

J. E. OGDEN.
EXPANSION ANCHORAGE.
APPLICATION FILED JUNE 5, 1919.

1,419,979.

Patented June 20, 1922.

Fig. 1,

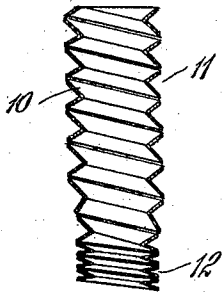


Fig. 2,

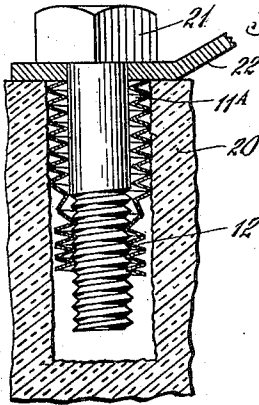


Fig. 3,

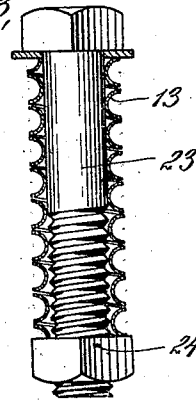


Fig. 4,

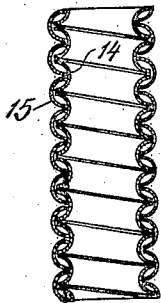


Fig. 5,

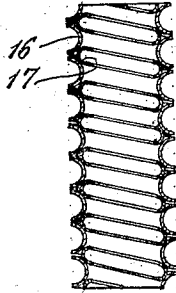


Fig. 6,

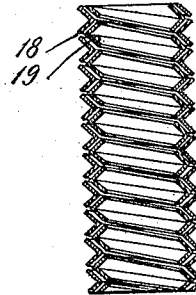


Fig. 7,

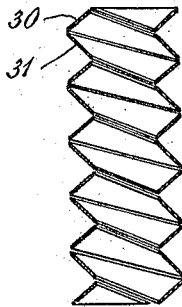
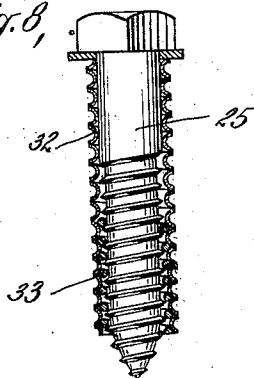


Fig. 8,



INVENTOR
John Edward Ogden
BY
E. M. Marshall
ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN EDWARD OGDEN, OF CORNWALL, NEW YORK.

EXPANSION ANCHORAGE.

1,419,979.

Specification of Letters Patent. Patented June 20, 1922.

Application filed June 5, 1919. Serial No. 301,990.

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 Anchorages, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to new and useful improvements in expansion anchorage devices and its object is to provide a simple and inexpensive device which may be used to cause a screw or bolt or the like to obtain a good hold on a wall or other structure of such material that the threads of screw or bolt cannot securely engage therewith.

More specifically, its object is to make such a device of one or more strips of material wound into a closed, or nearly closed, helix.

Another specific object is to bend the strip or strips longitudinally so that when the helix formed by them is shortened, they will expand laterally. They may also be so formed that the inner diameter of the helix will contract when the helix is shortened.

These and other objects of my invention will be set forth hereinafter, and in order that my invention may be thoroughly understood I will now proceed to describe the same in the following specification, and will then point out the novel features thereof in appended claims.

Referring to the drawings:

Figure 1 is a sectional elevation of an expansion anchorage device which is made according to and embodies this invention.

Figure 2 is a sectional elevation of the same shown expanded in a hole in a wall with a bolt therein and with a member fastened to the wall by the bolt.

Figure 3 is a sectional elevation of a modified form of construction which also embodies this invention, with a bolt and nut shown in elevation.

Figures 4, 5, 6, 7 and 8 are sectional elevations of other modifications of construction. A bolt is shown inserted in the device of the latter figure.

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

10 designates a metallic strip bent longitudinally into a flattened V shape to place the edges of the strip out of alinement with

the parts intermediate such edges. This is wound into a helix, the greater part of which, designated by 11 has an internal diameter slightly greater than that of the bolt which is to be used with it, and an external diameter no greater than that of the hole into which it is to be inserted. A part of this helix, preferably near one of its ends, and designated by 12, is wound to be of smaller diameter about the same as the smallest diameter of the threads of the bolt.

