

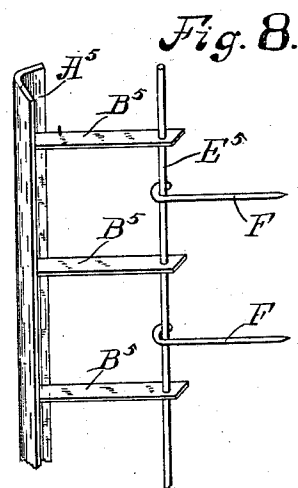
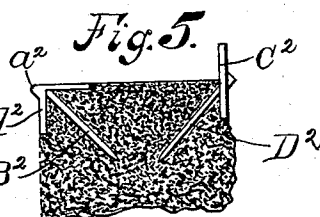
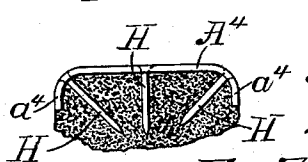
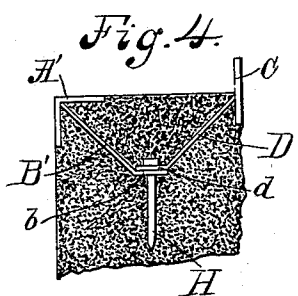
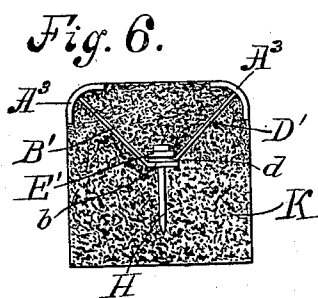
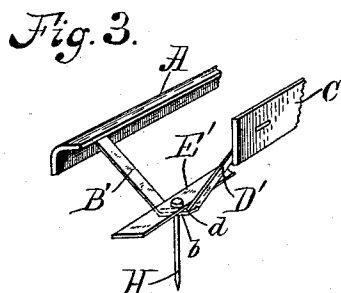
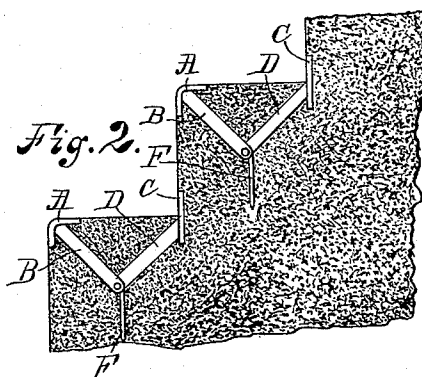
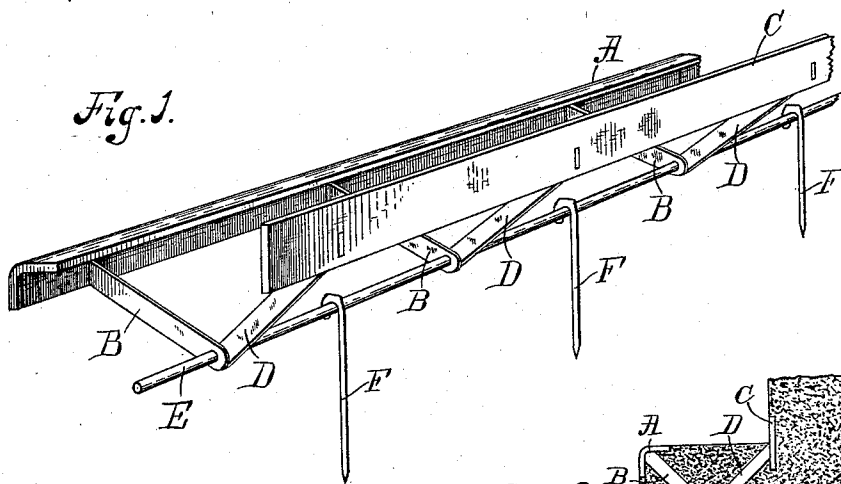
(No Model.)

H. H. WAINWRIGHT.

MEANS FOR SECURING PROTECTING PLATES TO CONCRETE.

