

H. W. PLEISTER.
EXPANSION BOLT.
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973,559.

Patented Oct. 25, 1910.

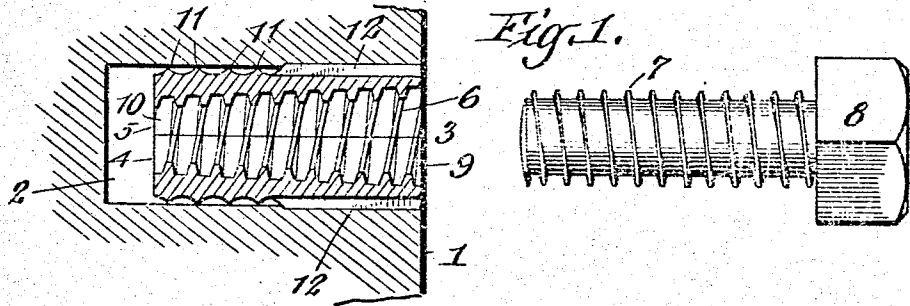


Fig. 2.

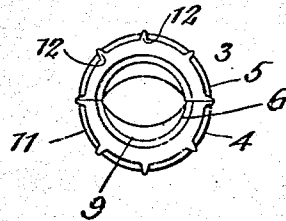


Fig. 3.

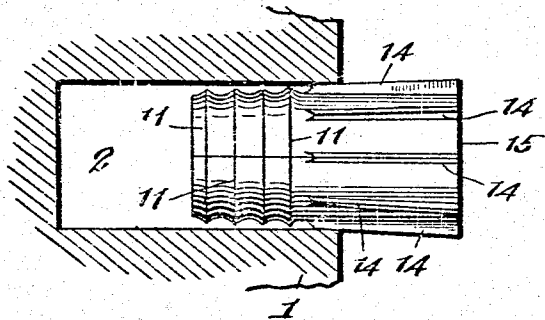


Fig. 4.

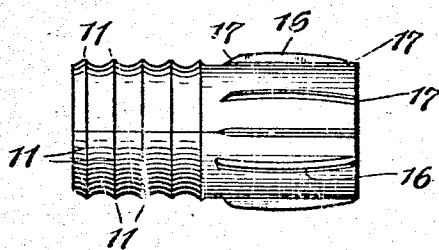


Fig. 5.

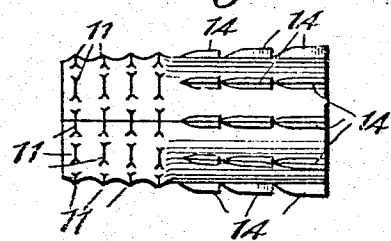
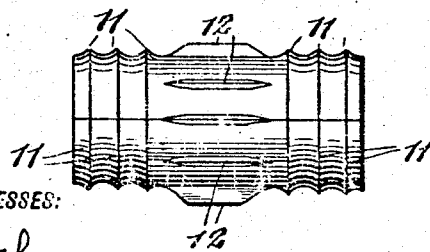


Fig. 6.



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EXPANSION-BOLT.

973,559.

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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 Expansion-Bolts, of which the following is a specification, taken in connection with the accompanying drawings, which form a part of the same.

This invention relates to expansion bolts and more particularly to the shields for such bolts.

In the accompanying drawing I have shown several illustrative embodiments of my invention in which the same reference numerals refer to similar parts in the several figures.

Figure 1 is a vertical section through a support and the shield, the bolt being shown in side elevation; Fig. 2 is an end view of the shield shown in Fig. 1; Fig. 3 is a vertical sectional view through a support showing a slightly modified form of shield in side elevation; Fig. 4 is a side elevation of a modified form of shield; Fig. 5 is a side elevation of another modified form of shield; and Fig. 6 is a side elevation of another modified form of shield.

In the illustrative embodiments of this invention shown in the drawing, 1 is any suitable support of brick, masonry, cement or any other support, in which an aperture 2, of a given diameter, has been made for the insertion of the shield 3 of my expansion bolt. I have shown this shield made of two parts 4 and 5, (Fig. 2) though this number may be varied without departing from my invention.

Simply for purposes of illustration, but with no idea, however, of limiting my invention, I have shown the shield 3 provided with interior screw threads 6 to cooperate with the male screw threads 7 upon the lag bolt 8. It is to be distinctly understood, however, that the interior of the shield 3 may be plain or may be provided with machine screw threads or any other form, those shown being, as noted, simply for purposes of illustration.

