J. KENNEDY.

BOLT ANCHOR.

APPLICATION FILED AUG. 24, 1911.

1,025,275. **Patented May 7, 1912.**

Fig. 1,

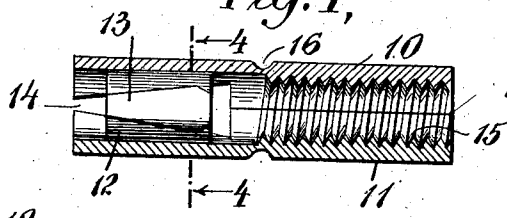


Fig. 3,

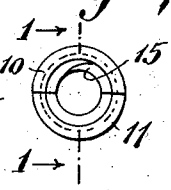
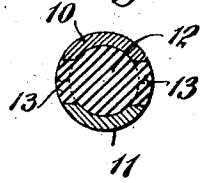


Fig. 4,



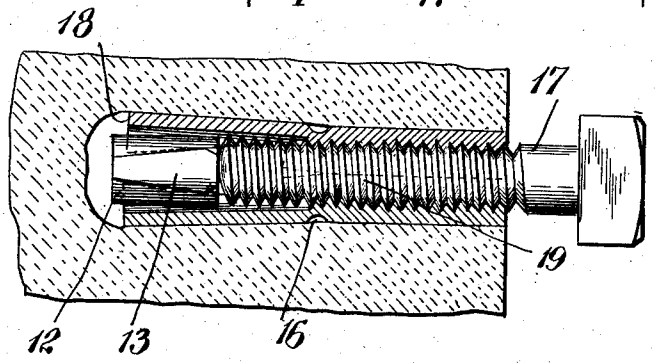


Fig. 2,

Fig. 5,

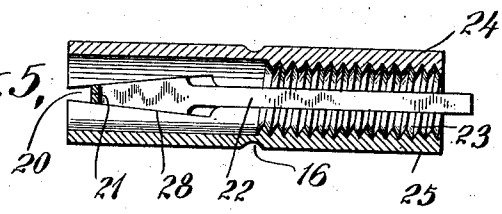


Fig. 6,

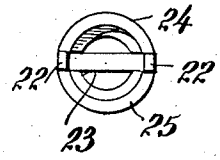


Fig. 7,

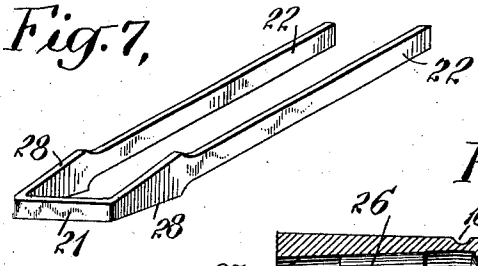


Fig. 9,

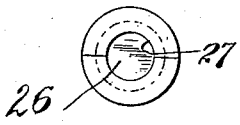


Fig. 8,

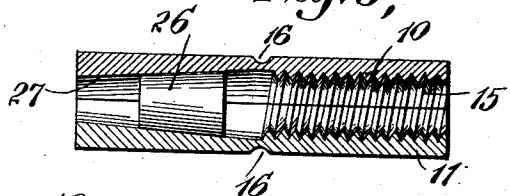
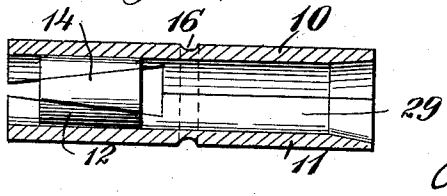


Fig. 10,



WITNESSES:

Harold Cox

Lyman S. Andrews Jr.

INVENTOR

Joseph Kennedy

BY

James C. Chapin

ATTORNEY

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH KENNEDY, OF NEW YORK, N. Y., ASSIGNOR TO THE CLEMENTS CO., A CORPORATION OF NEW YORK.

BOLT-ANCHOR.

