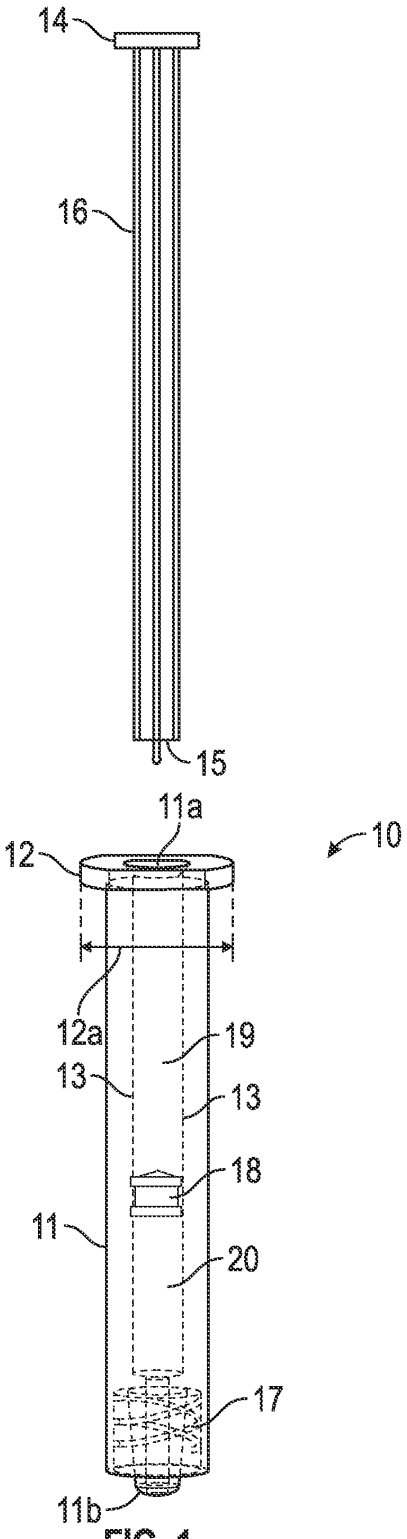


FIG. 1

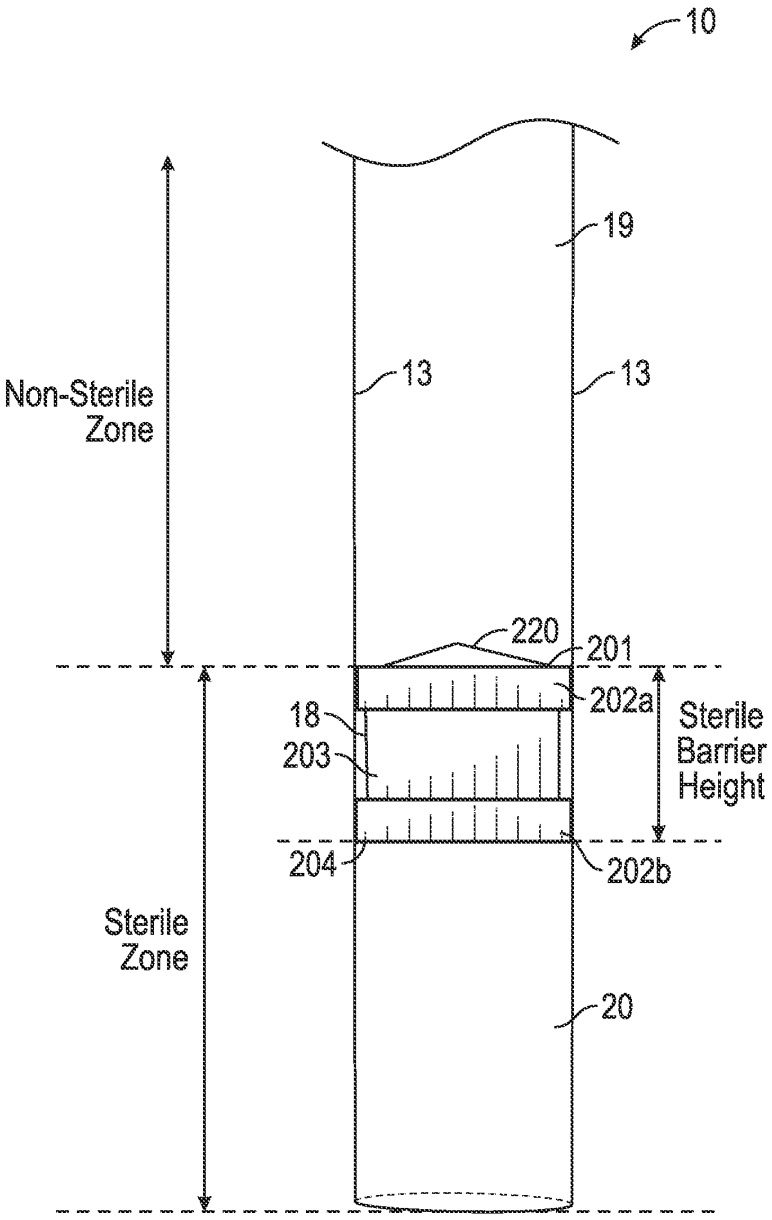

10
19
13
13
Non-Sterile Zone
220
201
202a
18
203
Sterile Barrier Height
204
202b
Sterile Zone
20

