H. W. PLEISTER.

COMBINED EXPANSION AND TOGGLE BOLT AND PARTS THEREOF.

APPLICATION FILED AUG. 2, 1913.

1,161,155. Patented Nov. 23, 1915.

Fig. 1.

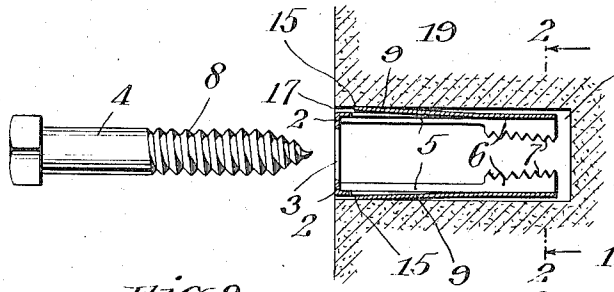


Fig. 2.

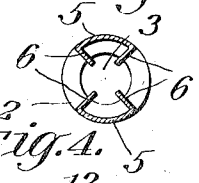


Fig. 4.

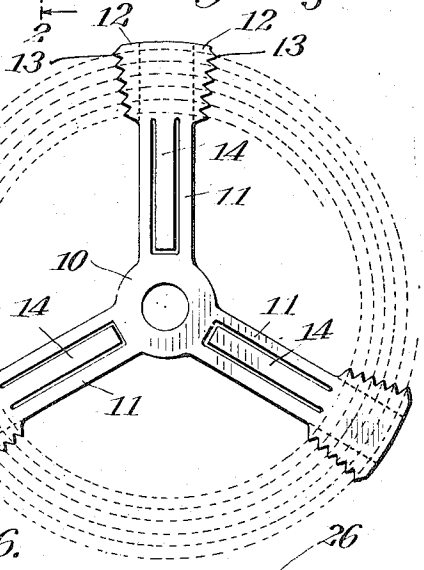


Fig. 3.

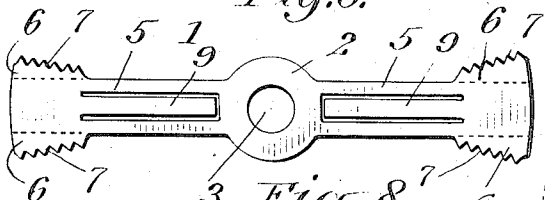


Fig. 8.

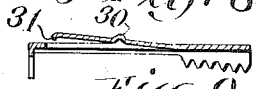


Fig. 9.

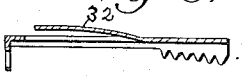


Fig. 5.

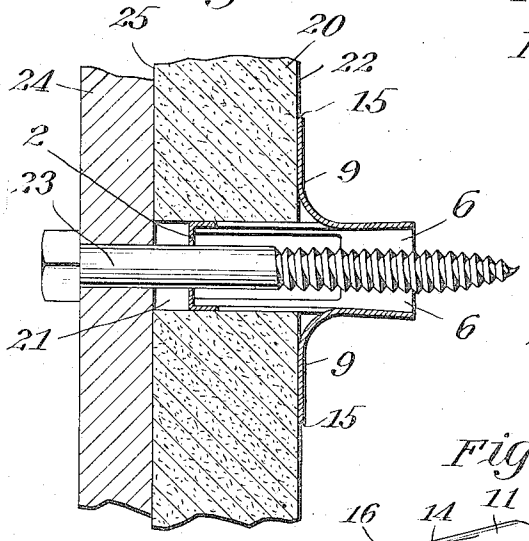


Fig. 6.

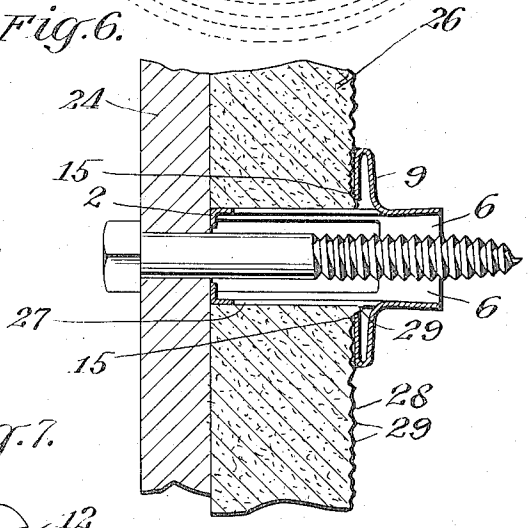
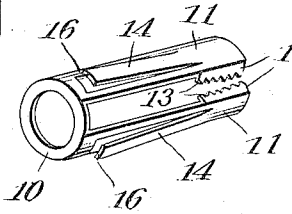


Fig. 7.



WITNESSES:

J. Levy,

N. Crocheron

INVENTOR

Henry W. Pleister

BY

Edwin H. Johnson

ATTORNEY

UNITED STATES PATENT OFFICE.

