The present invention relates to improved reinforcement and anchoring device for a dovetail metallic channel embedded in a concrete structure, particularly in a concrete ceiling or beam from which heavy objects may be suspended.

A principal object of the invention is to provide a simplified and highly effective reinforcement and anchoring device constructed to fit the outer configuration of a thin wall dovetail metallic channel of the above character and adapted to be embedded along with the metallic channel in a concrete structure so as to make the channel structure better suited for supporting heavy objects without danger of spreading the relatively thin side walls of the channel and without danger of fracturing the concrete in which the channel is embedded.

A further and more specific object is to provide an anchoring device of this type which, when applied to a metallic dovetail channel of the above character will not be displaced by the pouring of the concrete and which, by virtue of its configuration, will provide a large area of bonding contact with the concrete. This makes it particularly suitable for use in situations wherein the concrete, in which the channel is embedded, has a low compressive value.

The present invention features means for preventing the spread of the channel at the point of entry into the concrete. The improved reinforcing and anchoring device comprises a yoke member which embraces the dovetail metallic channel in a manner whereby the downwardly converging legs of the yoke engage and interlock with the downwardly converging side walls of the channel. The vertical edges of the yoke member are bent at right angles to the face of the device to provide angular rigidifying legs at opposite sides of the channel which prevent downwardly converging anchor faces of substantial area. The upper edge of the yoke is bent at an angle which, in addition to rigidifying the yoke, provides it with additional anchoring value. In order to maintain the anchoring device perpendicular to the channel during the pouring of the concrete and also provide additional anchorage within the concrete, the said rigidifying yoke is provided with tongues bent in opposite directions to seat against the top wall of the metallic channel.

A preferred embodiment of the invention is illustrated in the accompanying drawings wherein:

FIG. 1 is an end view of a dovetail metallic channel embedded in a concrete structure and showing my improved reinforcing and anchoring device embracing the top and side walls of the channel and embedded in the concrete structure;

FIG. 2 is a view, in perspective, of the construction shown in FIG. 1; and

FIG. 3 is a view, in perspective, of a section of the metal channel before it is channel embedded in concrete and showing also a plurality of anchoring devices operatively positioned on the channel structure in their normal spaced relation when they are embedded in a concrete ceiling or other structure.

Referring now to the drawings: A metallic channel 10 of dovetail configuration in cross section together with a reinforcing yoke device 11 associated therewith is shown as embedded in a concrete structure 12. While the said channel 10 and reinforcing element 11 are shown herein as embedded in a horizontal concrete structure it should be understood that this disclosure is for exemplary purpose only and that if desired the said channel 10 and reinforcing element 11 may be embedded in a vertically extending concrete structure. The purpose of the channel is to provide a slot in the concrete structure and to receive a series of anchor blocks 19 or other form of supporting devices including, in each case, a bolt 20 from which objects may be suspended or supported.

The metallic anchor slot channel structure comprises a shell formed of relatively thin metal and includes a top or base wall 13 and a pair of side walls 14—15 which converge slightly toward each other to provide the channel with a dovetail configuration in cross-section. The edges 16—16 of the channel are provided with a horizontal web 17—17 which receive and retain a closure strip 18 of thick paper or other readily frangible material.

The edges 17—17 of the metallic channel do not bear firmly against the said form, it is therefore important to provide the closure strip 18 to prevent the thinner grout of the concrete from seeping into the channel 10 and thereby interfere with the insertion of the anchor blocks 19 or other form of supporting devices. The fact that the closure strip 18 is readily frangible, the block 19 can be used to pierce the strip 18 and thereby facilitate insertion of the block 19 into the channel through the opening thus formed in the closure.

The element 11 for reinforcing the metallic channel element 10 and for providing an increased bonding area in the concrete 12 is in the form of a yoke having a pair of legs 21—21 which converge toward their outer ends so as to fit the inclined side walls 14—15 of the metallic channel 10. The legs 21 are preferably bent to provide flanges 22—22 which serve to reinforce the legs and also provide additional bonding area to prevent displacement of the member 11 within the concrete. The said legs 21—21 are connected by means of a transverse plate portion 23, the outer end of which is provided with a rigidifying flange 24 extending substantially parallel to the wall 13 of the metallic channel and thereby increases the holding power of the yoke member and the channel 10.

The transverse plate portion 23 is provided with a pair of tongues 25 which are bent in opposite directions from the face of the plate 23. These tongues seat against the top wall 13 of the channel to maintain the yoke member 11 in a position perpendicular to said top wall 13 and prevent displacement of the yoke 11 during the pouring of the concrete. The angular arrangement of the tongues 25 also afford greater anchorage within the concrete and thereby increase the load supporting capacity of the concrete structure.

The reinforcing and anchoring devices are normally slipped over an end of the metallic channel 10 and are arranged in spaced relation to each other along the length of the channel. Ordinarily the anchoring devices will be arranged approximately one foot apart, but the spacing arrangement depends largely upon the character of concrete in which the structure is embedded. If the con-
pressive force of the concrete is of low value a larger number of anchoring devices 11 will be used per each length of channel 10.

While I have illustrated improved reinforcing and anchoring devices 11 herein in connection with certain specific constructions, it will be obvious to persons familiar with this art that various changes may be made in the structure without departing materially from the invention as disclosed herein. It will be understood, therefore, that I contemplate all structural modifications coming within the scope of the appended claims.

I claim:
1. In combination with a relatively thin metallic anchor slot channel structure having opposed sides which converge toward the open end of the channel to provide load supporting inclined walls embedded in a concrete structure with the open end of the channel facing outwardly to receive a load supporting attachment designed to seat against the inner faces of the inclined walls of the channel, a yoke device for reinforcing said metallic channel structure and for effectively increasing its anchorage in said concrete structure comprising a flat metallic plate body positioned edgewise to the channel structure and formed with legs which converge toward the open side of said channel structure and seat edgewise of the plate against the outer faces of said load supporting inclined walls of the channel structure and extend outwardly therefrom; the outer edges of said legs being bent laterally of the flat plate body to provide stiffening and bonding flanges which project lengthwise of the channel structure in planes parallel to the said load supporting walls.

2. The combination structure defined in claim 1 characterized in that a pair of tongues are bent outwardly in opposite directions from the flat plate body of said yoke device and seat against the base wall of the channel structure to support the yoke device perpendicular to said channel structure.

3. The combination structure defined in claim 2 characterized in that a transverse edge of the body of said yoke device is bent laterally to provide a reinforcing and bonding flange which extends outwardly from the plane of the yoke body in a direction opposite to the flanges along the outer edges of the legs so as to provide anchorage in the concrete at a location outside the confines of the said flanges along the outer edges of said legs.

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