

Feb. 6, 1951

E. J. SCHNEIDER

2,540,759

LOCK NUT

Filed July 18, 1946

FIG 1

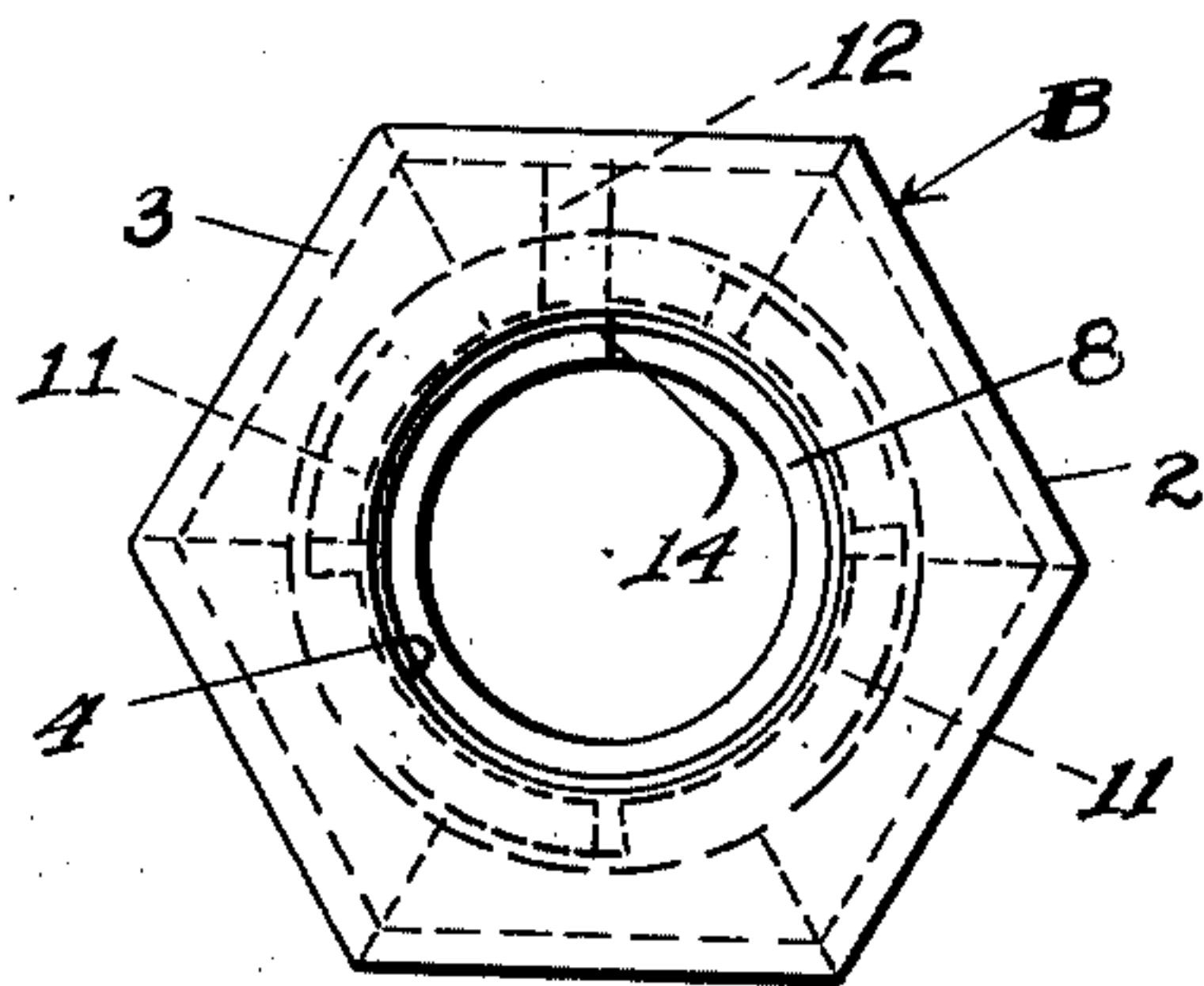


FIG 2