HENRY W. PLEISTER, OF WESTFIELD, NEW JERSEY, ASSIGNOR TO HENRY B. NEWHALL.

COMBINED EXPANSION AND TOGGLE BOLT AND PARTS THEREOF.

1,161,155. Specification of Letters Patent. Patented Nov. 23, 1915.

Application filed August 2, 1913. Serial No. 782,600.

To all whom it may concern:

Be it known that I, HENRY W. PLEISTER, a citizen of the United States, and a resident of Westfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Combined Expansion and Toggle Bolts and Parts Thereof, of which the following is a specification, taken in connection with the accompanying drawing, which forms a part of the same.

My invention relates to expansion bolt anchors and also to toggle bolt anchors, and to a structure, which in itself, performs either the function of an expansion bolt anchor or a toggle bolt anchor.

My invention further relates to details of construction and parts which will be more fully set forth in the specification and claims.

In the accompanying drawings, showing illustrative embodiments of my invention and in which the same reference numerals refer to similar parts in the several figures, Figure 1 is a longitudinal vertical section through the bolt anchor, the expanding means, shown by way of example as a bolt, being shown in side elevation; Fig. 2 is a transverse vertical section substantially on the line 2—2 of Fig. 1, looking in the direction of the arrows; Fig. 3 is a plan view of a blank showing the simplest form of my invention. Fig. 4 is a plan view of the blank showing a modification in which three tines are employed. Fig. 5 is a vertical section showing my anchor used as a toggle bolt: Fig. 6 is a vertical section also showing my device operating as a toggle bolt. Fig. 7 is a detail perspective view of the preferred form of combined expansion and toggle bolt. Fig. 8 is a detail of a modification. Fig. 9 is a detail of another modification.

In the illustrative embodiments of my invention shown in the drawing, 1 is a blank of sheet steel, brass, or any other suitable resilient sheet metal, in which the body member 2 is formed as a ring having an opening 3 for the insertion of any suitable expanding means such as the bolt 4. In the simplest form of my invention, the body member 2 is provided with two tines 5, 5 each tine being preferably provided with wings 6, 6 having saw teeth 7, 7. These wings 6, 6 are bent inwardly as shown in Figs. 1 and 2, their teeth 7 coöperating and forming female screw threads to coöperate with the male screw threads 8 on the expanding means, which by way of example, is shown as a bolt 4. Of course, it is to be understood that any expanding means provided with coöperating screw threads, would come under the terms of my invention. This blank 1 is preferably stamped at one time from a sheet of steel, brass or similar sheet metal, the teeth 7, 7 as well as the tongues 9, 9 for a purpose to be more fully hereinafter described being preferably formed at the same time that the blank is made. At the same time the die may bend the tines 5, 5, substantially at right angles to the body member 2 to assume the position in Fig. 1, or this bending may be subsequently done, in another machine, or by hand or in any other suitable manner. At the same time or subsequently the wings 6, 6 are bent down at an angle to the tines as shown in Fig. 2 so as to coöperate with the threads 8 as previously described.

While I may form my bolt anchor with simply two tines, it is to be distinctly understood that two or more tines may be employed. For example, I have shown in Fig. 4 a body member 10 having the tines 11, 11 and the wings 12, 12 provided with teeth 13, 13, the position of the teeth being relatively in the line of a spiral having a common center with the body member, the distance between successive convolutions being equal to the distance between threads on the bolt or screw to which it is adapted for use, so that when the blank is pressed into its finished form, the teeth will lie in the line of a spiral screw thread. The spiral is shown dotted in Fig. 4 to illustrate the manner of stamping these saw teeth 13, 13.

When the tines 11, 11 are bent back upon the body member 10 to make the bolt anchor shown in Fig. 7, the wings 12, 12 are bent in at an angle to the tines 11, 11 so as to form coöperating female screw threads for the male screw threads on the expanding means. In this construction, as well as in the prior construction, I preferably stamp at the same time, or subsequently form, the tongues 14, 14 in any desirable way, though the preferable and most economical manner of manufacture is to have the one die cut out the tongues at the same time that the blank is stamped.

In the final bending of the blank, the tongues 9 and 14 are preferably bent up slightly so that their free ends 15, 15 or

16, 16 frictionally engage the inner surface 17 of the hole 18 in the wall or other support 19. This friction is sufficient to prevent the expansion anchor falling out of the aperture or opening 18, if, for example, it should be in a position in which the bolt anchor would drop out by gravity. These tongues also prevent the bolt anchor from turning within the aperture 18 while the expanding means 4 is coöperating with the female screw threads to expand the anchor. The degree of friction with which the tongues engage the walls in the support can, of course, be easily regulated by bending out or pressing in these tongues. Moreover the material of which the bolt anchor is made permits one of a given diameter to operate successfully in openings such as 18 of various diameters.

