

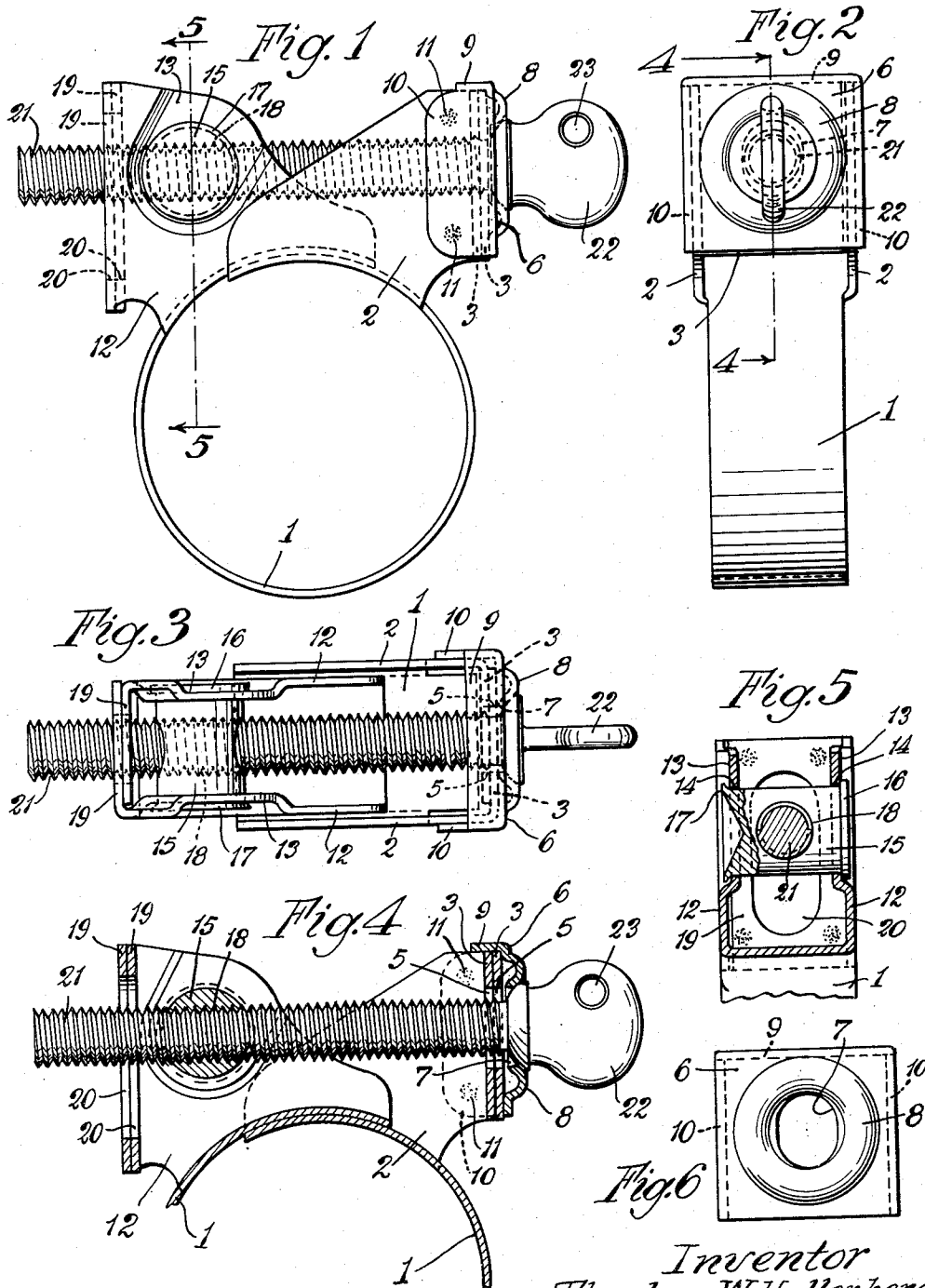
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CLAMP

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CLAMP

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This invention relates to a fastening means, and particularly to a clamp. In the form here shown the invention is embodied in what is usually referred to as a "hose clamp," although it is not limited to any use in connection with a hose, and may be used wherever a clamp or fastening member is needed of the general type indicated.

One object of the invention is to provide a unitary clamp which is formed substantially of a single piece of material.

Another object is to provide a clamp of the type indicated in which means are provided whereby the clamp fits tightly and smoothly over bodies of many different diameters and in which means are provided in the clamp for ready accommodation with a number of diameters.

Other objects will appear from time to time throughout the specification and claims.

This invention is illustrated more or less diagrammatically in the accompanying drawing, wherein:

Figure 1 is a side elevation.

Figure 2 is an end elevation.

Figure 3 is a top plan view.

Figure 4 is a vertical section taken at line 4-4 of Figure 2.

Figure 5 is a vertical sectional detail taken at line 5-5 of Figure 1.

Figure 6 is an elevation of the shoe which is used in the assembled clamp.

Like parts are indicated by like characters throughout the specification and the drawing.

