A. J. WIDMER.

METAL INSERT FOR CONCRETE CEILINGS.

APPLICATION FILED APR. 12, 1917.

1,245,414.

Patented Nov. 6, 1917.

Fig. 1.

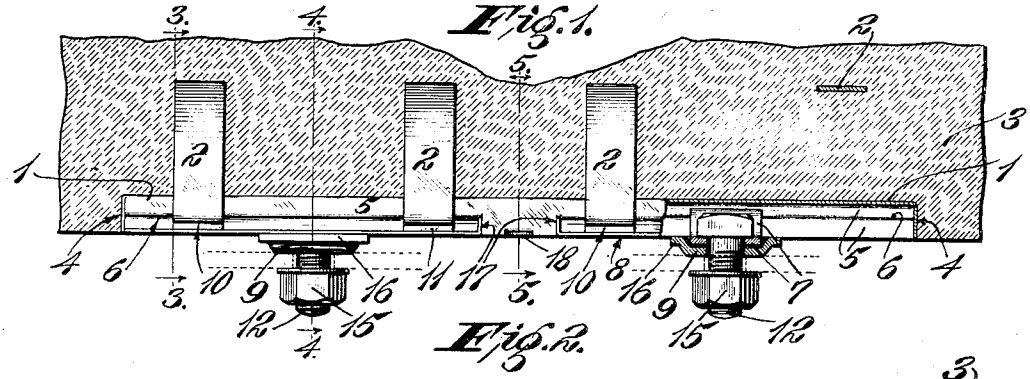


Fig. 2.

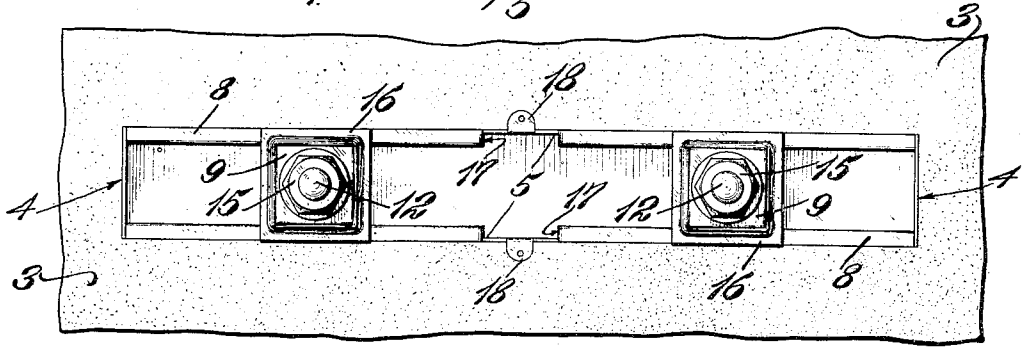


Fig. 3.

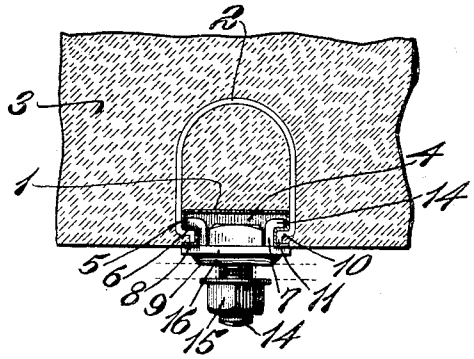


Fig. 4.

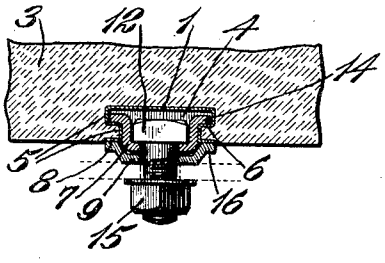


Fig. 5.

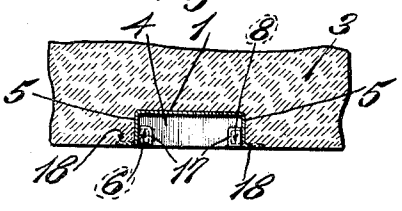


Fig. 6.

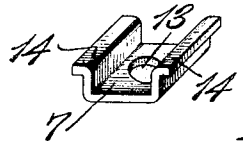


Fig. 7.

