Nov. 7, 1933. S. C. AWBREY 1,933,536

CONCRETE INSERT

Filed Sept. 18, 1930

Fig. 1

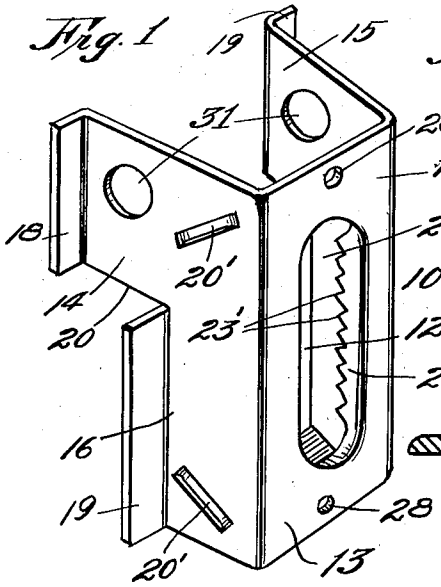


Fig. 2

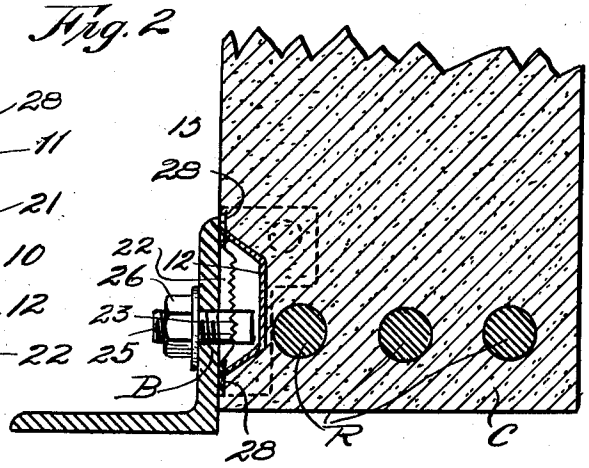


Fig. 3

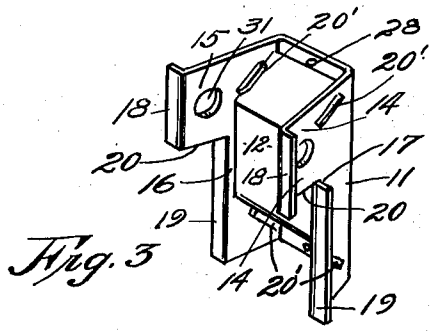


Fig. 4

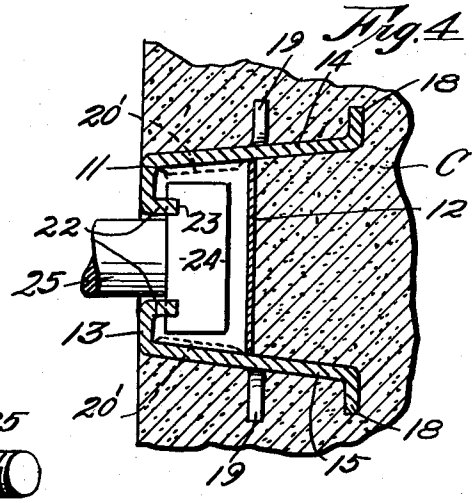


Fig. 5

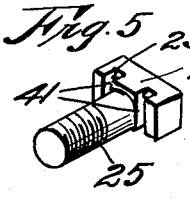


Fig. 6

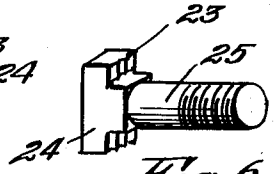


Fig. 7

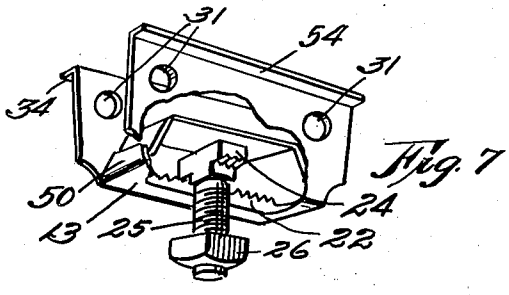
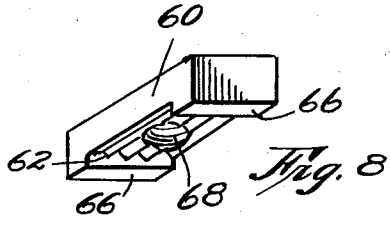


Fig. 8



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Patented Nov. 7, 1933 1,933,536

UNITED STATES PATENT OFFICE

1,933,536

CONCRETE INSERT

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Application September 18, 1930, Serial No. 482,767, and in Canada May 16, 1930

6 Claims. (Cl. 72—105)

This invention relates to inserts adapted to be embedded in a concrete structure and having an opening in the outer face thereof for the reception of a bolt by means of which, members may be securely attached in position to the concrete structure.

