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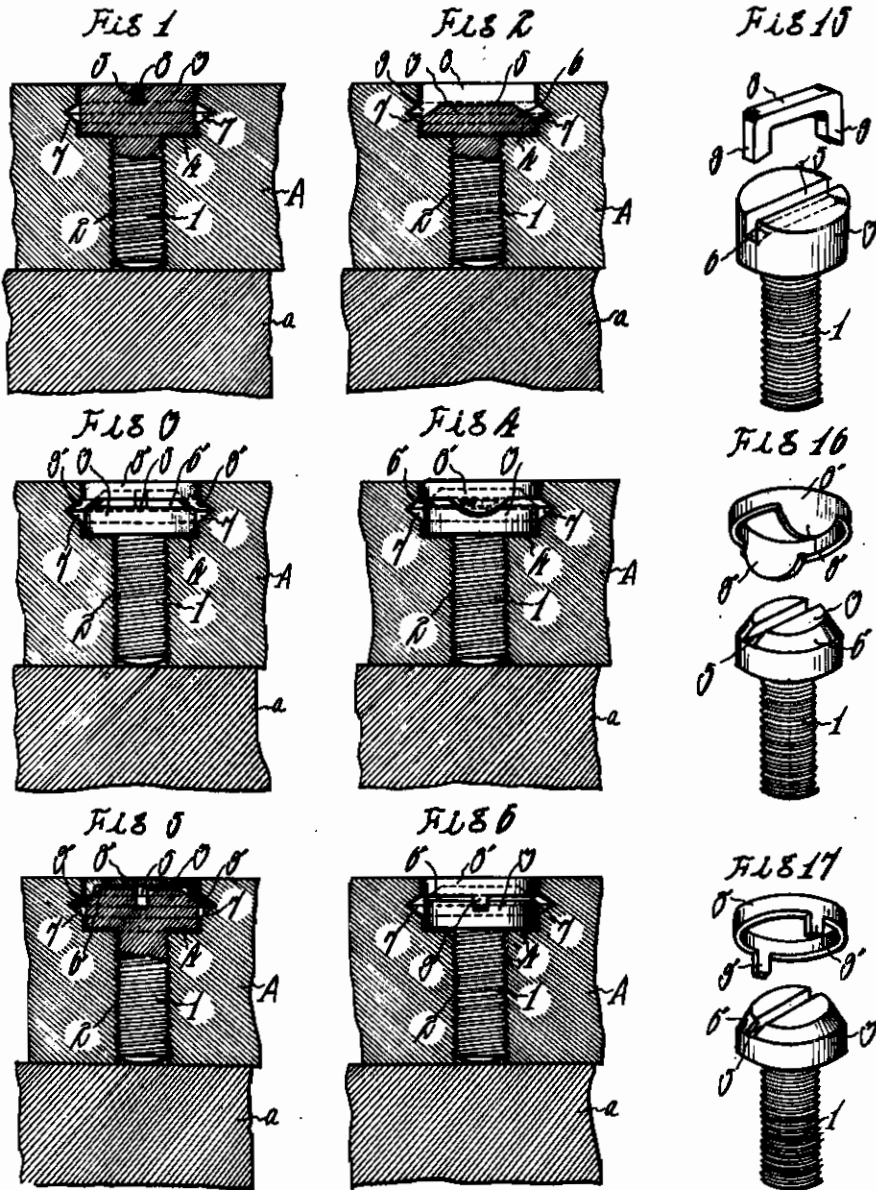
Serial No.

MAY 11, 1943. LOCKING DEVICE FOR BOLTS, SPINDLES OR THE LIKE 382,653

BY A. P. C.

