July 18, 1944. A. G. F. WALLGREN 2,354,160

LOCKING DEVICE

Original Filed July 15, 1937

Fig. 1.

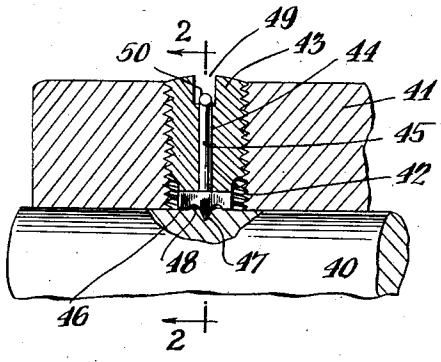


Fig. 2.

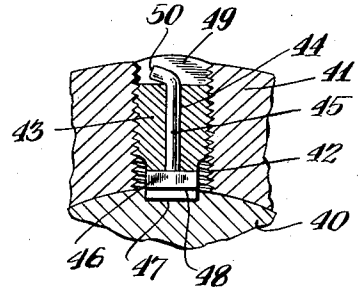


Fig. 3.

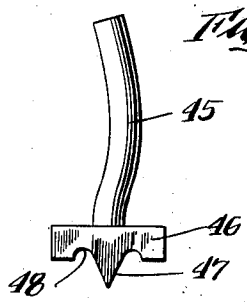


Fig. 4.

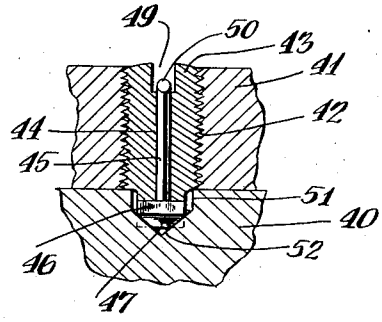


Fig. 6.

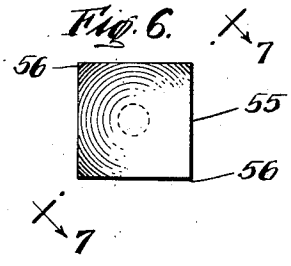


Fig. 7.

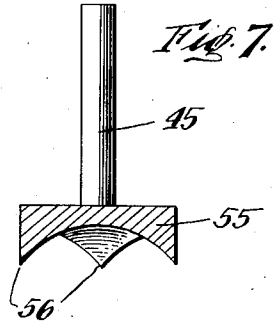
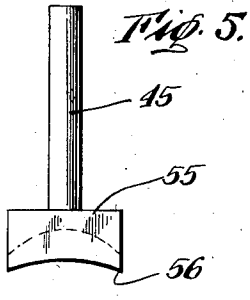


Fig. 5.



INVENTOR

August Gunnar Ferdinand Wallgren

BY

Daniel Mathe

His ATTORNEY

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UNITED STATES PATENT OFFICE

2,354,160

LOCKING DEVICE

August Gunnar Ferdinand Wallgren, Stockholm, Sweden, assignor to Liljeqvist Sågblads-Och Redskapsfabrik N Y A A. B., Eskilstuna, Sweden, a corporation of Sweden

Original application July 15, 1937, Serial No. 153,719, now Patent No. 2,244,930, dated June 10, 1941. Divided and this application February 18, 1941, Serial No. 379,414. In Sweden July 17, 1936

2 Claims. (Cl. 85—1)

This application is a division of my copending application Serial No. 153,719, filed July 15, 1937, which matured into Patent No. 2,244,930.

My present invention relates to locking devices and more particularly to devices for locking a setscrew in such a manner as to positively prevent rotation of the setscrew. Another object of my invention is the provision of such a device as a unitary structure. Further objects and advantages of my invention will be apparent from the following description considered in connection with the accompanying drawing, which forms a part of this specification and of which;

Fig. 1 is a cross-sectional view of one embodiment of my invention;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is an elevational view of one of the members shown in Figs. 1 and 2;

Fig. 4 is a cross-sectional view of a further embodiment of my invention;

Fig. 5 is a side view of a modified form of the device shown in Fig. 3;

Fig. 6 is a bottom view of the device shown in Fig. 5; and

Fig. 7 is a cross-sectional view taken on the line 7—7 of Fig. 6.

