Sept. 27, 1960 O. C. KINDORF 2,953,874

CONCRETE INSERT WITH SWIVEL SUPPORT FOR CONDUITS OR THE LIKE

Filed Oct. 27, 1958

Fig. 1.

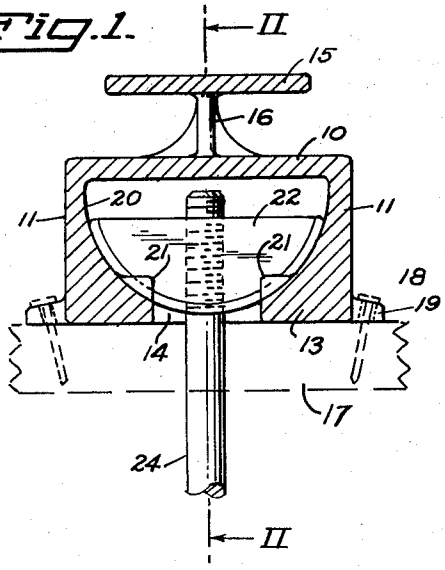


Fig. 2.

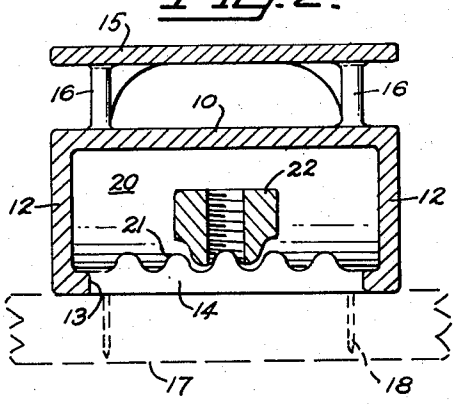


Fig. 3.

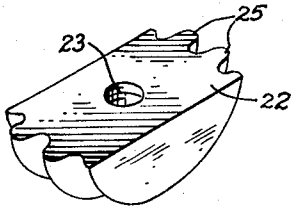


Fig. 4.

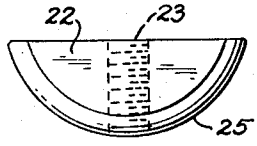


Fig. 5.

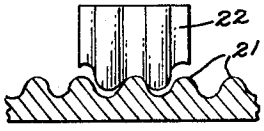
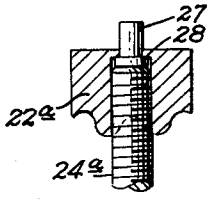


Fig. 6.



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CONCRETE INSERT WITH SWIVEL SUPPORT FOR CONDUITS OR THE LIKE

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Filed Oct. 27, 1958, Ser. No. 769,602

3 Claims. (Cl. 50—476)

This invention relates to concrete inserts which are devices let into concrete walls or ceilings when they are cast for the purpose of providing an anchor or support for some device to be secured to the wall or ceiling and it pertains more particularly to a ceiling insert to provide a swivel anchor for a depending rod employed as a support for conduits, electric fixtures or other suspended building appurtenances.

The device of the invention is particularly adapted to suspension of steam pipes or the like where expansion or contraction of the pipe line due to variations in temperature is anticipated, but it has general application in the provision of a swivel support for any conduit or fixture which might be suspended by rods.

Concrete inserts in general are nailed or otherwise secured to the inner side of a form against which concrete is to be poured so that they remain in the concrete with one face exposed when the form is stripped. Forms are usually of wood which may swell or otherwise become slightly distorted when wet mix is poured against them so that perfect positioning of inserts to support a straight line of conduit presents a problem. Also the exact position of a planned pipe line is sometimes difficult to foresee because of slight variations in pipe threads and makeup of pipe joints. It is desirable, therefore, to provide for some adjustment of the position of hanger rods depending from inserts particularly in a lateral direction with respect to the axis of the pipe line. The longitudinal adjustment is accomplished by positioning of the hanger on the pipe at the lower end of each hanger rod.

It is, therefore, the object of the present invention to provide an insert with means to support the upper end of a hanger rod for universal movement as well as means to adjustably position the rod at least in one direction.

A further object of the invention is the provision of an insert of the kind described in which the portion providing universal or swivel movement is a separate part attached to the hanger rod before assembly but securely held in position after assembly.

Further and more specific objects and advantages of the invention are made apparent in the following specification wherein the invention is described in detail by reference to the accompanying drawing.

In the drawing:

Fig. 1 is a central transverse section of a concrete insert and hanger rod support embodying the present invention,

Fig. 2 is a longitudinal sectional view of the same insert taken on the line II—II of Fig. 1;

Fig. 3 is a perspective view of a swivel nut which forms a part of the insert and support;

Fig. 4 is a view in side elevation of the same nut;

Fig. 5 is a view in end elevation of the same nut illustrated in position upon a fragmentary section of the insert; and

Fig. 6 is a transverse section of a modified form of nut.

Referring now to Figs. 1 and 2 of the drawing, the

concrete insert of the present invention is illustrated as comprising a rectangular box-like member having a top wall **10**, side walls **11**, end walls **12** and a bottom wall **13** in which there is provided an elongated slot **14**.

Anchoring projections or webs are common on concrete inserts to assist in holding them in the concrete after it is cast about them and in the present case, such a web is shown as a rectangular plate **15** supported above the top of the insert as by posts **16**.