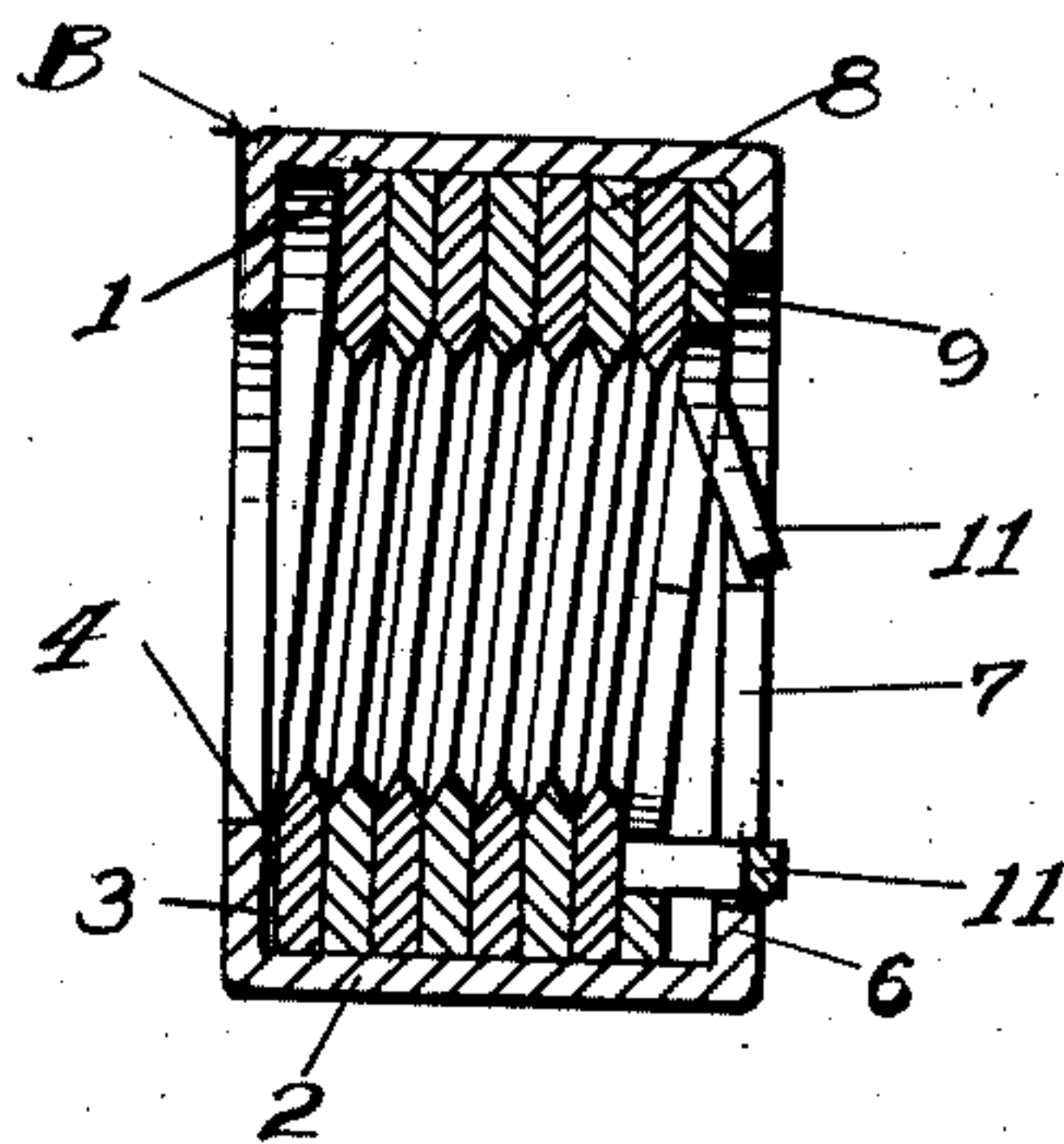


FIG 3

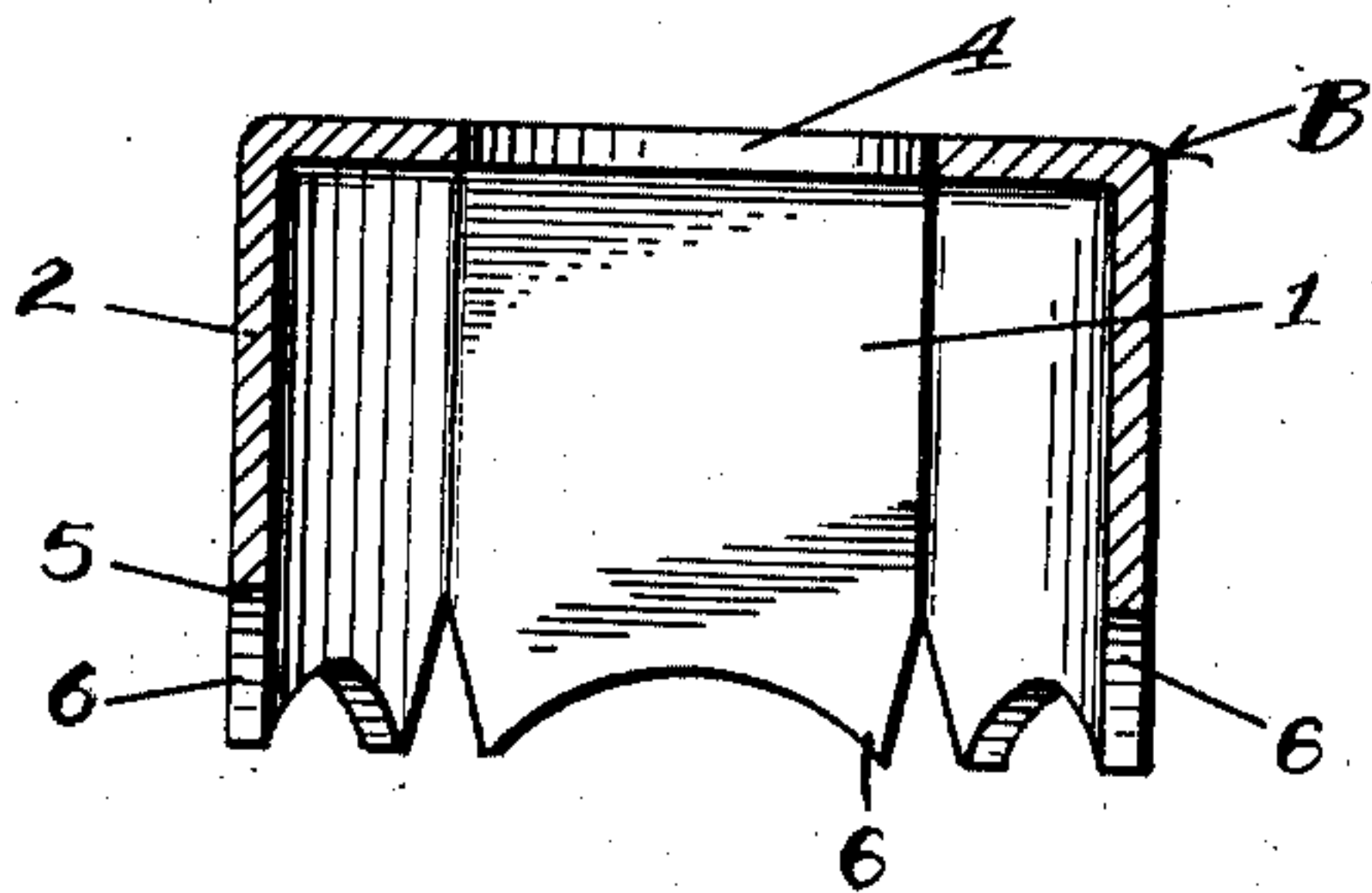