No. 578,668.

Patented Mar. 9, 1897.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY H. WAINWRIGHT, OF WASHINGTON, DISTRICT OF COLUMBIA.

MEANS FOR SECURING PROTECTING-PLATES TO CONCRETE.

SPECIFICATION forming part of Letters Patent No. 578,668, dated March 9, 1897.

Application filed June 9, 1896. Serial No. 594,837. (No model.)

To all whom it may concern.

Be it known that I, HENRY H. WAINWRIGHT, a citizen of the United States, residing at Washington, in the District of Columbia, have
5 invented certain new and useful Improvements in Means for Securing Protecting-Plates to Concrete; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved mode of connecting a bar or plate or plates placed on the corners or exposed surfaces of steps,
15 coping, or other concrete formations in such manner as to do away with various devices in the shape of anchor-plates, screw-bolts, clenches and other means heretofore resorted to and thought to be necessary to hold such
20 protecting-bar in place.

I have discovered that when iron or analogous metal is embedded in a mass of concrete oxidation of the surface takes place, but that when the concrete hardens and becomes dry
25 no more air or moisture is in contact with the metal, oxidation ceases, and the result is an almost perfect union between the metal and concrete in the nature of a "rust-joint" which is sufficiently strong to give any necessary
30 hold, as between the embedded bolt, rod, or bar, to enable it to act as a perfect stay to the protecting bar or plate with which it is connected and prevent its being knocked or jarred out of position. This result is effected
35 by several devices, as shown by the accompanying drawings, in which—

Figure 1 represents a perspective view of the protecting-plates and the methods of staying the same adapted for use in concrete steps, coping, or for like purposes. Fig. 2
40 represents a transverse section through a series of concrete steps, showing the protecting-plates in position. Fig. 3 represents a perspective view of a modified form of the apparatus in which a flat bar is connected to the bent-over ends of the stay-bolts and the bolt is driven through into the mass of concrete. Fig. 4 represents a transverse section
45 of a step or coping in which the longitudinal bar is omitted. Fig. 5 represents a modification in which the protecting-plates are secured to the mass of concrete by bolts driven

into the latter and without the interposition of stay-plates or the like. Fig. 6 represents a modified form of coping in which the upper
5 and outer edges are protected by curved plates held in place by stay-plates secured to a flat transverse bar and bolted in the concrete. Fig. 7 represents a modified form of protecting-plate for use with coping which is
60 simply bolted to the concrete; and Fig. 8 represents a perspective view of the protecting-plate and parts connected thereto for protecting the corners of concrete buildings, the edges of window-openings made of concrete,
65 and for like purposes.

Referring more particularly to Figs. 1 and 2, A represents a curved protecting-plate provided with stay-plates B, which are attached thereto in any convenient way.

C represents a flat protecting-plate adapted to fit between the rise and step and to protect the concrete, which plate C is provided with stay-plates D, secured thereto in any convenient way and connected to the stay-plates B by means of the rod E, which runs
75 longitudinally through the step, as shown most clearly in Fig. 2. This rod E may be further secured in the concrete by hooked bolts F, but this will ordinarily be unnecessary.

In the form of device shown in Fig. 3 the stay-plates B' and D' are bent over at their ends, as at *b* and *d*, beneath the flat bar E', which runs longitudinally through the step,
85 and the said bar E and the plates B' and D' are held together and bolted to the concrete by means of the bolts H. By having these plates B' and D' and the bar E' flat, with the flat side uppermost, they are made to hold
90 more rigidly against vertical strains.

Referring now to Fig. 4, the plate A' is made angular, as shown, and the stay-plates B' and D' are similar to those shown in Fig. 3, but the longitudinal bar E' shown in Fig. 3 is omitted, and the two plates B' and D'
95 are secured together and bolted to the concrete by means of the bolt H.