Filed March 10, 1941

2 Sheets-Sheet 1



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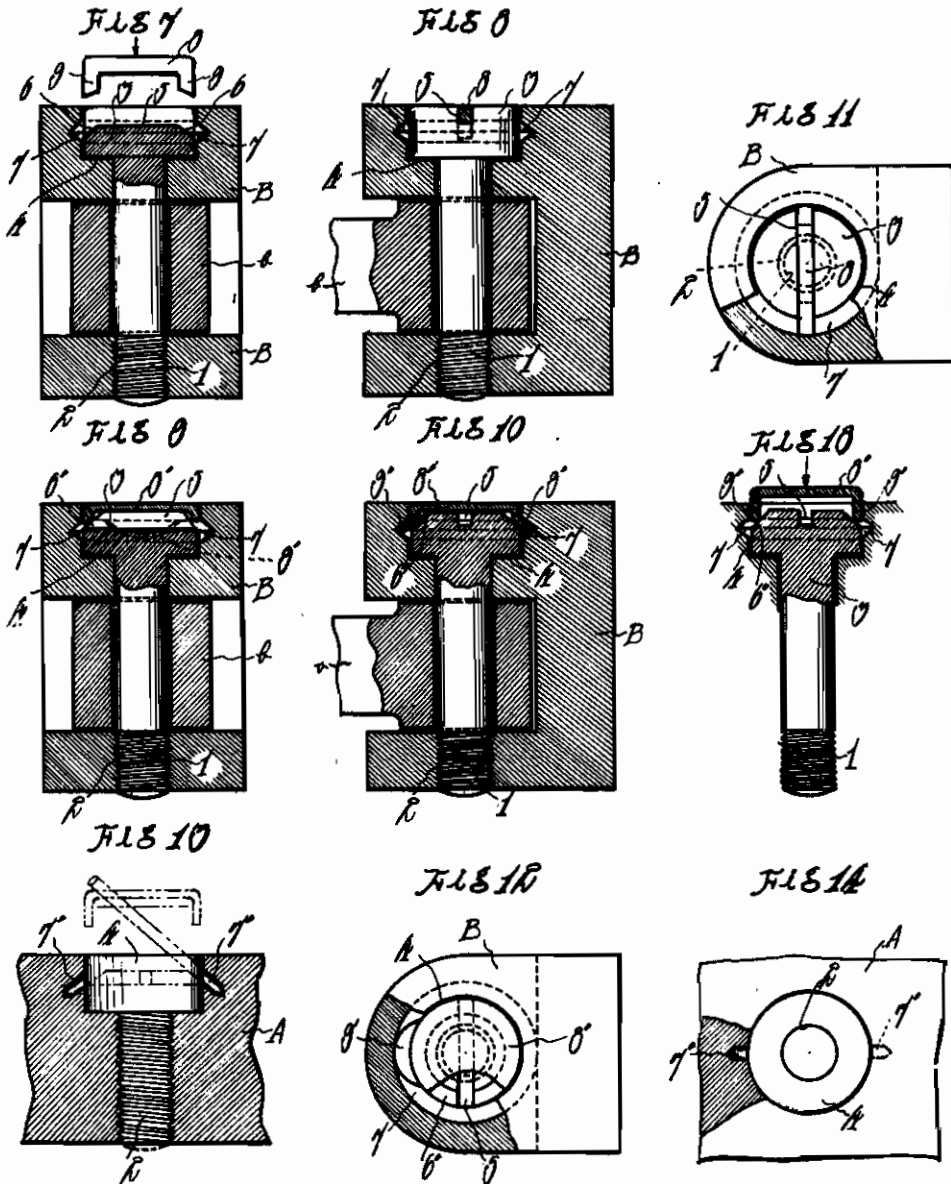
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ALIEN PROPERTY CUSTODIAN

LOCKING DEVICE FOR BOLTS, SPINDLES OR THE LIKE

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This invention relates to a device for locking a bolt, spindle or the like against loosening and detachment, consisting of a bolt having a screw threaded portion at one end and a head at the other, said bolt head being formed with a diametral slot having both ends inclined, or the top edge of said bolt head being bevelled so as to form a conical face, a block having a cavity for receiving said bolt head and formed with a recess or recesses in the side wall thereof, and a locking staple adapted to be inserted and pressed into said diametral slot in the bolt head, or a locking cap having a plurality of tongues, whereby the legs of said locking staple or the tongues on the locking cap are adapted to be bent outwardly and engaged by said recesses in the side wall of the cavity when said locking staple or cap is mounted and pressed upon the bolt head. The object of the invention is to provide a locking device of simple construction which is adapted for effectively preventing loosening and detachment of the bolt, spindle or the like due to vibration, by extremely simple means.