FIG 4

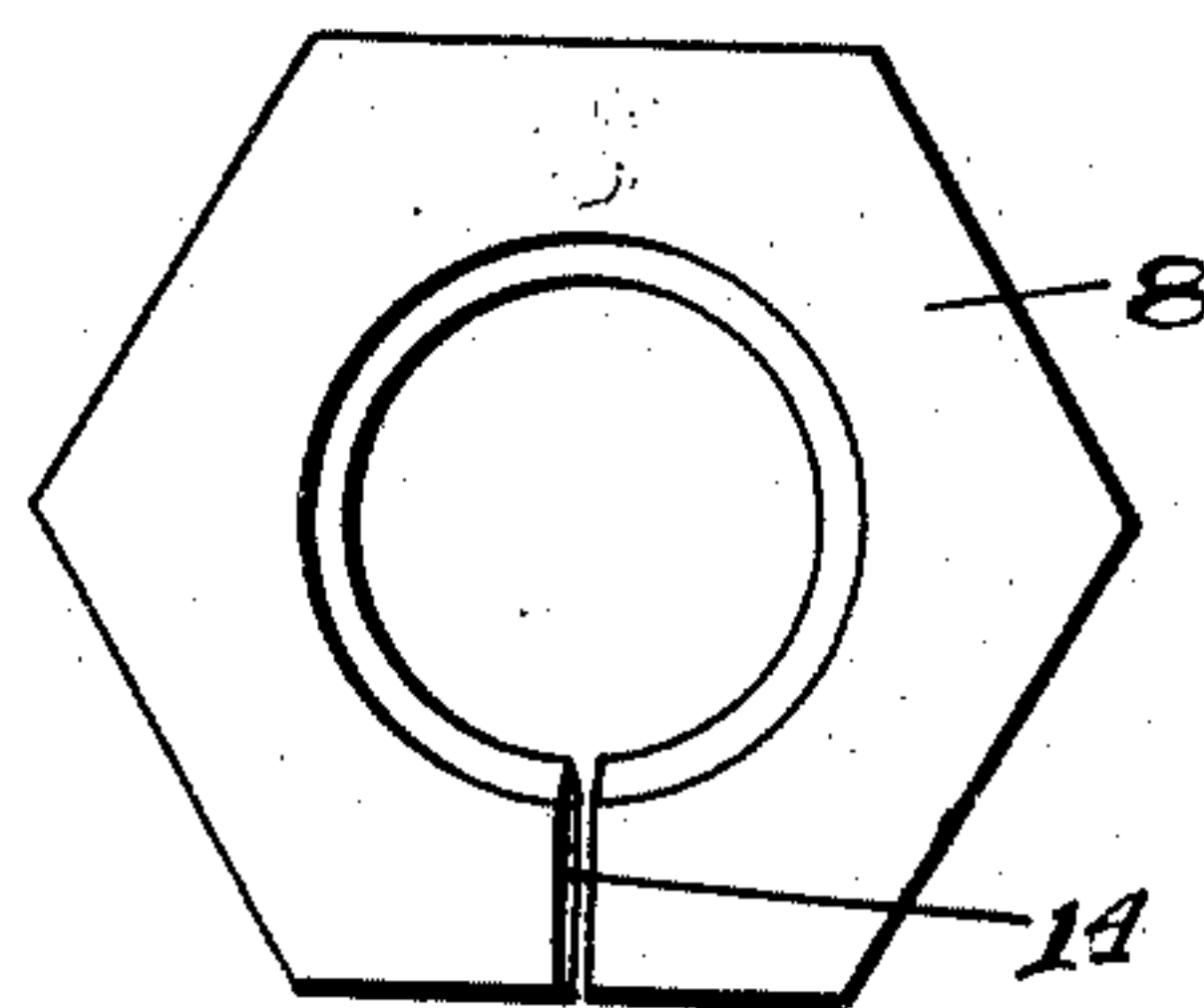