In the form of device shown in Fig. 5 the protecting-plate A² is curved upward somewhat, as at *a*², and is connected to the concrete forming the step by the bolts B², while the plate C² is secured by means of the bolts D² to the back of the step at the rise of the
100

same. In this form of device these bolts hold the said protecting-plates in position and form the rust-joint, already described, with the concrete and hold these plates in position with sufficient firmness to prevent the same from becoming dislodged.

Referring now to Fig. 6, the coping K has at its two upper angles protecting-plates A³, which are preferably curved, as shown, but they may be made angular, similar to the plate A', (shown in Fig. 4,) if desired. These plates A³ are held in position by the stay-plates B' and D' and the bar E and bolt H, as described with reference to Fig. 3, but the said bar may be omitted, as shown in Fig. 4, if desired, or the said plates A³ may be bolted directly to the coping, as shown at A² in Fig. 5.

In the form of device shown in Fig. 7 the protecting-plate A extends over the entire top of the coping and is curved downward at either end, as shown at a⁴. This protecting-plate is held in position by means of the bolts H, driven into the concrete. The plates are applied and the various bolts are driven in while the concrete is still in the plastic state or before it has become set.

In the form of device shown in Fig. 8 the plate A⁵ is used to protect the angle of a building or window-opening or for analogous purposes and is provided with horizontal stay-plates B⁵, and as a further means of securing the plate A⁵ firmly in place a vertical bar E⁵ may be run through the ends of the plates B⁵ and held in place by the hooked bolts F, but this vertical bar E⁵ and these hooked bolts F may be omitted, if desired, as the rust-joint between the plates B⁵ and the concrete will under normal conditions be sufficient to hold the plate A⁵ firmly in place.

In operating the invention the concrete, which is made in the usual manner of sand, gravel, broken stone, and cement, is filled in the molds and tamped, so as to compress or compact it, the iron or metal parts being held in position by temporary fastenings. When the molds are nearly filled, the facing of finer material is put in and properly smoothed on the surface with a trowel. The mass is allowed to set and harden, and on removal of the molds the protecting bars or plates will be found to be held tightly in position, and when the mass is entirely dry they will be found to be immovable. The same method can be adapted to corners of buildings, ends of walls, window-openings in concrete walls, or any form in which a mass of concrete would be subject to injury or wear.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In means for protecting the edges or angles of concrete masses, the combination with a plate adapted to fit over and conform to the edge or angle to be protected; of a plurality of stays attached to said protecting-plate; and bolts passing through said stays and adapted to be inserted into the partially-formed concrete mass while in a plastic state; the said stays and bolts being of a material that will be corroded by the concrete and will thus form a rust-joint therewith when completed, whereby the said protective plate is held in position, substantially as described.

2. In an apparatus for protecting the edges of concrete masses, the combination with a plurality of protecting-plates, of stay-plates attached to said protecting-plates and projecting into the concrete material, and bolts passing through pairs of said stay-plates connecting them together, substantially as described.

3. In an apparatus for protecting the edges or angles of concrete masses, the combination with a protecting-plate, of stay-plates attached to said protecting-plates and projecting into the concrete material; a longitudinal bar connecting said stay-plates, and bolts connected to said longitudinal bar and extending into the concrete mass, said bolts being composed of a material that will become corroded by said concrete and thus form a rust-joint therewith whereby the said protective plate is held in position thereon, substantially as described.

4. In an apparatus for protecting the edges or angles of concrete masses, the combination with a plurality of protecting-plates, of stay-plates attached to said protecting-plates, and projecting into the concrete material; a longitudinal bar connecting pairs of said stay-plates, and bolts connected to said longitudinal bar and extending into said concrete mass; the said stay-plates and said bolts being of a material which will be corroded by the concrete and will form a rust-joint therewith, substantially as described.

5. In an apparatus for protecting the edges of concrete masses, the combination with a plurality of protecting-plates, of stay-plates projecting into the concrete material from said protecting-plates and made of material that will be corroded by said concrete, and bolts passing through pairs of said stay-plates connecting them together, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY H. WAINWRIGHT.

Witnesses:

F. C. YEATES,
HARRY Y. DAVIS.