J. E. OGDEN.

EXPANSION SHIELD.

APPLICATION FILED OCT 21, 1919.

1,372,035. Patented Mar. 22, 1921.

Fig. 1,

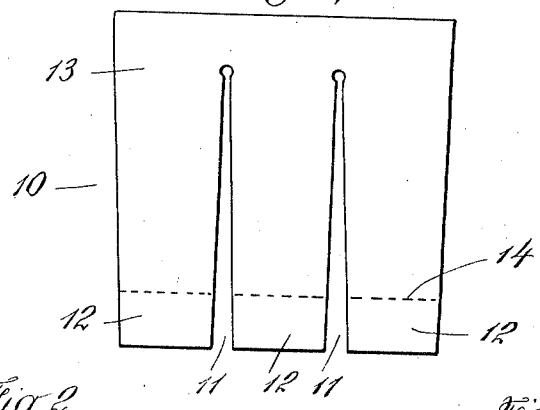


Fig. 2,

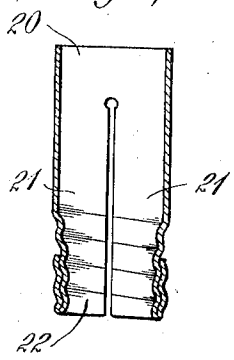


Fig. 3,

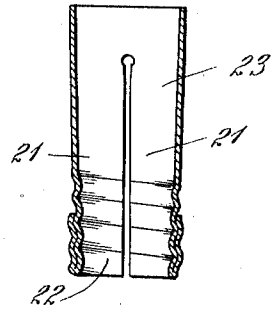


Fig. 4,

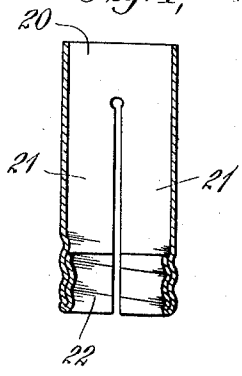
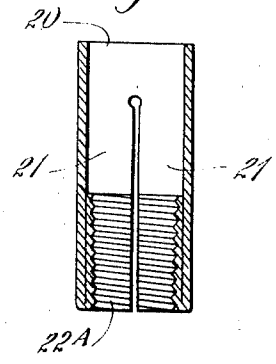


Fig. 5



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EXPANSION-SHIELD.

1,372,035. Specification of Letters Patent. Patented Mar. 22, 1921.

Application filed October 21, 1919. Serial No. 332,349.

To all whom it may concern:

Be it known that I, JOHN EDWARD OGDEN, a citizen of the United States of America, and a resident of Mountainville, town of Cornwall, Orange County, and State of New York, have invented certain new and useful Improvements in Expansion-Shields, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to expansion shields for securing a screw or bolt to a structure of material with which the threads of the screw cannot engage securely, and its object is to provide a simple and inexpensive device of sheet metal which may be stamped or bent into desired form and which is capable of forming an effective and secure anchorage.

These and other objects of the invention will appear in the following specification in which I will describe the invention, the novel features of which will be set forth in appended claims.

Referring to the drawings:

Figure 1 is a plan view of a partly formed blank which is adapted to be rolled into a tube to form a shield.

Fig. 2 is a sectional elevation of a shield which embodies this invention.

Fig. 3 is a similar view of a shield with slightly modified form.

Fig. 4 is a sectional elevation showing another form of construction.

Fig. 5 is a similar view which shows a shield with a tapped thread.

Like characters of reference designate corresponding parts in all the figures of the drawings.

10 designates a blank of sheet metal with slits 11 cut through one of its edges and extending well into the blank, thus forming a plurality of members 12 integrally united with a portion 13. The dotted lines 14 are construction lines to show where the lower ends of the members 12 are to be bent back to overlapping positions.

The lower ends of the members 12 may be corrugated preferably after they have been bent back. These corrugations are on inclined lines which when the shield is completed form a helix with which the threads of a lag screw or other threaded device may engage. The blank is bent around a central axis into tubular form as shown in Figs. 2–5. In Figs. 2, 4 and 5 the upper end of the shields formed by the part 13 of the blank designated by 20 is a cylindrical collar from which extend segmental members 21 of which the lower ends are provided with screw threads 22 formed in Figs. 2–4 by corrugations stamped or pressed into the metal and cut into the metal as at 22^A in Fig. 5.

In Figs. 2 and 3 the blank has been rolled around with the bent over ends on the outside of the tube, and in Figs. 4 and 5 these ends are on the inside of the tube.

The unthreaded part of the shield may be cylindrical as shown in Figs. 2, 4 and 5. Fig. 2 shows the condition of the shield after it has been inserted in a hole with the inner diameter of the corrugated part less than the inner diameter of the other parts. The device may be constructed to have this form initially or may be made to be contracted to this form by being driven into the hole in which it is to be used.

After the shield is inserted the lag screw or other threaded device is screwed into it, its threads engaging the helical corrugations, the contracted part of the shield is expanded thereby and because of the excess metal at the inner end thereof formed by the bent over portions will form a secure anchorage. The corrugations on the outside of the shield coöperate to give the desired holding effect.

The structure of Fig. 3 is similar to that shown in Fig. 2 except that the unthreaded portion 23 of the shield is tapered. The outer diameters of both ends of this shield are alike. This construction has the advantage of guiding the screw into the screw threads.

In Figs. 4 and 5 the bent over ends are inside of the shield. The screw threads 22 in Fig. 4 are formed by helical corrugations formed in the metal as in the other cases; those in Fig. 5 are cut by a tapered die inserted from the outer end of the shield. In this figure the shield is shown as made of thicker metal than the others in order to get the required thickness of metal at the inner end. Machine threaded screws or bolts may be used with this form of shield.

The invention is capable of many modifications, and I intend no limitations other than those imposed by the appended claims.

What I claim is:

1. A tubular expansion shield of sheet metal having an end portion and a plurality of similar members integral therewith and extending therefrom, but separated from

one another for a substantial part of the length of the shield, said members being corrugated to receive the threads of a screw and having their ends bent back into overlapping positions.

2. A tubular expansion shield of sheet metal having an end portion and a plurality of similar members integral therewith and extending therefrom, but separated from one another for a substantial part of the length of the shield, the width of said members being less at their free ends than at the ends thereof which are at said end portion, said members converging to taper the bore of the shield, said members being corrugated to receive the threads of a screw and having their ends bent back into overlapping positions.

3. A tubular expansion shield of sheet metal having an end portion and a plurality of similar members integral therewith and extending therefrom, but separated from one another for a substantial part of the length of the shield, the width of said members being less at their free ends than at the ends thereof which are at said end portion, the adjacent edges of said members being parallel, said members being corrugated to receive the threads of a screw and having their ends bent back into overlapping positions.

In witness whereof I hereunto set my hand this 6th day of October, 1919.

JOHN EDWARD OGDEN.

Witness:
I. B. MOORE.