Dec. 12, 1944. V. E. SPROUSE 2,365,017

HOSE CLAMP

Filed Aug. 20, 1943

Fig. 1.

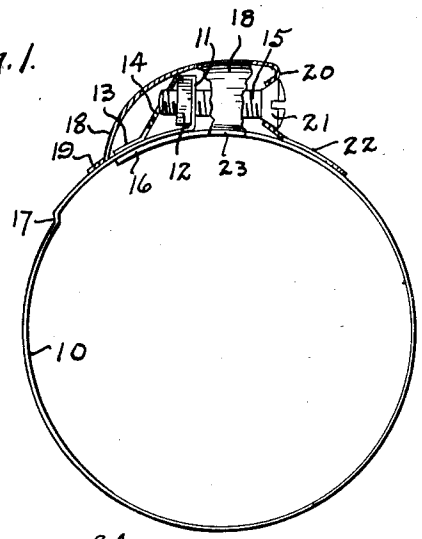
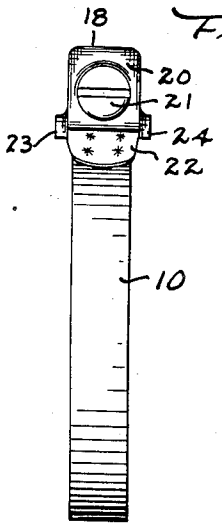


Fig. 2.



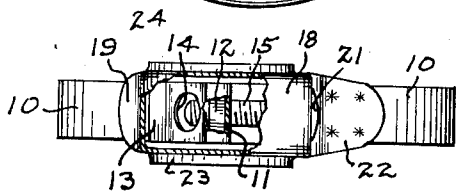
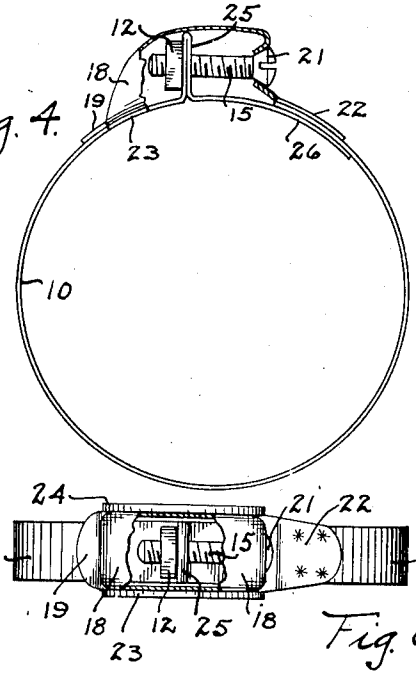


Fig. 3.

Fig. 4.



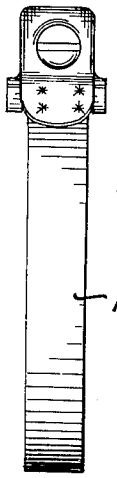


Fig. 5.

Fig. 6.

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HOSE CLAMP

Verner E. Sprouse, Columbus, Ind.

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5 Claims. (Cl. 24—19)

This invention relates to hose clamps and has for a primary object the provision of a clamping mechanism which will be free of projecting bolts, ends, and the like. An important advantage of the invention resides in the fact that the clamping mechanism is entirely confined within a more or less rounded housing so that there will be no danger of the workman catching his clothing on the clamp when he is working about the device to which the clamp is applied. Furthermore, the structure embodying the invention provides a highly efficient method of drawing up the strap of the clamp snugly about the hose to which it is applied in an even manner.

These and other important advantages of the invention, including a better appearing structure, will become apparent to those versed in the art in the following description of the invention as illustrated in the accompanying drawing, in which

Fig. 1 is a view in side elevation in partial section of a structure embodying the invention;

Fig. 2, a view in end elevation;

Fig. 3, a view in top plan and partial section;

Fig. 4, a view in side elevation in partial section in reference to Fig. 3 of a structure embodying another form of the invention;

Fig. 5, a view in end elevation of that second form; and

Fig. 6, a view in top plan and partial section.

