

C. J. CLEMENTS.
BOLT ANCHOR.
APPLICATION FILED JAN. 28, 1910.

983,479.

Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.

Fig. 1,

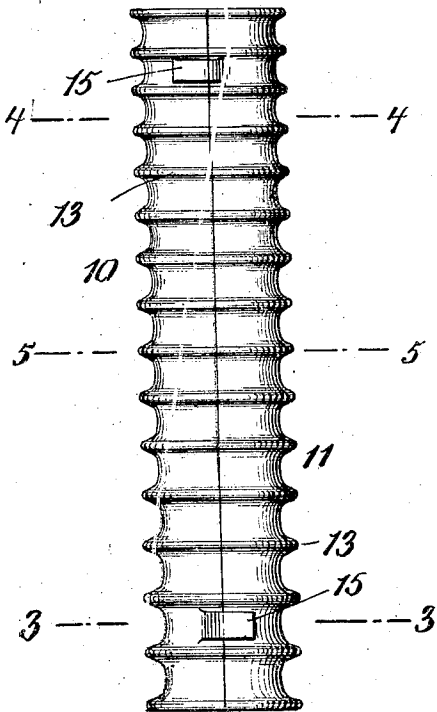


Fig. 2,

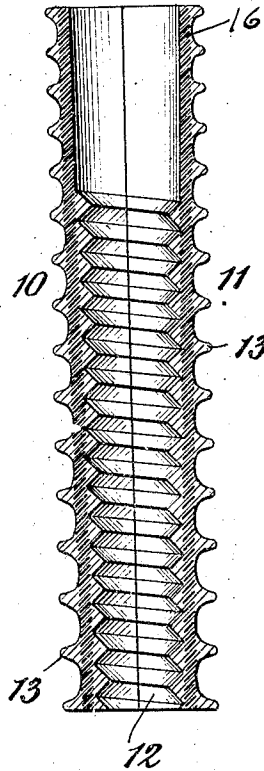


Fig. 3,

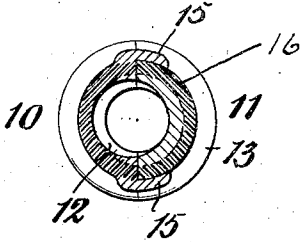


Fig. 4,

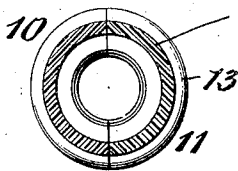
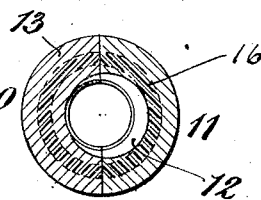


Fig. 5,



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2 SHEETS—SHEET 2.

Fig. 7,

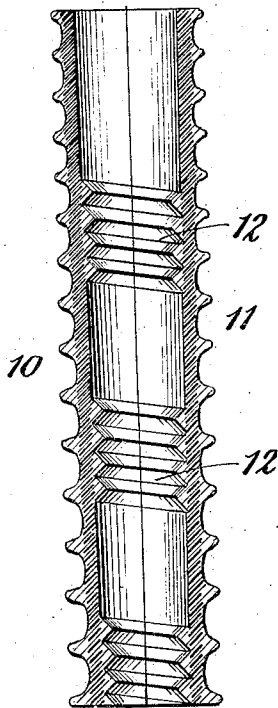
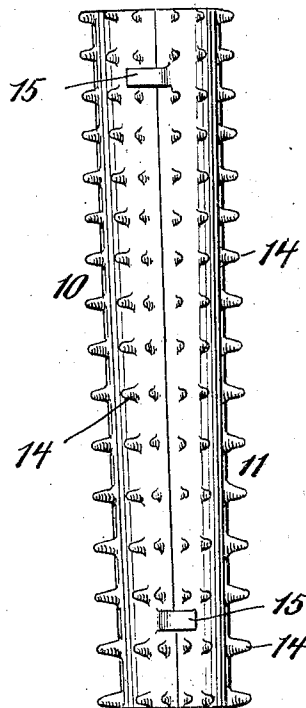


Fig. 6,



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UNITED STATES PATENT OFFICE.

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BOLT-ANCHOR.

983,479.

Specification of Letters Patent.

Patented Feb. 7, 1911.

