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PIPE HANGER

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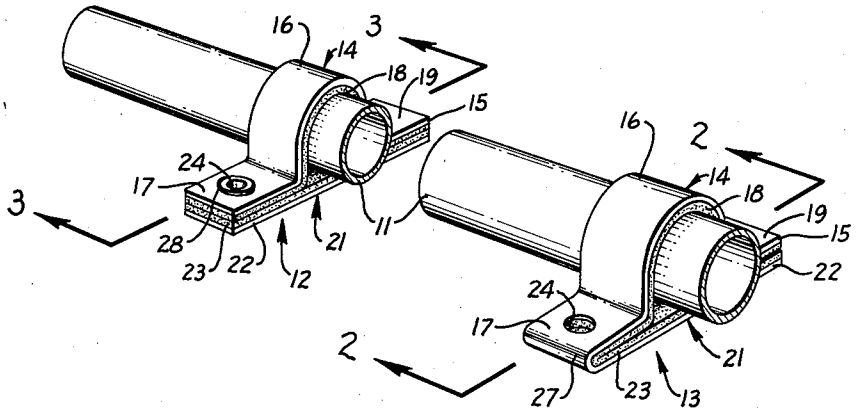


FIG. 1.

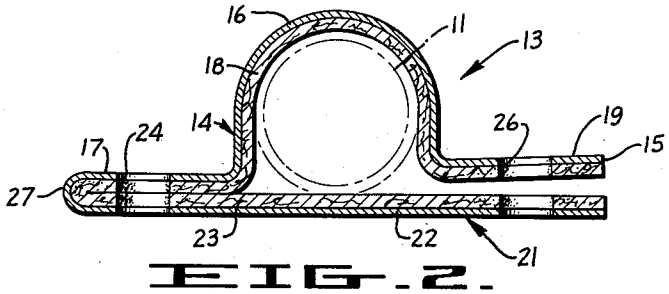


FIG. 2.

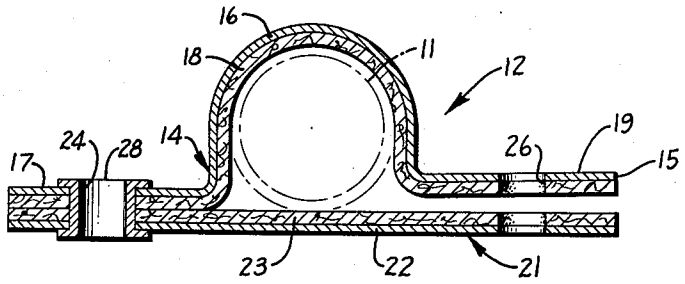


FIG. 3.

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PIPE HANGER

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The present invention relates to improvements in a pipe hanger and particularly to a pipe hanger suitable for supporting copper tubing.

Recently, the use of copper tubing for water lines, and particularly hot water lines, has become quite popular because of the advantages obtained by reduced corrosion both inside and outside. This reduced corrosion gives the tubing a longer operating life together with more satisfactory operation resulting from the maintenance of an unobstructed passage.

Prior to the present invention, such tubes were generally supported by conventional pipe hangers which are usually of a U-shape proportioned to fit around the pipe, and which have outwardly extending tabs through which screws and bolts are engaged. These hangers are typically formed of galvanized iron or similar material.

While supports of the class mentioned above are suitable for the purpose of holding the copper pipes, such installations have certain disadvantages. One of these disadvantages is caused by axial expansion and contraction of the pipe due to temperature changes. This drags the pipe through the hanger, causing annoying groaning and scraping noises. The problem is further aggravated by the high coefficient of expansion of copper and by the differential expansion between the hanger and the pipe.

Another problem that has been encountered with such conventional supports is the electrolytic effect between two dissimilar metals which tends to eat away the copper at the hanger. Such corrosion results in the loss of one of the advantages obtained by using copper pipe.

It has been suggested to wrap the pipe with plastic tape, but this involves time-consuming labor, is expensive, and the tape tends to prevent free movement of the tubing in the hanger under certain conditions, causing unwanted buckling of the pipe. Alternatively, the plastic tends to catch on the hanger as it moves axially until the tape works out and no longer gives firm support.

It is therefore a primary object of this invention to provide a pipe hanger which provides a satisfactory, secure and firm support for the pipe but which will allow the pipe to slide freely and silently through the hanger.

