March 22, 1932. L. R. ZIFFERER 1,850,275

PIPE HANGER

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Fig. 1.

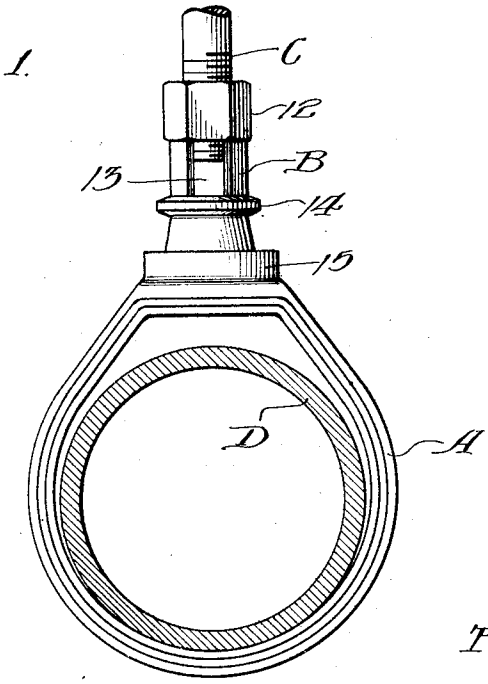


Fig. 4.

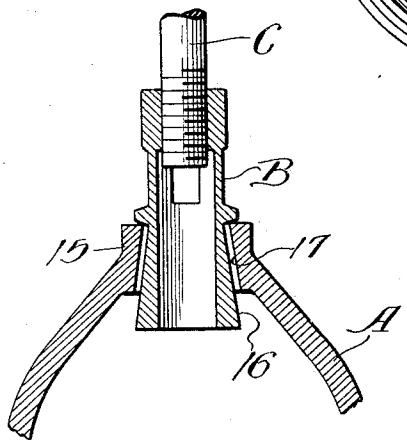


Fig. 2.

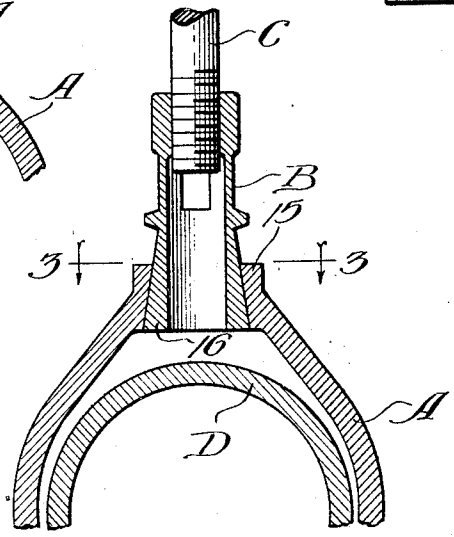
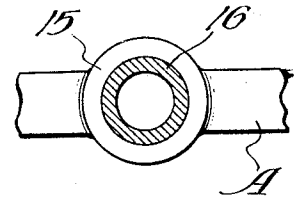


Fig. 3.



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Fig. 5.

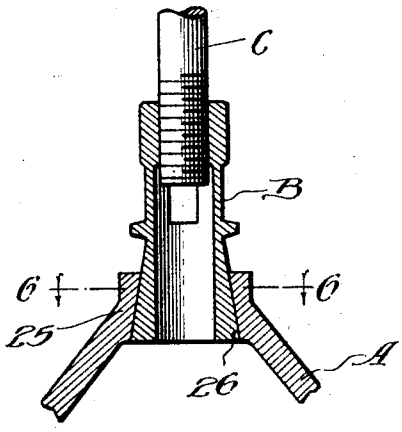


Fig. 7.

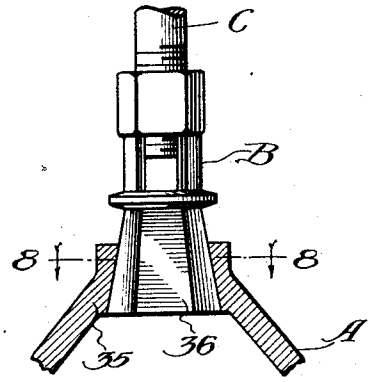


Fig. 6.

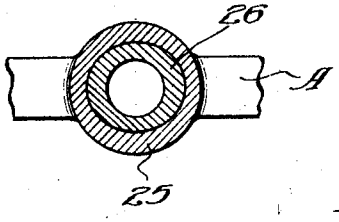


Fig. 8.

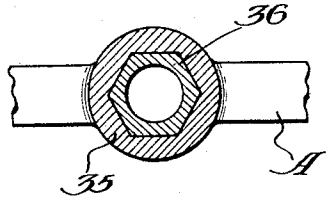


Fig. 9.

Fig. 10.