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To all whom it may concern:

Be it known that I, CHARLES J. CLEMENTS, a citizen of the United States of America, and a resident of Brooklyn, county of Kings, 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 accompanying drawings, forming a part thereof.

My invention relates to bolt anchors of the type employed to secure bolts in holes in brick and stone walls and the like, and adapted to be expanded into intimate engagement with the walls of said holes by and upon the insertion of the bolt to be anchored.

The particular type of bolt anchor to which my invention relates is that comprising an expansible shield composed of a plurality of longitudinally divided laterally separable sections, the interior of which is screw-threaded, and the exterior of which is provided with projections.

It is the main object of my present invention to improve and simplify the construction of this type of bolt anchor, increase the strength thereof and reduce the cost of manufacture of the same, and to this end I provide the anchor with tapered walls of uniform thickness throughout the length thereof, the interior being preferably screw-threaded, and the exterior provided with projections which progressively increase in height toward the smaller end of the anchor the said projections being preferably so disposed as not to register with the screw threads, a convenient and satisfactory form thereof being annular. This form of bolt anchor will be found to be light in weight owing to the reduction of the quantity of metal from that ordinarily employed, yet of increased strength owing to the more uniform distribution of the metal.

My invention also consists in providing the laterally separable sections with overhanging alining lugs of such length that they will embrace the section they engage sufficiently to prevent relative lateral separation of the sections, until they are forced apart in use.

In order that my invention may be fully 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

side elevation of a bolt anchor constructed in accordance with my invention. Fig. 2 is a view in central longitudinal section thereof through. Figs. 3, 4 and 5 are transverse sectional views upon the lines 3-3, 4-4, and 5-5 respectively of Fig. 1. Fig. 6 is a view in outside elevation of an anchor in which the exterior projections are in individual pyramidal form instead of being in annular form as are those shown in Fig. 1. Fig. 7 is a view in central longitudinal section of an anchor in which the interior screw threads are interrupted.

The anchor is of tubular form being preferably constructed of a plurality of sections. In the form shown in the drawings the anchor is composed of two similar semi-annular sections 10-11 in mutual engagement upon a medial plane.

The interior bore of the anchor is longitudinally tapered, and the walls 16 thereof which constitute the body portion of the anchor are of uniform thickness throughout, that is to say, the outer and inner surfaces of the anchor are parallel with respect to each other but are oblique to the longitudinal axis of the anchor. Interior screw threads 12 are conveniently provided in the bore of the anchor, the same projecting inwardly as is shown, and such threads may be provided either throughout the entire length of the anchor, or throughout a part only of the length thereof as may be preferred. Preferably the "throat" or portion at which the bolt is admitted is bare of threads for a short distance (see Fig. 2) so as to facilitate such admission, and if desired, the threads may be interrupted as shown in Fig. 7 to permit of the anchor being used with bolts whose threads do not quite correspond in pitch to the pitch of the anchor threads.

The anchor is provided upon its exterior with a plurality of portions which project beyond the walls 16 of the anchor for progressively increasing distances. These projecting portions are preferably out of register with the interiorly projecting screw threads, and they may conveniently be in the form of annular projections 13 as is shown in the first five figures of the drawings, or in the form of individual pyramidal projections 14, in which form they are shown in Fig. 6. The height of the projections increases progressively from the large to the small end of the anchor walls, the extremities thereof lying preferably in a

cylindrical surface, coaxial with the anchor bolt, so that the anchor as a whole will just fit a cylindrical hole when in its contracted or non-extended condition. The projections
5 may also be spaced progressively farther apart as they increase in height as will be readily understood by reference to the drawings.

In use the anchor is inserted in a hole in
10 a stone or brick wall or other place in which the bolt is to be anchored, and the bolt is then inserted in the large end of the bore, and screwed into place. As the bolt is screwed home the inner end of the anchor
15 will be expanded and the exterior projections forced into the walls of the hole so as to fasten the same securely thereto. By reason of the fact that the increased thickness required at the inner end of the anchor
20 for the purpose of giving a divergent form to the portion which engages the walls of the hole when the anchor is expanded, is obtained by increasing the height of the exterior projections while maintaining the
25 walls 16 of the same thickness throughout, it will be found possible to employ but a minimum of material in constructing the anchor, whereby the weight of the anchor will be lessened and the cost of manufacture
30 thereof reduced, while at the same time a maximum of strength will be obtained. Moreover, if the projections are made out of register with screw threads, as is preferred, the tendency to fracture between the threads,
35 which is common where helical exterior projections which register with the screw threads are employed, is obviated.

