

No. 784,845.

PATENTED MAR. 14, 1905.

F. H. EVANS.
EXPANSION BOLT.
APPLICATION FILED NOV. 11, 1904.

3 SHEETS—SHEET 1.

Fig. 1,

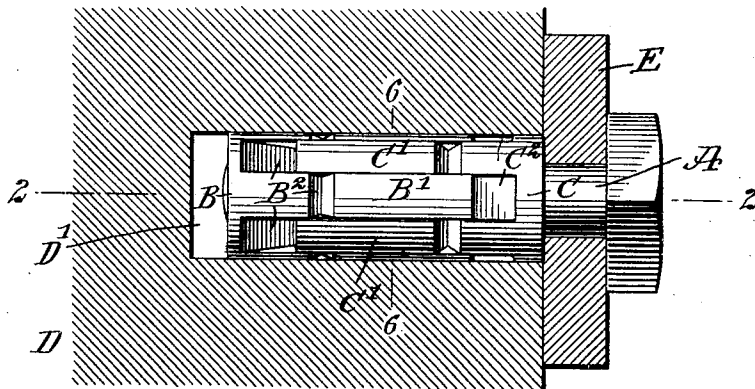


Fig. 2,

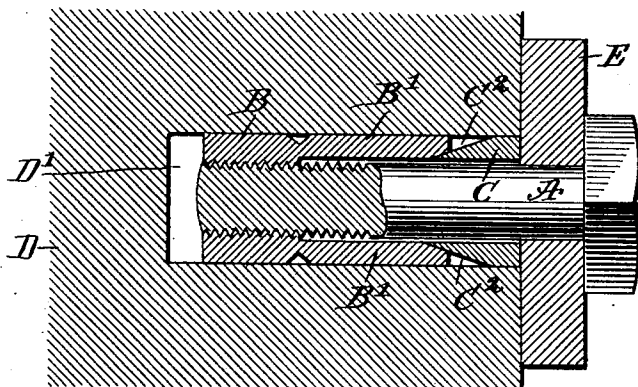
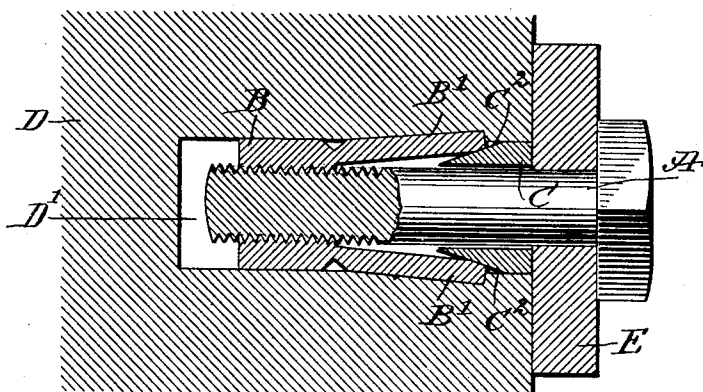


Fig. 3,



WITNESSES:

Edward Thorpe.
Rev. J. H. H. H.

INVENTOR

Frederic H. Evans

BY

Mumford
ATTORNEY

No. 784,845.

PATENTED MAR. 14, 1905.

F. H. EVANS.
EXPANSION BOLT.
APPLICATION FILED NOV. 11, 1904.

3 SHEETS—SHEET 3.

Fig. 7.

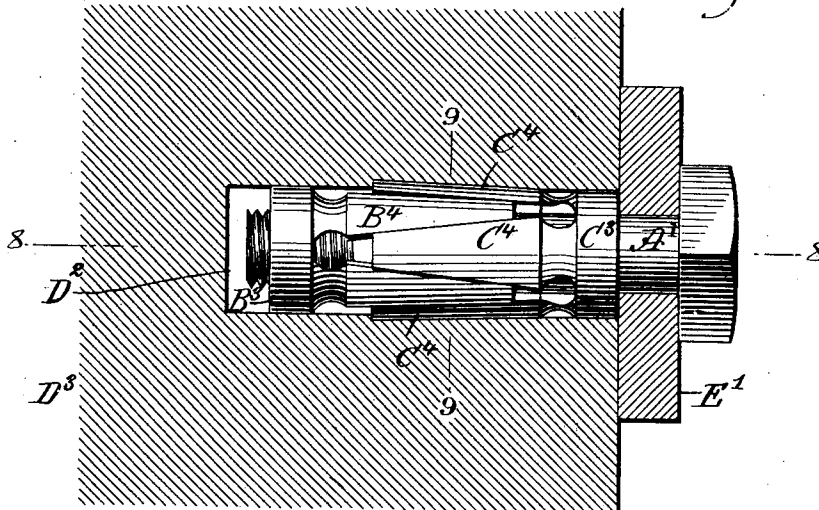


Fig. 8.