FIG. 2

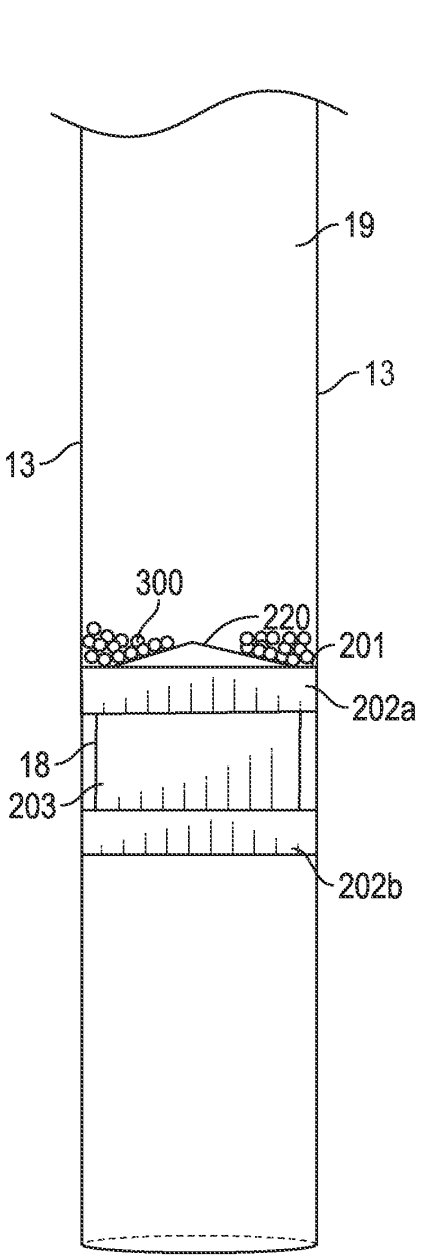


FIG. 3

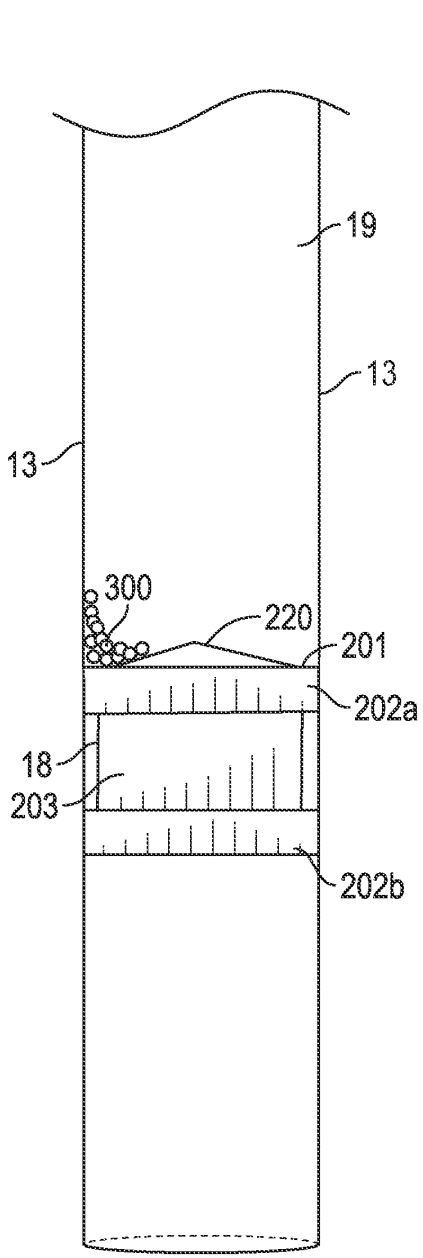


FIG. 4

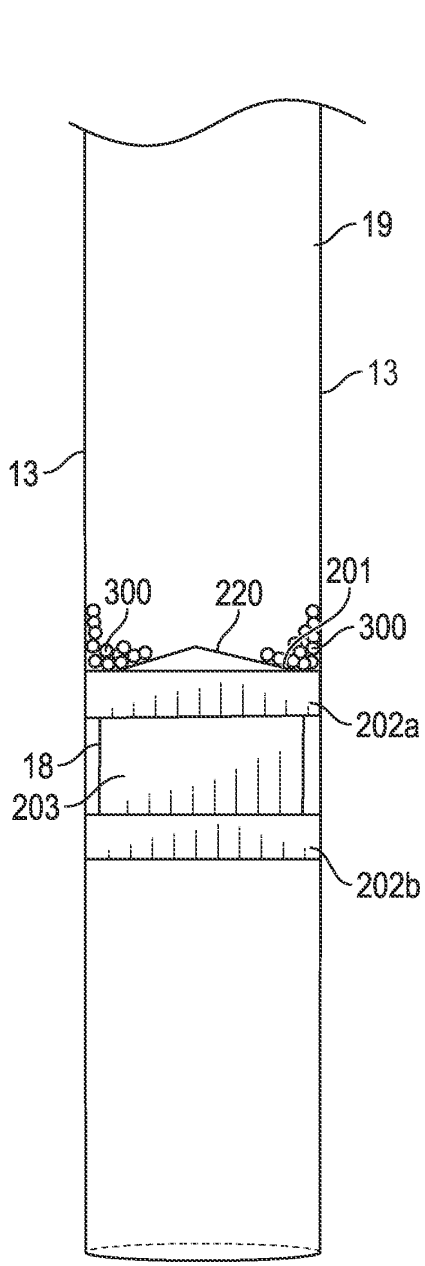


FIG. 5

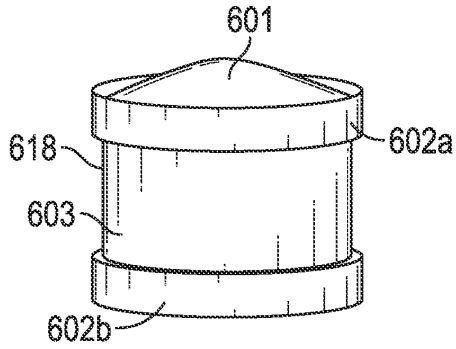


FIG. 6A

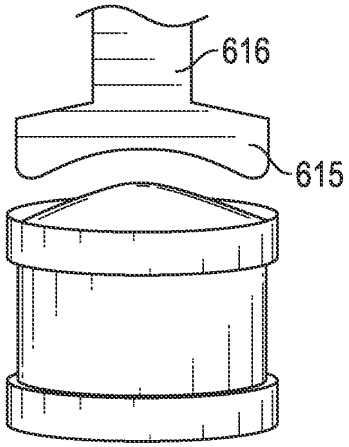


FIG. 6B

