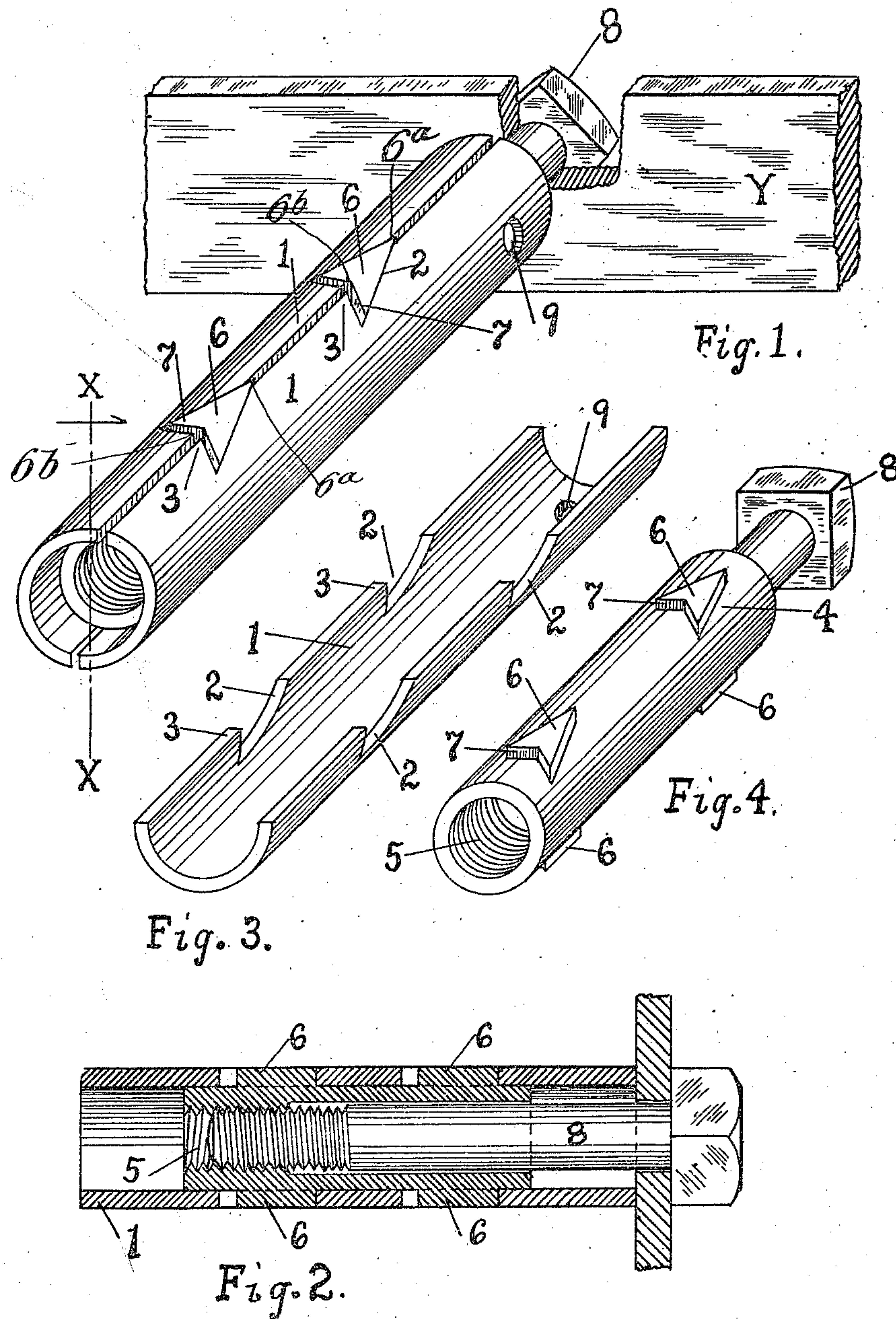


J. H. BAKER.  
-EXPANSION BOLT.  
APPLICATION FILED NOV. 10, 1909.

966,515.