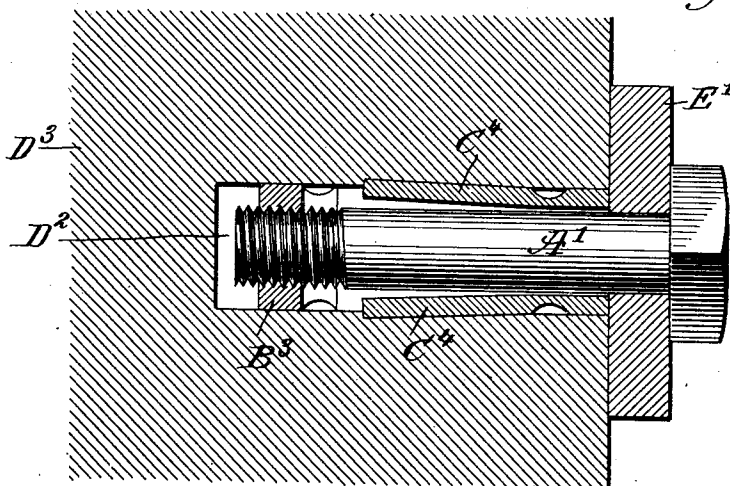
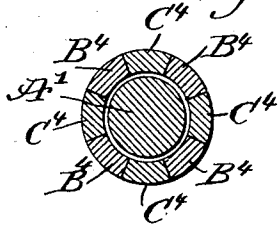


Fig. 9.



WITNESSES:

Edward Thorpe.
Rev. J. Foster.

INVENTOR

Frederic H. Evans

BY

Mumford

ATTORNEYS

UNITED STATES PATENT OFFICE.

FREDERIC H. EVANS, OF NEW YORK, N. Y.

EXPANSION-BOLT.

SPECIFICATION forming part of Letters Patent No. 784,845, dated March 14, 1905.

Application filed November 11, 1904. Serial No. 232,281.

To all whom it may concern:

Be it known that I, FREDERIC H. EVANS, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Expansion-Bolt, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved expansion-bolt composed of comparatively few parts held together when not in use without separate fastening devices and arranged to insure a firm engagement and embedding or gripping of the expanding devices in the wood, stone, or other material on which the expansion-bolt is used.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement in position on the parts to be fastened together, the expanding devices being retracted or non-expanded and the parts to be fastened together being shown in section. Fig. 2 is a longitudinal sectional elevation of the same on the line 2 2 of Fig. 1. Fig. 3 is a like view of the same, showing the expanding devices expanded, the section being on the line 3 3 of Fig. 4. Fig. 4 is a side elevation of the same. Fig. 5 is a sectional side elevation of the same on the line 5 5 of Fig. 4. Fig. 6 is a cross-section of the improvement on the line 6 6 of Fig. 1. Fig. 7 is a side elevation of a modified form of the improvement in position on the parts fastened together, said parts being shown in section. Fig. 8 is a longitudinal sectional elevation of the same on the line 8 8 of Fig. 7, and Fig. 9 is a transverse section of the same on the line 9 9 of Fig. 7.

The expansion-bolt illustrated in Figs. 1 to 4, inclusive, consists of a bolt A and expanding members B and C, made tubular in shape and of which the member B is provided with