Another object of the invention is to provide a metallic pipe hanger which supports a pipe of dissimilar metal upon a surface that does not produce an electrolytic effect in contact with the pipe.

A further object of the invention is to provide a pipe hanger of the character described which performs its functions and is not adversely affected by the range of temperatures encountered in hot water pipes.

Still another object of the invention is the provision of a pipe hanger of the character described that is simple in construction and capable of providing many years of satisfactory service.

Further objects and advantages of our invention will be apparent as the specification progresses, and the new and useful features of our pipe hanger will be fully defined in the claims attached hereto.

In its broad aspect, the present invention provides a pipe hanger comprising a metal bracket having a resilient fibrous material on its inner surface which is adapted to grip the pipe in a manner preventing lateral movement of the pipe while allowing axial movement. Preferably, the resilient material is felted and is of such nature as to have a comparatively low coefficient of friction against a copper surface, felted fibers of organic origin being particularly well adapted for this use.

The preferred forms of the invention are illustrated in the accompanying drawing, forming a part of this specification, in which:

FIGURE 1 is a perspective view showing two forms of pipe hangers constructed according to the invention as seen in place on a copper tube or pipe;

FIGURE 2, a cross-sectional view taken in the plane of line 2—2 of FIGURE 1; and

FIGURE 3, a cross-sectional view taken in the plane of line 3—3 of FIGURE 1.

While we have shown only the preferred forms of our invention, it should be understood that various changes or modifications may be made within the scope of the claims attached hereto without departing from the spirit of the invention.

Referring to the drawing in detail and particularly to FIGURE 1, there is shown a pipe 11 having pipe hangers 12 and 13 in supporting position thereon. Both of the pipe hangers 12 and 13 are constructed in accordance with the present invention and comprise a first section 14 formed from a metal strip 15 having a substantially U-shaped portion 16 and a substantially flat portion 17 extending laterally from the leg of the U, and a felt pad 18 permanently attached to the inner surface of the first section in position to bear against a pipe embraced by U-shaped portion 16.

The U-shaped portion 16 has a part thereof in the shape of a circular arc, preferably a semicircle. The depth of the U with the felt lining in place will be substantially the diameter of the semicircle in the forms here shown to provide the desired resilient grip on pipe 11. In the preferred forms, another substantially flat portion 19 extends laterally from the leg of the U opposite portion 17.

It is important that the felt pad be permanently secured to the first section so that slippage of the pipe takes place between the pipe and the felt pad. For this reason, it is necessary that the coefficient of friction between the pad and the pipe be low for best results.

In general, the felt may be composed of any fibrous material having the described resiliency and low coefficient of friction, including but not limited to organic fibers, either natural or synthetic. Suitable materials of this class include animal hairs such as wool, mohair and horsehair, vegetable fibers such as cotton and linen, and synthetic fibers such as regenerated cellulose and nylon. We have found that felted animal hairs such as wool provide excellent resiliency and low coefficient of friction, and have a long, trouble-free operating life under the conditions normally encountered in copper tubing installations.

Pipe hangers 12 and 13 also each include a second section 21 containing a substantially flat metal strip 22 adapted to fit across the open end of the U and against the laterally extending portion of said first section. Where the first section has two laterally extending portions, as in the preferred embodiments shown in the drawing, the second section fits against both portions.

Metal strip 22 also has a felt pad 23 attached thereto on the side adjacent the first section. This felt pad is also permanently attached to the metal so as to allow the pipe to slip against the felt while positively preventing the felt from slipping against the metal strip. Attachment of felt pads 18 and 23 may be accomplished by any suitable glue or other bonding means that provides permanent adherence between the felt and the metal.

As shown in the drawings, two holes 24 and 26, suitable for receiving screws, bolts or other fastening means, are provided through portions 17, 19 and strip 22. At-

tachment to studs, joists or other supports may be accomplished by using one or both holes.

In the preferred forms illustrated, the felt pads 18 and 23 also cover the entire inside surfaces of the metal strips 15 and 22 and yield somewhat as the fastening means are used to tighten the strips relatively together. This serves to control the pressure exerted through the cushion of felt against the pipe so that the pipe is gripped against lateral movement yet not gripped too tightly for axial movement to take place. In addition, such construction helps to retain the felt strips in place as the pipe moves axially.