The clamp is preferably formed of a single blank which is not here illustrated as a blank, but which is shown only in the shaped form in which it is embodied in the finished clamp. The clamp comprises a main encircling portion 1 which is provided at or near one end with a plurality of ears 2-2 which are integral with the encircling portion 1 and are upwardly bent until they lie parallel with each other, as shown particularly in Figure 2. These ears 2 are provided with laterally bent portions 3, 3, one of which is formed on each of the ears 2. These laterally bent portions overlap each other, as shown particularly in Figures 1, 3, and 4, and are perforated, as at 5. The perforation is preferably somewhat elongated. When the ears are in the assembled position with the portions 3 overlapping, a shoe member 6 is positioned over the ends of the ears and over the overlapping portions. As shown the shoe 6 is provided with an elongated opening 7 which is surrounded by a raised portion 8, and the shoe is provided on

its top with a flange 9, and on its opposite sides with side flanges 10, 10. These flanges are secured to the ears 2 by spot welding, as at 11, or otherwise, so that when the clamp is assembled, the shoe is a permanent part of the clamp.

At its opposite end the portion 1 is provided with a second pair of ears 12, 12. These ears are provided with inwardly depressed portions which form two depressions, 13, 13, and in each of these depressions a perforation 14 is formed. A trunnion 15 is positioned in the perforations 14. It is preferably headed at one end, as at 16, and is riveted at its opposite end, as at 17. The head and the riveted portion hold the trunnion against separation from the ears, but permit its rotation with respect to the ears. The trunnion is provided with a threaded perforation 18. The ears 12 are provided with overlapping portions 19, 19, which overlap particularly as shown in Figure 3, and each of these portions is provided with an elongated perforation at 20. When the members 19 are in assembled position the two perforations 20 overlap.

An adjusting and tightening screw 21 is positioned in the threaded perforation 18 of the trunnion 15 and extends outwardly through the perforations 20. At its opposite end it extends through the perforations 5 of the members 3 and through the perforations 7 of the shoe 6. The screw may be provided with a flattened head portion 22 by means of which it may be readily rotated, and the head portion is provided with a perforation 23 which is, particularly as shown in Figures 1 and 4, out of center with the axis of rotation of the screw 21. Thus when the screw has been moved to the desired position of adjustment, a wire or other fastening means is secured in the perforation 23 and is secured also to some point of attachment so that the wire prevents undesired rotation of the screw.

It will be realized that whereas I have described and shown a practical and operative embodiment of my invention and the method for carrying it out, nevertheless many changes may be made in the size, shape, number and disposition of parts and in the details and steps of such method without departing from the spirit of my invention. I therefore wish my description and drawing to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting me to my precise showing. In particular, the shape of the ears might be varied, and the degree to which the end portions of the ears of each pair mounting the trunnion and the details of fasten-

ing the various parts into final assembled position might be varied without departing from the spirit of the invention. While the parts have been described as welded into position, they might be otherwise secured. The overlapping portions 19 might be welded or otherwise fastened together, and similarly the portions 3 might be so fastened. The invention is therefore not limited to the particular details shown.

The external shape of the shoe may be almost unlimited in its variations. As shown, however, the shoe is shaped to provide a concave portion about its perforation, and this concave portion is circular. A corresponding convex portion is formed on the screw, and these cooperate to effect centering of the screw with respect to the shoe.

The use and operation of the invention are as follows:

The clamp is formed originally preferably as a unitary blank. It is then curved or shaped so that the member 1 assumes a rounded position and so that the ears of each pair are brought into relatively parallel position with each other, and the end members of each ear are overlapped so that the perforations in them are in register. The trunnion is in position between the ears 12 and is riveted. The shoe at the opposite pair of ears is then put in place and is welded or otherwise secured. Both pairs of members 19 and 3 may be riveted or otherwise fastened together. When the parts are thus assembled, the screw is put in place, being passed through the perforations 7 and 5, and then engaged in the threads of the threaded perforation 18 of the trunnion 15. It may or may not pass through the perforations 20, depending upon the size of the member about which the clamp is fastened. When the clamp is tightened in place about some member, a wire or other fastening member is engaged in the perforation 23 and is secured to prevent undesired rotation of the screw.

For removal the wire or other fastening member is removed or slackened, and the screw may then be rotated to loosen the clamp and permit its removal or to permit the removal of the part or parts previously engaged by the clamp.

I claim:

1. In combination in a clamp, a strap-like member and pairs of ears positioned adjacent each end of said strap-like member, each pair of ears being provided with laterally bent flanges, each flange being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in a pair of ears, and a screw extending through the perforations of said flanges, and being engaged in the threads of said trunnion, and being provided with a head by means of which it may be rotated.

2. In combination in a clamp, a strap-like member and pairs of ears positioned adjacent each end of said strap-like member, each pair of ears being provided with laterally bent flanges, each flange being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in a pair of ears, and a screw extending through the perforations of said flanges, and being engaged in the threads of said trunnion, and being provided with a head by means of which it may be rotated, said head

shaped to receive means for preventing its rotation.

