Feb. 9, 1960 F. D. REILAND 2,924,089

HINGED CLIP HANGER FOR DOVETAIL CHANNEL STRUCTURE

Filed March 3, 1958

FIG. 1

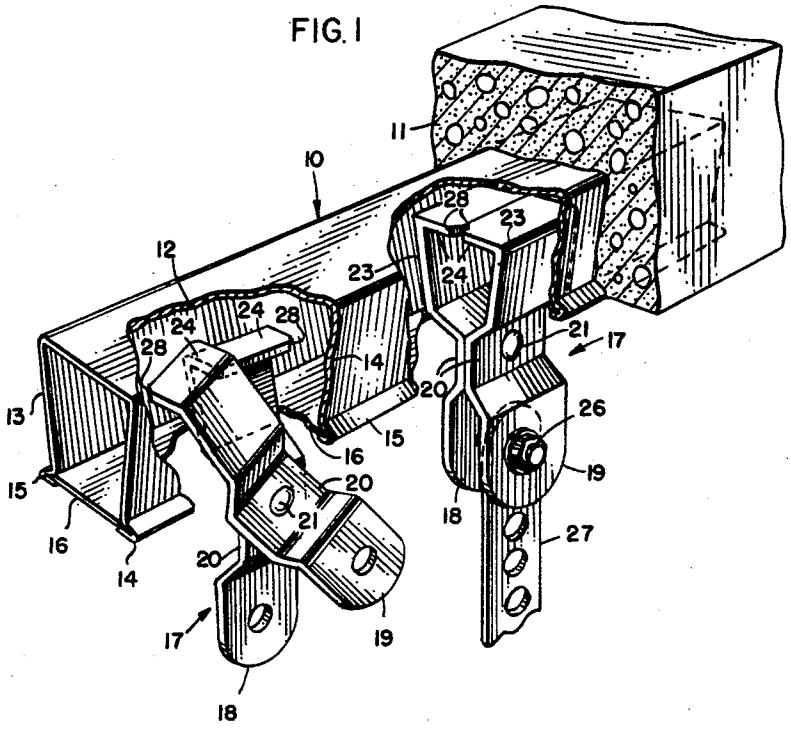
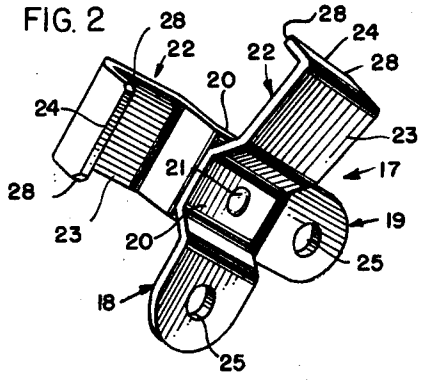


FIG. 2



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United States Patent Office 2,924,089
Patented Feb. 9, 1960

2,924,089

HINGED CLIP HANGER FOR DOVETAIL CHANNEL STRUCTURE

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Application March 3, 1958, Serial No. 718,730

3 Claims. (Cl. 72—105)

The present invention relates to an improved hinged clip hanger for use in connection with metallic anchor channels of the type which are embedded in concrete ceiling and beam structures for the purpose of suspending from such concrete structure various objects, including metal lath, acoustical ceiling, piping and other fixtures of appreciable weight.

The principal object of the invention is to provide an improved clip hanger which may be readily inserted into a dovetail channel structure at any desired location and thereafter brought into clamping engagement with the side walls of such channel structure.

According to the invention, the improved hanger clip is composed of two pivotally connected identical parts, each comprising a metal plate having greater length than width and having its opposite ends offset relative to medial portion of the plate. The offset at one end of the plate includes an inclined portion and a lateral flange and the other end provides an ear portion and is pierced to receive a bolt or other fastening device.

In the assembled position of the hanger parts, the medial portions of the plate elements are arranged face-to-face and are pivotally connected to each other by means of a suitable fastening device. The plate elements are adapted to be moved about their pivotal axis into registered alignment. When they are so moved into registered alignment the inclined offset ends and their associated lateral flanges define a sectional wedge adapted to fit within and wedgingly engage the side walls of the dovetail channel structure.

The dovetail channel structure includes a frangible closure strip which may be readily ruptured at the location where the hanger clip is inserted into the channel. This is accomplished by thrusting an end of the hanger through the frangible closure. The wedge end of the clip, while it is in its collapsed position, is inserted into the channel through the opening thus formed in the closure and the pivotally connected plate elements are then rotated about their pivotal connection until they are brought into registered alignment with each other.

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

Fig. 1 illustrates a channel structure embedded in a concrete structure and shows one hanger clip in its applied position within the channel and also illustrates a second hanger clip in the process of being installed within the said channel structure; and

Fig. 2 illustrates the hanger clip in its fully collapsed position.