The interior of the shield 3 preferably tapers from its mouth 9 to the end 10. The exterior of the shield 3, however, is preferably formed of substantially a uniform diameter from one end to the other. On

this exterior surface of the shield, and upon each section 4 and 5, I provide a plurality of projections 11, 11 and 12, 12 located in a certain manner on the exterior surface of the shield and at an angle to each other. The projections 11, 11 are preferably arranged on the forward end of the shield 3 and are formed of such a height that that end of the shield is substantially equal to, or is slightly less, than the diameter of the aperture 2 within which the shield is to be mounted. The other projections 12, 12 are preferably mounted at the rear or opposite end of the shield so that they are on the end which is nearest to the face 13 of the support 1 and consequently are on that portion of the shield which is the last to be inserted in the aperture 2. The diameter of the shield plus the height of the projections 12 is a little greater than the diameter of the shield plus the projections 11.

Preferably that portion of the shield provided with the projections 12, 12 has a diameter slightly in excess of the aperture 2 within which the shield is to be seated. This permits that portion of the shield provided with the projections 11, 11 to be readily inserted within the aperture 2 of the support 1 until the projections 12, 12 contact with the interior surface of the aperture 2. These projections 12 in the preferred form are of substantially a uniform height which for purposes of illustration is shown exaggerated in Fig. 1; they are also exaggerated for the same purpose in the other figures of the drawing.

As shown in Fig. 1 the two portions 4 and 5 of the shield are brought together and substantially half of the shield can be readily inserted within the aperture 2 until the longitudinal projections 12, 12 contact with the interior surface of the aperture. Pressure, or a soft blow, upon the two members 4 and 5 of the shield will then cause the longitudinal projections 12, 12 to bite into the surface of the aperture 2 and form shallow longitudinal furrows within which the projections 12, 12 will be seated. This serves to hold the two portions 4 and 5 of the shield 3 together and in position to permit them to readily cooperate with the expanding means which may be a lag screw 8, such as shown in Fig. 1, a machine bolt, or any other suitable expanding member, which upon inserting within the shield 3 will cause

the two members to expand and firmly grip the surface of the aperture 2 in the support 1. I preferably arrange the transverse projections 11, 11 at substantially right angles to the projections 12, 12. It will be readily seen that by such an arrangement the projections 12, 12 first become operative to hold the two parts 4 and 5 together within the aperture 2, but after the shield is expanded, in any suitable manner, the end of the shield upon which the transverse projections 11, 11 are mounted will be expanded to a greater extent than the front portion of the shield and consequently the main holding or friction of the shield within the aperture 2 will then be by means of the transverse projections 11, 11 which are arranged at right angles to the line of force which might be applied to the shield to withdraw it from the support; and, further, that the friction and the expanding force of these projections 11, 11 will be at a point removed from the face 13 of the support 1 and therefore less likely to crumble or mar it.

While I preferably arrange the projections 11 and 12 in the form of ribs, they however may be varied without departing from the scope of my invention. For instance the ribs may be mutilated or broken such as shown in Fig. 5.

In some instances I arrange the longitudinal ribs inclined, making that end of the shield upon which they are mounted substantially a frustum of a cone. Such an arrangement is shown in Fig. 3 wherein the longitudinal ribs 14, 14 are inclined making the greatest diameter of the shield plus the projections at the end 15 which would be the last to be inserted within the aperture 2 of the support 1. In some cases I may form the longitudinal projections tapering from the center 16 to each of its ends 17, 17 (Fig. 4) in which case the maximum friction or bite of the longitudinal ribs will be at the point 16.

Preferably the transverse projections are arranged only at the inner end of the shield and while I have shown them extending back on the shield substantially half its length, this is a mere matter of degree for my invention is not to be limited to this particular arrangement of the projections. In some cases I may arrange the transverse projections at either end of the shield and place the longitudinal projections in the cen-

ter, such an arrangement being shown in Fig. 6. In all cases, however, I preferably, though not necessarily, form the exterior of the shield 3 of substantially a uniform diameter thereby forming a cylinder of substantially a uniform diameter, and vary the height, shape and contour of the transverse and longitudinal projections 11, 12, 14 and 16.

When an expanding member provided with screw threads is used to expand the different members 4 and 5 of the shield, the longitudinal projections 12, 12 or 14, 14 serve to prevent relative movement of the parts 4 and 5 and also prevent the rotation or movement of the shield within the aperture 2, permitting the expanding member to be brought home within the shield 3 with a minimum amount of labor and without any lost motion. By arranging the cylinder of a substantially uniform diameter the transverse projections 11, 11 will readily slip within the aperture 2. It will take substantially little or no expanding force to cause them to engage with the surface of the aperture 2, and comparatively little expanding force to cause them to bite within the support whereby a bolt anchor is obtained which can be quickly and expeditiously inserted and secured within a support with the minimum expense of labor and effort.

Having thus described this invention in connection with several 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 claim.

I claim—

A shield for expansion bolts comprising a plurality of expansion members forming a cylinder having its exterior surface of substantially a uniform diameter throughout and provided with a tapered interior surface, transverse projections on the forward exterior surface of the expansion members and longitudinal projections upon the rear exterior surface of the expansion members, making that end of the expansion members of a diameter slightly greater than the end on which the transverse projections are formed.

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