In use, the inserts are secured to the inner side of the form panel which is represented in broken lines at **17** and held in proper position thereon by nails or other securing means indicated at **18** as passing through lugs **19** provided on the side walls for this purpose. Consequently when the concrete has been poured and has set, the forms are stripped and the nails may be clipped or extracted leaving a flat concrete ceiling surface with only the bottom wall **13** of the insert exposed in co-planar relationship thereto.

The interior of the box-like insert is formed with a semi-cylindrical surface **20** interrupted at its bottom by the elongated slot **14** and which has a series of spaced projections **21** extending upwardly from the surface adjacent each long edge of the slot **14**. A hanger rod nut **22**, also shown in Figs. 3, 4 and 5, has a central threaded bore **23** for the reception of a hanger rod illustrated at **24** in Fig. 1. The nut **22** is of generally elongated configuration so that it will pass freely upwardly through the slot **14** in one position and upon being rotated 90° from that position will be supported by the inner curved side walls of the insert as illustrated in Fig. 1.

The nut **22** is formed in the shape of a segment of a sphere which has the same radius as the cylindrical form of the interior of the insert and the spherical surface of the nut is provided with spaced ridges **25** adapted to register between or mesh with the projections **21** within the insert. This configuration of the nut and the interior of the insert permits universal swinging movement of the rod **24** which depends from the nut because the nut is free to rock in one direction on its own spherical ridged surface and to slide in the other direction where it bears against the inner cylindrical surface of the insert.

The long dimension of the insert as it is illustrated in Fig. 2 is disposed transversely to the longitudinal center line of the pipe line being supported at the lower ends of rods such as shown at **24** in Fig. 1. Consequently if the inserts were not properly aligned upon insertion, or the pipe line is not accurately located, the nut **22** may be moved to right or left with its center line registering with any one of the projections **21** providing the necessary lateral adjustment in relatively small increments.

The lower end of the hanger rod **24** is connected by any conventional swivel support and hanger mechanism with the pipes to be supported and since there are many well-known mechanisms available for this purpose, none is herein shown.

In order to permit freedom of movement of the nut in the insert, it is necessary that the upper end of the hanger rod **24** stop short of the top wall **10** of the insert against which it could produce a binding action. To insure this relationship, the threaded portion of the rod **24** may be limited as shown in Fig. 1 to establish a maximum insertion of the rod. It is desirable, however that the upper end of the rod be permitted to project somewhat above the top of the nut **22** and to a position where it will strike the inner side of the top wall **10** of the insert before the projections **25** on the nut are clear of the projections **21** in the insert so as positively to prevent removal of the nut from the insert due to heavy vibration or other accidental causes when the support is in use. With this con-

struction, the rod 24 will be partially threaded into the nut before insertion of the nut into the insert and then threaded to the full distance possible after the nut assumes its operating position within the insert.

It is possible in many installations that the rods will be cut and threaded on the job and if proper regard is not given to the length of thread on the rods, the device might not function as described because the upper end of the rod could be too high or too low. A modification of the nut structure which would prevent this is illustrated in Fig. 6 wherein the nut is shown in section at 22*a* and the threaded bore terminates short of the top surface of the nut and is then reduced in size to receive the shank 27 of a small rivet-like member, the head of which is shown at 28 as disposed within the threaded bore and engaged by the end of the rod here shown at 24*a*. Thus, with the rod partially inserted, the end 27 of the rivet would not project upwardly to prevent insertion of the nut into the insert and, when the rod is fully inserted, the end will project as shown to prevent removal of the nut from the insert as previously described.

I claim:

1. A device for adjustably supporting the upper end of a depending hanger rod for conduits or the like comprising a member having an upper surface of generally arcuate contour and including an elongated slot passing through the member at the bottom of the generally arcuate contour of the upper surface, an elongated nut threaded to receive a hanger rod inserted through said slot and spanning the slot within the member for support by said member, said nut having a surface of generally spheroidal contour engaging the arcuate surface of said member, the arcuate surface of said member and the spheroidal surface of said nut having mating longitudinal extending spaced ridges having crests, which ridges prevent movement of the nut longitudinally with respect to said slot while the nut is engaging said member, the crests of the ridges on the nut also following a spheroidal contour to permit universal swinging movement of a rod depending from the nut, and means effective upon the hanger rod being inserted into the nut to prevent raising of the nut sufficiently to clear the ridges in the member while still permitting said universal swinging movement.

2. A concrete insert for adjustably supporting a conduit hanger rod which comprises a box-like structure adapted to be let into a concrete support with one wall exposed, said wall having an elongated slot formed therein, the lower inner surface of said box having a generally arcuate contour, said slot passing through the wall at the bottom of the generally arcuate contour of the lower inner surface, an elongated nut threaded to receive a hanger rod, inserted through and spanning said slot within the box, said nut having a surface of generally spheroidal contour engaging the arcuate interior surface of the box, the arcuate surface of said box and the spheroidal surface of said nut having mating longitudinal extending spaced ridges having crests, which ridges prevent movement of the nut longitudinally with respect to said slot while the nut is engaging the said surface of the box, the crests of the ridges on the nut also following a spheroidal contour permitting universal swinging movement of a rod depending from said nut, and means effective upon the hanger rod being inserted into the nut to prevent raising of the nut sufficiently to clear the ridges in the box while still permitting said universal swinging movement.

3. The invention as claimed in claim 2 wherein the upper surface of said nut is of sufficient length to cause one end thereof to abut the top of the box-like structure before the opposite end registers with the edge of the slot when the nut is spanning the slot.

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