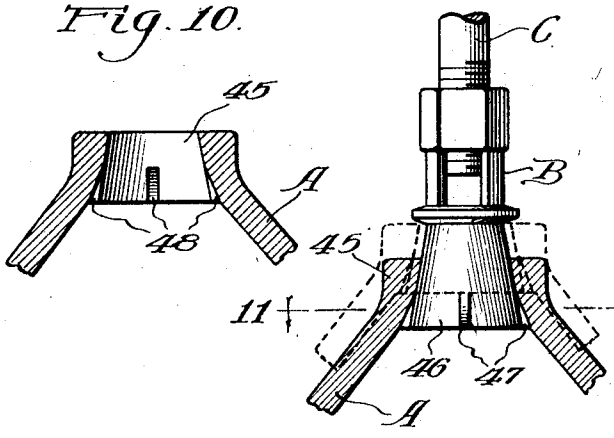
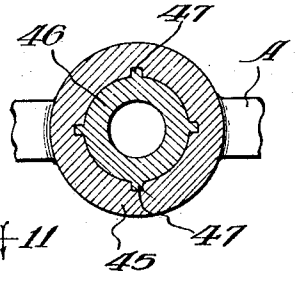


Fig. 11.



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UNITED STATES PATENT OFFICE

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PIPE HANGER

Application filed May 12, 1928. Serial No. 277,150.

This invention relates to a pipe hanger which is adjustable upon a depending overhead support. It comprises a ring having a swiveled mounting upon a sleeve, these two parts being inseparably joined. The present invention is directed more particularly to the connection between the sleeve and the ring by which these parts tend to remain in a relatively fixed rotative position, although freely rotatable after the one has been shifted longitudinally upon the other. It is practicable to embody the invention in any one of a number of different forms, several of which are illustrated in the accompanying drawings, in the manner following:

Figure 1 is a view in elevation of the hanger in its entirety, a pipe, shown in transverse section, being supported therein;

Fig. 2 is a vertical section through the hanger shown in Figure 1;

Fig. 3 is a transverse section taken on line 3—3 of Figure 2;

Fig. 4 which is a view similar to Figure 2, shows the parts moved to a position wherein one may be adjusted rotatively to the other;

Fig. 5 is a view similar to Figure 2 showing a sleeve base having a contour which is elliptical in cross section;

Fig. 6 is a transverse section therethrough on line 6—6 of Figure 5.

Fig. 7 is a view partly in elevation and partly in section showing the invention further modified to provide a sleeve base for hexagonal contour;

Fig. 8 is a transverse section therethrough taken on line 8—8 of Figure 7;

Fig. 9 which is a view partly in elevation and partly in section, shows a further modification of the invention, the base of the sleeve in this instance being conical with ribs extended radially therefrom;

Fig. 10 is a detail in elevation of the ring collar which is formed to co-operate with a sleeve having the construction shown in Figure 9; and

Fig. 11 is a transverse section taken on line 11—11 of Figure 9.

The pipe hanger of this invention comprises a ring A having a swiveled connection with a sleeve B the internal threads of which co-operate with a depending bolt or rod C having an overhead fastening. By rotating the sleeve the hanger may be adjusted vertically upon the bolt. A device of this character is adapted to support a pipe D which is receivable within the ring A, as shown.

The sleeve is provided by preference with a polygonal head 12 affording a convenient wrench hold. It may also have one or more transverse apertures 13 affording a view of the supporting bolt C which is threaded therewithin. A flange 14 which extends circumferentially of the sleeve provides an upper stop for a collar 15 which upstands from the ring component A. At the lower end of the sleeve is an enlarged base 16 providing a lower stop for the ring collar.

In the construction shown in Figures 1 to 4, inclusive, the sleeve base tapers outwardly and co-operates with a like tapering surface 17 formed interiorly of the collar 15, the arrangement being such that the ring of the hanger normally occupies the down position shown in Figure 2. When the hanger is supporting a load, the vertical force exerted thereby is sufficient to produce a wedge action between the respectively engaging tapering surfaces, such that the sleeve is locked frictionally against rotation relative to the associated parts. By relieving the hanger of its load or optionally by lifting the ring component slightly, as shown in Figure 4, this friction lock between the sleeve and collar may be released, permitting the sleeve in such circumstances to be adjusted freely to a selected vertical position upon the supporting bolt. In any such movement of the ring the flange 14 serves as an upper stop, and due to the fact that this flange overlies the upper end of the collar it co-operates with the sleeve base to prevent disassembly of the ring and sleeve under all conditions.

A very similar construction is set forth in Figures 5 and 6 wherein the only difference is in the cross sectional contour of the tapering base of the sleeve and the corresponding tapering contour of the ring collar. The sleeve in the region of its base 26 is of elliptical cross section, and the contour of the ring col-

lar 25 is of corresponding shape. Because of this peculiarity of construction, the ring can occupy the extreme down position shown in Figure 5 only when the sleeve is rotated to a position wherein the major axes of the two elliptical co-operating surfaces are in alignment. There are two such positions situated 180° apart. The effect of this construction is to render the lock between the sleeve and ring positive rather than merely frictional.

A further modification of this invention is suggested in Figures 7 and 8 wherein the tapering base 36 of the sleeve is of hexagonal contour with the co-operating surfaces of the ring collar 35 similarly configured. With such a construction the ring may be locked positively relative to the sleeve in anyone of six rotative positions situated 60° apart.

