C. C. TOMKINSON.

EXPANSION SHIELD WITH INTERLOCKING CAP.

APPLICATION FILED FEB. 23, 1921.

1,412,581. Patented Apr. 11, 1922.

Fig. 3.

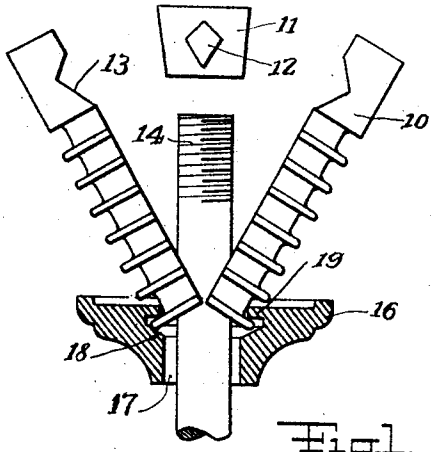


Fig. 6.

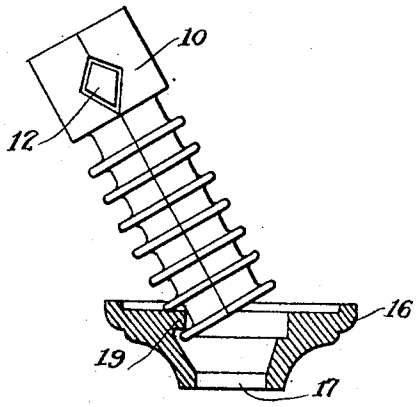


Fig. 1.

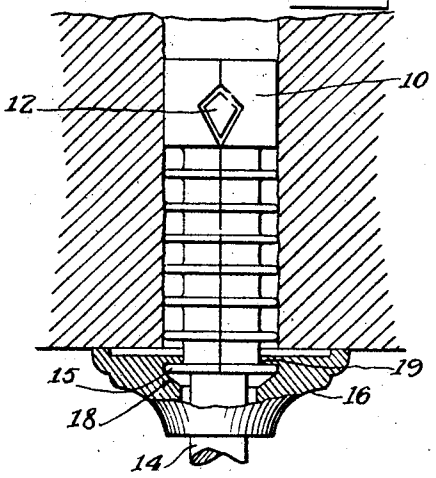


Fig. 4.

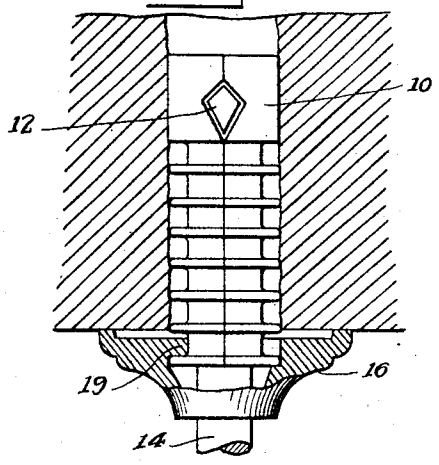


Fig. 2.

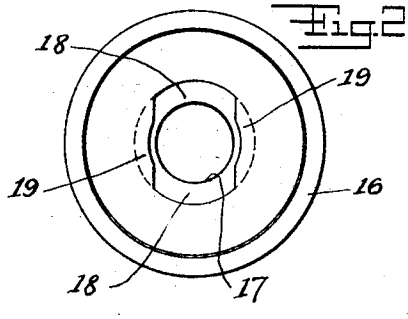
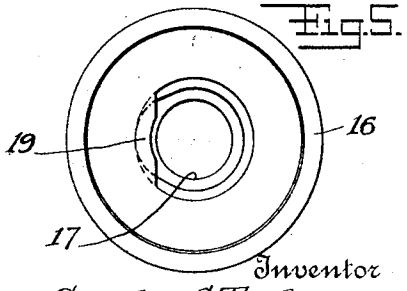


Fig. 5.



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EXPANSION SHIELD WITH INTERLOCKING CAP.

1,412,581. Specification of Letters Patent. Patented Apr. 11, 1922.

Application filed February 23, 1921. Serial No. 447,291.

To all whom it may concern:

Be it known that I, CHARLES C. TOMKINSON, a citizen of the United States, and a resident of Plainfield, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Expansion Shields with Interlocking Caps, of which the following is a specification.

This invention relates to expansion shields such as are commonly anchored within bodies of solid material like concrete or masonry and is particularly concerned with an interlocking connection between the shield and a cap which is designed for attachment to one end of the same. The invention contemplates a connection of such character that the parts must be tilted or rocked relatively to each other in order to effect interlocking engagement. The novel features of construction and arrangement will appear from the detailed description thereof taken in connection with the accompanying drawings forming part of this specification and will be particularly pointed out in the appended claims.

In the drawings, Fig. 1 is an elevational view showing one embodiment of my invention the expansion shield and cap being in operative relation with respect to a body within which the shield is inserted, parts of the cap being broken away.

Fig. 2 is a plan view of the cap showing the undercut flanges or chords at either side of the bore thereof.

Fig. 3 is an assembly view with the cap in section.

Fig. 4 is a view similar to Fig. 1 of a slightly different form of the invention.

Fig. 5 is a plan view of the cap plate shown in Fig. 4.

Fig. 6 is a view showing the manner of assembling the expansion shield and cap illustrated in Figs. 4 and 5, the cap being in section.

Like characters of reference designate like parts throughout the several views.

An expansion shield of any desired or approved form is shown at 10, the means for expanding the same being shown as a wedge member 11 having the usual lateral projections 12 which enter into cut-outs 13 in the shield members. Cooperating with member 11 is a bolt 14, the threaded end of which is adapted to be screwed into the member 11 as will be readily understood, spreading of the shield members being effected by moving the wedge toward the remote end of the shield.