Patented Aug. 9, 1910.



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# UNITED STATES PATENT OFFICE.

JAMES H. BAKER, OF SPRINGFIELD, ILLINOIS.

## EXPANSION-BOLT.

966,515.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed November 10, 1909. Serial No. 527,294.

### *To all whom it may concern:*

Be it known that I, JAMES H. BAKER, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Expansion-Bolts, of which the following is such a full, clear, and exact description as will enable others skilled in the art to make and use my said invention.

The invention relates to securing devices known as expansion bolts such as are used for securing articles or parts of machinery to brick or stone walls, or other structures, in which holes are drilled to receive the securing devices.

An objection to expansion bolts as commonly constructed prior to my invention, is that certain of the parts are in pairs, right and left, therefore the loss of one member of the pair renders the expansion bolt useless. Other objections are; the difficulty of aligning the bolt with the nut; the unequal contact of the casing with the wall of the bore and the consequent rocking of the casing in the bore; and the difficulty of removing the casing in the event that it sticks in the bore before the bolt is completely screwed down.

The general purpose of this invention is to provide means for overcoming the difficulties which I have stated, and other more specific purposes are; to provide a sectional casing having inter-changeable parts so that two parts taken at random from stock will form a complete casing; to provide a sleeve cooperating with the casing and equipped with wedges and a tubular nut; to provide means for uniform expanding of the sections of the casing; to provide means for retracting the sections to permit the withdrawal of the casing from the bore; and to provide means to facilitate the withdrawal of the casing.

The invention comprises the instrumentalities illustrated in the annexed drawing to which reference is hereby made, and hereinafter described and finally recited in the claims.

Similar reference numerals and characters designate like parts in the several views.

Figure 1, is an isometric view of the complete device; Fig. 2, is a vertical axial section on the line X. X. of Fig. 1; Fig. 3, is

an isometric view of one-half of the casing; and Fig. 4, is an isometric view of the sleeve and the bolt in the sleeve.

The casing and the sleeve are preferably of malleable iron, but may be of any other suitable material.

The casing comprises two exactly similar and inter-changeable semi-tubular sections 1, provided with notches 2, and inclined or wedge-shape members 3. The sleeve 4, is tubular and has diametrically opposite integral wedges 6, and a nut 5, integral with the sleeve. When the parts are assembled the sections of the casing are parallel to each other and the inclined walls of the notches 2 are parallel to those sides of the wedges 6, which converge to form the salient angles 6<sup>a</sup> of the wedges, and the walls of the members 3 are parallel to those sides of the wedges which converge to form the re-entering angles 6<sup>b</sup> in the ends of the wedges; and the wedges occupy the spaces formed by the conjuncture of the notches. The wedges 6, have inclined members 7 forming a re-entering angle at one end of each wedge, accommodating the wedge-shape members 3, of the casing sections 1. The bolt 8, is of the usual construction and screws into the nut 5.

Each casing section 1, has near its outer end a hole 9, adapted to receive a hooked wire or other suitable instrument, for withdrawing the casing from the drilled hole, in case of necessity.

In connecting the expansion bolt with the building or other structure the bolt 8, will be inserted through the hole in the article Y, which is to be connected with the structure and screwed in the nut 5, far enough to center the bolt and catch the thread. The sections 1, will then be placed on the sleeve 4, as shown in Fig. 1, and the casing will be inserted in the drilled hole. The bolt will then be turned, and as it advances in the nut will pull the sleeve so that the edges of the salient angle of the wedges 6, will act on the edges of the notches 2, to move the sections 1, apart so that they will contact firmly with the inner wall of the drilled hole. All of the wedges 6, act simultaneously and expand the sections of the casing equally throughout the length of the hole, so that the casing seats firmly and cannot rock in



the hole. If for any purpose it be desired to remove the casing before the bolt 8, is completely screwed down, a blow with a hammer, on the head of the bolt 8, will drive the sleeve 4, inward and cause the edges which form the reëntering angle of the members 7, of the wedges 6, to engage the members 3, of the casing-sections 1, and will draw them toward each other so that the casing may be readily withdrawn from the hole.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. An expansion bolt comprising a sectional casing having on each section members adapted to be engaged by members on a sleeve within said casing; a sleeve adapted to slide within said casing and having members adapted to engage said members of the sections of said casing to retract said casing upon inward sliding of the sleeve, and a bolt connected with said sleeve and adapted to be driven inward to effect inward sliding of the sleeve.