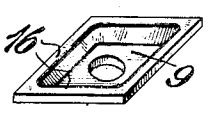
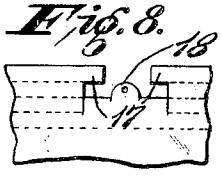


Fig. 8.



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UNITED STATES PATENT OFFICE.

ARTHUR J. WIDMER, OF WEBSTER GROVES, MISSOURI, ASSIGNOR TO WIDMER ENGINEERING COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

METAL INSERT FOR CONCRETE CEILINGS.

1,245,414. Specification of Letters Patent. Patented Nov. 6, 1917.

Application filed April 12, 1917. Serial No. 161,583.

To all whom it may concern:

Be it known that I, ARTHUR J. WIDMER, a citizen of the United States, and a resident of Webster Groves, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Metal Inserts for Concrete Ceilings, of which the following is a specification.

My invention relates to metal inserts for concrete ceilings, and has for its principal object to make an insert from which to suspend shafting, conveyers, or other heavy objects, which insert is compact, light, strong, and adjustable as to the position of the supporting member.

Generally stated, the invention consists of a shallow inverted channel shape member embedded in the concrete ceiling, in which member is movably located a bolt hanger in which rests the bolt for supporting the parts to be held up, together with means for introducing said bolt support into said channel and means for rigidly securing it in any desired location in the channel.

In the accompanying drawing, which forms part of this specification, and in which like symbols refer to like parts in the several views,

Figure 1 is a side elevation of a device embodying the invention, certain parts being broken away and shown in section;

Fig. 2 is a bottom plan view of the device as it appears in place in the ceiling;

Fig. 3 is a vertical transverse section on the line 3—3 in Fig. 1;

Fig. 4 is a vertical transverse section on the line 4—4 in Fig. 1;

Fig. 5 is a vertical transverse section on the line 5—5 in Fig. 1;

Fig. 6 is a perspective view of the bolt supporting member;

Fig. 7 is a perspective view of the washer or clamping member;

Fig. 8 is a plan view of a portion of the blank from which the channel is formed, showing the lines along which it is slitted and bent in order to form an opening for the insertion of the bolts and supporting members.

In Figs. 1 to 5 the device is shown in position in the concrete which is shown in cross section where necessary to expose the device.

The insert consists of an inverted channel 1 of sheet metal supported on inverted U-shaped anchors 2 embedded in the concrete ceiling 3. Preferably, the ends 4 of the top of the channel 1 are bent down to form end walls for the channel, but other means may be used for closing the ends, or they may be left open if desired. The side walls 5 of the channel 1 are bent in to form opposing ledges 6 for supporting the bolt hangers 7. The lower portions of the walls 5 have outturned flanges 8 flush with the ceiling 3. Washers 9 bear against these bottom flanges 8 for clamping the bolt hangers down on the ledges. The lower ends of the anchors 2 are turned in to form hooks 10 which catch under the ledges 6 and are bent down at their ends 11 against the bottom flanges 8, to hold them in place while the concrete is being poured.

Bolts 12 are provided for supporting shafting or other heavy objects. The bolts 12 pass through holes 13 in the bolt hangers 7. The flanges 14 of the bolt hangers 7 rest on the ledges 6 of the channel 1. After the bolt hangers 7 with the bolts 12 resting in them have been placed in the desired position in the channel 1, the parts to be supported are clamped against the washers 9 by nuts 15. The clamps 9 are depressed in the center so that their edges 16 bear directly on the bottom flanges 8 of the channel 1, leaving a space between the body of the washers 9 and the bolt hangers 7.

At the middle of the channel 1, gaps are formed through the ledges 6 and flanges 8 to permit the insertion of the bolts 12 and hangers 7. Surplus sheet metal in the ledges and flanges is cut out, and rectangular strips of metal 17 are left projecting from the bottom flanges of the channel 1 and are bent up to cover the opening between the ledges 6 and the flanges 8. The manner of slitting and bending the sheet metal is illustrated in Fig. 8, wherein the dotted lines indicate where the metal is bent after it is slit. Lugs 18 are bent out at the lower edges of the side

walls from the surplus metal at the gaps. Through these lugs nails may be driven to hold the insert in position in the forms during the process of pouring the concrete in the floor.

