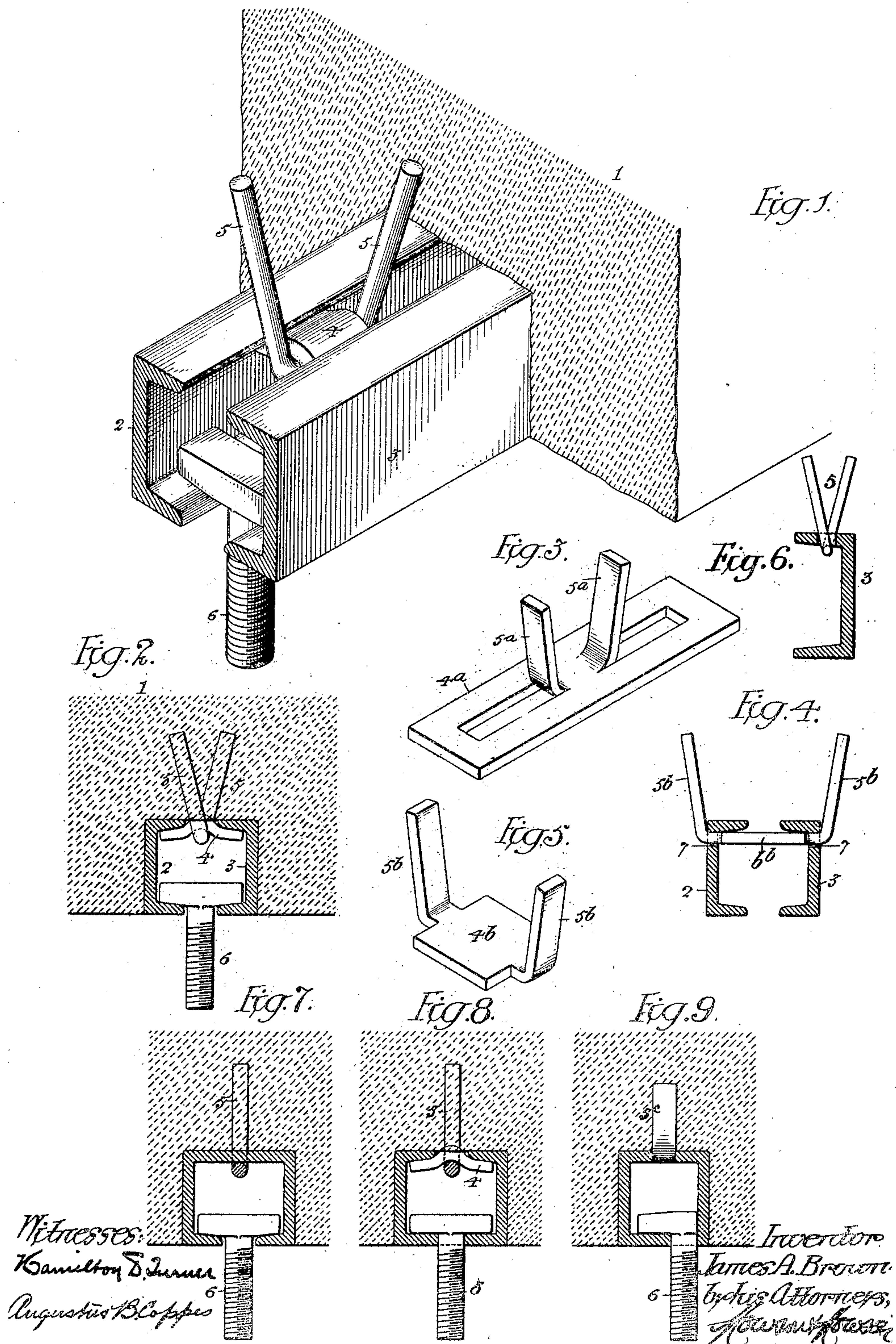


No. 827,613.

PATENTED JULY 31, 1906.

J. A. BROWN.  
ANCHORAGE FOR CONCRETE STRUCTURES.  
APPLICATION FILED JAN. 16, 1905.





# UNITED STATES PATENT OFFICE.

JAMES A. BROWN, OF PHILADELPHIA, PENNSYLVANIA.

## ANCHORAGE FOR CONCRETE STRUCTURES.

No. 827,613.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed January 16, 1906. Serial No. 241,284.

*To all whom it may concern:*

Be it known that I, JAMES A. BROWN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented Improvements in Anchorages for Concrete Structures, of which the following is a specification.

The object of my invention is to provide a concrete structure with an anchoring device whereby shaft-hangers, brackets, pedestals, or other devices may be readily and securely attached to that portion of a building of which the concrete structure forms part.

