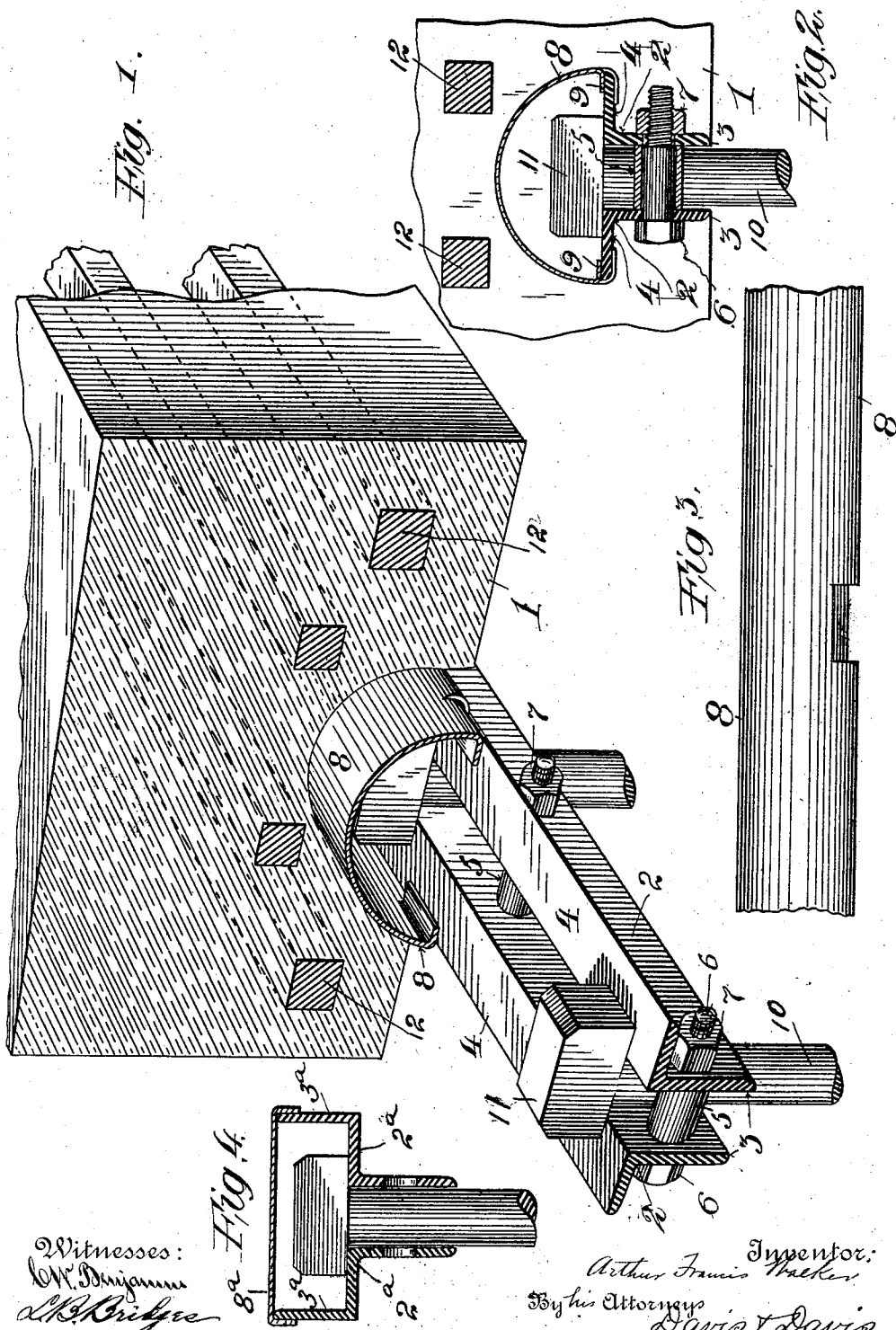


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PATENTED DEC. 24, 1907.

A. F. WALKER.
CONCRETE STRUCTURE AND HANGER SUPPORT.
APPLICATION FILED MAR. 27, 1907.



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UNITED STATES PATENT OFFICE.

ARTHUR FRANCIS WALKER, OF ATLANTA, GEORGIA.

CONCRETE STRUCTURE AND HANGER-SUPPORT.

No. 874,461.

Specification of Letters Patent.

Patented Dec. 24, 1907.

Application filed March 27, 1907. Serial No. 364,886.