Like characters of reference indicate like parts in the several views in the drawing.

Referring first to that form of the invention as shown in Figs. 1–3, an encircling member, such as a strap 10 is formed to have an end portion 11 upturned to serve as an abutment for a screw-threaded member, such as a nut 12. This end portion of the strap 10 is carried around from the top end of the abutment 11 over the top of the nut 12 and thence diagonally downwardly to terminate in a foot 13 which is brought into contact with the outer side of the strap 10 and there secured in any suitable manner, such as by welding. Preferably a hole 14 is provided in the diagonal portion in order to provide clearance for the end of a securing bolt 15 that may extend beyond the nut 12.

The other end of the strap 10 is brought around to lap under the first end portion above described to bear thereagainst in a sliding manner, this end portion being designated as the tongue 16 and free to slide in contact with the inner or under face of the first described end portion. Between those end portions, the strap 10 is formed in a generally circular shape. An offset 17 may be provided in the strap 10, spaced a distance from the abutment 11, this offset being provided to space the remainder of the strap from that offset out to the abutment 11 an increased radial distance to permit that end portion of the strap 10 to slide over the tongue 16 without the tendency of the end of the tongue 16 to gouge into the hose about which the clamp is engaged.

A housing 18, open from its under side, is positioned over the abutment 11 to have a foot 19 at the left-hand end thereof, Fig. 1, bearing in sliding contact with the outer face of the strap 10 beyond the foot 13. At the opposite end of the housing 18 is a wall 20, herein shown as having a hole therethrough, the margin of the hole being formed by having a part of the wall inturned in a frusto-conical shape to serve as a bearing for a like shaped head 21 of the bolt 15. The hole through this end wall of the housing 18 is so located that the axis of the bolt 15 will be normally perpendicular to a diameter of the formed strap 10.

From a lower end of this right-hand wall 20 extends a foot 22 in contact with the outer face of the strap 10. This foot 22 is secured to the strap 10 in any suitable manner, such as by spot-welding. The housing 18 is thus located to be over the abutment 11 under which the tongue 16 extends. Furthermore the bolt 15 is entirely within the housing and the only exposed portion is the outer face of the head 21, herein shown as being slotted to be turned by means of a screw driver for carrying the bolt through the nut 12 in order to reduce the diameter of the strap 10. The head 21 is fixed in relation to peripheral travel around the strap 10 by reason of the housing 18 being secured to the strap 10. The abutment 11 is pulled toward the housing wall 20 when the bolt 15 is revolved therein in the proper direction to effect the clamping engagement. For use on large diameter hoses, the side walls of the housing 11 may be flanged outwardly to form the arcuate side feet 23 and 24 for the purpose of bearing on the hose. In small diameter clamps, these flanges would be preferably omitted due to the difficulty of forming them in a stamping operation. Normally the housing 18 is tended to be rocked down into engagement by the foot 19 with the strap 10 as the bolt 15 is drawn into clamping position by reason of the fact that the wall 20 would otherwise tend to bend around toward the tongue 16. This bending action is prevented by reason of the top and side walls of the housing 18 forming a substantial brace with

the sliding bearing at the foot 19 on the strap 10 in the smaller diameter clamps, aided by the side flanges 23 and 24 bearing against the rubber hose in the larger diameter clamps. The abutment 11 is prevented from bending toward the head of the bolt 15 by reason of the diagonal portion tied through the foot 13 to the strap 10.

Thus a structure is provided wherein there are no corners or projecting bolt ends on which clothing or even the fingers of a workman may be caught. The structure is of particular advantage in places where there is restricted room to work.

Referring now to that form of the invention as shown in Figs. 4–6, the primary difference between this form and the form shown in Figs. 1–3 resides in the forming of an abutment carrying the screw-threaded member to be engaged by the bolt 15. In this second form, the strap 10 is bent upwardly and thence around and back down over itself to form the double strap thickness abutment 25. From the lower end of the downturned part of this abutment, the strap 10 is continued on around to form the tongue 26 lapping under the opposite end portion of the strap 10 which carries the foot 22 of the housing 18, this foot 22 being secured to that end of the strap by any suitable means, such as by spot-welding. The housing 18 has its foot 19 bearing against the outer face of the strap 10 beyond the abutment 25. The nut 12, which is placed outside of the abutment 25, may be loose in reference thereto or it may be secured to the abutment 25 in any suitable manner, such as by sweating or welding.

