

May 26, 1942.

A. H. BEGGS

2,284,081

LOCK-NUT

Filed April 25, 1939

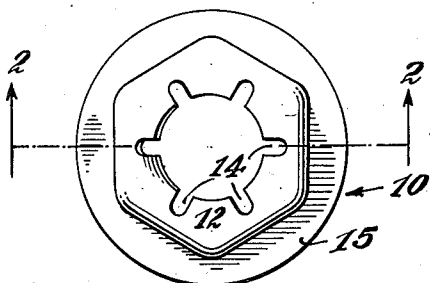


Fig. 1.

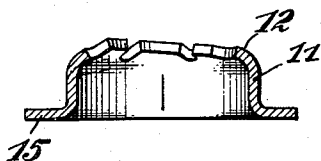


Fig. 2.

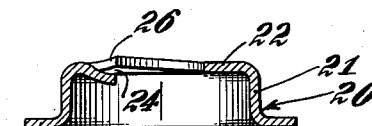


Fig. 3.

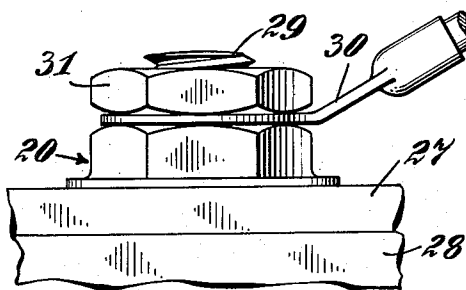


Fig. 4.

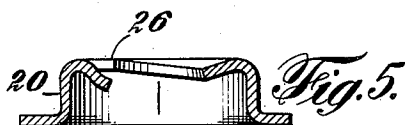


Fig. 5.

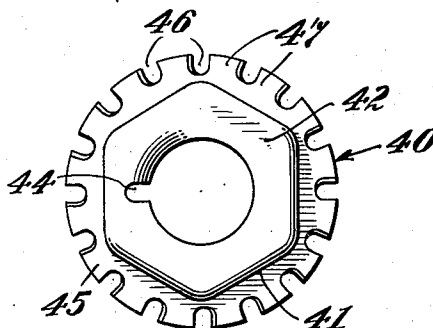


Fig. 6.

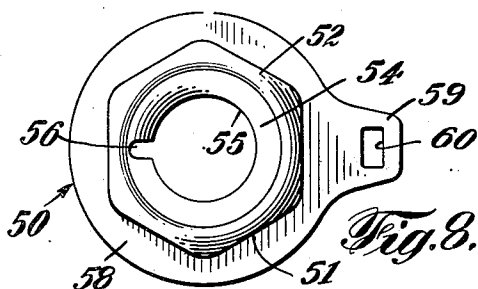


Fig. 8.

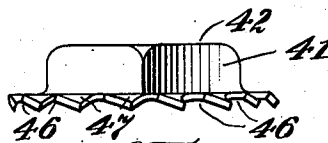


Fig. 7.

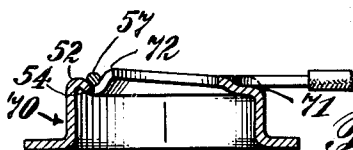


Fig. 9.

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2,284,081

LOCK NUT

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Application April 25, 1939, Serial No. 269,841

5 Claims. (Cl. 151-14)

This invention relates to improvements in lock-nuts, and more particularly to improvements in lock-nuts made integrally from sheet metal.

An object of the present invention is to provide a new and improved lock-nut made from sheet metal, which lock-nut includes as a part thereof a washer-like portion.

Another object of the invention is to provide a lock-nut made from sheet metal which has as an integral part thereof a washer-like portion extending outwardly from the bottom of wrench-engaging surfaces.

A further object of the invention is to provide a lock-nut as described above, which has the top part thereof so recessed or indented as to receive a terminal part of a wire conductor.

A still further object of the invention is to provide a lock-nut of the foregoing character in which a part of the thread engaging portion thereof serves to restrain an eyelet-like terminal against movement when such terminal is positioned on top thereof and fastened thereto by a superimposed nut member.

Other features, objects, and advantages of the invention will become apparent by reference to the following detailed description of the accompanying drawing, wherein:

Fig. 1 is a plan view of a device embodying the invention;

Fig. 2 is a vertical section taken substantially on the line 2-2 of Fig. 1;

Fig. 3 is a view similar to Fig. 2 of a modification of the invention and prior to assembly of the device with a bolt;

Fig. 4 is a vertical elevation of an assembly made up of a device in accordance with Fig. 3, an eyelet-like terminal, and a retaining nut, all associated with a threaded bolt and another member;

Fig. 5 is a view similar to Fig. 3 of a modification wherein the highest part of the aperture wall is not higher than the tops of the side walls;

Fig. 6 is a view similar to Fig. 1 of a further modification of the invention;

Fig. 7 is a vertical elevation of the device shown in Fig. 6;

Fig. 8 is a view similar to Fig. 1 of a still further modification of the invention, and

Fig. 9 is a vertical section of another modification.

