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2,614,304

HOSE CLIP

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Fig. 1.

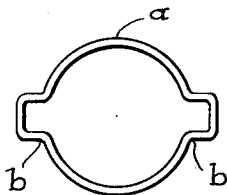


Fig. 2.

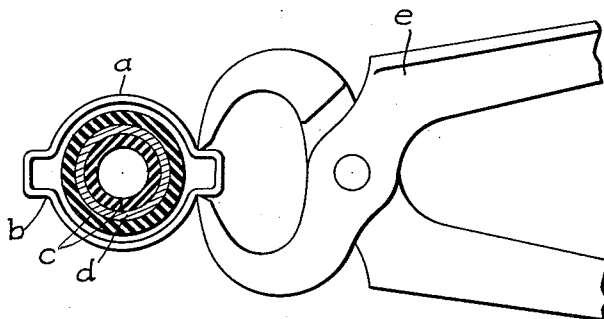
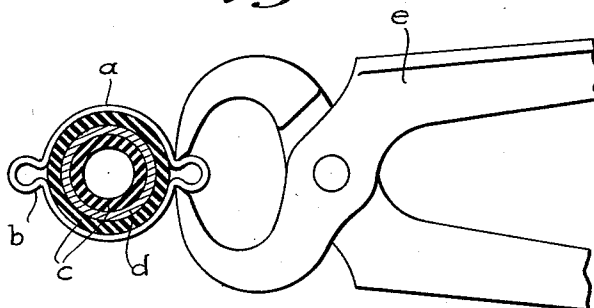


Fig. 3.



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HOSE CLIP

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7 Claims. (Cl. 24-20)

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The present invention relates to a compression band adapted to be mounted on some other structure which is to be clamped, re-inforced, or compressed. The new band is particularly useful as a clip for pressing a hose against a rigid member inserted in the hose.

The present application is an improvement over application No. 188,313 filed by the applicant on October 4, 1950, and which has been abandoned.

Hose clips are known which consist of a metallic ring that is provided with a V-shaped fold which, when the latter is squeezed together, causes the hose to be pressed against a rigid tube. These clips are not adequate to ensure a good hold on the parts that are to be connected and require special tools for squeezing together the sides of the V-shaped fold. This cannot be achieved with an ordinary tool, for instance a pair of pliers, because these do not grip the inclined surfaces of the fold firmly and thus tend to slip. In addition, the joint formed by the squeezed V-fold is overstressed and tends to rupture. With a single fold it is practically impossible to obtain a uniform pressure distribution over the entire circumference of the hose, because the stress acting on this single fold due to the tension on its sides produced by the counteracting pressure of the hose is so great, especially when there is a high internal gas or liquid pressure, that there is a risk that the fold may yield and open.

These disadvantages are avoided by the present invention which concerns a clip in the form of a closed metallic band that is slipped over the hose and has at least two folds spaced along its circumference, these folds being in the shape of a U, the legs of which adjoining the periphery of the ring are at least approximately parallel to each other.

This shape of metal ring or band results in an effective clip where the force which grips the hose is distributed over the circumference and is substantially radially directed. It is only the radially directed components of the forces acting at different points which press the hose tightly on to the pipe inside the hose.

The folds according to the invention greatly facilitate the application of the clip because an ordinary tool, namely a pair of pliers, can be used to fit it on to the hose. The internal diameter of the clip before fitting can exceed the external diameter of the hose by an amount corresponding to the extent of the folds, and after the clip has been slipped on to the hose it is pressed on by applying the jaws of the pliers to

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the inner ends of the parallel sides of each fold. Since the pressure of the jaws is approximately perpendicular to the surfaces of the parallel sides, the pliers do not slip. When the inner ends of the parallel sides of the fold are caused to approach each other due to the external pressure, the diameter of the ring decreases and the extent of this decrease can be adjusted to suit each particular case. During this fitting process the sides of the folds become curved and form small cylinders without being stressed to the point of rupture.

It is advantageous to use annealed steel for the clip, because this material offers very great resistance to any deformation of the folds after they have been bent. Copper or other non-ferrous metals can also be used.

Generally two U-shaped folds located diametrically opposite to each other on the metallic ring clip are sufficient to produce a joint of the desired strength and tightness. For large hose diameters more than two folds can be provided, these being spaced uniformly around the metal ring.

A constructional example of the invention is illustrated in the accompanying drawing where Fig. 1 shows a clip in plan view before fitting, whilst Fig. 2 shows the same clip after being slipped on to the hose and with the pliers applied to one of the folds. Fig. 3 shows the mounted clip after the folds have been squeezed together.

In the figures, *a* indicates a curved portion of the closed metallic ring, *b* the folds in the form of open rectangles, *c* the hose and *d* the pipe connection inside the hose, whilst *e* is a pair of pliers.

As shown in Fig. 1, the metallic ring is provided with two folds *b, b* located diametrically opposite to each other and having a cross-section shaped like an open rectangle or U. The short sides of the folds are parallel and enable the pliers *e* to be applied without the risk of slipping, as illustrated in Fig. 2. Although the diameter of the metal rings or band is considerably greater than that of the hose *c*, when the legs of the U forming the folds *b, b* are pressed together there is such a decrease in the size of the ring that the hose *c* firmly grips the pipe *d* as indicated in Fig. 3. The folds themselves are bent during this process into small rings or cylinders which, however, are not deformed to an extent which may result in a breakage of the clip. Preferably, the legs of the U forming a fold are shorter than the web portion interconnecting the legs.

When the width and thickness of the metal ring is primarily selected with a view to obtaining a strong and tight joint between the hose and the pipe, it can happen that it is overdimensioned. Practical experience has shown, however, that in all cases it is possible to keep the width and thickness of the ring within such limits that the folds can be compressed by hand with the aid of a pair of pliers. The clip can be removed from the hose by simply nipping off the folds.

When the clips are to be produced in a series or batches, it is an advantage to make them from drawn tubes with a cross-section corresponding to the shape of the clip, the tube being cut into sections equal to the width of the clip. The same result can be obtained when the clips are manufactured from extruded metal strip.

I claim:

1. A closed compression metal band comprising curved portions and yieldable substantially radial portions having the configuration of a U when the band is in uncompressed state, the ends of the legs of the U being individually connected with said curved portions, the ends of the legs of the U being squeezed towards each other and said yieldable portions having substantially the configuration of cylinders whose axes are parallel to the axis of the band when the latter is in compressed state.

2. A compression band as defined in claim 1, said curved portions and said yieldable portions

respectively being in diametrically opposed positions.

3. A compression band as defined in claim 1, the legs of the U being shorter than the web of the U.

4. A compression band as defined in claim 1, which is made of annealed steel.

5. A compression band as defined in claim 1, which is made of copper.

6. A compression band as defined in claim 1, which is made of non-ferrous metal.

7. A compression band as defined in claim 1, the ends of the legs of the U of the individual yieldable portions being adapted to be squeezed towards each other by means of conventional pliers.

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The following references are of record in the file of this patent:

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