To all whom it may concern:

Be it known that I, ARTHUR FRANCIS WALKER, a citizen of the United States, residing at Atlanta, county of Fulton, and State of Georgia, have invented certain new and useful Improvements in Concrete Structures and Hanger-Supports, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a perspective sectional view of a portion of a concrete beam with the hanger support secured therein; Fig. 2 a transverse vertical sectional view thereof; Fig. 3 a side elevation of a portion of the cap of the hanger support; Fig. 4 a vertical sectional view showing a slightly different form of the parts constituting the hanger support.

The invention relates particularly to providing, in a concrete structure, instrumentalities by which hangers may be readily secured to, or detached from, said structure.

One of the main objects of the invention is to provide a structure of this class which will be self-anchoring in the concrete, whereby the use of separate anchoring devices or instrumentalities is avoided. Anchoring devices are objectionable in that it is difficult to keep them in proper position during the process of molding the concrete structure, and, furthermore, it is always a matter of uncertainty as to whether or not the anchoring devices are properly embedded in the concrete.

Another object of the invention is to provide means for preventing the concrete entering the space designed to receive the hanger-attaching means. This is desirable in that the concrete structure may be more quickly molded and less care need be exercised in forming the concrete around the hanger support.

A further object of the invention is to strongly reinforce the concrete structure around the hanger support.

Other advantages of the invention will appear hereinafter.

Referring by reference numerals to the various parts illustrated in the drawings, 1 designates the concrete structure, which is illustrated as a beam. It will, of course, be understood, however, that it may be in any form. Embedded in the mass of concrete at the lower edge thereof are two parallel angle irons 2. These angle irons are arranged with one of their members, 3, vertical, the lower edge of said members being flush with the

lower edge of the concrete structure. These vertical members 3 of the angle irons are arranged a suitable distance from each other and are parallel. The other members, 4, of these angle irons extend horizontally outward from the upper edge of the vertical members 3 and are embedded in the concrete structure. These outwardly extending horizontal members of the angle irons form anchoring means by which the said irons are strongly supported in the concrete.

To separate the vertical members of the angle irons, and to hold them in a fixed position with respect to each other, tubular separators 5 are placed horizontally between said members and are secured rigidly in place by means of horizontal bolts 6, which pass through said separators and registering apertures in the members 3. These bolts are secured in place by means of nuts 7. The bolts not only secure the separators in place, but also serve to prevent any spreading or separation of the members 3 under the strains brought thereon through the hangers.

To prevent the concrete entering the space designed to receive the hanger-supporting means, I secure an arched cap piece 8 to the outer free edges of the horizontal members 4 of the angle irons. This arch extends upwardly over the angle bars and spans the space between the outer edges thereof forming a complete closure which effectually prevents concrete entering the space below the arch during the process of molding the concrete structure. This arch may be secured to the edges of the angle irons in any suitable manner. As shown in the drawings the edges of this arch are bent inward to adapt them to fit under the angle iron members 4; and at suitable intervals said arch piece is provided with inward extending integral clips 9 which engage the upper edge of the angle iron members 4 to securely hold said arch piece in position. It will, of course, be understood, however, that this arch piece may be secured to the angle iron in any suitable manner.

The hangers may be of any suitable form and may be locked to the angle bars in any suitable manner. I prefer, however, to use hanger bolts 10 provided at one end with T-heads 11 of such a width that they may be passed upward through the slots between the two vertical members of the angle irons and of such length that when turned transversely of said slot their heads will firmly

engage the upper surfaces of the horizontal members of the angle irons. The arched cap piece 8 forms a space or chamber to receive these heads.

- 5 If desired the concrete structure adjacent to the hanger supports may be strengthened by longitudinally extending metallic bars 12.

In Fig. 4 the angle irons 2^a are of Z-shape, the outer vertical members 3^a extending upward from the horizontal members and serving to form, together with the cap piece 8^a, the chamber to receive the heads of the hanger bolts.

- 15 It will, of course, be understood, that the vertical members of the angle irons will be bolted together at suitable intervals, and that as many hanger supports may be used as are desired.

From the foregoing it will be seen that I provide a very simple means for forming a hanger support in a concrete structure and in which the device is self-anchoring. It will also be noted that the cap piece will effectually prevent the concrete entering the space designed to receive the hanger supports.

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

1. The combination of a mass of concrete, 30 a pair of parallel angle bars embedded therein and arranged along the lower edge thereof, one member of each angle iron being vertical and the other member being horizontal, the vertical members of the angle irons being parallel and separated a suitable distance from each other and the horizontal members extending outwardly from the upper edge of the vertical members and over a mass of concrete, and means for spacing the vertical 40 members from each other.

