July 26, 1927. 1,636,831

R. E. OGDEN

SETTING TOOL FOR EXPANSION SHIELDS

Filed Oct. 31, 1922

Fig. 1,

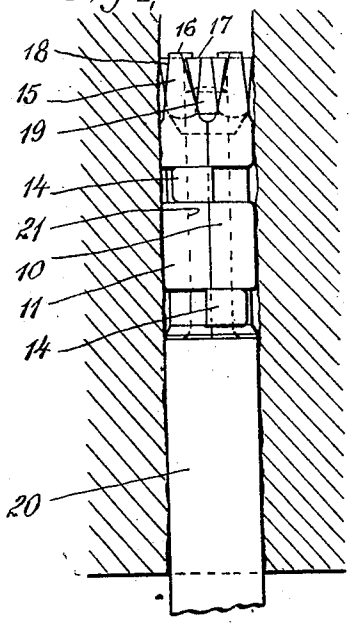


Fig. 2,

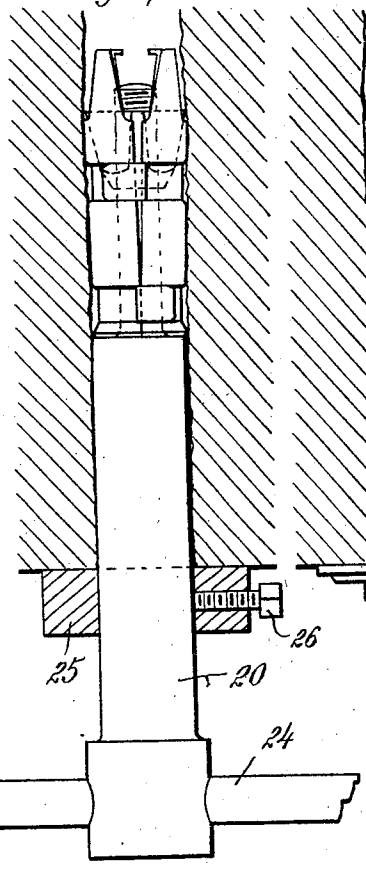


Fig. 3,

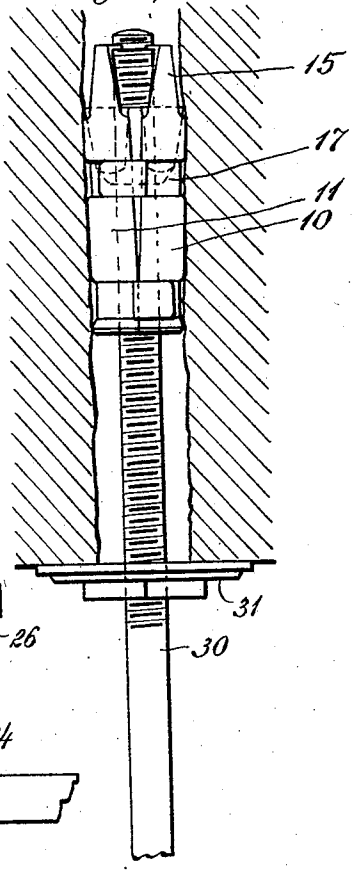


Fig. 4,

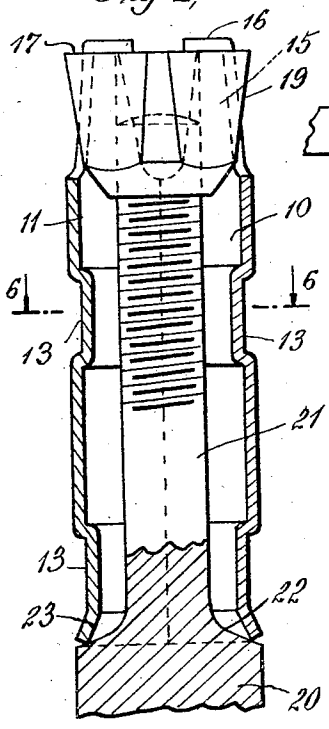


Fig. 5,

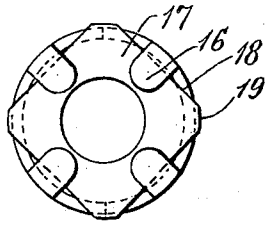
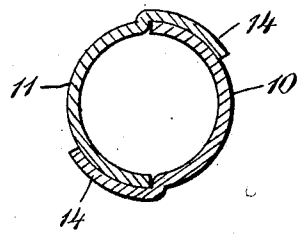


Fig. 6



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UNITED STATES PATENT OFFICE.

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SETTING TOOL FOR EXPANSION SHIELDS.

Application filed October 31, 1922. Serial No. 598,125.

This invention relates to a tool for expanding or setting expansion shields. In using expansion shields or bolt anchors in connection with structures of concrete or cementitious material, it is very desirable that the shield be expanded and set deep in the wall opening since the depth to which the shield is set determines the firmness of the anchorage and the resistance of the material in which the anchorage is set. In other words, the more material there is between the anchorage and the surface of the wall in which the anchorage is set the firmer will be the anchorage.

One of the objects of the invention is to provide a tool by means of which an expansion shield may be expanded or set deep in a wall opening.

Another object of the invention is to provide a tool of the character described so constructed and arranged that it will operate to set a shield firmly and securely in the wall opening.

