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CARTRIDGE ASSEMBLY INCLUDING RIBBED HUB

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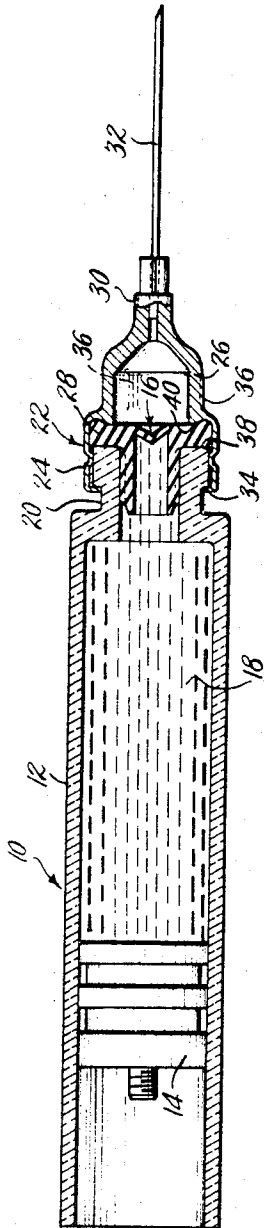


**FIG. 1.**

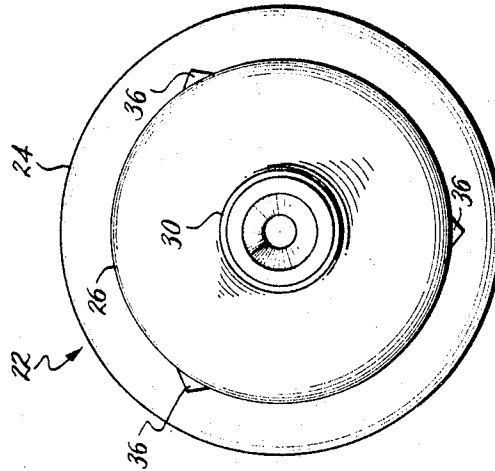


**FIG. 3.**

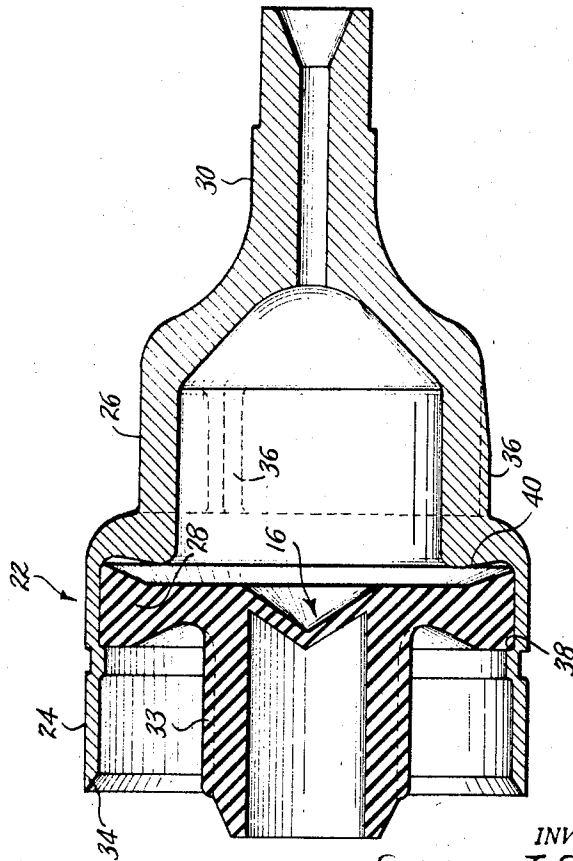


**FIG. 2.**

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## CARTRIDGE ASSEMBLY INCLUDING RIBBED HUB

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9 Claims

### ABSTRACT OF THE DISCLOSURE

This invention relates to a cartridge and needle assembly including a vial, a needle and a hub for attaching the needle to the vial, said hub having at least two different diameters with longitudinal ribs spaced around the smaller diameter portion; the larger end of the hub being secured to the vial and the other hub end to the needle.

This invention relates to a novel cartridge and needle combination such as is used for injection of medicament into a patient.