1,025,275. Specification of Letters Patent. Patented May 7, 1912.

Application filed August 24, 1911. Serial No. 645,871.

To all whom it may concern:

Be it known that I, JOSEPH KENNEDY, a citizen of the United States of America, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Bolt-Anchors, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in bolt anchors of the character employed for obtaining anchorage in brick or stone walls or the like, of which the material is of a character not adapted to directly receive a threaded bolt.

My invention relates to a longitudinally segmental anchor interiorly threaded, flexible intermediate its ends, and provided with an expander adapted to be forced forward to expand a part of the anchor without expanding the screw threaded portion.

My invention further consists in an anchor which may be fastened in position by expanding, and is adapted to receive bolts of varying lengths.

I have found by experience in the past that it is often desirable, after the bolt anchor has been fastened in place, to be able to remove the bolt and yet leave the anchor firmly fastened in position. This is a particularly desirable feature in such places as mines, for securing hangers, etc. It is also a very desirable feature to be able to remove the bolt when it is used for securing apparatus in position on walls or ceilings, such as electrical apparatus, lamps, and like devices, where it is frequently necessary to loosen the bolt and apparatus and later secure other apparatus which may require a different length bolt, or may not permit the same bolt to be inserted the same distance.

In order that my invention may be thoroughly understood, I will now proceed to describe an embodiment thereof, having reference to the accompanying drawings illustrating the same, and will then point out the novel features in claims.

In the drawings: Figure 1 is a view in central longitudinal section through a bolt anchor constructed in accordance with my invention, the section being taken on line 1—1 of Fig. 3. Fig. 2 is a view in longitudinal section therethrough, the bolt being shown as completely inserted and the anchor segments expanded by the expanding device. Fig. 3 is an end view on the anchor viewed from the threaded end. Fig. 4 is a transverse sectional view upon the line 4—4 of Fig. 1. Fig. 5 is a view in longitudinal section through a bolt anchor in which the expander is of a different form than that shown in Fig. 1. Fig. 6 is an end view of the anchor shown in Fig. 5. Fig. 7 is a perspective view of the expander shown in Fig. 5. Fig. 8 is a longitudinal section of an anchor with an expander of slightly different form than that shown in Fig. 1. Fig. 9 is an end view of a modification of the anchor shown in Fig. 8. Fig. 10 is a central longitudinal section through a bolt anchor constructed in accordance with my invention, without the threads.

Referring first of all to the anchor shown in Figs. 1 to 4 inclusive, the same comprises a shell divided longitudinally throughout its length, the two parts being numbered 10—11. The shell has a longitudinal bore, the forward end 15 of which is provided with a screw-thread adapted to receive a bolt, the remaining portion of the bore being smooth and having an expander within. The walls of the shell are cut away to form openings the opposite faces of which converge toward the end of the shell, which openings receive a pair of cam-shaped extensions located on either side of the expander. Preferably the lateral extensions of the expander fit the convergent surfaces of the cut-away portion of the shell wall so that the slightest movement of the plug toward the inner end of the shell will cause the parts of the shell to separate or expand. A transverse groove 16 is provided near the middle of the shell to facilitate this expansion as will more fully hereinafter be shown.

In Fig. 1 the two parts of the shell are shown assembled with the plug expander in position.

In operation the anchor is disposed in a slightly undercut opening 18 prepared to receive it, and the bolt is inserted. As the bolt is driven home its end engages the ex-

pander 12 and forces it ahead toward the inner end of the shell. The two convergent cams 13—13 engage the surfaces of the openings in the shell 14 and spread the parts of the shell apart as shown. In this form of anchor the shell is preferably made of a soft metal such as lead, or a lead composition, and the segments will be bent or swaged to conform to the configuration of the hole, by the plug expander, as will be well understood by those familiar with this art. The weakening of the shell at 16 by a groove of suitable shape, facilitates this bending or swaging operation, and also permits the threaded portion to retain its shape and accurately fit the bolt especially where the material in which the anchor is placed shows any weakness or tendency to yield.