While I have herein shown and described my invention in the particular forms, it is obvious that structural variations may be employed without departing from the spirit of the invention and I therefore do not desire to be limited to those precise forms beyond the limitations as may be imposed by the following claims.

I claim:

1. A hose clamp comprising in combination, an encircling strap; an outturned abutment on one end portion of the strap including a screw-threaded part; a housing secured to the other end portion of said strap and covering said abutment; a wall in said housing outturned from said strap and having a hole therethrough; a bolt through said hole screw-threadedly engaging with said abutment screw-threaded part; a shoulder on the bolt revolubly engaging about the margin of said hole; and a bearing member carried by said housing to contact said strap beyond said abutment to limit the rocking of the housing toward said abutment when said bolt is drawn up in said screw-threaded part.

2. A hose clamp comprising in combination an encircling strap; an outturned abutment on one end portion of the strap including a screw-threaded part; a housing secured to the other end portion of said strap and covering said abutment; a wall in said housing outturned from said strap and having a hole therethrough; a bolt through said hole screw-threadedly engaging with said abutment screw-threaded part; a shoulder on the bolt revolubly engaging about the margin of said hole; a bearing member carried by said housing to contact said strap beyond said abutment to limit the rocking of the housing toward said abutment when said bolt is drawn up in said screw-threaded part; said abutment comprising an end portion of said strap bent outwardly and thence looped around and back down against and secured to said strap; and said screw-threaded part consisting of a nut positioned within said loop against said abutmsnt.

3. A hose clamp comprising in combination an encircling strap; an outturned abutment on one end portion of the strap including a screw-threaded part; a housing secured to the other end portion of said strap and covering said abutment; a wall in said housing outturned from said strap and having a hole therethrough; a bolt through said hole screw-threadedly engaging with said abutment screw-threaded part; a shoulder on the bolt revolubly engaging about the margin of said hole; a bearing member carried by said housing to contact said strap beyond said abutment to limit the rocking of the housing toward said abutment when said bolt is drawn up in said screw-threaded part; said abutment comprising an end portion of said strap bent outwardly and thence looped around and back down against and secured to said strap; said screw-threaded part consisting of a nut positioned within said loop against said abutment; said other end of said strap extending by a tongue under said housing and under said abutment.

4. A hose clamp comprising in combination an encircling strap; an outturned abutment on one end portion of the strap including a screw-threaded part; a housing secured to the other end portion of said strap and covering said abutment; a wall in said housing outturned from said strap and having a hole therethrough; a bolt through said hole screw-threadedly engaging with said abutment screw-threaded part; a shoulder on the bolt revolubly engaging about the margin of said hole; a bearing member carried by said housing to limit the rocking of the housing toward said abutment when said bolt is drawn up in said screw-threaded part; said abutment comprising an end portion of said strap bent outwardly and thence looped around and back down against and secured to said strap; said screw-threaded part consisting of a nut positioned within said loop against said abutment; said bearing member consisting of a foot slidingly resting on said strap beyond said abutment.

5. A hose clamp comprising in combination an encircling strap; an outturned abutment on one end portion of the strap including a screw-threaded part; a housing secured to the other end portion of said strap and covering said abutment; a wall in said housing outturned from said strap and having a hole therethrough; a bolt through said hole screw-threadedly engaging with said abutment screw-threaded part; a shoulder on the bolt revolubly engaging about the margin of said hole; a bearing member carried by said housing to contact said strap beyond said abutment to limit the rocking of the housing toward said abutment when said bolt is drawn up in said screw-threaded part; said abutment comprising a portion of said strap bent outwardly therefrom and folded back inwardly thereover; and a tongue extending from the inner end of said back fold and around under said other strap end portion.

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