In addition to performing the function of an expansion bolt anchor, my device, without any change whatever, will also coöperate with a hollow wall or other support and then become a toggle bolt. I have shown for example in Fig. 5 a hollow wall or support 20 having an opening 21 for the reception of my device. When so used it is merely necessary to insert the combined expansion and toggle bolt anchor within the opening 21 until the end 15 of the tongues escape the inner surface 22 of the wall or other support 20. They will then spring out by their own resiliency so that when the bolt 23 is made to coöperate with the teeth 7, or 13, upon the wings 6 or 12, the entire combined toggle and bolt anchor is drawn to the left of Fig. 5 which forces the ends 15, 15 of the tongues 9 or 11, as the case may be, up the interior surface 22 of the hollow support 20 and away from the opening 21. These tongues then serve as a lock and securely hold the combined toggle and bolt anchor in the hollow or other support the work 24 being securely and immovably held on the face 25 of the hollow support 20 by the bolt 23.

My improved combination expansion and toggle bolt may be used not only with a hollow support such as shown in Fig. 5, but also with any support having a smooth or an irregular inner surface 28. For purposes of illustration I have shown in Fig. 6 a support 26 having an irregular inner surface having irregularities 29 which catch the ends 15, 15 or 16, 16 of the tongues and prevent them moving up the irregular surface which results in the tongues bending as shown in this figure.

In some instances, I may, to permit the more ready bending of the tongues, form them as in Fig. 8, with a crimp 30 and in some instances, also with bent ends 31, 31 to more readily engage the irregularities 29 on the inner wall 28 of the support 30, or for that matter, to engage the smooth inner wall 22 so as to cause the tongues to bend, as shown in Fig. 6, the crimps 30, if used serving to more readily permit this bending, though it is to be understood that while I may use the crimps 30 and bent ends 31, I may use one without the other. I may also form the tongues in the form of a bow 32, such as in Fig. 9, to permit them to more readily bend to assume the position shown in Fig. 6. It is not to be overlooked, however, that in some instances I may form the bolt anchor without any tongues whatever, in which case it will perform all the functions of a bolt anchor, but will not perform those of a toggle bolt.

It will be readily seen that a dealer laying in a stock of my improved expansion bolts, at the same time, without any additional outlay for a larger stock to supply his trade, will have the same quantity of toggle bolts; not to mention the advantage of workmen going to a job with expansion bolt anchors which can also, without any change whatever, be used as toggle bolts in case the exigencies of the job so demand.

Having thus described this invention in connection with the illustrative embodiments thereof to the details of which I do not desire to be limited, what is claimed as new and what it is desired to secure by Letters Patent is set forth in the appended claims.

1. A bolt anchor comprising a body member and a plurality of tines of resilient sheet metal, each tine being provided with means to coöperate with the screw threads of a screw or bolt, and one or more tongues cut from the tine or tines to frictionally hold the bolt anchor in its seat and prevent accidental turning upon the insertion of the expanding means.

2. A combined expansion and toggle bolt comprising a body member and a plurality of tines, and means carried by the tines adapted to convert the expansion bolt into a toggle bolt.

3. A combined expansion and toggle bolt comprising a body member and a plurality of tines formed of resilient sheet metal, and means carried by the tines adapted to convert the expansion bolt into a toggle bolt.

4. A combined expansion and toggle bolt comprising a body member and a plurality of tines, and means carried by the tine or tines adapted either to coöperate with an expansion bolt or to convert the expansion bolt into a toggle bolt.

5. A combined expansion and toggle bolt comprising a body member and a plurality of tines formed of resilient sheet metal, and means carried by the tine or tines and integral therewith, adapted either to coöperate with an expansion bolt or to convert the expansion bolt into a toggle bolt.

6. In an expansion bolt anchor formed from resilient sheet metal, the combination of a body member and a plurality of integral

tines provided with bent in tapered wings having rigid teeth to coöperate with the screw threads of a screw or bolt.

7. In an expansion bolt anchor formed from resilient sheet metal, the combination of a body member and a plurality of integral tines provided with tapered wings having rigid teeth to coöperate with the screw threads of a screw or bolt, said rigid teeth being formed on the edges of inclined parts of the tapered wings.

8. In an expansion bolt anchor formed from resilient sheet metal, the combination of a body member and a plurality of integral tines provided with turned in rigid teeth to coöperate with the screw threads of a screw or bolt, and resilient means to retain the bolt anchor in correct position in the support while the expanding means is being inserted.

9. A toggle bolt comprising a bolt or screw and a cylindrical or polyhedral shell, provided on its exterior with resilient tongues and on its interior with means for engaging the threads of said bolt or screw.

HENRY W. PLEISTER.

Witnesses:
M. R. RYAN,
A. M. WILLIAMS.