2. The combination of a mass of concrete, a pair of parallel angle bars embedded therein and arranged along the lower edge thereof, one member of each angle iron being vertical 45 and the other member being horizontal, the vertical members of the angle irons being parallel and separated a suitable distance from each other and the horizontal members extending outwardly from the upper edge of the vertical members over a mass of concrete, means for spacing the vertical members from each other, and bolts passing horizontally through the vertical members to hold said members against the spacing means. 50

3. The combination of a mass of concrete, a pair of parallel angle bars embedded therein and arranged along the lower edge thereof, one member of each angle iron being vertical 55 and the other member being horizontal, the vertical members of the angle irons being parallel and separated a suitable distance from each other and the horizontal members extending outward from the upper edge of the vertical members, tubular spacing devices 60 between the vertical members, and

bolts passing through the vertical members and through said spacing devices to hold said members against the spacing devices.

4. The combination of a mass of concrete, a pair of parallel angle bars embedded therein and arranged along the lower edge thereof, one member of each angle iron being vertical 70 and the other member being horizontal, the vertical members of the angle irons being parallel and separated a suitable distance from each other and the horizontal members extending outward from the upper edges of the vertical members, means for spacing the vertical members from each other, and a cap piece secured to the horizontal members. 80

5. The combination of a mass of concrete, of a pair of parallel angle bars embedded therein and arranged along the lower edge thereof, one member of each angle iron being vertical and the other member being horizontal, 85 the vertical members of the angle irons being parallel and separated a suitable distance from each other and the horizontal members extending outward from the upper edges of the vertical members, means for spacing the vertical members from each other, and means to prevent the concrete entering the space between the angle irons. 90

6. The combination of a mass of concrete, a pair of parallel angle bars arranged along 95 the lower edge thereof, one member of each angle iron being vertical and the other member being horizontal, the vertical members of the angle irons being parallel and separated a suitable distance from each other and the horizontal members extending outward from the upper edges of the vertical members, means for spacing the vertical members from each other, and an arched cap piece connected to the horizontal members of the angle 105 irons.

7. The combination of a mass of concrete, a pair of parallel angle irons arranged along the lower edge thereof, one member of each angle iron being vertical and the other member horizontal, the vertical members of the angle irons being parallel and separated a suitable distance from each other and the horizontal members extending outward from the upper edge of the vertical members, 110 means for spacing the vertical members from each other, and an arched cap-piece provided with clamps at its edges adapted to engage the free edges of the horizontal members of the angle irons. 120

8. The combination of a mass of concrete, a metallic structure embedded therein and formed with two vertical parallel bars spaced a suitable distance from each other, two horizontal bars or members extending outwardly 125 from the upper edges of the vertical bars and over a mass of concrete, and a cap over the upper horizontal bars to form a chamber for the heads of the hanger bolts, the lower edges of the vertical bars being substantially 130

flush with the lower edge of the mass of concrete.

9. The combination of a mass of concrete, a metallic structure embedded therein and formed with two vertical parallel bars spaced a suitable distance from each other, two horizontal bars or members extending outwardly from the upper edges of the vertical bars and over a mass of concrete, a cap over the upper horizontal bars to form a chamber for the heads of the hanger bolts, the lower edges of the vertical bars being substantially flush with the lower edge of the mass of concrete, and longitudinally extending strengthening rods embedded in the mass of concrete substantially parallel with the metallic structure embedded therein.

10. The combination of a mass of concrete, a pair of parallel angle irons embedded therein and arranged near the lower edge thereof, one member of each angle iron being vertical and the other member being horizontal, the vertical members of the angle irons being parallel and separated a suitable distance from each other, and the horizontal members extending outwardly from the upper edge of the vertical members, a portion of the mass of concrete below said horizontal members and supporting them.

11. The combination of a mass of concrete, a pair of parallel angle irons embedded

therein and arranged near the lower edge thereof, one member of each angle iron being vertical and the other member being horizontal, the vertical members of the angle irons being parallel and separated a suitable distance from each other, and the horizontal members extending outwardly from the upper edge of the vertical members, a portion of the mass of concrete being below said horizontal members and supporting them, and a cap piece supported over said horizontal members and forming a chamber in the concrete to receive the heads of the hanger bolts.

12. The combination of a mass of concrete or other self-hardening plastic material with a holder or supporter made of metal and consisting of two vertical members spaced a suitable distance apart, horizontal members extending outwardly from the upper edges of the vertical members and over a portion of the mass of concrete, and a cap portion extending over the horizontal members and forming a space for the heads of the hanger bolts.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 25 day of March 1907.

ARTHUR FRANCIS WALKER.

Witnesses:

GEO. B. HINNAM,

JACK HEAD.