FIG 6

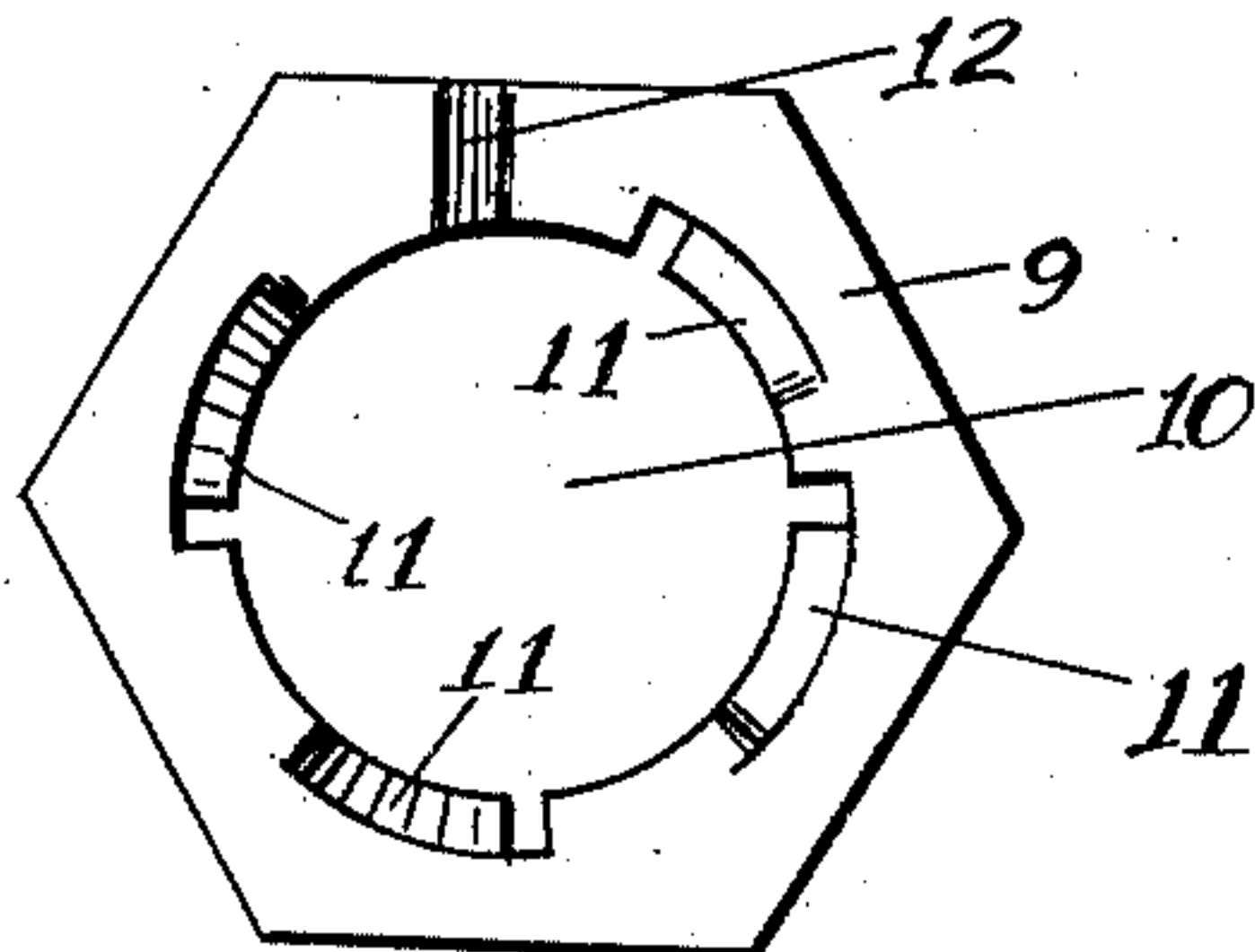


FIG 5

