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HANGER FOR CYLINDRICAL CONDUITS AND THE LIKE

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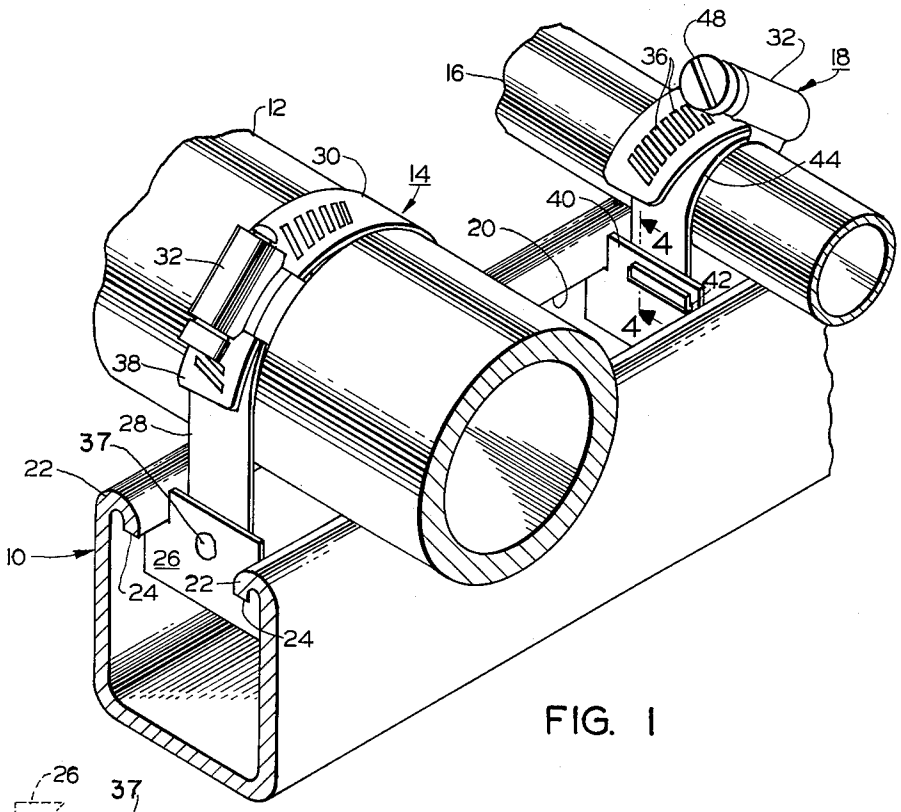


FIG. 1

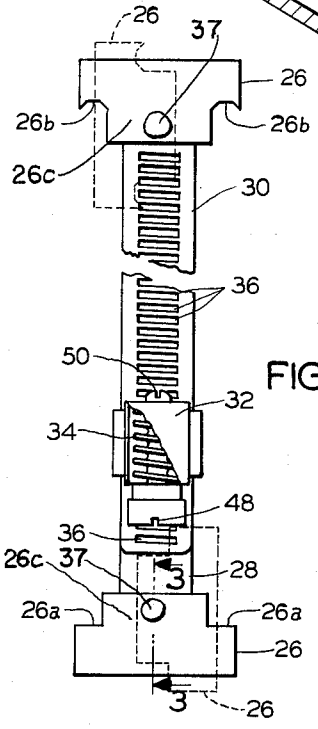


FIG. 2

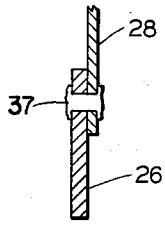


FIG. 3

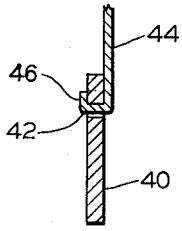


FIG. 4

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HANGER FOR CYLINDRICAL CONDUITS AND THE LIKE

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The present invention is directed to pipe or conduit hangers and relates particularly to an improved hanger adapted to accommodate conduits of different diameters.

