Oct. 10, 1933. S. C. AWBREY 1,929,835

CONCRETE INSERT

Filed Nov. 11, 1929

Fig. 1

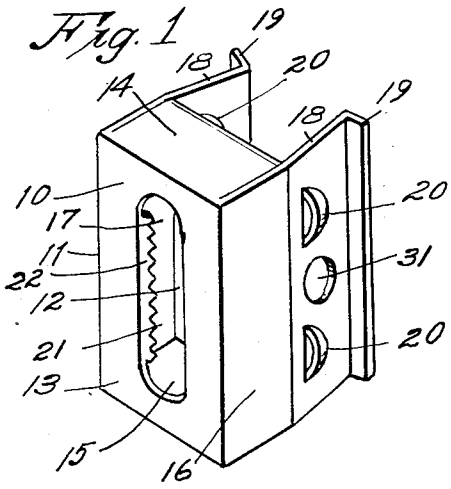
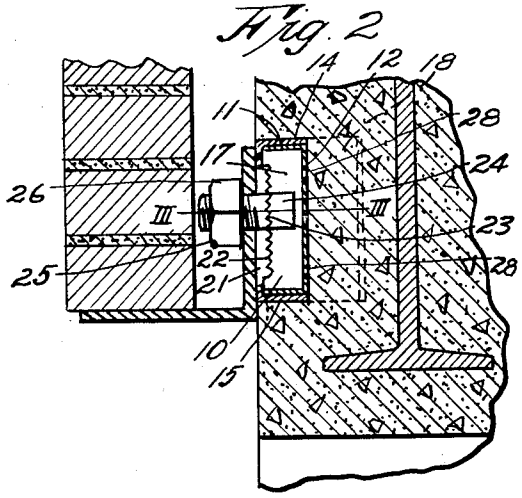



Fig. 2



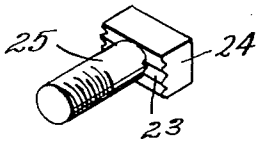




Fig. 4

Fig. 3

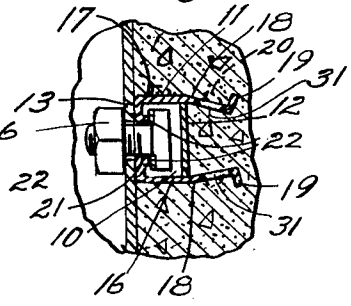



Fig. 7

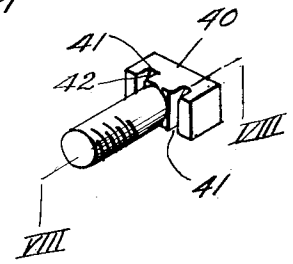



Fig. 5

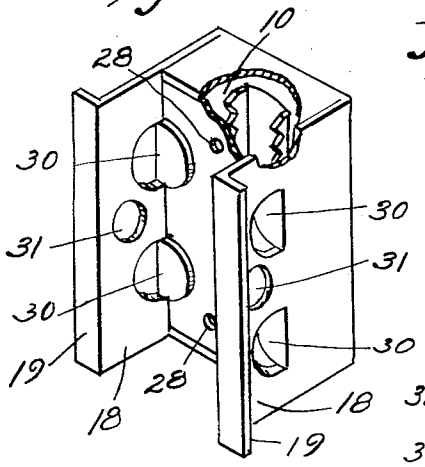
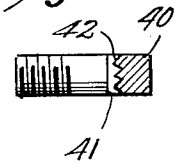



Fig. 8.



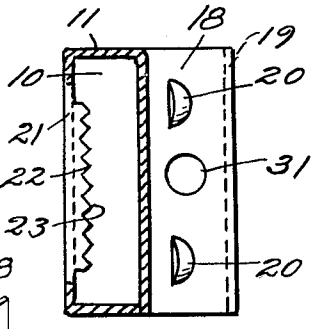




Fig. 6

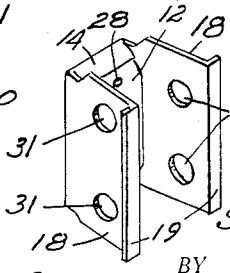



Fig. 9

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Patented Oct. 10, 1933

1,929,835

# UNITED STATES PATENT OFFICE

1,929,835

## CONCRETE INSERT

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Application November 11, 1929
Serial No. 406,325

4 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.

The principal object 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 the 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.

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.

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

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 angle-iron for supporting the facing of the building.

Fig. 3 is a fragmentary sectional view taken on line III—III of Fig. 2.

Fig. 4 is a perspective view of the bolt adapted to be used with the present insert.

