March 26, 1963 F. W. WAHL 3,082,794

CLAMPING MEANS FOR SEALING PLASTIC TUBING

Filed March 30, 1959

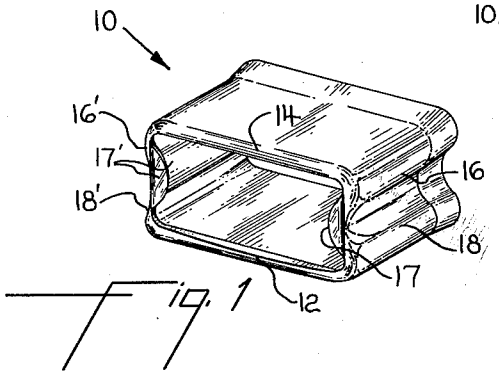


Fig. 1

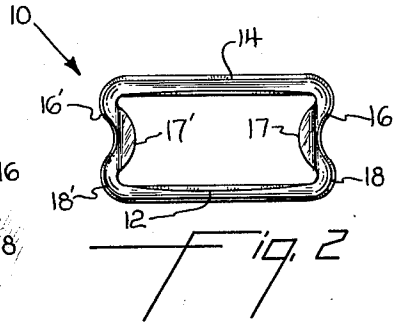


Fig. 2

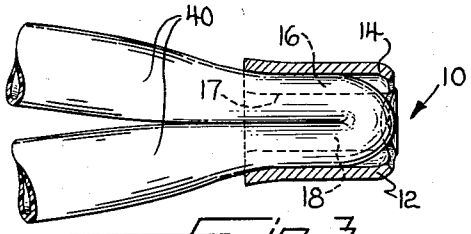


Fig. 3

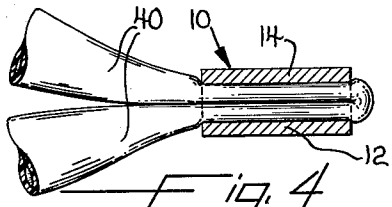


Fig. 4

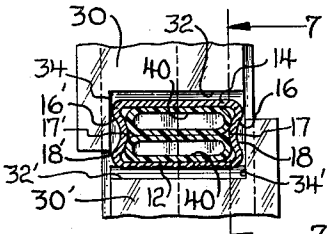


Fig. 5

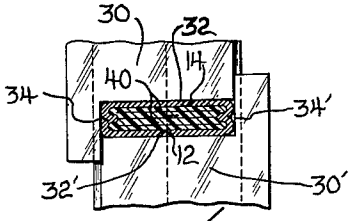


Fig. 6

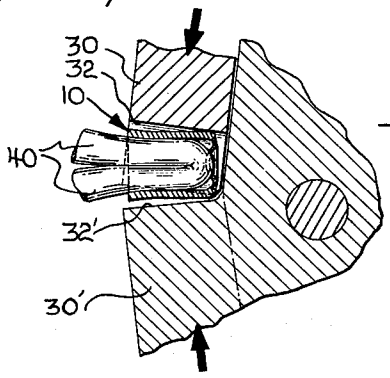


Fig. 7

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CLAMPING MEANS FOR SEALING PLASTIC TUBING

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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 impervious 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 is 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 taken 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**, **16'** and **18**, **18'** forms a curved portion with intermediate connecting portions **17**, **17'** forming segments of reverse curvature, which are concavo-concave 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-concave 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.

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