2. A sleeve comprising in an integral structure a tubular part and diametrically opposite wedges having inclined wedge-members forming a reëntering angle in one edge of each wedge in combination with a casing comprising two sections adapted to be engaged by said inclined wedge-members of the wedges on said sleeve to move said sections in parallel positions toward each other upon inward sliding of said sleeve within said casing.

3. A sleeve comprising in an integral structure a tubular part having a nut, and diametrically opposite wedges; in combination with a bolt screwing into the nut of said sleeve; and a casing comprising two sections adapted to be engaged by the wedges on the sleeve, to move the casing-sections in parallel positions away from each other.

4. A casing comprising two sections each having inclined members converging to form an angle when the sections are assembled parallel to each other, in combination with a sleeve having wedges provided with members forming a reëntering angle in one end of each wedge to accommodate the converging members of said sections, and acting to move said sections toward each other upon inward sliding of said sleeve, and means connected with said sleeve to move it outwardly to expand said casing.

5. In an expansion bolt, the combination of a sleeve provided with wedges having salient angles and reëntering angles, a sectional casing having in each section inclined notches and inclined members which when the sections are assembled in conjuncture

form spaces accommodating the wedges of said sleeve, and a bolt connected with said sleeve and adapted to slide it outwardly to expand the casing and acting by impact to retract the casing.

6. An expansion bolt comprising a sectional casing having members adapted to be engaged by members of a sleeve sliding outwardly in the casing, to expand the casing, and having members adapted to be engaged by members of the sleeve to retract the casing upon inward sliding of the sleeve; and a sleeve adapted to slide in the casing and having members adapted to engage the members of said sections to retract the casing upon inward sliding of the sleeve and having members adapted to engage said sections to expand the casing upon outward sliding of the sleeve.

7. An expansion bolt comprising a sectional casing, a sleeve slidable in the casing and equipped with means adapted to expand the casing and also equipped with means adapted to retract the casing, and a bolt connected with said sleeve and adapted to move the sleeve outwardly to expand the casing and acting by impact to move the sleeve inwardly to retract the casing.

8. In an expansion bolt, the combination of a casing comprising two sections adapted to occupy positions parallel to each other in a hole in the structure to which the expansion bolt is to be attached, and each section having a transverse hole adapted to receive an instrument for withdrawing the sections; a slidable sleeve adapted to retract the casing-sections, and a bolt screwing into said sleeve and adapted to be unscrewed to withdraw the bolt from the casing to permit the insertion within the casing of an instrument engaging in the transverse holes in the sections thereof to withdraw the retracted sections.

9. A sleeve comprising a tubular part and diametrically opposite wedges each having a salient angle and a reëntering angle, in combination with a casing comprising sections adapted to be engaged by the edges forming the salient angles of the wedges to move said sections in parallel positions away from each other and adapted to be engaged by the members forming the reëntering angles of said wedges to move said sections in parallel positions toward each other, and means for sliding said sleeve to expand said sections.

10. The combination of a sleeve comprising an internally screw-threaded tubular part having diametrically opposite wedges with inclined members forming a reëntering angle at one end of each wedge, a screw fitting within the tubular part of said sleeve and adapted to move the sleeve inwardly by

the impact of a hammer on said bolt, and a casing comprising sections having members adapted to be engaged by the edges of the members which form the reëntering angle  
5 of the wedges to move said sections in parallel positions toward each other.

In witness whereof I have hereunto signed

my name at Springfield, Illinois, this 5th day of November 1909.

JAMES H. BAKER.

Witnesses:

PEARL COLEMAN,  
JOSEPH L. KAVANAUGH.