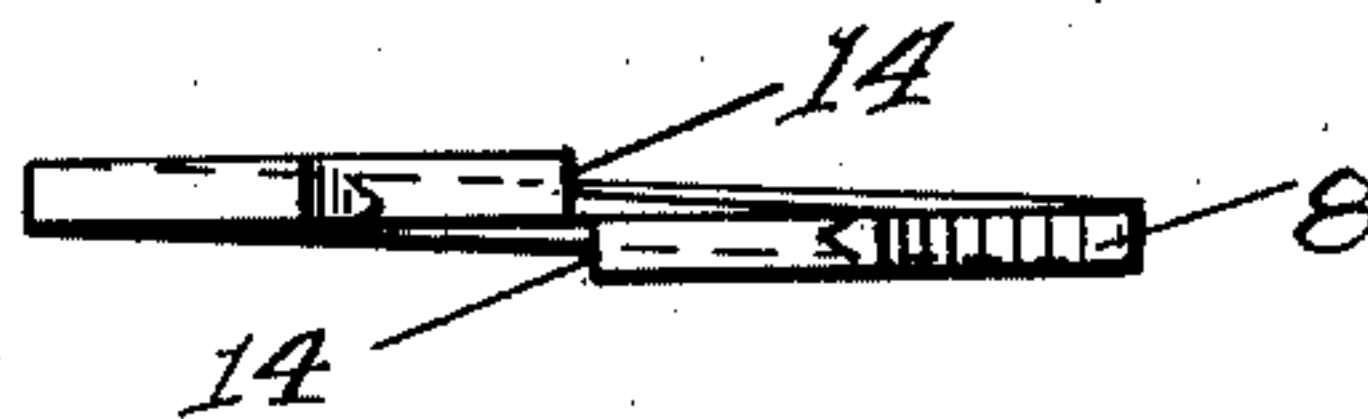
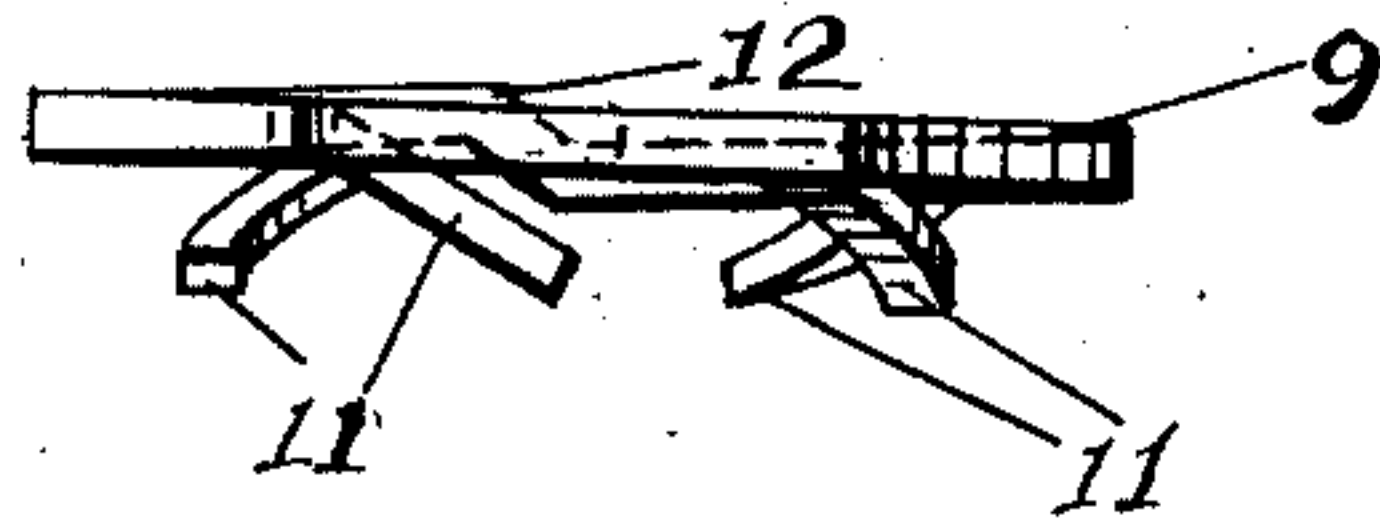