It is an object of this invention to provide a cartridge and needle combination having a hub for securing the needle to the cartridge which is so formed as to provide easy means for holding the hub against slippage in a holding chuck during spinning of a portion of the hub about a vial portion of the cartridge while at the same time the same means affords stiffening of the hub and moreover enables the combined cartridge and needle to be securely held against lateral displacement in a multiplicity of types of cartridge holders.

For a fuller understanding of the invention, attention is directed to the following specifications when taken in conjunction with the accompanying drawing in which

FIG. 1 is a sectional view of the combined cartridge and needle,

FIG. 2 is an enlarged cross-sectional view of a hub utilized in the assembly of parts, and

FIG. 3 is a plan view of the hub looking at the largest diameter portion thereof.

Now referring to the drawings in greater detail, at 10 is indicated a cartridge comprising a vial 12, preferably of transparent material such as glass, the vial having therein a piston 14 and a pressure rupturable rubber stopper 16, the space between the piston and the stopper being filled with a medication 18.

The vial is open at both ends. However, adjacent the stopper end of the vial there is a neck 20. Surrounding the end of the vial adjacent the neck is a hub 22 in the form of a thin metal shell, as of aluminum. The hub has three diametered portions, a large diametered portion 24 overlying the end of the vial adjacent the neck, an intermediate diametered middle portion 26 forming a step between the two diametered portions for engaging a flanged portion 28 of the stopper and a much smaller diameter portion 30 securely holding the needle 32, as by being swaged thereon. The stopper has a centering ribbed portion 33 extending into the end of the vial. The free end 34 of the large diametered portion 24 is spun about the end of the vial and into the neck portion, thus effecting an assembly of the vial, stopper and needle. The intermediate diametered portion 26 of the hub has formed thereabout a number of ribs 36, these ribs being preferably equally spaced about the periphery of the sleeve and extending substantially two thirds of the way along the length of the sleeve from the step between the two diametered portions 24 and 26 toward the needle end of the hub. Preferably the ribs are three in number for securing proper reinforcement of the sleeve and for enabling proper centering of the cartridge in

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various sized holders. The shoulder between the two stepped diametered portions 24 and 26 affords a seat for the rubber stopper. These ribs preferably taper toward the needle end of the sleeve and merge into the sleeve.

The hub on the largest diametered portion 24 is circumferentially grooved or otherwise shaped to form an inner circumferential shoulder 38 to initially retain the stopper 16 within the hub and during the application of the hub to the vial. When the hub is spun onto the vial, flange material of the rubber stopper will flow and shape itself in the space between the vial end and the inner curved wall 40 of the step portion of the hub.

The ribs perform a multiplicity of functions. They enable a chuck to hold the sleeve firmly against slippage during spinning application of the sleeve to the vial; they also enable a much thinner sleeve material to be utilized since the ribs afford rigidity to the sleeve and reinforce it and furthermore, due to the softness of the metal, they enable the cartridge assembly to be inserted in holders having various sized or shaped holes since the ribs upon proper manipulation of the cartridge will be deformed and conform to the contours of the holes in the holders.

Having thus described the invention, what is claimed is:

1. A cartridge and needle assembly including a vial, a needle and a hub for attaching the needle to the vial, said hub being at least two different diameters, providing a shoulder between the two diametered portions, raised ribs spaced about the exterior surface of the smaller diametered portion and running in a direction longitudinally of the length of the hub, the large end of the hub being secured directly to the vial and the needle being secured to the outer end of the hub.
2. An assembly as set forth in claim 1 in which the ribs on the hub are of a soft metal.
3. An assembly as set forth in claim 1 in which the ribs on the hub are of aluminum.
4. The assembly of claim 1 in which the hub is made of a thin material.
5. The assembly of claim 1 in which a stopper is interposed between the hub and the vial, said stopper being rupturable by medicament in the vial when pressure is applied to the medicament.
6. An assembly as claimed in claim 1 in which the hub is of three successively smaller diametered portions, the largest of the diametered portions being secured to the vial and the smallest diametered portion being secured to the needle, the ribs along the hub extending from the juncture between the largest diametered portion along the intermediate diametered portion.
7. An assembly as claimed in claim 6 in which the ends of the ribs toward the needle are tapered.
8. An assembly as claimed in claim 6 in which the ribs extend along the hub for about two thirds of the length of the intermediate diametered portion.
9. The assembly as set forth in claim 1 in which the largest diametered portion of the hub is provided with a shoulder circumferentially of the inner wall of the hub.

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