Another object of the invention is to provide a tool of the character described having a depth gage by means of which a plurality of shields can be set at a uniform depth.

Further objects of the invention will appear from the following specification taken in connection with the drawings, which form a part of this application, and in which

Fig. 1 is a sectional elevation of a portion of a wall having an opening therein and an expansion shield and setting tool disposed in the opening, the shield being shown before expansion;

Fig. 2 is a view similar to Fig. 1, but showing the shield expanded by the setting tool;

Fig. 3 is a view similar to Fig. 2, but showing a threaded element such as a pipe-hanger inserted in place of the setting tool;

Fig. 4 is an enlarged sectional elevation of the expansion shield and shank portion of the setting tool;

Fig. 5 is an end elevation of the inner end of the shield shown in Fig. 4; and

Fig. 6 is a sectional elevation taken substantially on line 6—6 of Fig. 4.

The invention briefly described consists of a tool having a body portion adapted to extend into the bore of a wall opening and having a shank portion at the free end of the body portion adapted to extend into the shield and having a threaded end for engaging the expanding element or nut within the shield. At the junction of the shank portion and body portion a shoulder is formed, this shoulder being preferably beveled for engaging the flaring outer end of the shield. As the tool is rotated the expanding nut will be drawn longitudinally in the shield thereby expanding the shield. In order to permit the user to set the shield at any desired depth and to set a plurality of shields at a uniform depth, a gage is adjustably mounted on the body of the tool.

The setting tool may be used for expanding many different forms and shapes of expansion shields, but in the particular embodiment of the invention shown, the shield comprises a pair of sections 10 and 11, each section having annular depressions 13 formed therein and spaced longitudinally thereof, the depressions of the two sections registering when the sections are assembled.

Each section also has formed thereon a pair of longitudinally spaced tabs 14, the tabs 14 on one section seating in the depressions 13 of the other section. It will be understood that any other suitable means may be used for retaining the sections against separation.

The shield has formed thereon a plurality of longitudinally extending tapered fingers 15 having inturned ends 16 adapted to overlap the inner end of a threaded expanding element or nut 17. In the particular embodiment of the invention illustrated, the nut 17 has a plurality of flat surfaces 18 disposed between the fingers 15 and a plurality of tapered surfaces 19 disposed between the fingers 15 and adapted to expand the shield as the nut travels longitudinally therein.

The setting tool comprises a main or body portion 20 and a shank portion 21 of reduced cross-section. The shank portion 21 is threaded throughout a portion of its length from the free end thereof toward the body portion 20 of the tool. Intermediate the shank portion 21 and the main or body portion 20, the tool is beveled as shown at 22 and this beveled portion is adapted to engage the flaring outer end 23 of the shield. This beveled portion of the tool expands

the flared end 23 of the shield into firm and gripping engagement with the wall opening.

The tool is provided with a handle 24 at its outer end and in order to gage the depth to which the shield is set in the opening a collar 25 is preferably adjustably secured by a set-screw 26 on the main or body portion 20 of the setting tool. By means of this depth gage, the shield may be set in the opening at any desired depth, and a plurality of shields may be set in their respective openings at a uniform depth.

The setting tool operates in the following manner. The shank portion 21 of the tool is first threaded into the nut 17 and the shield is then inserted by the tool into the wall opening to the desired depth, this depth being determined by the gage 25. The tool is then rotated and after the beveled portion 22 thereof engages the beveled or flared end 23 of the shield, further rotation will cause the nut 17 to travel longitudinally in the shield thereby expanding the shield. With this particular type of shield, the nut will be locked in the shield after expansion and the tool may then be rotated in the reverse direction and withdrawn, leaving the anchorage firmly set in the wall opening. Thereafter any desired threaded element, such as the hanger 30 shown in Fig. 3, may be threaded in the nut 17 and a ceiling plate 31 may be mounted on the member 30 to conceal the opening and increase the rigidity of the anchorage.

Although the tool is particularly useful for setting shields deep in a wall opening it may also be used to set shields flush with the wall surface.

Although one specific embodiment of the invention has been particularly illustrated and described, it will be understood that the invention is capable of modification and that changes in the construction of the device may be made without departing from the spirit or scope of the invention as expressed in the following claims.

What I claim is:

1. A rotatable expanding tool for expansion shields having means for engaging and moving an expanding element longitudinally in the shield and having a portion fixed with respect to the tool and adapted to abut against the end of the shield as the tool is rotated.

2. A rotatable tool having a threaded shank for engaging and moving an expanding element longitudinally of an expansion shield and having a portion enlarged in cross-section, fixed with respect to the tool, and adapted to abut against the end of the shield as the tool is rotated.

3. An expansion tool having a shank adapted to engage and actuate an expanding member and having a shoulder fixed on said shank and adapted to engage the element being expanded.

4. An expansion tool having a shank adapted to engage and actuate an expanding member and having a beveled shoulder adapted to engage the element being expanded.

5. A tool for actuating an expanding element in an expansion shield, said tool having a gage thereon for determining the depth to which the shield is inserted in a wall opening.

6. An expanding tool for expansion shields having a threaded shank for engaging and actuating an expanding element, and having a beveled shoulder adapted to abut against the end of the shield, and an adjustable gage for limiting the depth to which the shield can be inserted in a wall opening.

In witness whereof, I have hereunto set my hand this 24th day of October, 1922.

RALPH E. OGDEN.