CLAMPING MEANS FOR SEALING PLASTIC TUBING

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1 Claim. (Cl. 158—89)

This invention is directed to a clamping means for sealing plastic tubing. It is particularly effective for use with containers of blood plasma which not only require sealing devices capable of resisting the assault of moisture and environmental conditions, but also must be impermeable to the entry of bacteria.

Thus, it is an object of this invention to provide a sealing device for plastic tubing that is easily applied and capable of closing the tubing against the entry of moisture or bacteria.

Other objects and attainments of the present invention will become apparent to those skilled in the art upon a reading of the following detailed description when taken in conjunction with the drawings in which there is shown and described an illustrative embodiment of the invention; it is to be understood, however, that this embodiment is not intended to be exhaustive nor limiting of the invention but is given for purposes of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and the manner of applying it in practical use so that they may modify it in various forms, each as may be best suited to the conditions of a particular use.

In the drawings:

FIGURE 1 is a perspective view of a sealing device employing principles of this invention;

FIGURE 2 is a front plan view of the device shown in FIGURE 1;

FIGURE 3 is a sectional view illustrating the device of FIGURES 1 and 2 as applied to plastic tubing, but prior to being deformed into sealed position;

FIGURE 4 is a view similar to FIGURE 3, after the device is in sealed position;

FIGURE 5 illustrates the device of FIGURE 3 seated within a pair of closing dies;

FIGURE 6 is a view similar to FIGURE 5 showing the dies in closed position;

FIGURE 7 is a sectional view along plane 7—7 of FIGURE 5, showing a fragmentary view of the dies.

As shown in FIGURE 1, the sealing device is comprised of a quadrilateral, shell-like member, generally designated 10. As shown in FIGURES 1 and 2, the member 10 is generally rectangular, having two coextensive, planar, opposed parallel walls 12 and 14. The other set of opposed sides each has a wall formed by a pair of adjacent arcuate sections 16, 18 and 16', 18', respectively, which are bowed outwardly and meet approximately at the midpoint of the wall to form a reverse bend 17, 17'.

Thus, the periphery of the walls defined by the segments 16, 18 and 16', 18' forms a curved portion with intermediate connecting portions 17, 17' forming segments of reverse curvature, which are concavo-convex as seen in cross section. The juncture of each side wall and planar wall is formed with an internal radial curvature. The shell 10 may be made of aluminum or any other metal, or metal-like material, adapted to be crimped and capable of maintaining its deformed shape.

As shown in FIGURES 5—7, a pair of dies 30 and 30' suitable for applying the shell 10 includes opposed, flat die surfaces 32, 32' with perpendicular sidewalls 34, 34'. As the dies are brought together with the shell 10 therebetween, the die surfaces 32, 32' bear upon the walls 14 and 12 of the shell 10. The side walls 34, 34' of the die confine the shell to prevent outward extrusion of the shell as it collapses.

When it is desired to seal a length of plastic tubing 40, the tubing is bent back upon itself to form a U-shape, see FIGURE 3. The bight of the bent tubing is inserted into the shell so that the upper section 16, 16' of the shell is aligned with one length of tubing and the lower section 18, 18' of the shell is aligned with the reversed portion of tubing. It is observed that the radius of the arcs forming 16, 16' corresponds to the radius of the tubing 40.

The clip with the tubing therein is inserted between the dies 30, 30' and the dies are driven toward each other to deform the shell 10 and compress the tubing therein. The shell is deformed onto the tubing to effect a seal which prevents intrusion of moisture, environmental conditions and even bacteria.

Changes in construction will occur to those skilled in the art and various apparently different modifications and embodiments may be made without departing from the scope of the invention. The matter set forth in the foregoing description and accompanying drawings is offered by way of illustration only. The actual scope of the invention is intended to be defined in the following claim when viewed in their proper perspective against the prior art.

I claim:

A device for sealing plastic tubing having a portion which is doubled over and flattened, comprising a quadrilateral, hollow member adapted to receive the flattened portion, said hollow member having a pair of coextensive, planar walls comprising two sides of the quadrilateral, the other two sides of the quadrilateral comprising a pair of curved side walls which join the planar walls, the curvature of each of said side walls extending from one wall to the opposing wall to form a concavo-convex cross section, each juncture of a side wall and a planar wall having an internal radial curvature, whereby compressing the plastic tubing between the planar, opposed walls causes it to be flattened, thereby hermetically sealing the tubing and confining it within the quadrilateral without damaging said tubing.

References Cited in the file of this patent

UNITED STATES PATENTS

347,625 McIntyre 1886 Aug. 17
1,368,480 Brown 1921 Feb. 15
2,327,683 Warner et al. 1943 Aug. 24
2,346,412 Bratz 1944 Apr. 11
2,526,740 Gilmore 1950 Oct. 24
2,747,935 Szantay 1956 May 29
2,881,496 Werming 1959 Apr. 14

FOREIGN PATENTS

711,779 Germany 1886 Aug. 17