After the insert is embedded in the ceiling the bolts 12 and bolt hangers 7 may be inserted in the gap in the middle of the channel 1, and moved to the position desired to suit the thing to be supported. The flanged or cupped clamps or washers 9 and the nuts are assembled on the bolt hangers 7 beneath the part to be supported, and the nuts are tightened up to clamp the washers and bolt hangers against the bottom and top faces of the ledges. This arrangement provides a rigid structure for holding up the parts to be supported so as to prevent vibration.

The U-shaped bolt hangers 7 make possible the use of a channel shallow enough to pass under the reinforcing bars in the ceiling; they permit the heads of the bolts to drop between and below the ledges upon which the bolt hangers rest and hold them securely against turning; and the cupped washer allows still further decrease in the depth of the channel by permitting a greater drop to the bolt heads. It is evident that the shape of the side walls stiffens the channel and permits the use of light metal, and at the same time makes a strong structure. Also, the side and end walls of the channel 1 are unbroken, thereby doing away with extra pieces for covering holes or gaps in the side walls. A plurality of these devices may be placed end to end, extending completely across the ceiling, if desired.

The invention is not limited to the precise construction shown.

I claim the following as my invention:

1. An insert for concrete ceilings comprising an inverted channel, ledges in said channel, a U-shaped bolt hanger having outturned flanges at the tops of its side walls and being supported on said ledges by means of said flanges and adapted to support a bolt below the level of said ledges, and means for rigidly securing said hanger in said channel.

2. An insert for concrete ceilings comprising an inverted channel having its side walls provided with ledges along their inner sides, hangers having flanges at the top of their side walls whereby they are supported on said ledges, said hangers having depressed seats arranged between said ledges for supporting bolts below the level of said ledges and for holding them from turning.

3. An insert for concrete ceilings comprising an inverted channel having its sides bent in and down and provided with outturned flanges along their lower edges to form hollow ledges, downwardly offset hangers having flanges along their top edges whereby they are supported on said ledges, said hangers having depressed seats arranged between said ledges for supporting bolts and embracing their heads to hold them from turning.

4. An insert for concrete ceilings comprising an inverted channel, ledges in said channel, U-shaped hangers having flanges resting on said ledges, and a clamping member suspended below said ledges from said U-shaped hangers for engaging the under side of said insert, whereby said hangers are movable in said channel but can be rigidly secured in any desired position in said channel.

5. An inverted channel for an insert for concrete ceilings, said channel having hollow ledges, and bottom flanges flush with the ceiling, middle gaps in said ledges and flanges, strips of metal adjacent said gaps being bent to cover the open ends of said hollow ledges, and portions of the walls of said channel adjacent thereto being bent out to form nailing lugs.

6. An inverted channel shape insert having its side walls bent in and down to form ledges, two transverse slits in the ledge portions of one side wall, the metal between said slits being unbent, portions of said unbent metal below the lower edges of the channel walls being removed, and projecting tabs on said channel walls adjacent to said slits, said ribs being bent across the open ends of said ledges, whereby an opening is provided for inserting machinery supporting members into said channel.

7. An insert for concrete ceilings, said insert comprising a sheet metal inverted channel shape member, the side walls of which have inside ledges and outside bottom flanges, gaps in said ledges formed by bending down the metal thereof, and lugs opposite said gaps formed by bending out the lower edge of the surplus metal at said gaps, whereby the insert may be held in position while the concrete is being poured.

8. In a ceiling insert, in combination with longitudinal spaced track members, a bolt hanger suspended from said track, the middle portion of said bolt hanger depending between said track members and constituting a seat for a bolt, and a washer arranged below said track members and adapted to bear against the under side of said insert, said washer having its middle depressed to provide clearance between it and said bolt hanger.

9. An insert for concrete ceilings comprising an inverted channel having inside ledges and bottom flanges, U-shaped hangers having flanges along their top edges, whereby they are supported on said ledges, and arched metal anchors hooked under said

ledges, the extremities of said anchors being turned down and resting on said bottom flanges.

10. An insert for concrete ceilings comprising an inverted channel having inside ledges and bottom flanges, a downwardly offset hanger having flanges along its top edges, whereby it is supported on said ledges, and a bolt supported on the offset portion of said hanger.

Signed at St. Louis, Missouri, this tenth day of April, 1917.

ARTHUR J. WIDMER.