FIG 7



Inventor

Edward J. Schneider

By *Wilfred Lawson*

ATTORNEY

UNITED STATES PATENT OFFICE

2,540,759

LOCK NUT

Edward J. Schneider, St. Louis, Mo.

Application July 18, 1946, Serial No. 684,518

2 Claims. (Cl. 151—21)

1

This invention relates to a lock nut and it is primarily an object of the invention to provide an article of this kind constructed in a manner whereby effective holding engagement is had both upon the threads of an associated bolt and on the work to be held.

The invention has for its particular object to provide a lock nut which is capable of repeated use without in any way hindering its efficiency.

Another object of the invention is to provide a lock nut comprising a cup-like member in which is freely placed a work engaging member with further means within the body operable upon turning of the nut into tightening direction to force said work engaging member into firmer contact with the work.

These and other objects and advantages will be readily understood from the following disclosure with the aid of the attached drawings forming part of this invention.

Figure 1 is a view in front elevation of a lock nut constructed in accordance with an embodiment of my invention, certain of the parts being diagrammatically illustrated by broken lines;

Figure 2 is a sectional view taken radially through Figure 1;

Figure 3 is a sectional view taken through the body member of the nut;

Figure 4 is a view in plan of one of the thread engaging elements herein embodied;

Figure 5 is a view in edge elevation of the element illustrated in Figure 4;

Figure 6 is a view in plan of the work engaging member as herein embodied; and

Figure 7 is a view in edge elevation of the member as illustrated in Figure 6.

In the embodiment of the invention as illustrated in the accompanying drawings, the lock nut comprises a body member B provided in one face with a socket or chamber 1 of desired depth and open at one face of the body B. The peripheral wall 2 of the body B, remote from its initially open face, is partially closed by inwardly directed annular flange 3 which defines a central opening 4 of a radius to permit unhampered passage therethrough of the bolt to which the nut is to be applied. The peripheral wall 2 of the initially open face of the body B is suitably pressed to provide outwardly disposed aprons 5 which, after the various elements of the nut have been assembled, are die-pressed or otherwise operated upon to have their curved edges 6 directed inwardly of the open face of the body B, to define a central opening 7, the aprons together forming a flange which serves as a retaining element.

2

Freely placed within the socket or chamber 1 is a plurality of washers 8, each of which has its periphery formed in accordance with the cross sectional configuration of the inner face of the wall 2 of the body B which is preferably angular so that while the washers 8 may be free to move axially of the body B, they will be held against rotation independently of such body.

Each of the washers 8, as particularly illustrated in Figure 4 of the drawings, is split and said washer from one free end to the other is disposed on a spiral curvature closely approximating the pitch of the thread of the bolt to which the nut is to be applied and as is particularly illustrated in Fig. 2 of the drawing, adjacent washers 8 are in contact one with the other. The washers 8 are applied within the socket or chamber 1 before the aprons 5 are pressed inwardly, after which there is freely pressed within the socket or chamber 1 the work engaging washer 9. This washer 9 has a central opening 10 of such diameter as to permit the ready passage therethrough of the bolt with which the nut is engaged and is free for movement axially of the body B.

