E. C. ROYER.

EXPANSION BOLT.

APPLICATION FILED APR. 24, 1919.

1,349,437. Patented Aug. 10, 1920.

Fig. 1.

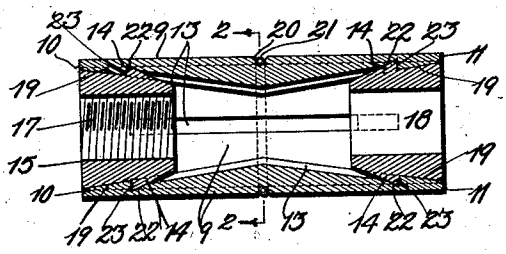


Fig. 2.

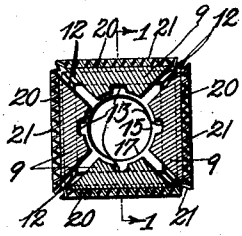


Fig. 3.

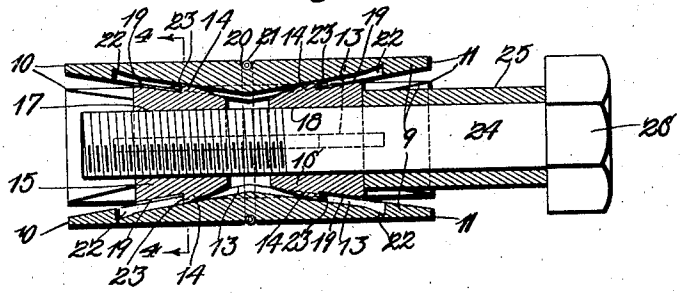


Fig. 4.

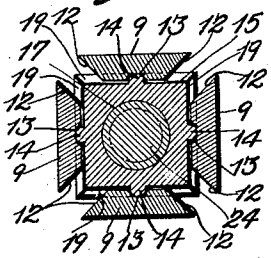


Fig. 5.

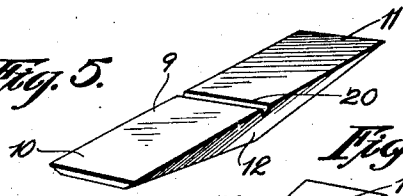


Fig. 8.

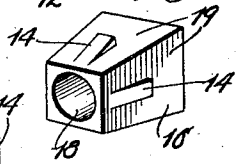


Fig. 7.

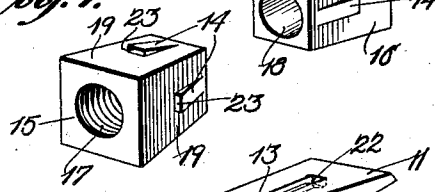
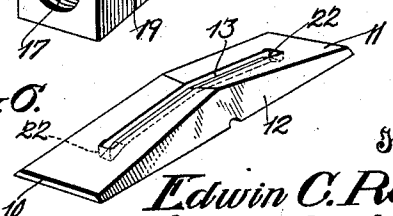


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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EXPANSION-BOLT.

1,349,437. Specification of Letters Patent. Patented Aug. 10, 1920.

Application filed April 24, 1919. Serial No. 292,456.

To all whom it may concern:

Be it known that I, EDWIN C. ROYER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Expansion-Bolts, of which the following is a specification.

One object of my invention is to provide an improved expansion bolt which can be used for any of the numerous purposes in which expansion bolts have been previously employed, and to so construct my improved expansion bolt that it will completely fill the hole in which it is placed and will be of such shape that it will not accidentally become dislodged.

A further object is to make my improved expansion bolt of a simple and durable construction and so that it can be quickly and easily manipulated.

These objects, and other advantageous ends which will be described hereinafter, I attain in the following manner, reference being had to the accompanying drawings in which

Figure 1 is a longitudinal section of my improved invention taken on the line 1—1 of Fig. 2,

Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1,

Fig. 3 is a longitudinal section of my improved invention showing the parts having been moved into their expanded positions by the introduction of an actuating bolt,

Fig. 4 is a transverse section taken on the line 4—4 of Fig. 3, and

Figs. 5, 6, 7 and 8 are perspective views of certain of the elements of my invention.

Referring to the drawings, my invention includes four plates 9 which on their outer surfaces are substantially rectangular and increase in thickness from their opposite ends 10 and 11 toward their entrance, as clearly shown in Figs. 1 and 3. The sides 12 of the plates 9 taper inwardly so that said plates are wedge shape both in transverse and longitudinal section. Each of the plates has a longitudinal groove 13 formed in its inner surface for the reception of lugs 14 on expanded blocks 15 and 16. Each of the blocks 15 and 16 is rectangular in cross section and tapers throughout its length. The block 15 has a screw threaded hole 17 extending axially therethrough and the block 16 has a smooth hole or bore 18 extending longitudinally therethrough. The blocks 15 and 17, made as above described, have substantially flat surfaces 19, as clearly shown in Figs. 7 and 8. The blocks 15 and 16 are adapted to be positioned between the plates 9 and each of the plates 9 has a transversely extending groove 20 in its outer surface. A spring or elastic band 21 fits within the grooves 20 and tends to hold the plates 9, with the blocks 15 and 16, therebetween, together. Each of the plates 9 has recesses 22 formed therein at opposite ends of the internal grooves 13, said recesses serving to form pockets or sockets for the lugs 14 of the respective blocks 15 and 16 when the latter are in their normal position, such for example as shown in Fig. 1. When the parts are in their normal position, the plates 9 will rest firmly upon the flat surfaces 19 of the blocks 16 and the ends of the lugs will abut the ends of the slots 13 and thereby prevent the blocks from accidentally separating from the plates 9.

When it is desired to use my invention, a bolt 24 is extended first through the bore 18 of the block 16 and then screwed into the top hole 17 of the block 15. A sleeve or piece of pipe 25 can be interposed between the head 26 of the bolt 24 and the outer end of the block 16. Upon screwing up upon the bolt 24, the blocks 15 and 16 will be moved together and the plates 9 will be moved apart first against the action of the spring band 21 and this expanding action will not take place until the plates 9 have been forced into engagement with the walls of the hole in which the expansion bolt is placed. In this manner, the expansion bolt can be anchored within a hole in a wall or other structure and the expansion takes place throughout the entire length of the plates 9. Furthermore, by having the plates 9 angular in cross section they will not tend to rotate within a hole but on the contrary will firmly grip the inner wall of the hole thereby securely fastening the plate within the hole.

While I have described my invention as taking a particular form, it will be understood that the various parts of my invention may be changed without departing from the spirit thereof, and hence I do not

limit myself to the precise construction set forth, but consider that I am at liberty to make such changes and alterations as fairly come within the scope of the appended claim.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent:—

An expansion bolt including a plurality of plates angular in cross section arranged annularly around the axis thereof and having inwardly extending tapered edges at the sides intersecting their innermost surfaces, said innermost surfaces extending at slants in opposite directions from its opposite ends, said tapered edges of adjacent plates being arranged substantially parallel with each other; an elastic band for holding said plates together; expansion blocks interposed between said plates; and means for moving said expansion blocks whereby the plates are separated and moved outwardly from the axis against the action of said band, said plates having internal grooves extending along their lengths between said tapered edges, said blocks having lugs adapted to move within said grooves, said grooves following the slants of said innermost surfaces; substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN C. ROYER.

Witnesses:
CHAS. E. POTTS,
AUGUSTUS B. COPPES.