Referring now to the drawing and particularly to Figs. 1 and 2, 10 indicates generally a device embodying the invention, which device is made from some suitable sheet metal. As shown in

the drawing this device has upstanding wall portions 11 which are substantially flat and which provide wrench-engaging surfaces. These surfaces may be of any desired number, but six are shown in Figs. 1 and 2. Extending inwardly from the top edges of the wrench-engaging surfaces 11 is a convex top part 12 which is centrally apertured and which has the wall of such central aperture arranged in spiral form to engage the threads of a bolt or similar object. This spiral arrangement of the aperture wall is accomplished by the provision of a plurality of radially extending slots 14. Also formed integrally with the walls 11 and the top 12 is an annular flanged part 15 extending outwardly from the bottom edges of the walls 11 and corresponding in function to a washer. Thus the present device combines the features not only of a lock-nut but also incorporates therewith a washer member so that this device can supplant the use of two separate members heretofore commonly in use, namely, a washer and a lock-nut.

The use of this device will be evident from the description thereof, since it may be engaged with a screw-threaded bolt or other similar object in association with some member to be fastened to such bolt. When so assembled the device can be locked to the bolt and to the associated member by rotating the member 11 on the bolt until the washer part 15 contacts the associated member. Further rotation of the device 10 causes such locking contact of the aperture wall thereof with the bolt threads as to effectively lock the parts together, it being understood, of course, that the device is made of metal of such gauge as to have the requisite resiliency.

In the arrangement shown in Fig. 3 the device is again made up of upstanding walls 21 forming wrench-engaging surfaces, a convex top part 22 centrally apertured with the aperture wall in spiral form, and a washer-like flange part 25 at the bottom of the member. In this form, however, instead of providing a plurality of slots in the top part to make possible the spiral arrangement of the aperture wall, a single slot 24 is provided therein. It will be noted that the upper termination of the aperture wall 26 is disposed some distance above the plane of the top of the walls 21 so that in effect a tooth of upstanding form is provided. It is to be understood that this tooth may be at any desired height above the plane of the wall tops, such height being attained by the curvature of the convex top part 22.

This device is particularly useful in connect-

ing eyelet-like terminal members to a bolt or other threaded member associated with some suitable supporting member. By reference to Fig. 4 it will be seen that a pair of members 27 and 28 have a bolt 29 passing therethrough. If it is desired to connect an electrical conductor to such bolt and lock the same thereto, use may be made of a member of the general type shown at 20, which member is threaded onto the bolt 29 and tightened until the spiral wall of the aperture therein is distorted or depressed an amount sufficient to accomplish locking of the member to the bolt. An eyelet-like member 30 is shown disposed above the member 20 with the bolt 29 passing through the eyelet 30. A second nut member 31 is then assembled onto the bolt above the eyelet 30 and can be screwed downwardly into locking engagement therewith. Preferably the nut 31 is of a locking type.

As the result of tightening the assembled parts of Fig. 4, the member 20 has the spiral edge of the aperture so depressed that the convexity thereof is distorted to an extent sufficient to substantially remove the upstanding tooth 26 from a position above the plane of the top of the walls 21. During such tightening, of course, this tooth 26 engages the bottom surface of the eyelet 30 and serves in some degree to prevent rotation of the eyelet 30 relative to the member 20. Due to the lowering of the position of the tooth 26 it follows that the bottom surface of the eyelet 30 can rest in flat contact with the top edge parts of the walls 21 so that good electric contact between the eyelet 30 and the member 20 is assured.

The condition of the nut following such depression of the aperture wall is shown in Fig. 5. In some instances, however, it will be desirable to make the nut originally in the form shown in Fig. 5 so that a washer-like member can rest directly on top of the ring defining the top of the side walls.

While the assembly of Fig. 4 has been shown as making use of a member 20 of the Fig. 3 and Fig. 5 type, it will be understood, that a member 10 as shown in Figs. 1 and 2 could be used in the stead thereof.

In Fig. 6 a modification of the invention has been shown, such device comprising a member 40 having upstanding walls 41 providing wrench-engaging surfaces, a convex top 42 having a single slot 44 therein whereby the aperture of the slot can be spirally disposed. Also the device has an annular flange or washer-like part 45 extending outwardly from the bottom edges of the wall 41. The edge of this washer-like part 45 is provided with a plurality of slots 46 so disposed as to define a plurality of fingers 47. These fingers can be uniformly twisted as shown in Fig. 7, and so arranged that they offer substantially no resistance to tightening the nut onto a bolt, but once the nut has been tightened to a bolt and associated member through which the bolt passes, the downwardly extending edges of the fingers tend to bite into the associated member and thereby prevent reverse rotation of the nut. While the nut of Fig. 6 and Fig. 7 has been shown as being so constructed as to have a single slot 44 therein in the fashion of the Fig. 3 device, it will be apparent that the convex top 42 of this member could have a plurality of radial slots therein in the fashion of the device of Fig. 1.