an interior screw-thread engaged by the threads of the bolt A, while the other member, C, is loosely held on the bolt between the member B and the head of the bolt A. Each of the members B and C is provided with integral longitudinally-extending jaws or arms B' and C', respectively, arranged alternately in a transverse direction, as plainly indicated in the drawings, the free ends of the jaws B' being adapted to travel up bevels or inclines C² on the member C and the free ends of the jaws or arms C' being adapted to travel up on inclines B², formed on the peripheral face of the member B. When the expansion-bolt is placed in the bore D' of a part D, to which another part, E, is to be attached, and the operator turns the head of the bolt A, then the member B is caused to move toward the other member, C, which latter abuts with its outer face against the part E, as indicated in the drawings. In case the device is used in very deep bores a washer or sleeve is placed on the bolt between the part E and the outermost member C. When the member B travels toward the member C, the jaws or arms B' and C' are expanded outwardly, so as to firmly engage and practically embed themselves at their free ends in the material of the part D, as plainly indicated in Fig. 3, to firmly hold the expansion-bolt in position against pulling out of the bore D'. It is understood that the jaws or arms B' and C' are preferably somewhat reduced in thickness at or near their junction with the tubular members B and C to permit the said jaws or arms B and C to readily bend in an outward direction for engaging the interior surface of the bore D' when moving the threaded member B toward the abutting member C.

From the foregoing it will be seen that each of the members B and C is provided with expanding devices expanded by the other member when turning the bolt for drawing one member toward the other. Thus two sets of gripping devices are moved in engagement with the wall of the bore to insure an exceedingly-firm fastening of the expansion-bolt, especially as the free ends of the expanding jaws or arms are capable of embedding themselves in or gripping the material of the part D.

The free ends of the jaws or arms B' and C' are preferably somewhat beveled to readily slide up on the corresponding inclines C² and B² of the opposite members.

5 In the modified form illustrated in Figs. 7, 8, and 9 the jaws or arms B' and C' of the members B³ and C³, held on the bolt A', are beveled or tapering at their sides, and the opposite sides of adjacent jaws or arms are in
10 contact with each other, as plainly indicated in Fig. 7. Now when the bolt A' is turned and the member B³ advances toward the other member, C³, then the jaws of one member act on the jaws of the other member to force the
15 same outward—that is, both sets of jaws are expanded to engage the wall of the bore D² of the part D³, to which the other part, E', is to be fastened by the expansion-bolt.

From the foregoing it will be seen that when
20 the device is not in use the two members are held on the bolt A without requiring separate fastening devices, and in order to use the expansion-bolt it is only necessary to place it into the bore of one part and turn the bolt to
25 cause the threaded member of the expanding device to move toward the other member in order to force the jaws of both members simultaneously outward in firm engagement with the wall of the bore, as above explained.

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

1. An expansion-bolt, comprising a bolt, and expanding members, movable relatively to one another along the bolt and having laterally-movable jaws, and means arranged to
35 contact with the under side of the jaws and move them outward when the said members approach each other.

2. An expansion-bolt, comprising a bolt,
40 and a pair of members sleeved on the bolt, each member having laterally-movable portions arranged to ride upon the other member when the said members are moved toward each other.

3. An expansion-bolt, comprising a bolt,
45 and an expanding device on said bolt, consisting of tubular members in one of which screws the threaded end of the bolt, the other member being loose on the bolt, the said members having bendable jaws, the jaws of each mem-
50 ber being constructed to ride upon the other

member, whereby the jaws will be bent outward and their ends embedded in the wall of the bore of the part in which the bolt is arranged on drawing the threaded member toward the other member.

4. An expansion-bolt, comprising a bolt, and an expanding device on said bolt and consisting of a threaded member in which screws the bolt and an abutting member loose on the bolt, the said members having integral jaws
55 extending toward each other, the jaws of each member being reduced in thickness at their junction with the members to permit them to be readily bent outward and constructed to ride upon the other member when the threaded
60 member is drawn toward the abutting member on turning the bolt.

5. An expansion-bolt, comprising a bolt, and members capable of expanding and held on the bolt, each member having a plurality of
70 spaced gripping-jaws, and beveled surfaces between the jaws at the bases thereof, one member being screw-threaded to screw on the bolt and the other member being held loosely on the bolt.

6. An expansion-bolt comprising a bolt, and members capable of expanding and held on the said bolt, each member having integral laterally-movable jaws and beveled faces, for the jaws of one member to engage the beveled
80 faces of the other member, one of the members being threaded to screw on the bolt and the other member being held loosely on the bolt between the threaded member and the head of the bolt.

7. An expansion-bolt comprising a bolt, and members capable of expanding and held on the said bolt, each member having integral gripping-jaws and beveled faces, for the jaws of one member to engage the beveled faces of
90 the other member, the said jaws on each member being spaced apart for the reception of the jaws of the other member.

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

FREDERIC H. EVANS.

Witnesses:

THEO. G. HOSTER,
EVERARD BOLTON MARSHALL.