3. In combination in a clamp, a generally rounded strap-like member and pairs of integral, parallel ears positioned adjacent each end of said strap-like member, each pair of ears being provided with laterally bent flanges, each flange being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in a pair of ears, and a screw extending through the perforations of said flanges, and being engaged in the threads of said trunnion, and being provided with a head by means of which it may be rotated.

4. In combination in a clamp, a generally rounded strap-like member and pairs of integral, parallel ears positioned adjacent each end of said strap-like member, the ears of one pair positioned apart sufficiently to embrace the others when the clamp ends are adjusted to cause them to overlap, each pair of ears being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in a pair of ears, and a screw extending through the perforations of said flanges, and being engaged in the threads of said trunnion, and being provided with a head by means of which it may be rotated.

5. In combination in a clamp, a generally rounded strap-like member and pairs of integral, parallel ears positioned adjacent each end of said strap-like member, each pair of ears being provided with laterally bent flanges, the flanges of each pair being secured together and standing approximately at right angles to the planes of the ears, each flange being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in a pair of ears, and a screw extending through the perforations of said flanges, and being engaged in the threads of said trunnion, and being provided with a head by means of which it may be rotated.

6. In combination in a clamp, a generally rounded strap-like member and pairs of integral parallel ears positioned adjacent each end of said strap-like member, the ears of one pair positioned apart sufficiently to embrace the others when the clamp ends are adjusted to cause them to overlap, each pair of ears being provided with laterally bent flanges, each flange being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in the narrower pair of ears, a shoe positioned over the other pair of ears, said shoe being provided with side members secured to the ears which it overlaps and being provided with an elongated perforation in register with the perforations in the adjacent flanges, said shoe being shaped with a concave portion about its perforation, and a screw extending through the perforations of said flanges, and being engaged in the threads of said trunnion, and being provided with a head by means of which it may be rotated.

7. In combination in a clamp, a generally rounded strap-like member and pairs of integral parallel ears positioned adjacent each end of said strap-like member, the ears of one pair posi-

tioned apart sufficiently to embrace the others when the clamp ends are adjusted to cause them to overlap, each pair of ears being provided with laterally bent flanges, each flange being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in the narrower pair of ears, a shoe positioned over the other pair of ears, said shoe being provided with side members secured to the ears which it overlaps and being provided with an elongated perforation in register with the perforations in the adjacent flanges, said shoe being shaped with a concave portion about its perforation, and a screw extending through the perforations of said shoe and of said flanges, and being engaged in the threads of said trunnion, and being provided with a head by means of which it may be rotated.

8. In combination in a clamp, a generally rounded strap-like member and pairs of integral parallel ears positioned adjacent each end of said strap-like member, the ears of one pair positioned apart sufficiently to embrace the others when the clamp ends are adjusted to cause them to overlap, each pair of ears being provided with laterally bent flanges, each flange being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in the narrower pair of ears, a shoe positioned over the other pair of ears, said shoe being provided with side members secured to the ears which it overlaps and being provided with an elongated perforation in register with the perforations in the adjacent flanges, said shoe being shaped with a concave portion about its perforation, and a screw extending through the perforations of said flanges, and being engaged in the threads of said trunnion, said screw being provided with a convex portion adapted loosely to engage the concave portion of said shoe, and being provided with a head by means of which it may be rotated.

9. In combination in a clamp, a generally rounded strap-like member and pairs of integral ears positioned adjacent each end of said strap-like member, each pair of ears being provided with laterally bent flanges, the flanges of each pair being secured together and standing approxi-

proximately at right angles to the planes of the ears, each flange being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in the narrower pair of ears, a shoe positioned over the other pair of ears, said shoe being provided with side members secured to the ears which it overlaps and being provided with an elongated perforation in register with the perforations in the adjacent flanges, said shoe being shaped with a concave portion about its perforation, and a screw extending through the perforations of said shoe, and of said flanges, and being engaged in the threads of said trunnion, said screw being provided with a convex portion adapted loosely to engage the concave portion of said shoe, and being provided with a head by means of which it may be rotated, said head shaped to receive means for preventing its rotation.

10. In combination in a clamp, a generally rounded strap-like member and pairs of integral parallel ears positioned adjacent each end of said strap-like member, the ears of one pair positioned apart sufficiently to embrace the others when the clamp ends are adjusted to cause them to overlap, each pair of ears being provided with laterally bent flanges, the flanges of each pair being secured together and standing approximately at right angles to the planes of the ears, each flange being provided with an elongated perforation, the perforations of each pair of flanges registering when the flanges are positioned one over the other, and a perforated threaded trunnion rotatably positioned in the narrower pair of ears, a shoe positioned over the other pair of ears, said shoe being provided with side members secured to the ears which it overlaps and being provided with an elongated perforation in register with the perforations in the adjacent flanges, said shoe being shaped with a concave portion about its perforation, and a screw extending through the perforations of said shoe, and of said flanges, and being engaged in the threads of said trunnion, said screw being provided with a convex portion adapted loosely to engage the concave portion of said shoe, and being provided with a head by means of which it may be rotated, said head shaped to receive means for preventing its rotation.

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