In Fig. 8 a still further modification of the invention has been illustrated. This device indicated generally at 50 has upstanding walls 51 forming wrench-engaging surfaces, and a top part

52 which is of convex form as it extends inwardly from the edges of the walls 51 but which is not of complete convex form but which has an indentation 54 therein. This indentation 54 defines a groove between the convex part 52 and the wall 55 of the central aperture. Again a single slot 56 has been provided, whereby the spiral arrangement of the aperture wall can be accomplished. The recess 54 can be of such depth that when the nut 50 is tightened on a bolt in association with a member through which the bolt passes, a looped end 54 of a wire conductor can be disposed therein and can be held in place by another nut or similar member located immediately above the member 50. Also the device of Fig. 8 has a washer-like bottom part 58 extending outwardly from the lower edges of the walls 51. If desired this washer-like part 58 can have a tab 59 with an opening 60 therein, such tab and opening serving as a terminal for a conductor or any other member to be soldered or otherwise secured thereto.

It is to be understood that again instead of a single slot 56, a plurality of slots can be provided in the top of the member 50, and if desired the part 58 may have grooves in the periphery thereof to permit the formation of fingers or teeth in the fashion shown in Figs. 6 and 7.

In Fig. 9 the use of a member having an indentation 54 therein has been shown in section. This member indicated generally at 70 is similar in construction to the member of Fig. 8 with the exception that at one point in the periphery of the part 52 a depression 71 is provided, such depression being of width capable of permitting the passage of the conductor 57 which is of looped form as it lies in the indentation 54. Due to this arrangement it is possible to so tighten the member 70 on a bolt that the upstanding tooth-like termination of the aperture wall is disposed below the normal plane of the part 52 so that a flat member can rest on top of the member 70 and in contact with the looped part of conductor 57.

From the foregoing it will be seen that the present device in any form shown provides a new, simple and efficient lock-nut made from sheet metal, and having as a part thereof a washer-like portion whereby this new member in use supplants an assembly of washer and lock-nut previously required. The device in any form is inexpensive to manufacture and is efficient in operation. The invention may be modified in any suitable manner, and accordingly is to be limited only by the following claims.

What I claim is:

1. A lock-nut made integrally from sheet metal, said nut comprising an upstanding continuous side wall portion having wrench-engaging flats the side edges of which are in substantial parallelism, a top portion extending inwardly from the top of said wall portion, said top portion being apertured and formed to engage threads with a resilient locking engagement, and a bottom flange portion extending outwardly from the bottom of said wall portion and forming a washer.

2. A lock-nut made integrally from sheet metal, said nut comprising an upstanding continuous side wall portion having wrench-engaging flats the side edges of which are in substantial parallelism, a top portion extending inwardly from the top of said wall portion, said top portion being convexed and apertured and formed to engage threads with a resilient locking en-

gement, and a bottom flange portion extending outwardly from the bottom of said wall portion and forming a washer.

3. A lock-nut made integrally from sheet metal, said nut comprising an upstanding continuous side wall portion having wrench-engaging flats the side edges of which are in substantial parallelism, a top portion extending inwardly from the top of said wall portion, said top portion being convexed and apertured and formed to engage threads with a resilient locking engagement, and a bottom flange portion extending outwardly from the bottom of said wall portion and forming a washer, said top portion being yieldable to depress the wall of said aperture below the plane of the top of said wall portion.

4. A lock-nut made integrally from sheet metal, said nut comprising an upstanding continuous side wall portion having wrench-engaging flats the side edges of which are in substantial parallelism, a top portion extending inwardly from the top of said wall portion, said top portion being apertured and formed to engage threads with a resilient locking engagement, and

a bottom flange portion extending outwardly from the bottom of said wall portion and forming a washer, said top portion having an annular indentation therein for the reception of a wire loop, said indentation being intermediate and spaced from said wall portion and the wall of said aperture.

5. A lock-nut made integrally from sheet metal, said nut comprising an upstanding continuous side wall portion having wrench-engaging flats the side edges of which are in substantial parallelism, a top portion extending inwardly from the top of said wall portion, said top portion being apertured and formed to engage threads with a resilient locking engagement, and a bottom flange portion extending outwardly from the bottom edge of said wall portion and forming a washer, said top portion having an annular indentation therein for the reception of a wire loop, said indentation being intermediate and spaced from said wall portion and the wall of said aperture, said top portion having a radial depress leading into said indentation.

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