One of the objects of the present invention is the provision of an insert adapted to be embedded in a concrete structure comprising a box having an elongated slot in the outer surface and an irregular surface on its inner face of said box adjacent each of the opposite elongated sides of said slot and a bolt having a head provided with an irregular surface adapted to be inserted in said slot to engage said irregular surface in said box to prevent relative movement of said bolt and insert when they are in the operative position.

It has been found in practice that the rectangular shaped insert is not suitable for use where the reenforcing rods are to be positioned adjacent the lower edge of the concrete wall and in horizontal alignment with the insert. To overcome this objection in the present invention the concrete insert is provided with inwardly projecting side members having the opposite end portions thereof extending different distances from the main body of the insert to permit the positioning of reenforcing rods adjacent the outer surface of the wall.

Another object of this invention is the provision of an insert adapted to receive a bolt for supporting any construction member, said bolt being mounted in said insert for longitudinal adjustment and means integral with said bolt and insert whereby they are maintained in fixed relative positions.

A further object of the present invention is the provision of an insert having means whereby it is securely anchored in the concrete structure.

An even further object of the invention is to provide an insert characterized by a quickly attachable back plate and a series of offset bearing feet disposed in spaced apart parallel planes, said offset and feet precluding displacement in any direction.

Other objects of this invention are simplicity and cheapness of construction, ease of operation and adaptability to various building construction.

With these general objects in view, as well as minor objects which will appear during the course of the detailed specification, reference will now be had to the accompanying drawing, in which,

Figure 1 is a perspective view of an insert embodying this invention.

Fig. 2 is a sectional view of the insert embedded in a concrete structure and to which is attached an angleiron for supporting the facing of the building.

Fig. 3 is a reduced perspective view of the rear side of the insert.

Fig. 4 is an enlarged sectional view of the insert positioned in the concrete.

Fig. 5 is a perspective view of a modified form of the bolt to be used in this insert.

Fig. 6 is a perspective view of the bolt formed to properly function with the insert.

Fig. 7 is a perspective view of a modified form of the insert partly broken away to more clearly disclose the construction.

Fig. 8 is an especially constructed nut which may be operatively associated with the insert.

Like reference characters designate similar parts throughout the several views and the numeral 10 designates a box formed by a body member 11 and a U-shaped member 12. Body member 11 comprises a flat outer face 13, extended side members 14 and 15 and shorter side members 16 and 17 which extend inwardly to form inwardly projecting anchoring members having flanged edges 18 and 19 respectively which more securely anchor the insert in the concrete structure. Step 20 formed between members 14 and 16 adds to the holding power of the insert in the concrete by presenting a face at right angles to flanges 18 and 19.

It is to be noted that flanges 18 and 19 are disposed in spaced apart, parallel planes. The lower flange bracing against any fulcrum pressure set up when the insert is in place.

The U-shaped member 12 is formed to snugly fit between side members 16 and 17 beneath the pressed in converging lugs 20' to prevent any of the soft concrete mixture from entering the box during the process of construction. To allow member 12 to be positioned, the members 18 are flared slightly outwardly in converging relation as shown in Fig. 4.

Formed in the outer face of member 11 is an elongated slot 21, the edge of which is preferably spaced apart from the edges of face 13 and from the side walls of the box. Inturned serrated flanges 22 are formed adjacent the longitudinal edges of slot 21, to engage the serrations 23 formed on the inner face of the elongated head 24 of bolt 25 to prevent relative movement of said insert and bolt when the nut 26 is screwed to position as shown in Fig. 2. The elongated rectangular head 24 is of a width slightly narrower than slot 21 so that it can be inserted into the box 10 through the slot 21 then turned so

that the serrations 23 will register with the serrations 23' in flanges 22.

While regular serrations for preventing relative movement of the parts have been shown, it is evident that any coacting irregular surfaces will serve the same purpose. Also the inturned flanges may be dispensed with. Flanges 22 are of sufficient length to permit adjustment of the bolts to allow proper aligning of structural members to be secured thereby. Holes 28, formed through outer face 13, are adapted to receive nails, not shown, for securing the insert to inside of the concrete forms prior to the pouring of the concrete. These holes 28 are positioned between the ends of U-shaped member 12 and the ends of the insert as shown in Fig. 2.