Referring to the drawing wherein the improved hanger clip is illustrated in connection with a dovetail metallic channel embedded in a concrete ceiling or beam structure and cooperating therewith to suspend therefrom structures or objects of various character (not shown), but which includes sub-ceilings, metal lath, sprinkling systems and the like.

The dovetail channel structure designated generally by the numeral 10 is formed of relatively thin metal and is

embedded in concrete 11, for example a ceiling or an overhead beam. The said channel comprises a transverse side 12 and a pair of converging side walls 13—14. The longitudinal edges of the converging side walls are formed with reverse bends 15—15 adapted to clamp the longitudinal edges of a closure strip 16 of builder's paper or other readily frangible material.

In practice, the channel structures 10 are nailed to wooden forms (not shown) which support the wet concrete. The purpose of the closure strip 16 is to prevent the thinner grout of the concrete from seeping into the interior of the metallic channel at locations where the edges of the channel do not fit tightly against the form.

The improved hanger clip is designated generally by the reference numeral 17 and comprises two metal plates 18 and 19 which are of greater length than width. The opposite ends of the plates are offset relative to their medial portions 20—20. One offset end portion of each plate 18—19 includes an inclined portion 22 and a lateral flange 24. The other ends of the plates 18—19 are provided with apertures 25 for receiving a bolt 26 or other suitable fastener, as shown in Fig. 1.

When the plate elements 18 and 19 are moved about their pivotal connection 21 into registered alignment, the opposed offset ends 22—22 including the inclined portions 23—23 and the lateral flanges 24—24 define a wedge, the inclined sides 23—23 of which correspond to the inclination of the side walls 13—14 of the dovetail channel 10. The lower ends of the pivotally connected plates 18—19 constitute spaced apart ears between which an attaching strap or bar 27 is secured to the bolt 26 so as to depend from the clip 10 for attachment to the structure or article (not shown) to be suspended from the concrete structure. The corner portions 28 of the flanges 24—24 are preferably chamfered to provide cam surfaces which move into engagement, one with another, so as to move the inclined portions 23—23 laterally into firm clamping engagement with the side walls 13—14 of the channel 10.

When installing the hanger assembly 17 within a channel structure 10, the hanger 17 is collapsed as shown in Fig. 2, or as shown in its partially applied position in Fig. 1. The hanger when thus collapsed may be readily thrust through the frangible closure 16 and into the interior of the channel 10, at any location intermediate the ends of said channel. After the collapsed hanger is inserted within the channel pressure is applied to the end portions of the hanger which project from the channel to move the elements 18 and 19 into registered alignment within the channel. In this position of the parts, the longitudinal edges of the flanges 24 are in engagement with each other and the inclined sides 23—23 of the said clip are pressed tightly against the inclined side walls 13—14 of the channel 10.

There is a slight clearance between the transverse wall 12 of the channel 10 and the lateral flanges 24—24 of the hangers so as to facilitate the pivotal movements of the plates 18—19 of the hanger to their properly installed position. The application of downward pressure serves to move the inclined portions 23—23 of the hangers into increasing wedging engagement with the inclined side walls 13—14 of the channel 10.

Normally there are a series of hangers 17 installed in a channel structure 10. The number of hangers so used and their spacing along the channel will depend upon the character and weight of the structure suspended from the concrete structure.

While the invention has been disclosed herein in connection with certain preferred constructions, it will be obvious that modifications in structure may be made without departure from the spirit of the invention. Therefore, it must be understood that the invention contemplates all

such changes in structure coming within the scope of the appended claims.

I claim:

1. In combination with a channel structure embedded in the face of a concrete body and having a closed side and opposed sides connected therewith converging toward the open side of the channel to provide the channel with an internal dovetail configuration in cross section, means for suspending an object from said channel structure comprising a pair of plate members formed with opposed inclined portions normally aligned with each other transversely of the channel structure to provide a wedge having inclined surfaces of substantial area bearing flat against the inner faces of said opposing sides of the channel structure, means for pivotally connecting said plates for movement into and out of alignment about an axis extending transversely of the channel, whereby the said inclined portions of the plates are movable into and out of their operative engagement with the opposed sides of the channel structure by rocking the plates about said

pivotal connection in directions lengthwise of the channel structure.

2. The combination structure defined in claim 1 characterized in that the inclined portion of each plate is provided with an inturned flange adapted, in the operative element position of the plates, to abut against the corresponding flange of the adjacent plate to rigidify said wedge.

3. The combination structure as defined in claim 2 wherein the ends of the said inturned flanges are chamfered in opposite directions to provide diverging cam surfaces movable into engagement with each other to urge the inclined portions of said plates into operative engagement with the said opposed side walls of the channel structure.

References Cited in the file of this patent

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,924,089 February 9, 1960

Frank D. Reiland

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 6, for "element" read -- aligned --.

Signed and sealed this 9th day of August 1960.

(SEAL)
Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents