

Jan. 21, 1964

W. E. HUNT ETAL
THREE RING CONTROL SYRINGES

3,118,447

Filed Feb. 13, 1958

2 Sheets-Sheet 1

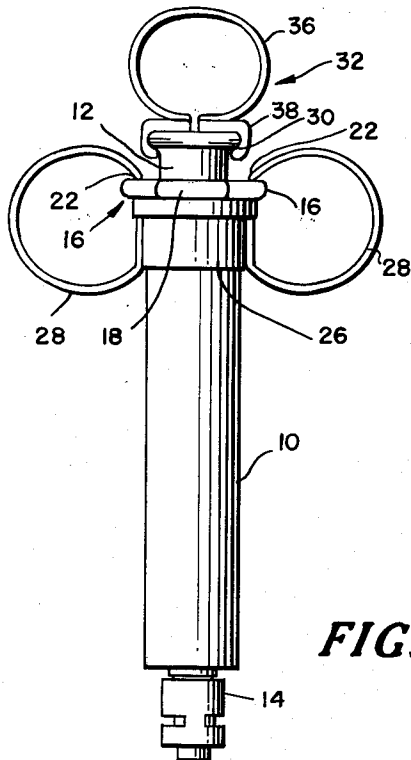


FIG. 1.

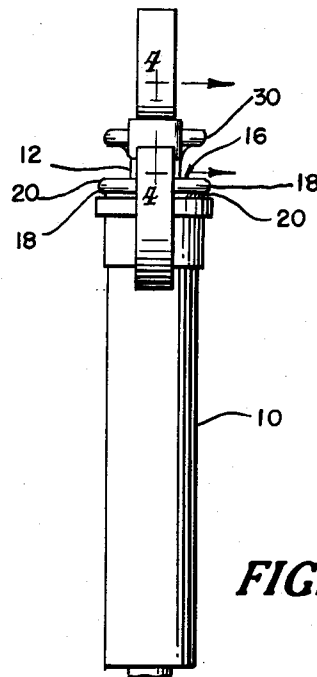


FIG. 2.

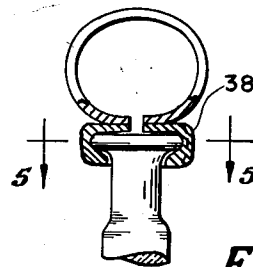


FIG. 4.

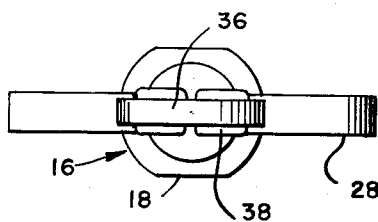


FIG. 3.

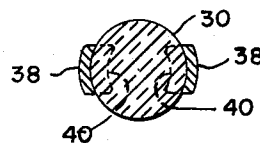


FIG. 5.

INVENTORS

WILLIAM E. HUNT
WILLIAM H. MCGILL

BY *Crushman, Parly & Crushman*

ATTORNEYS

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W. E. HUNT ETAL

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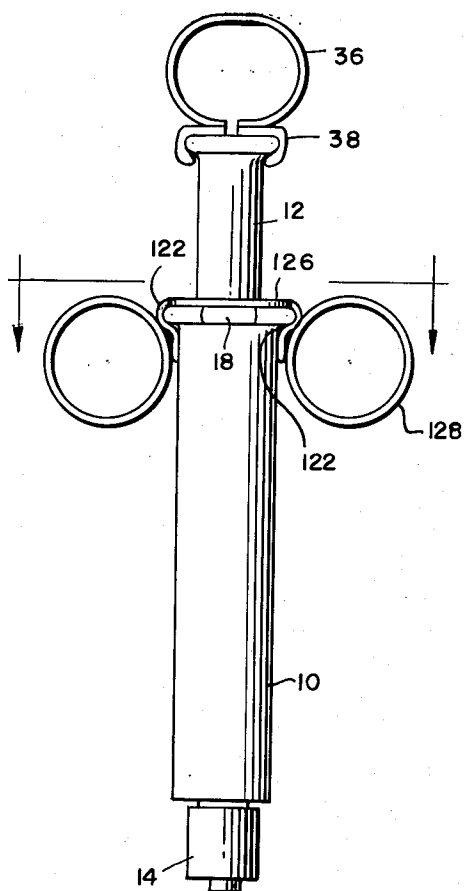


FIG. 6.

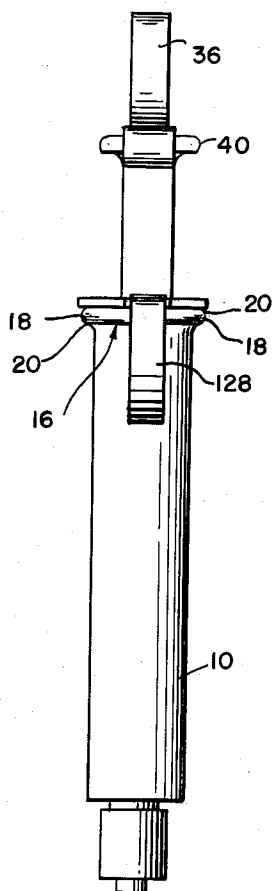


FIG. 7.

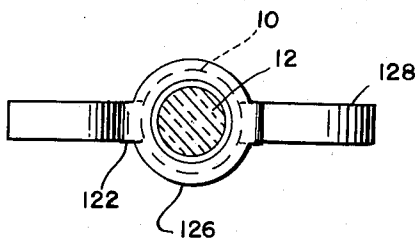


FIG. 8.

INVENTORS

WILLIAM E. HUNT
WILLIAM H. MCGILL

BY *Cushman, Darby & Cushman*
ATTORNEYS

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3,118,447

THREE RING CONTROL SYRINGES

William E. Hunt, Nashville, and William H. McGill,
Whites Creek, Tenn., assignors to Eisele & Company,
Nashville, Tenn., a corporation of Tennessee
Filed Feb. 13, 1958, Ser. No. 715,105
3 Claims. (Cl. 128-218)

This invention relates to a medical syringe.

More particularly, this invention relates to a syringe which may be used alone, in the ordinary manner, but is particularly adapted for use in combination with a detachable thumb receiving ring and a unitary syringe brace which may be detachably engaged with the barrel thereof.

In a preferred embodiment, the brace includes rings through which the fingers may be inserted to facilitate both the handling of, and the operation of, the device, and the overall result of the combination is a three ring control syringe. It is well known that, under certain circumstances, a medical syringe may be more effectively used if provided with a pair of rings, or other form of finger braces, extending outwardly from opposite sides of the barrel thereof so that the operator may effectively brace this syringe against the pressure exerted by the thumb upon the end of the plunger. However, the previously known means for providing such a syringe with such finger rings, or other finger bracing means, have been unsatisfactory in that they have been either permanently fixed on the syringe, and thus are lost when the syringe is cracked and broken, and has to be discarded, or are detachably mounted by arrangements necessitating the use of two or more elements, which is troublesome in that the parts must be assembled prior to use and there is that much greater chance of a component becoming lost when the equipment is disassembled for storage, cleaning, or sterilization.

It is therefore an object of this invention to provide a syringe having a unitary finger brace.

It is another object of this invention to provide a new and improved syringe having a unitary syringe finger brace detachably mounted thereon in a manner whereby the finger brace is firmly attached to the syringe during use but nevertheless may be easily detached therefrom for storage, cleaning, or sterilization.

It is another object of this invention to provide a new and improved three ring control syringe wherein the thumb ring is detachably mounted upon the free end of the plunger and wherein a finger brace element is firmly, but detachably, mounted on the barrel but may be easily removed for storage, cleaning, or sterilization.

These and other objects of this invention will be fully understood from the following detailed description of a typical preferred form and application of the invention, throughout which description reference is made to the accompanying drawings in which:

FIGURE 1 is an elevational view of the invention.

FIGURE 2 is a side view of the invention.

FIGURE 3 is a plan view of the invention.

FIGURE 4 is a section view taken through line 4-4 of FIGURE 2.

FIGURE 5 is a section view taken through line 5-5 of FIGURE 4.

FIGURE 6 is an elevational view of another embodiment of the invention.

FIGURE 7 is a side view of the embodiment shown in FIGURE 6.

FIGURE 8 is a plan view, partially in section, of the embodiment shown in FIGURE 6.

Referring more particularly to the drawings, the syringe consists of a barrel 10 having a plunger 12 reciprocally mounted therein and extending out of one end thereof. The second end of the syringe is fitted with an outlet 14

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which may be constructed in any suitable and convenient manner for reception of, or fitting with, any suitable injection needle. It is within the contemplation of this invention that the barrel 10 and plunger 12 be constructed of ground glass, or ground glass reinforced with other material, although the specific advantages of the instant invention will be in no way affected by the material chosen and used in the construction of the barrel or the plunger.

The end of the barrel 10 which defines the opening for receiving the plunger 12, is formed with an integral radially outwardly extending flange 16. This flange is generally circular but has diametrically opposite portions 18 formed so as to extend radially outward a somewhat lesser distance than the remainder of the flange, that is to say, these portions of the periphery of the flange are ground down, or otherwise formed, so as to present parallel straight edges.

As will be observed in the drawings, these parallel straight edges are ground down, or otherwise formed, to define camming surfaces 20 to facilitate passage of the flange engaging portions 22 in a manner which will be described in detail hereinafter.

The above description is equally applicable to any embodiment of the invention, but now referring to FIGURES 1-5, wherein there is illustrated a preferred embodiment of the unitary syringe brace, it will be seen that this element is formed with various portions which may be moulded, cast, or otherwise formed integrally, or formed separately and then welded, or otherwise joined, to define an integral structure. That is to say, there is an annular ring portion, which is defined by a generally cylindrically shaped band 26 having one planar end flush against the under side of barrel flange 16. There are also finger bracing portions extending radially outwardly from diametrically opposite sides of the band which are, in the preferred embodiment, formed as rings 28. Referring particularly to FIGURE 1, it will be seen that the upper portions, when the syringe is viewed in elevation, are particularly adapted, by their shape and location, to define finger braces when the syringe is being used in the conventional manner. That is to say, the syringe is used by inserting the index and third fingers into the rings with the finger tips bearing against the under surface (when viewed in elevation) of the top portion of the rings, and the plunger is forced downwardly in the barrel. The fingers will, in conjunction with the rings, serve to brace the syringe, and hence the needle affixed to the operative end thereof, from movement relative to the body or member of the person being inoculated.

As best shown in FIGURE 1, the end portions 22 of the rings 28 bear against the upper surface of flange 16. Due to the natural resiliency of the rings 28, these bear downwardly upon the flange and serve to yieldingly urge the band 26 into tighter engagement with the under surface of the flange 16. Thus while certain portions of the ring define finger bracing portions, it will be seen that the free ends 22 of the rings serve a somewhat different function and may be defined as flange engaging portions 22.

The unitary syringe brace is installed by inserting the outlet end of the barrel into the lumen of the band 26. The syringe brace is so indexed that the rings 28 (each of which is spaced 180° from the other) are angularly positioned to correspond with the previously described portions 18 of the flange 16. As the syringe brace slides up the barrel the ring ends 22 will engage the camming surfaces 20 of the portions 18 of the flange 16 and the natural resiliency of the ring will allow these ends to cam over the edge of the flange. After the ends 22 pass these camming surfaces 20, the ring will spring back to a relaxed position with the free ends 22 thereof bearing against the upper surface of the flange 16. The syringe brace is then rotated, say 90°, so that the ring ends 22

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are bearing down upon the wider portions of the flange and are unlikely to slip off.

Still referring to FIGURES 1-5, the plunger has a circular flange 30 formed on the free end thereof. A resilient thumb ring, generally indicated at 32, is releasably mounted thereon so that the over-all effect, of the combination of the thumb ring and the unitary syringe brace is to define a three-ring control syringe. As will be seen from the drawings, more particularly FIGURES 1, 4 and 5, the thumb ring is formed by a split ring 36 having a plunger flange gripping means formed at each end thereof. As is well illustrated in the drawings, the flange gripping means comprises a U-shaped member 38 having one leg of the U affixed to the outer (relative to the ring) surface of the end of the ring. As is best shown in FIGURES 4 and 5, the crotch 40 of the U is curved with substantially the same radius of curvature as the periphery of the plunger flange whereby each of these U-shaped members defines a segment of an annular channel. The crotches of the respective U-shaped members 38 are, when the ring 36 is relaxed, spaced apart a distance which is slightly smaller than the diameter of the plunger flange, and it will, therefore, be seen that when the split ring 36 is spread to slip the plunger into the annular channels defined by the respective U-shaped members, the latter will spring back to tightly engage the plunger flange and thereby maintain the thumb ring, as a whole, firmly, but detachably, engaged with the plunger.

Referring now to FIGURES 6, 7 and 8, there is shown a syringe having a thumb ring identical with that described immediately hereinabove but with a slightly modified embodiment of the unitary syringe brace. In this embodiment, there is a planar ring 126 mounted on the upper surface of the flange 16, the hole in the ring being of a slightly greater diameter than the diameter of the plunger 12 so that it does not interfere with the reciprocating action thereof. The outside diameter of the ring 126 is substantially equal to that of the barrel flange 16. As is best shown in FIGURE 6, the unitary syringe brace has a flange engaging portion 122 which extends downwardly (when the syringe is viewed in elevation) around the periphery of the flange 16 to engage the under surface thereof. Rings 123 extend radially outwardly from diametrically opposite sides of the ring 126 and, as in the embodiment previously described, define finger braces.

This embodiment of the unitary syringe brace is installed in a somewhat different manner from that described hereinabove in that the plunger 12 is removed from the barrel 10 and the syringe brace is so indexed relative to the barrel, and hence the flange 16, that the flange engaging portion 122 angularly corresponds to the portion 18 of the barrel flange 16. The syringe brace is pressed downwardly (the syringe being viewed in elevation as in FIGURE 6) so that the flange engaging portions 122 will cam over the camming surfaces 20 and will then spring back to the relaxed position shown in

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FIGURE 6 wherein they engage, and bear against, the under surface of the flange 16. The syringe brace is then rotated, say 90°, so that the flange engaging portions 122 are bearing upwardly against the wider portions of the flange and are unlikely to slip off.

Having described only typical preferred forms and applications of our invention, we do not wish to be limited or restricted to specific details herein set forth, but wish to reserve to ourselves any variations or modifications that may appear to those skilled in the art and falling within the scope of the following claims.

We claim:

1. The combination comprising a syringe having a barrel and a plunger, a radially outwardly extending flange at the end of the barrel receiving the plunger, a unitary syringe brace detachably engaged with said barrel, said brace comprising an annular portion circumscribing said plunger and having one surface contacting a first planar side of said flange, finger bracing portions extending radially outward from diametrically opposite sides of said annular portion, flange engaging portions of said finger bracing portions arranged to yieldingly bear against a second planar side of said flange whereby said brace is yieldingly held against any movement longitudinally of said barrel.

2. The structure of claim 1 wherein said flange has diametrically opposite portions formed so as to extend radially a lesser distance than the remainder of said flange, said opposite flange portions having their free edges cammed so as to facilitate passage of said flange engaging portions past the same when the said syringe gripping means is being installed or removed, the annular portion being sufficiently free of said barrel to allow the entire brace to be rotated relative to said barrel whereby said flange engaging means comes to bear on the wider portions of said flange when the syringe is in use, and may be indexed to a position corresponding to the cammed flange edges when the syringe gripping means is being installed or removed.

3. The structure defined in claim 2 wherein said annular portion comprises a planar ring disposed upon the planar surface of said barrel flange which defines the end of said barrel.

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