In the accompanying drawings, in which a plurality of embodiments of the invention are shown by way of example,

Figs. 1, 3 and 5 show in longitudinal section three different forms of devices for locking screw bolts;

Figs. 2, 4 and 6 are longitudinal sections taken at right angle to Figs. 1, 3 and 5 respectively;

Figs. 7 and 9 show in longitudinal section two different forms of devices for locking spindles or connecting pins;

Figs. 8 and 10 are longitudinal sections taken at right angle to Figs. 7 and 9 respectively;

Fig. 11 is a plan view of Fig. 8, partly in section;

Fig. 12 is a plan view of Fig. 10, partly in section;

Fig. 13 is a section of the block shown in Fig. 5, with the bolt and the locking cap not mounted;

Fig. 14 is a plan view thereof, partly in section;

Figs. 15, 16 and 17 show in perspective views three different forms of the bolts and locking staple and caps; and

Fig. 18 shows in section a position of a locking cap just being pressed on the bolt head.

Referring to the drawings, particularly Figs. 1 to 6, 1 designates a screw bolt screwed into an internally threaded bore 2 in a block A, which may be for example a boss or collar which is to be fixed by the screw bolt 1 to a rod or shaft α . Said bolt 1 has a head 3 adapted to be received

in a cavity 4 formed in the block A. At the top, the head 3 is formed with a diametral slot 5 for receiving a driver, by which the bolt 1 is screwed into the block. Said diametral slot 5 is bevelled off at both ends, forming inclined faces 6, as shown in Figures 1 and 15. Alternatively, the top edge of the head 3 is bevelled so as to form a conical face 6' as shown in Figs. 3 to 6 and Figs. 16 and 17. The cavity 4 is formed with an annular recess 7, or is formed with diametrically opposite recesses 7'. 8 is a locking staple adapted to be inserted and driven into the slot 5, whereby the legs 9 are bent outwardly by being acted upon and guided by the inclined faces 6 and inserted into the annular recess 7. In the form shown in Figs. 3, 4 and 16, a locking cap 8' having two or more tongues 9' is used. This cap serves similarly as the locking staple 8, and when it is inserted and driven into the cavity onto the head 3 of the bolt, the tongues 9' are bent outwardly by being acted and guided by the conical inclined face 6', and are thus engaged by the annular recess 7 or recesses 7'.

Figs. 7 to 10 are embodiments of this invention as applied to a spindle or pin serving, for example, as a pivot for a hinge, a handle, or other turning element b forming a machine part. Referring to the drawings, 1 designates a spindle having screw thread at one end and a head 3 at the other end. Similar parts are designated with similar reference numerals as in the above mentioned forms, and further explanation in detail will not be necessary. In the form shown in Figs. 7 and 8, a locking staple 8 is used, whilst in the form shown in Figs. 9 and 10, a locking cap 8' is used.

In the use of this invention, the screw threaded portion of the bolt or spindle 1 is screwed into the internally threaded bore 2 in the block A or B by means of a suitable driver inserted into the diametral slot 5 in the head 3, so that said head 3 is embedded in the cavity 4. Then, the locking staple 8 or locking cap 8' having the tongues 9' is mounted and pressed upon the head 3. The legs 9 of the locking staple 8, or the tongues 9' of the locking cap 8', are pressed against and guided by the inclined faces 6 of the slot 5 or the conical face 6' respectively, and are bent outwardly to be received by the annular recess 7 or by the recesses 7', whereby locking the bolt or spindle 1 against any movement.

From the foregoing, it will be seen that, according to this invention, as the head of the bolt is embedded in the cavity in the block, and the detachment of the bolt is prevented by the lock-

ing staple or the locking cap having the tongues, the head of the bolt and the locking device are not projected from the block A, but flush with the top of the latter, so that there will not be any hindrance. As the legs of the locking staple, or the tongues of the locking cap, are automatically bent outwardly and engaged by the recesses 7 or 7' when the locking staple 8 is mounted and pressed in the slot 5 in the bolt head or the locking cap 8' is mounted and pressed upon the 10

bolt head in the cavity 4, loosening or detachment of the bolt 1 is effectively prevented by simple operation, yet the locking device cannot be so readily removed. Moreover, as the presence of the locking device is practically invisible, comparatively good appearance of the device equipped with the present invention may be obtained.

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