Referring more particularly to Figs. 1 through 3, reference character 40 designates a member, such as a shaft, to which it is desired to secure another member 41, such as a bearing ring. Member 41 is formed with a threaded aperture 42 adapted to receive a setscrew 43. Screw 43 is formed with a central bore 44 through which extends a wire-like rod 45. The inner end of rod 45 is secured to a locking element 46 which is provided with a hardened projection 47 on either side of which are formed recesses 48. As shown, element 46 is disposed between the inner end of setscrew 43 and the surface of the shaft 40. Rod 45 may be initially bent slightly as is shown in Fig. 3, in order that it will frictionally engage bore 44 with sufficient force so that it will not drop out by gravity before the setscrew is put in place. The other end of the setscrew is provided with the usual slot 49 for engagement with a screw-driver.

When the setscrew is screwed in place, preferably by a screw-driver provided with a central slot to accommodate the substantially straight projecting end of rod 45, projection 47 on locking element 46 penetrates into the material of shaft 40 and is thus held against rotation with respect to the shaft. Thereafter, the upper end 50 of rod 45 is bent to the position shown in Fig. 2 and hence rotation between the rod and the setscrew is prevented. Inasmuch as rod 45 is rigidly secured to locking element 46 the setscrew is locked against rotation with respect to the shaft 40.

In Fig. 4 the shaft 40 is shown as being formed with a recess 51 having a conical bottom 52. In this case the ends of projection 47 penetrate into the conical surface 52 and this effects a positive locking between the element 46 and the shaft. Otherwise, this embodiment is the same as described in connection with Figs. 1 through 3.

In Figs. 5 through 7, there is shown a modified form of locking element 55. The element is provided with a plurality, for instance 4, of hardened projections 56 in the form of points. The element may be square in shape with the points 56 located at each corner. When used in connection with the setscrew and shaft shown in Figs. 1, 2 or 4, these points penetrate into the material of shaft 40, thus positively locking the element 55 against rotation with respect to the shaft.

While I have described several more or less specific embodiments of my invention, it is to be understood that this has been done for purposes of illustration only and that further modifications fall within its scope, which is to be limited only by the appended claims.

What I claim is:

1. In a device for locking two members against relative rotation, a locking element adapted to be disposed between said members and being formed with a hardened projection extending in the direction of the axial movement of said element as the members are locked together, said projection terminating in a sharp edge throughout its entire extent from side to side and projecting axially beyond the end of the locking element for penetrating in an axial direction the material of one of the members to thereby prevent relative rotation between said element and said one of said members, said element being formed with a recess immediately adjacent to every part of said edge for receiving the material which is displaced as a result of said axial penetration, the other of said members having a bore, and a rod of softer material than said projection secured in fixed relation to said element and extending through said bore and being initially rotatable relative to said other member, said rod being deformable so as to engage said other member for preventing relative rotation between said element and said other member.

2. In a device for locking two members against relative rotation, a locking element adapted to be

disposed between said members and being formed with a hardened projection extending in the direction of the axial movement of said element as the members are locked together, said projection terminating in a sharp edge throughout its entire extent from side to side and projecting axially beyond the end of the locking element for penetrating in an axial direction the material of one of the members to thereby prevent relative rotation between said element and said one of said members, said element being formed with a recess immediately adjacent to every part of said edge for receiving the material which is displaced as a result of said axial penetration, the other of said members having a bore, and a rod of softer material than said projection secured in fixed relation to said element and extending through said bore and being initially rotatable relative to said other member, said rod being deformable so as to engage said other member for preventing relative rotation between said element and said other member, said rod being initially curved sufficiently to engage the sides of the bore for retaining the rod in place.

AUGUST GUNNAR FERDINAND WALLGREN.