The form of the bolt as shown in Fig. 4 provides for a bolt having an elongated head 24, having a pair of parallel slots 41, which in turn are provided with serrations 23 at their base. These serrations serve to engage the serrated flanges 22 to prevent relative movement of the parts.

It is apparent that the insert as described is suitable for use on the ceiling, floor or side wall of a concrete structure to support parts thereon. In Fig. 2 which shows a typical installation when the insert is used on a vertical wall, the same is embedded in the reenforced concrete structure C with its outer face flush with the concrete face. An angle iron A which serves as a ledge to support the facing of the structure, is secured to the structure by passing the bolt 25 through a hole B formed therein. It will be noted by referring to Fig. 2 that the concrete structure is provided with reenforcing rods R which are positioned in the usual manner so that the outer rod fits into the notch formed by the offsetting of the side members of the insert.

Referring to Fig. 7, which shows another form of the insert, it will be noted that the U-shaped member is held in place by members 50 which angle toward each other at each end of the insert to overlie the U-shaped member 12. The sides 52 are continuous and the flange 54 formed along the projected edge of each side 52 is continuous.

It may be desirable in some instances to utilize holes 31 formed in opposed relation through each side of the insert as shown in both forms. If so, a rod or the like not here shown may be passed therethrough, allowing the same to project outwardly on each side so that the same will be embedded in the concrete to add an even more secure means for holding the insert in place.

Besides forming a more rigid structure, the offset type of insert provides a clearance for the elements of the structure with which it is to be used.

In the event the insert is to be used as a hanger and embedded in the ceiling, the form of nut 60 shown in Fig. 8 may be used to rest in the box-like structure and engage the serrations 23' with similar serrations 62 formed along the one surface thereof which is set back from the projecting ends 66. A tapped opening 68 receives a threaded member of suitable character when needed.

Since several of these inserts are used to support a single angleiron, and the holes are punched therein away from the job, also since it is impossible to perfectly align the inserts in the concrete structure, it will be necessary to adjust the bolt up or down in the slot in order to register it with the hole or slot in the angle. When the nut is screwed to position and the coacting serrated portions are in inter-locked relation, the angle will be secured against movement relative to the concrete structure.

The insert has been shown as constructed from sheet metal, however, if so desired, it may be cast or otherwise produced without effecting the novel features of this invention.

I do not wish to limit this invention to the structure shown and described since many modifications may be made within the scope of the appended claims without departing from the spirit thereof.

What I claim as new and desire to secure by Letters Patent is:

1. An insert adapted to be embedded in concrete, comprising a box having extended side members, an elongated opening of uniform width in the outer face of said box, an inturned serrated flange adjacent each of the opposite sides of said elongated opening, each of said flanges being spaced apart from its adjacent side member, and a unitary securing member having an elongated, serrated head formed to be inserted in said slot and adapted to be positioned to operatively engage and overhang both of said serrated flanges.

2. An insert adapted to be embedded in concrete, comprising a box having an elongated opening in the outer face thereof, an inturned serrated flange adjacent each of the opposite sides of said opening, said members integral with said box having flanges at the extended edges thereof, said sides each being divided into a short and a long portion whereby the flanges are positioned in spaced apart planes.

3. An insert adapted to be embedded in concrete, comprising a box having an elongated opening in the outer face thereof, side members integral with said box and extending therefrom, flanges on the extended edges of said side members, said side members each being divided into portions extending different distances from said box whereby the flanges are positioned in offset relation.

4. An insert adapted to be embedded in concrete, comprising a box having an elongated opening in the outer face thereof, side members integral with said box and extending therefrom, corresponding end portions of said side members extending beyond the free ends thereof to form an offset in each of said side members.

5. An insert adapted to be embedded in concrete, comprising a box having a body member, a slot of uniform width formed in one side of the body member adapted to receive and hold a bolt and a U-shaped member forming a part of the box for the bolt head positioned entirely within the confines of said body member, and converging lugs integral with said body member engaging the outer surface of said U-shaped member to maintain it in position in said body member.

6. An insert adapted to be embedded in concrete, comprising a box having an elongated opening of uniform width in the outer face thereof, an inturned, serrated flange adjacent and spaced apart from each of the opposite sides of said opening, a bolt having an elongated head provided with a groove on its inner surface and serrations at the bottom of said groove adapted to engage said inturned, serrated flanges with the outer portion of said head positioned between said flanges and side walls respectively.

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