One environment for this invention is in the building construction field particularly where it is necessary to fasten a plurality of electrical conduits to a rigid support member. More particularly, a plurality of tubular conduits which may have among themselves different diameters are frequently supported in closely adjacent positions on a cross member or strut. The conduits may be supported along their length at several such cross members spaced, for example 10 to 15 feet apart. Thus a workman will secure each of the series of conduits to the same strut or support at about the same time.

Being that certain of the conduits are of diameters different than the others in the group, it has been necessary for the workman to carry with him or have readily available various sizes of conduit clamps or holders adapted to retain the conduits of different diameters. Of necessity this requires the availability of numerous hangers supplied and entails a workman's selection of the particular hanger for the particular conduit from such supplies.

This arrangement is wasteful in time and tedious especially when the workmen do not have available the size of hanger needed for the particular conduit. Further, it requires the stocking of various sizes of hangers corresponding to the sizes of conduits on the job.

A desirable practice in arranging a plurality of conduits in a side-by-side relationship is to space the conduits closely together as is consistent with the space available. An obstacle frequently encountered in such arrangement is that the close spacing makes extremely diffcult the attachment of conduit hangers by reason of there being a limited space within which to fix the hangers onto the support and then to secure the hangers or tighten them by means of a hand-tool. Thus practical conditions have limited to a measure the closeness of the spacing which can be obtained.

A general object of the invention is to provide an improved hanger for cylindrical conduits or the like which is readily cooperable with conduits of different diameters.

Another object is to provide a hanger of the type described which permits installation thereof in closely confined quarters.

Still another object is to provide a hanger of the type described which may be brought into clamping engagement with the conduit by use of a hand-tool from either of two positions.

Yet another object is to provide a hanger of the type described wherein pivotally movable anchor portions permit insertion of the hanger into a narrow space between adjacent conduits.

A further object is to provide an improved conduit hanger for fastening a variety of sizes of conduits to a

support member, which hanger is readily mountable, economical to manufacture, and adapted to secure such conduits to a support member firmly over a long service life.

Further features of the invention pertain to the arrangement of the improved conduit hanger whereby the above outlined and additional operating features are attained.

The invention, both as to its organization and method of cooperation, together with further objects and advantages, will best be understood by reference to the following specification taken in connection with the accompanying drawing wherein like reference numerals designate like parts throughout, in which:

FIGURE 1 is a perspective view showing two embodiments of the present invention in operative position;

FIGURE 2 is a view of the hanger of the present invention in its developed or extended position, the view being fragmentary and showing at the upper portion thereof a first form of anchor means and at the lower portion thereof a second form of anchor means encompassed by the present invention;

FIGURE 3 is a fragmentary sectional view taken in the direction of the arrows along the line **3—3** in FIG. 2; and

FIGURE 4 is a fragmentary sectional view taken generally in the direction of the arrows along the line **4—4** in FIG. 1.

There is shown in FIG. 1 of the drawing a support member **10** having a large conduit **12** fixedly secured thereto by a conduit clamp or hanger **14** and a second and smaller conduit **16** similarly secured to the support **10** by a second form of hanger **18**, the hangers **14**, **18** being made in accordance with and embodying the principles of the present invention.

As shown in FIG. 1 the support **10** is a tubular element generally rectangular in cross section and having an elongated opening **20** in the upper surface thereof, the borders of which are defined by the spaced apart inwardly turned flanges **22**. The inwardly facing or edge surfaces **24** of the flanges **22** may be flat, as shown in FIG. 1, or may be beveled or rounded slightly depending upon the method and apparatus by which the support **10** is fabricated.

The cylindrical conduit **12** may comprise a thin-wall electrical metallic tubing into which is placed a plurality of electrical conductors (not shown). Well understood is that tubing of the instant variety is fabricated in a variety of different sizes the specifications of which pertain to the outside diameter of the tubing and the wall thickness. Thus a 2" tubing would have a 2" outside diameter, the inside diameter being smaller in proportion to the wall size.