An advantage of the invention resides in the ease of fabrication of the unit. This is particularly true of the preferred embodiments shown in the drawings. Thus in FIGURES 1 and 2, the entire unit is constructed from a single metal strip with the two sections being integrally connected at the end of a laterally extending portion. When fabricating the unit, the felt pad is glued in place, the U is formed in the upper section, and the strip is bent over at 27 to form the body of the hanger. Holes 24 and 26 are then bored or punched in the desired positions.

In the embodiment shown in FIGURES 1 and 3, each section is formed separately with the felt pads glued in place. A hollow rivet 28 is installed to hold sections 14 and 21 together and, at the same time, provide the hole 24. Hole 26 may then be formed through the extending portion 19 and confronting area of section 21. Other methods of fabricating these embodiments will be apparent to those skilled in the art, and these steps are given for illustration only. In addition, other forms or modification may also be used, if desired, without departing from the invention.

In a typical installation, the pipe hanger will be slid over the end of the pipe 11, and fastened in place. For example, it may be screwed to wooden floor joists or studs, using one or both holes. It may also be bolted to a conventional strap-type pipe hanger, if desired. In either case, the pipe is free to slide axially without noises due to scraping of metal on metal. The felt also serves to dampen vibrations in the pipe which may be caused from noisy valves or the like, and prevent their transmission to walls or floors.

We claim:

1. A pipe hanger, comprising metallic support means formed for receiving a pipe in encircling relation thereto, a resilient pad secured to said support means in position to be interposed between said means and the pipe, said means being adapted for clamping said pad against the pipe, and said pad being formed of a material having a low coefficient of friction with the pipe whereby the pipe will be held firmly against lateral movement and with freedom of axial movement relative to said support means.

2. The pipe hanger defined in claim 1, in which the pad consists essentially of a felted fibrous material.

3. A pipe hanger, comprising a metal bracket having a portion thereof in the shape of a circular arc, and a felt pad permanently attached to the inner surface of said bracket and forming an inner surface of felt whereby the felt fits snugly against a pipe with a grip sufficient to prevent lateral movement while allowing axial movement.

4. The pipe hanger defined in claim 3, in which the felt is wool and in which the felt is present over the entire inside walls which are engageable with a pipe.

5. A pipe hanger, comprising a first section containing in the shape of a circular arc and having a portion thereof

a substantially U-shaped metal strip having a part thereof extending laterally from the leg of the U, a felt pad permanently attached to the entire inner surface of said first section, a second section containing a substantially flat metal strip adapted to fit across the open end of the U and against the laterally extending portion of said first section, and a felt pad permanently attached to the entire surface of the second section on the side adjacent said first section.

6. The pipe hanger defined in claim 5, in which holes are provided in the laterally extending portion to accommodate fastening means.

7. A pipe hanger, comprising a first section formed from a metal strip having a substantially U-shaped portion with a part thereof in the shape of a semicircle and a depth of substantially the diameter of the semicircle and having laterally extending portions extending in opposite directions from the upper ends of the legs of the U, a felt pad permanently attached to the inner surface of said first section, a second section formed of a substantially flat metal strip adapted to fit across the open end of the U and against the laterally extending portions of said first section, and a felt pad permanently attached to the second section on the side adjacent said first section.

8. A pipe hanger, comprising a first section formed from a metal strip having a substantially U-shaped portion with a part thereof in the shape of a semicircle and a depth of substantially the diameter of the semicircle and having laterally extending portions extending in opposite directions from the upper ends of the legs of the U, a felt pad permanently attached to the entire inner surface of said first section, a second section formed of a substantially flat metal strip adapted to fit across the open end of the U and against the laterally extending portions of said first section, and a felt pad permanently attached to the entire surface of the second section on the side adjacent said first section, said first and second sections being formed from the same strip and being integrally connected at the end of a laterally extending portion.

9. A pipe hanger, comprising a first section formed from a metal strip having a substantially U-shaped portion with a part thereof in the shape of a semicircle and a depth of substantially the diameter of the semicircle and having laterally extending portions extending in opposite directions from the upper ends of the legs of the U, a felt pad permanently attached to the entire inner surface of said first section, a second section formed of a substantially flat metal strip adapted to fit across the open end of the U and against the laterally extending portions of said first section, a felt pad permanently attached to the entire surface of the second section on the side adjacent said first section, and walls defining a hole in each of the laterally extending portions of said first section and the portion of said second section fitting thereagainst.

10. The pipe hanger defined in claim 9, in which the walls defining the hole in one of the laterally extending portions are formed within a rivet which permanently holds said first section and said second section together.

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