The marginal portion of the washer 9 defining the central opening 10 has struck therefrom the elongated resilient arms 11 all disposed in the same general direction and extending outwardly from the same face of the washer 9. When the washer 9 is applied these spring arms 11 extend outwardly through the central opening 7 defined by the edges 6 of the pressed aprons 5 and have a slight tension against the surface 6, as is clearly illustrated in Figure 2, so that as the nut is turned down upon its bolt, these arms 11 will have close frictional contact with the work. As the periphery of the washer 9 is such as to have proper coaction with the inner face of the body B, said washer will be held against turning movement independently of the body B with the result that retrograde turning of the applied nut is resisted by this frictional contact of the arms 11 of the work. Furthermore, these arms 11 serve to resist retrograde turning of the applied nut by digging or biting into the adjacent face or surface of the work. As is clearly illustrated in Figure 6 of the drawings, these arms 11 are disposed in a direction opposite to the direction of retrograde rotation of the nut. This washer is also disposed on a spiral curvature substantially and entirely therearound closely approaching the spiral curvature of the washer 8. However, the washer 9 is not split as the high and low points of the washer 9 are connected by an integral or rigid part 12 dis-

3

posed at an angle with respect to the axis of the washer 9 as is clearly illustrated in Figure 7 of the drawings.

The washers 8 may be of such number preferred, but as illustrated in the drawings, they are of a number to substantially fill the socket or chamber 1 yet allow the washers 8 and 9 substantially as a unit to have free movement in a direction axially of the body B.

The edge portion of each of the washers 8 defining the central opening thereof are chamfered in a manner to provide a cross sectional configuration to conform to the character of the thread on the bolt to which the nut is to be applied and this chamfered marginal portion engages in such thread bolt so that as the nut is turned home on the bolt the washer or washers 8 will move in a direction toward the work with resulting force of the arms 11 of the washer 9 into firm and close contact with the work. As the nut is turned home or tightened on its bolt there will be a tendency of the washers 8 to flatten out which will result in the chamfered edges 14 of said washers 8 having firm holding contact with the thread on the bolt, whereby further means is provided to prevent retrograde rotation of the nut.

This holding action is further facilitated by the fact that upon any tendency of retrograde rotation, the free ends of the washers 8 more particularly at the edge portion 14 thereof, will bite into the surface of the thread.

It is to be stated that under certain conditions the work engaging member 9 may be dispensed with as, for example, where the metal or material of the work is extremely soft.

From the foregoing description it is thought to be obvious that a lock nut constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

I claim:

1. As a new article of manufacture, a lock nut comprising a body having a socket open at its opposite ends for the passage of a bolt there-

4

through, the opposite end portions of the body being provided with inwardly disposed retaining parts, a plurality of split washer members within the socket of the body for encircling and riding engagement with the thread of a bolt, said members being substantially non-rotatable yet free to move axially of the body, a work engaging member within the socket of the body at one end of the plurality of washer members, and a part carried by said work engaging member and extending outwardly through the adjacent end of the body for direct contact with the work to apply axial thrust against said members.

2. As a new article of manufacture, a lock nut comprising a body having a socket open at its opposite ends for the passage of a bolt there-through, the opposite end portions of the body being provided with inwardly disposed retaining parts, a plurality of split washer members within the socket of the body for encircling and riding engagement with the thread of a bolt, said members being substantially non-rotatable yet free to move axially of the body, a work engaging member within the socket of the body at one end of the plurality of the washer members, and a part carried by said work engaging member and extending outwardly through the adjacent end of the body for contact with the work to apply axial thrust to said members and adapted to bite into the work upon reverse rotation of the nut.

EDWARD J. SCHNEIDER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
267,423	Harrington	Nov. 14, 1882
1,611,210	Liddell	Dec. 21, 1926
2,074,779	De Launday	Mar. 23, 1937
2,410,730	Gwyn	Nov. 5, 1946
2,425,228	Bloomfield et al.	Aug. 5, 1947
2,430,884	Noyes	Nov. 18, 1947