On the other hand the conduit **16** may be a conventional pipe such as is frequently used for transmitting fluids. In this case the conduit **16** is specified in accordance with standard pipe sizes which pertain to the nominal inside diameter of the pipe where, for example, a 1" pipe size would have an outside diameter of 1.32". A feature of the invention is that the same conduit clamp or hanger is operable to secure either conduit **12** or **16** to the support **10** where in the past hangers of different sizes were re-

quired. Further, the instant conduit hanger or clamp is adaptable to either tubing or pipe sizes interchangeably.

Considering now the conduit hanger **14**, such hanger **14** includes a pair of anchors **26** (only one being shown in FIG. 1) formed preferably of sheet metal material of about 1/16" thickness. As shown in FIG. 2, the anchor **26** is generally T-shaped in plan having re-entry or recessed corners which establish the ears **26***a*, **26***b* outwardly of the medial portion **26***c* of the anchor **26**. The ears **26***a*, **26***b* are adapted to engage on their upper edges the flange surfaces **24** of the support **10**, and when such surfaces **24** are flat the upper edges of the ears may be straight as illustrated for the ears **26***a*. On the other hand, where the flange surfaces **24** are beveled or rounded it may be desirable to cope the ears downwardly as illustrated for the ears **26***b*. In most cases the flange surfaces **24** are rounded and the shape of ear **26***b* is most advantageously used therewith.

Inwardly of the ears **26***a*, *b* the medial portion **26***c* of the anchor presents parallel edges spaced apart in relation to the spaced flanges **22** so as to provide a centering function of the hanger in the gap **20**. Should the conduit **12** be urged axially after tightening of the hanger, the medial portion **26***c* will resist disengagement of the ears **26***a* or **26***b* from the flange surface **24** through contact with one flange **22** and thereby maintaining the hanger in operative association with the support **10**.

Each anchor **26** has extending from the medial portion **26***c* thereof a bendably compliable band, formed preferably of metal strap material, which encircles the outer periphery of the conduit **12**. As thus arranged the bands overlap, the inner band herein being designated **28**, the outer **30**. Rigidly mounted on the inner band **28**, as by spot welding, is a housing **32** having arranged therein a worm-screw **34**, best shown in FIG. 2. The bottom of the housing **32** is open so as to permit the worm-screw **34** to project therethrough into engagement with the outer band **30** and particularly to cooperate with several of the array of transversely disposed screw slots **36** disposed in the outer band **30** over a substantial portion of the length thereof. To be recognized at this juncture is that the outer band **32** is of a length greatly exceeding that of the inner band **28** so that the hanger **14** may accommodate a variety of conduits having widely different diameters. It is necessary that the outer **30** and inner **28** bands overlap so as to permit the worm-screw **34** on the inner band **28** to engage the screw slots **36** of the outer band **30**. In most cases a portion of the outer band **30**, which may be termed a tail **38**, will extend beyond the housing **32**, as shown in FIG. 1.

Considering now the means for fastening the anchor **26** to a band **28** or **30**, the hanger **14** incorporates a highly advantageous arrangement wherein the band is pivotally fastened to the anchor **26** by means of a fastener such as the rivet **37** whereby the anchor **26** may be rotated with respect to the band through an angle of about 90° so as to come generally into alignment with the band as shown in the broken lines of FIG. 2. As thus arranged the anchor **26** may be inserted into the opening **20** of the support **10** without the need of skewing or otherwise twisting the band. Where adjacent conduits are closely spaced so as to preclude turning of the band and anchor within the space available, the hanger **14** nevertheless may be installed. Once the hanger is in its turned or aligned position and has been inserted downwardly beneath the edge surfaces **24**, of the flanges **22**, the anchor **26** may be pivoted to its operative condition, as shown in full lines in FIGS. 1 and 2, by simply shaking the band and anchor or by means of a hand-tool such as a screwdriver to bring the ears **26***a* or **26***b* into engagement with the surfaces **24** of the flanges **22**.