Many modifications of my bolt anchor may be made without departing from the spirit of my invention and in Figs. 5, 6, and 7, I have shown one of such modifications in longitudinal section, end view and perspective detail view, an anchor longitudinally divided and provided with an expanding element which has longitudinal extensions or arms and is adapted to be made of sheet metal, by punching, for example. The two segments of the shell are numbered 24—25 and are provided at its forward end with screw threads 23 adapted to receive the bolt. The screw threads extend for a part of the length of the bore only, the remaining portion being smooth and cut away to receive the convergent cam surfaces 28 which fit and coact with the cam surfaces of the walls of the shell as shown at 20. The two arms 22 are connected by a bridge piece 21 which is adapted to engage the end of the bolt when it is driven home. In this form of anchor I preferably make the arms 22 of such length that they extend beyond the forward end of the shell to assist in the application of the device as will be pointed out.

In Figs. 8 and 9 I have illustrated a modification of the shape of the bore of the shell and of the plug expander for use therewith. I have numbered the plug 26 in Fig. 8. It is the frustum of a cone in form and the cone surface engages the convergent bore of the shell so that upon the insertion of the bolt the shell will begin to expand immediately, the bolt moving the plug which is in contact with the bore of the shell.

In Fig. 10 I have illustrated an anchor of the same construction as shown in Fig. 1, except that I have omitted the screw threads.

It often happens that it is convenient to first fasten the bushing in place and have it secured firmly enough to prevent its falling out or being jarred out. To accomplish this result the shell with its expander is first inserted, and if the expander is of plug form, it is driven in by inserting a small rod in the shell and tapping with a hammer. Where the sheet metal form is used with the extending arms, no special tool is used to drive them in. Without removing the bolt the anchor may be further expanded and thereby tightened by means of the extending arms. In either form the expansion may be continued until the bolt is driven home as described.

It will be understood that more than two segments may be employed, in practical use, and that expanders of other forms may be employed.

What I claim is:

1. A bolt anchor comprising a tubular shell split longitudinally, said shell being constructed to form a transverse annular groove about the central portion thereof, one part of said tube being provided with interior screw threads from the end of the tube to a point near said groove, the other part of the shell being provided with faces converging toward the unthreaded end, and an expanding member adapted to engage said converging faces.

2. A bolt anchor comprising a tubular shell split longitudinally, said shell being constructed to form a transverse annular groove about the central portion thereof, one part of said tube being provided with interior screw threads from the end of the tube to a point near said groove, the parts of said shell the other side of the groove being cut away to form openings between them having faces converging toward the unthreaded end, and an expanding member adapted to engage said converging faces.

3. A bolt anchor comprising a tubular shell split longitudinally, said shell being constructed to form a transverse annular groove about the central portion thereof, one part of said tube being provided with interior screw threads from the end of the tube to a point near said groove, the adjacent parts of said shell the other side of the groove being cut away to form openings between them having faces converging toward and extending to the unthreaded end, and an expanding member within the unthreaded portion of the shell having opposed projections extending into said openings and adapted to engage said converging faces.

4. A bolt anchor comprising a tubular shell of soft metal split longitudinally, said shell being constructed to form a transverse annular groove about the central portion thereof, one part of said tube being provided with interior screw threads from the end of the tube to a point near said groove, adapted to receive a bolt, the adjacent parts of said shell the other side of the groove

being cut away to form openings between them having faces converging toward and extending to the unthreaded end, and an expanding member within the unthreaded portion of the shell having opposed projections extending into said openings and adapted to engage said converging faces, said member being in the path of and arranged to be moved by a bolt inserted in the threaded portion of the shell.

JOSEPH KENNEDY.

Witnesses:
E. S. MORRIS,
I. B. MOORE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."