Before specifically describing the structures shown in the other figures of the drawings, I will show how this device is used. A hole is drilled in a structure 20 of brick, cement or other material and the expansion device inserted therein. Then a bolt 21 is passed first through a member 22 and through the part 11 of the device until its threads engage the constricted part 12. Then the bolt is rotated which results in moving the part 12 toward the head of the bolt or toward the member 22. This of course shortens the part 11 as shown at 11^a in Figure 2. The transverse angularity of the strip 10 is thereby decreased, which of course means that the outside diameter of the part 11 is increased and its inside diameter decreased. The increase in outside diameter is limited by the wall of the hole and the decrease in inside diameter is limited by the bolt. The result is that a very secure hold between the bolt and the wall is obtained.

When the strip is not wound to form a closed helix,—that is, when it is wound in the manner shown in Figure 1, the first effect of shortening the helix will be to close the spaces between adjacent convolutions of the strip. This will cause some transverse expansion but this is supplemented by crushing or bending toward each other, the angularly disposed parts of the strip itself in each convolution of the helical structure 11.

In Figure 3, the strip 13 is curved longitudinally before it is wound into a helix. This figure shows a helix with adjacent convolutions of the strip substantially abutting one another. It also shows the edges of the strip faced outwardly but of course they may be faced inwardly if desired as is the strip 17 of Figure 5.

As the device of Figure 3 is not constructed with a thread engaging part, it is not shortened by exactly the same means as that

previously described. It may be shortened and consequently expanded and contracted by means of a bolt 23 and nut 24.

Figure 4 is a device comprising two longitudinally curved strips 14 and 15 oppositely faced and one wound over the other to form the helix.

The device of Figure 5 is also made of two longitudinally curved strips, the outer of which designated by 16, is wound into a closed helix with its edges faced outwardly and the other strip 17, a narrower one, an open helix of the same pitch with its edges faced inwardly.

Another helix made of two strips is shown in Figure 6 in which the strips are designated by 18 and 19. These strips are bent longitudinally at an angle as in the structure shown in Figure 1, and are wound with their edges oppositely faced as in the structure of Figure 5.

Figure 7 shows a structure, which also comes within the scope of this invention, although the strips 30 and 31 thereof are bent longitudinally but are oppositely inclined so that they have a transverse angular relation to each other.

Figure 8 shows another single strip structure. The strip 32 is curved longitudinally and its width and curvature are such that the pitch of the helix it forms is substantially the same as that of the threads of the bolt 25. Near one end of this helix is a wire 33 with which the threads of the bolt engage.

The operation of the various structures shown is similar and shortening the helix results in a plurality of toggle movements between the bolt and the wall of the hole. In the case of the structure shown in Figure 5, there is in addition to this action a further wedging effect produced by the relative movement of the convolutions of the curved strip 17, against the oppositely curved surfaces of the convolutions of the strip 16. If desired, these devices may be made of short lengths and placed end to end so that by using a desired number of them, they may be used in holes of different depths.

Examples of various structures which come within the spirit and scope of this invention might be multiplied, but I have illustrated and described enough of them to show that it is not limited to any specific

form of construction and I intend no limitations other than those imposed by the appended claims.

What I claim is:

1. An expansion anchorage device comprising a short tubular member consisting of a strip of sheet metal wound into a helix, said strip being bent longitudinally to stand the edges of the strip at an incline to the axis of the helix and whereby when the helix is longitudinally compressed the angles of such edges will be altered to increase the outside diameter of the helix.

2. An expansion anchorage device comprising a tubular member of short length consisting of a strip of metal wound into a closed helix, bent longitudinally to set the edges of the strip out of alinement with the parts thereof intermediate said edges.

3. An expansion anchorage device comprising a tubular member of short length consisting of a plurality of strips of metal bent longitudinally and together wound into a helix.

4. An expansion anchorage device comprising a tubular member of short length consisting of a plurality of strips of metal bent longitudinally and wound into a helix, with said strips overlapping.

5. An expansion anchorage device comprising a tubular member of short length consisting of a plurality of strips of metal bent longitudinally and wound into a helix, with said strips overlapping and faced oppositely.

6. An expansion anchorage device comprising two strips of metal curved longitudinally and wound into a helix with said strips overlapping and faced oppositely with the convex surface of one strip against the convex surface of the other strip.

7. An expansion anchorage device comprising a tubular member of short length consisting of a plurality of strips of metal wound into a closed helix with edges of the strips out of alinement with the parts thereof intermediate said edges.

In witness whereof, I have hereunto set my hand this 28th day of May, 1919.

JOHN EDWARD OGDEN.

Witness:

I. B. MOORE.