Fig. 5 is a perspective view of a modified form showing a slightly different way of forming the box of the insert.

Fig. 6 is a longitudinal section of a further modification of the insert showing the entire insert made of a single piece of sheet metal.

Fig. 7 is a perspective view of a modified form of the bolt to be used with the insert.

Fig. 8 is a sectional view taken on line VIII—VIII of Fig. 7.

Fig. 9 is a perspective view of a modified form of the insert partly broken away to more clearly show the construction thereof.

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, and members 14 and 15 and side members 16 and 17 which extend inwardly beyond end members 14 and 15 to form inwardly projecting anchoring members 18 and having flanged edges 19 which more securely anchor the insert in the concrete structure. Louvers 20 are formed in members 18 to add to the holding power of the insert in the concrete.

The U-shaped member 12 is formed to snugly fit between end members 14 and 15 and side members 16 and 17 to prevent any of the soft concrete mixture from entering the box during the process of construction. To secure member 12 in position the members 18 are pressed slightly inwardly in inwardly converging relation.

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. In-turned 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 in flanges 22. While regular serrations for preventing relative movement of the parts have been shown, it is evident that any co-acting irregular surfaces will serve the same purpose. Also the in-turned 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 in member 12, are adapted to receive nails, not shown, for securing the insert to inside of the concrete forms prior to the pouring of the concrete. When the concrete is poured and the forms removed, the nails which extend through the box may be cut off so as not to interfere with the proper adjustment of the bolt.

The modified form shown in Fig. 5 shows an insert similar to that shown in Fig. 1 with in-turned tabs 30 adapted to secure the member 12 in position. Also the openings formed in mem-

bers 18 by pressing tabs 30 therefrom, serve to receive concrete, thus adding to the holding properties of the insert. It may be desirable in some instances to utilize holes 31 formed through members 18 by passing a reinforcing rod or the like not here shown, through holes 31, allowing the rod to project outwardly on each side of the insert so that the same will be embedded in the concrete to add an even more secure means for holding the insert in place.

In the structure shown in Fig. 6 the member 12 is eliminated and the rear of the box 10 is closed by folding a portion of member 11 between the members 18 thus forming the insert from a single piece of sheet metal.

The modified form of the bolt as shown in Figs. 7 and 8 provides for a bolt having an elongated head 40, having a pair of parallel slots 41, which in turn are provided with serrations 42 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 reinforced 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 F of the structure, is secured to the structure by passing the bolt 25 through a hole B formed therein.

Referring to Fig. 9 which shows a modified form of the insert, it will be noted that the members 18 diverge inwardly, thus presenting a larger opening there-between in order to permit the free movement of a hammer in setting the nails which are inserted in holes 28 to secure the insert to the form during the process of construction. Furthermore, these angled side members 18 present an anchoring surface which prevents easy release of the insert from the concrete. End members 14 and 15, as clearly shown in this figure, have their inner edges positioned in relative converging position so that the member 12, when pressed together and positioned there-between, will be securely held against displacement without any other fastening means.

This construction is simple and eliminates considerable expense in the manufacture.

It will further be noted that the corners of the U-shaped member 12 are rounded, thereby lessening the danger of displacement by the tamping bar during the process of construction.

Since several of these inserts are used to support a single angle-iron, and the holes are punched therein away from the job, also 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 co-acting 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 otherwse produced without affecting 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 and desire to secure by Letters Patent is:

1. A concrete insert comprising a box, an elongated opening formed in one side thereof, an inturned flange extending into the box along each of the opposite sides of said opening, serrations formed on the inner edge of each flange, a bolt projecting from the box through the opening, a head for the bolt within the box, a pair of slots formed in the bolthead each receiving a flange and serrations at the base of each slot engaging the serrations on the edge of said flanges when the bolt is in the operative position.

2. A concrete insert comprising a box, an elongated opening formed in one side thereof, an inturned flange extending into the box along each of the opposite sides of said opening, a bolt projecting from the box through the opening, a head for the bolt within the box and parallel slots formed in the bolt head formed to receive the flanges when the bolt is in the operative position.

3. A concrete insert comprising a box, an elongated opening formed in one side thereof, an inturned serrated flange extending into the box adjacent each of the opposite sides of said opening, anchor members extending outwardly from the box in spaced-apart, non-parallel relation, flanges at each end of said member, and pressed out steps in the body of said anchor members adapted to be embedded in the concrete.

4. An insert adapted to be embedded in concrete, comprising a box having closed ends and an elongated opening in the outer face thereof and an inturned serrated flange extending into the box adjacent each of the opposite sides of said opening and spaced apart from the ends and sides of said box.

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