cotter key than a mere capacity to perform the function of holding the parts in their connected relation. We, therefore do not wish to limit ourselves to the identical construction of the cotter key as here shown, for the reason that it is apparent that some variations may be made therein without departing from the underlying principle of our invention, which as has been stated, resides in such a construction of the key that will prevent the key from entering too far into the openings in the nut and bolt as to interfere with the use of a suitable implement for the extraction of the said key.

Having described our invention, we desire to claim as follows:

1. A cotter key having an elongated head with an eye therein, the said head being formed by extending outwardly the shank members of the key in approximate parallelism in the formation of the said head, and providing shoulders on the opposite sides of the said head to limit the penetration of the said key so that the eye thereof may remain exposed when the key is inserted.

2. A cotter key having an elongated head terminating in an enlarged extremity forming an eye, the said head having outer and inner shoulders on opposite sides thereof whereby the penetration of the key is limited to an extent that the eye thereof is exposed when the key is inserted.

In testimony whereof we affix our signatures.

WILLIAM E. AYLOR.
MILTON RAUH.