At the said remote end of the expansion shield there is provided an annular flange 15 which is adapted to have interlocking engagement with a cap 16. This cap has a bore 17 through which the bolt 14 passes, the bore being counterbored as at 18 to a radius equal or somewhat larger than the radius of the flange 15 to permit the same to be seated therein. Extending across the counterbore 18 is a chord 19 which is adapted to have interlocking engagement with the flange 15. In the form shown in Figs. 1 to 3 the cap is provided with a pair of opposed chords 19 while in Figs. 5 to 6 but a single chord is shown.

When the cap is provided with two chords the expansion shield is interlocked therewith by first obtaining a hooked engagement between the chords and flanges on the respective shield members, the latter being inclined at an oblique angle to the axis of the bore of the shield (Fig. 3) and then rocked about the chords as fulcrums until the shield members are brought into contiguous relation.

When the cap member is provided with but a single chord as in the embodiment of the invention shown in Figs. 4 to 6 the members of the expansion shield may be left in abutting relation (Fig. 6) while the shield as a unit is rocked on the chord into interlocking engagement with the cap. If the shield is given a quarter rotation from the position shown in Fig. 6, or until the plane of division of the shield members bisects the chord, both members of the shield will be effectually held from separation with respect to the cap when the axis of the shield is in alignment with the axis of the bore of the cap.

Another important feature of the invention is that the shield is locked to the cap against turning as the shield is expanded. This follows for the reason that the flange 15 is seated in a counterbore of continuous shape and hence as the shield members are spread by the wedge 11 the flange 15 is frictionally engaged with the walls of the counterbore. Seating the flange in a completely walled counterbore has the further advantage that the greater part of the expansion of the shield takes place away from

the surface edge of the hole thus protecting the wall from breaking away at the edge. The surface engaging side of the cap is depressed except at its edges so that it will seat snugly against the wall. The cap may be of any desired ornamental design and will cover the ends of the hole in which the shield is inserted, the edge of which is apt to be rough and unsightly.

From the above it will be seen that I have provided a simple form or interlocking engagement between the expansion shield and a cap, the construction being such that the shield must be rocked on the chords of the cap in order to bring the parts into interlocking position.

While I have described the invention with considerable particularity of detail I desire it to be distinctly understood that I intend no limitations other than those imposed by the appended claims.

What I claim is:

1. The combination with an expansion shield having an out-turned flange at one end thereof, of a cap having an annular opening therethrough and an undercut flange at one side of the opening for interlocking engagement with the flange on the shield, the engagement being effected by first hooking the flanges one over the other while the axis of the cap is at an oblique angle to axis of the shield and then bringing the shield and cap into axial alignment.

2. The combination with an expansion shield having a flange at one end thereof, of a cap having a bore therethrough, an annular groove in the bore of the cap to receive the shield flange, a chord overlying the groove and adapted for interlocking engagement with the shield flange, the flange of the shield being entered into the groove by hooking the chord over the flange while the axes of the bore and shield members are at an oblique angle and then swinging the shield members in unison about the chord as a fulcrum until the shield flange is fully entered into the groove.

3. The combination with an expansion shield having a radial flange at one end thereof, of a cap having a bore with a continuous counter bore to receive said flange, a chord overlying a portion of the counter bore, the arrangement being such that in order to fully enter the flange behind the chord and into the counter bore the flange and chord must be in hooked relation and the members comprising the shield swung toward the axis of the bore.

4. In combination, a cap having a bore therethrough, a continuous circular wall spaced from and concentrically arranged relatively to said bore whereby a circular step is formed in the bore, a separable expansion shield having one end thereof seated in the step, and means at the other end of the shield movable toward the cap for expanding the shield, said means serving to frictionally lock the cap to the shield.

5. In combination, a cap having a bore therethrough, a continuous circular wall spaced from and concentrically arranged relatively to said bore whereby a circular step is formed in the bore, a separable expansion shield having one end thereof seated in the step, means at the other end of the shield movable toward the cap for expanding the shield, said means serving to frictionally lock the cap to the shield, and means projecting from the edge of the wall toward said bore and arranged to overlap a portion of the shield.

6. In combination, a cap having a bore therethrough, a continuous circular wall spaced from and concentrically arranged relatively to said bore whereby a circular step is formed in the bore, a separable expansion shield having one end thereof seated in the step, means at the other end of the shield movable toward the cap for expanding the shield, said means serving to frictionally lock the cap to the shield, means projecting from the edge of the wall toward said bore, and radially projecting means on the shield projecting under said means and in engagement with the circular wall.

7. In combination with an expansion shield having an out-turned flange at one end thereof, a cap having a bore therethrough and a counter-bore communicating with said bore and a flange overhanging a portion of said counter-bore, the uncovered portion of said counter-bore having its maximum dimension corresponding to the maximum dimension of the out-turned flange on the shield.

8. In combination with an expansion shield having an out-turned flange at one end thereof, a cap having a bore therethrough and a counter-bore communicating with said bore and a flange overhanging a portion of said counter-bore, the counter-bore corresponding in size and shape to the size and shape of the flange on the shield.

9. The combination with an expansion shield having a radial flange at one end thereof, of a cap having a bore with a continuous counter-bore to receive said flange, an extension overlying a portion of the counter-bore, the arrangement being such that in order to fully enter the flange behind the extension and into the counter-bore the flange and extension must be in hooked relation and the members comprising the shield swung toward the axis of the bore.

In witness whereof, I have hereunto set my hand this 18th day of February, 1921.

CHARLES C. TOMKINSON.

Witness:
I. B. MOORE.