Another form of attachment of the anchor to the band is present in the hanger **18** as shown in FIGS. 1 and 4. More specifically, the hanger **18** includes a pair of anchors **40** having in the medial portion thereof a slot **42** of a width and height to accommodate the associated band **44**. The lower end portion of the band **44** is formed into a J-portion **46** for disposition in the slot **42** and may be further affixed to the anchor **40** by spot welding. From this it is clear that the anchor **40** is rigidly secured to the band **44** over a substantial area of the end portion **46** to provide a strong and firm attachment which may be economically affected.

Referring again to the worm-screw **34** it will be seen in FIGS. 1 and 2 that the screw projects from each end of the housing **32**. Further, each end of the screw **34** is provided with means for accommodating a hand-tool, such means including an aperture or recess for a screw-driver or Allen wrench. Illustrated herein is a slot **48** at the large end of the screw **34** and a slot **50** at the smaller end thereof. The advantage of having two facilities for rotating the screw **34** is that in tightly confined spaces one end of the screw **34** may be inaccessible for reach with a hand-tool while the other end may be readily accessible. This feature finds great utility where conduits are closely spaced. Further it will be seen from a comparison of the two sizes of conduits **12**, **16** that the disposition of the housing **32** with respect to the conduit may vary in accordance with the diameter of such conduit, thus presenting the respective slots **48**, **50** at different orientations with respect to the conduit.

By use of the conduit hanger **14** or **18** it has been found that widely varying diameters of conduits may be secured to supports such as support **10** without the need of using a different size of hangers. Thus a workman may go on to the job with but a single or universal size conduit hanger and not be required to select a different sized hanger for each diameter of conduit encountered.

While there has been described what is at present considered to be the preferred embodiments of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true scope and spirit of the invention.

The invention is claimed as follows.

I claim:

1. Apparatus for securing a cylindrical conduit or the like fixedly against a support having two spaced apart, inturned flanges defining an elongated slot therebetween, comprising: a pair of anchors insertable longitudinally of such slot and each sized for permitting turning into an operative holding position to extend laterally of a slot, one anchor positionable on each side of such conduit, each anchor having two ears laterally spaced apart a distance to permit engagement of each ear with one such inturned flange; a shoulder inwards of each ear and extending from such slot proximate to the side of an inturned flange for ensuring that said anchor is centered in such slot to maintain each of said ears in engaging association with one of such flanges irrespective of longitudinal forces on such conduit; each anchor having secured thereto mediate said ears a band bendably conformable to the outer periphery of such conduit, each band from the respective anchor extendable over the outer periphery of such conduit to converge with the other band in an overlapping relationship, band-tightening means including a worm-screw mounted on the inside one of the overlapped bands; and means on the outside band cooperable with said worm-screw for contracting said bands to urge such conduit against such flanges, said worm-screw being provided at each end thereof with hand-tool receiving means facilitating rotation of said worm-screw from either end thereof.

2. The apparatus defined in claim **1** wherein the anchor is secured to the band for relative pivotal movement so as to generally align said ears in the direction of the band for ready insertion of the anchor between such inturned flanges.

3. The apparatus defined in claim **1** wherein the anchor

medially of said ears is provided with a band receiving opening and the end portion of the band is turned-over for insertion into said opening in hooking engagement with the anchor.

4. The apparatus in claim 1 wherein said hand-tool receiving means includes a screw-driver tip-receiving configurative arranged in said ends.

References Cited by the Examiner

UNITED STATES PATENTS

519,312	5/1894	Arthur	24—282
1,262,413	4/1918	Tyler	24—282
2,375,513	5/1945	Bach	248—59
2,384,158	9/1945	Carpenter et al.	248—68
2,386,629	10/1945	North et al.	24—274
2,746,701	5/1956	Carpenter et al.	248—73
2,880,949	4/1959	Fuss	248—70
3,145,962	8/1964	Kindorf	248—68

FOREIGN PATENTS

240,764	10/1959	Australia.
1,038,226	5/1953	France.
1,131,413	2/1956	France.
627,899	8/1949	Great Britain.
178,697	3/1962	Sweden.
300,125	9/1954	Switzerland.

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