It has been common in the past to provide sectional bolt anchors with short alining
40 lugs which act to maintain the sections against relative longitudinal displacement and against relative lateral displacement in the plane upon which they are united, but in order to maintain them against relative
45 lateral displacement in a direction at right angles to such plane some other means has been employed such as one or more springs, clips, or elastic bands.

In accordance with my present invention,
50 I provide alining lugs 15 of such length and arranged to overhang to such an extent that they will not only act to aline the parts but will also act as effective means to clamp the parts together until they are forced
55 apart in use. This construction is, of course, useful in many forms of bolt anchors, and is advantageous in that not only does it avoid the use of the spring clips which are apt to get displaced, and the rubber bands
60 which deteriorate, but it acts more positively and permanently than do such means, even at their best. These alining and clamping lugs may be used at one or more points in the anchor, and in the drawings I have
65 shown two sets, one employed near each end

thereof. I have shown one set as carried by the section 10, and embracing the section 11, and the other set as carried by the section 11 and embracing the section 10, but such arrangement and disposition is unim-
70 portant and may, of course, be varied. In manufacture, the parts may be sprung together, where the nature of the material employed permits it, or the lugs may be forced together after the sections have been
75 assembled.

What I claim is:—

1. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of
80 a hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with projections which progressively increase in height toward the smaller end
85 thereof.

2. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a
90 hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with projections which progressively increase in height toward the smaller end
95 thereof, the extremities of the said projections being tangent to a cylinder.

3. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a
100 hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with annular projections which progressively increase in height toward the
105 smaller end thereof.

4. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a
110 hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with annular projections which progressively increase in height toward the
115 smaller end thereof, the extremities of the said projections being tangent to a cylinder.

5. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a
120 hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with projections which progressively increase in height toward the smaller end
125 thereof, and upon the interior thereof with helical projections constituting screw threads.

6. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a
130 hollow cone, the walls whereof are of uni-

form thickness throughout, the said body portion being provided on the exterior thereof with projections which progressively increase in height toward the smaller end thereof, the extremities of the said projections being tangent to a cylinder, and upon the interior thereof with helical projections constituting screw threads.

7. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with projections which progressively increase in height toward the smaller end thereof and are spaced at progressively increasing distances apart.

8. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with projections which progressively increase in height toward the smaller end thereof and which are generally out of register with the screw threads.

9. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with projections which progressively increase in height toward the smaller end thereof and which are generally out of register with the screw threads, the extremities of the said projections being tangent to a cylinder.

10. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with annular projections which progressively increase in height toward the smaller end thereof, and upon the interior thereof with helical projections constituting screw threads.

11. A bolt anchor having a body portion in the form of a longitudinally divided tube

constituting substantially the frustum of a hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided on the exterior thereof with annular projections which progressively increase in height toward the smaller end thereof, the extremities of the said projections being tangent to a cylinder, and upon the interior thereof with helical projections constituting screw threads.

12. A bolt anchor having a body portion in the form of a longitudinally divided tube constituting substantially the frustum of a hollow cone, the walls whereof are of uniform thickness throughout, the said body portion being provided upon the exterior thereof with annular projections which progressively increase in height toward one end of the anchor and are spaced at progressively increasing distances apart, and upon the interior thereof with helical projections constituting screw threads.

13. A bolt anchor composed of a plurality of sections provided with overhanging alining and clamping lugs for securing the sections together against lateral displacement in a direction transverse of their divisional plane.

14. A bolt anchor composed of two semi-annular sections provided with overhanging alining and clamping lugs carried by one section and arranged to partially embrace the other section, the said lugs being of sufficient length to clamp the sections normally together against relative lateral displacement in a direction transverse of their divisional plane.

15. A bolt anchor composed of two semi-annular sections, one of which is provided with laterally projecting alining and clamping lugs for engagement with the other section, the said lugs being convergent and adapted to engage a convergent portion of the said other section whereby to prevent relative lateral displacement of the two sections in a direction transverse of their divisional plane.

CHARLES J. CLEMENTS.

Witnesses:

I. B. MOORE,
E. A. CLEMENTS.