This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view representing part of a concrete beam or girder having an anchoring device combined therewith in accordance with my invention. Fig. 2 is a transverse section of the same. Figs. 3, 4, and 5 are views illustrating different forms of stirrup forming part of my invention and intended for use in connection with the anchoring device which I have devised, and Figs. 6, 7, 8, and 9 are transverse sections of modified forms of said anchoring device.

In Fig. 1 of the drawings 1 represents part of a concrete beam or girder, or it may form part of a concrete ceiling, wall, floor, or other structure to which machinery has to be attached. In said concrete structure are embedded a pair of channel-bars 2 and 3, disposed so that their flanges face each other, thereby forming a tunnel slotted centrally throughout its extent both at top and bottom. In order to securely attach this structure to the mass of concrete, stirrups are disposed at intervals throughout the length of the same, these stirrups engaging the bars 2 and 3 and having portions projecting into the mass of concrete beyond the same. As shown in Fig. 1, each stirrup consists of a bar 4, bridging the slot between the upper flanges of the channel-bars, the central portion of this bar being bent upwardly into the slot, so as to form a seat for a yoke 5, the opposite legs of which project upwardly into the mass of concrete constituting the girder 1. The anchoring device thus constructed and secured to the concrete structure presents at the face of the latter, whether it is be a ceiling, wall, floor, or other part of a building, a longitudinal slot with an enlarged chamber behind the same, so that the elongated head of a bolt 6 can be passed through the slot and then

turned to a position transverse thereto, so as to bear upon the lower flanges of the channel-bars, to which it is therefore confined by any outward strain exerted in the direction of the axis of the bolt.

Instead of using a stirrup composed of a cross-bar and independent yoke, as shown in Fig. 1, I may employ a cross-bar such as shown at 4<sup>a</sup> in Fig. 3, said bar being of any desired length and being cut so as to form fingers 5<sup>a</sup>, which can be bent up from the bar, as shown, so as to serve the same purpose as the upwardly-extending legs of the yoke 5, or instead of extending the legs of the stirrup through the upper slot in the anchoring device slots may be formed in the webs of the channel-bars, as shown, for instance, at 7 in Fig. 4, and fingers 5<sup>b</sup>, projecting from the opposite sides of a bar or plate 4<sup>b</sup>, may be passed through these slots 7 and bent up outside of the same, or slots or perforations may be formed in the flanges of the bars for the reception of the upturned fingers 5<sup>b</sup> or for the reception of the legs of yokes 5, as shown in Fig. 6.

I prefer for convenience and economy to form the anchoring structure of a pair of channel-bars disposed so that their flanges face one another; but a slotted tube may, if desired, be used in place of said channel-bars, such tube having, by preference, a rectangular cross-section, as shown in Fig. 7. In such case the legs of the stirrup-yoke 5 may be passed through perforations in the back of the tube, as shown in Fig. 7, or a reverse construction may be adopted—that is to say, the tube may have its slot at the rear and may be combined with a stirrup of the character shown in Fig. 3 or Fig. 1, and the anchoring-bolt may be passed through a perforation in the closed front of the tube; as shown, for instance, in Fig. 8, this construction having the advantage over a bolt embedded directly in the concrete that it distributes the strain upon the bolt throughout a large area. It is preferable, however, to pass the anchor-bolt through a slot in the anchoring device, as such construction permits of adjustment of the bolt longitudinally on the anchoring device to any desired position. When a tube is employed in place of a pair of channel-bars, the slot may be at one side of the tube, if desired, as shown in Fig. 9, the anchoring-bolt in this case having a projecting head on one side only, and, if desired,



stirrups may be struck up directly from the back of the tube, as shown, for instance, at 5° in Fig. 9.

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

1. The combination of a concrete structure with an anchoring device embedded therein and consisting of a channel-bar structure with flanged and slotted front portion for engaging a headed bolt, and stirrups engaging the rear portion of said structure and presenting diverging fingers which project into the concrete, substantially as specified.

2. The combination of a concrete structure with an anchoring device embedded therein and consisting of a pair of channel-bars disposed with their flanges facing each other but separated so as to provide slots between said flanges, and stirrups engaging with the inner flanges, and having portions projecting through the slot between said flanges and into the mass of concrete beyond the same, substantially as specified.

3. The combination of a concrete structure with an anchoring device embedded

therein and having stirrups each consisting of a bar or plate having a bearing upon said anchoring structure and provided with integral fingers bent up therefrom so as to project into the mass of concrete beyond the anchoring device, substantially as specified.

4. The combination of a mass of concrete with an anchoring device embedded therein and consisting of a pair of channel-bars disposed with their flanges facing each other but separated so as to provide a slot between said flanges, and a stirrup consisting of a bar or plate engaging the inner flanges and having fingers bent up therefrom and projecting through the slot between said flanges and into the mass of concrete beyond the same, substantially as specified.

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

JAMES A. BROWN.

Witnesses:

WALTER CHISM,  
JOS. H. KLEIN.