In Figures 9, 10 and 11, I have suggested a further modification of the invention. The tapering base 46 of the sleeve is here provided with one or more ribs 47 preferably tapered outwardly to a greater angle, as shown. Each of these ribs at its upper end may be merged into the surface of the sleeve base. The ring collar 45 which is designed for cooperation with the sleeve so formed, is provided with a surface having a taper corresponding generally to that of the sleeve base, and is further formed with one or more slots 48 into which the outstanding ribs may enter. With a construction having four such ribs as suggested in the drawings, it is possible for the ring to be locked positively with the sleeve in any one of four positions situated 90° apart.

A pipe hanger formed according to any of the embodiments herein illustrated may be conveniently cast in metal, the sleeve being produced first and then serving as a core for the moulding of the ring collar which is produced in a second operation. By proceeding in this manner, I attain a perfect register between the co-operating surfaces of the sleeve base and the ring collar, regardless of the cross sectional contours thereof. The advantages of such a construction reside largely in the fact that the hanger may be produced uniformly with economy, be handled always as a unit article, and be installed and adjusted with a minimum of effort and time. In use the sleeve is rotated to a selected position of adjustment on the supporting bolt, following which the weight of the hanger and its load acts frictionally or positively to lock the sleeve against further movement, and the ensuing wedge action serves additionally to oppose relative longitudinal movement of the sleeve and collar which can take place only by the application of a force which is sufficient to break the wedge lock described.

I claim:

1. A pipe hanger in which is comprised a sleeve having an outwardly extended stop; the sleeve below the stop having its exterior surface outwardly tapered to provide a base, a ring provided with a collar surrounding the sleeve base and formed with an interior surface tapered in conformity with the exterior of the sleeve base and adapted to engage therewith when the collar is in an extreme downward position whereby a wedge force is exerted to frictionally lock the one part against rotation relative to the other, the stop on the sleeve overlying the upper end of the collar and being spaced therefrom a distance sufficient to permit a limited upward movement of the ring upon the sleeve whereby to release the lock between the ring and the sleeve.

2. In a pipe hanger, the combination of a ring having a collar the interior of which is tapered, a sleeve extended through the collar having a tapered base with which the corresponding collar surface is adapted to engage frictionally when the ring is disposed adjacent to the lower end of the sleeve base, and a stop projecting laterally from the sleeve at a point above the upper end of the collar when the latter is in its down position, the stop being adapted to limit the upward movement of the collar when the one part is shifted longitudinally upon the other.

3. In a pipe hanger, the combination of a ring having a collar, a sleeve extending through the collar and having spaced means between which the ring is shiftable longitudinally thereupon, one of said means being tapered and co-operating with a correspondingly tapered surface interiorly of the collar for preventing separation of the collar from the sleeve when the parts are shifted longitudinally in one direction, and adapted to lock with an increasing friction in response to an increase in the vertical force exerted by a load which is suspended in the ring, the other of said spaced means engaging with the collar when the latter is shifted relative to the sleeve in the opposite direction.

4. In a pipe hanger, the combination of a collar from which depends a pipe support, a sleeve adapted for threaded connection with an overhead support extending through the collar, means projecting from the sleeve above the collar for limiting endwise movement of the latter thereupon in one direction, the lower sleeve end having an outwardly tapering surface and the collar interior being similarly tapered for engagement therewith with a wedge action when the collar is shifted endwise upon the sleeve to an extreme down position, the means projecting from the sleeve above the collar permitting a limited longitudinal movement of the latter.

5. In a pipe hanger, the combination of a pipe support depending from a collar having an elongated tapering interior surface, and a sleeve adapted for threaded connection

with an overhead support extending through the collar, the sleeve having an elongated tapering base terminating adjacent the collar bottom, and with which the surrounding collar surface is adapted to engage frictionally when the ring is disposed adjacent the lower end of the sleeve base whereby a variable wedge force is exerted to lock the one part against rotation relative to the other.

6. In a pipe hanger, the combination of a pipe support depending from a collar having an elongated tapering interior surface, and a sleeve adapted for threaded connection with an overhead support extending through the collar, the sleeve having an elongated tapering base terminating adjacent the collar bottom, and a peripheral contour conforming to that of the tapered interior surface of the collar with which the sleeve base is adapted to engage frictionally when the ring is disposed adjacent the lower end of the sleeve base whereby a variable wedge force is exerted to lock the one part against rotation relative to the other.

7. In a pipe hanger, the combination of a collar from which depends a pipe support, and a sleeve adapted for adjustable connection with an overhead support extending through the collar, the sleeve having a tapered base with which the surrounding collar surface is adapted to engage frictionally when the ring is disposed adjacent the lower end of the sleeve base, whereby a variable wedge force is exerted to resist relative rotation between these parts, the engaged tapering surfaces being also formed with complementary eccentric means by which to further oppose such relative rotation.

LOTHAR R. ZIFFERER.