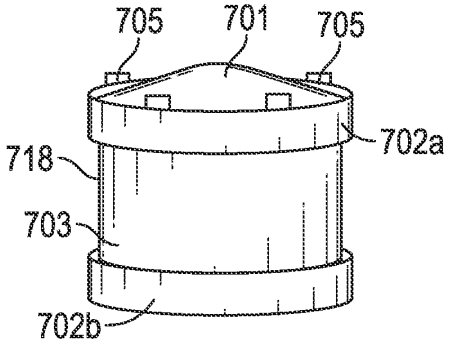


FIG. 7A

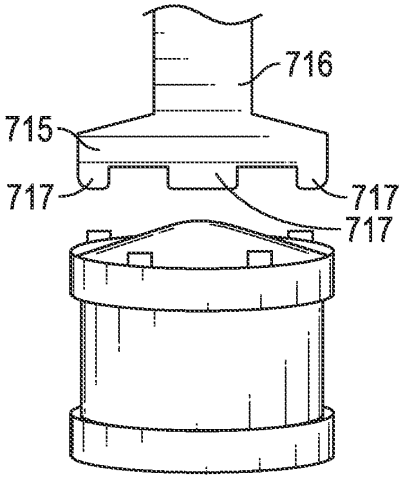


FIG. 7B

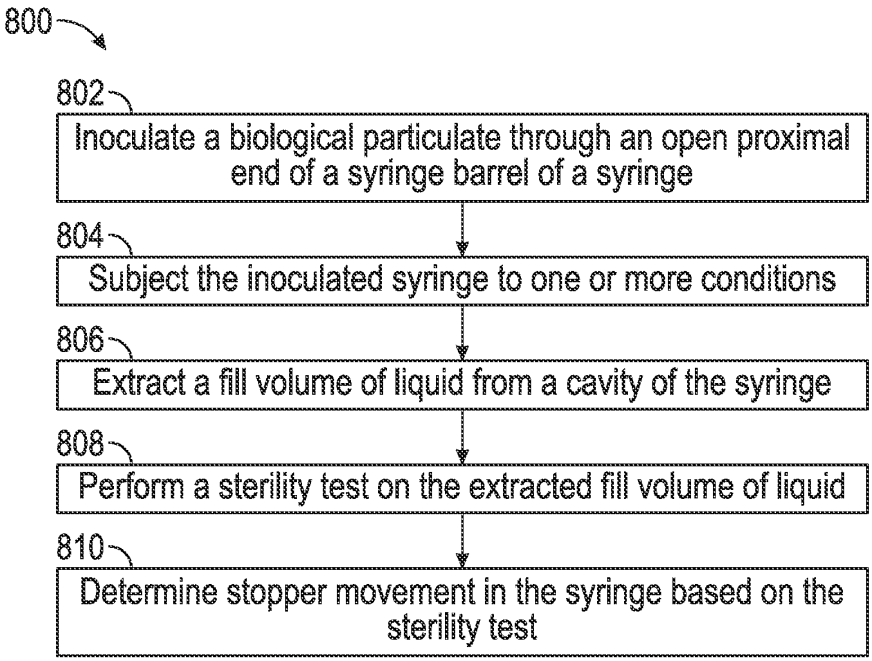

800
802
Inoculate a biological particulate through an open proximal end of a syringe barrel of a syringe
804
Subject the inoculated syringe to one or more conditions
806
Extract a fill volume of liquid from a cavity of the syringe
808
Perform a sterility test on the extracted fill volume of liquid
810
Determine stopper movement in the syringe based on the sterility test

FIG. 8

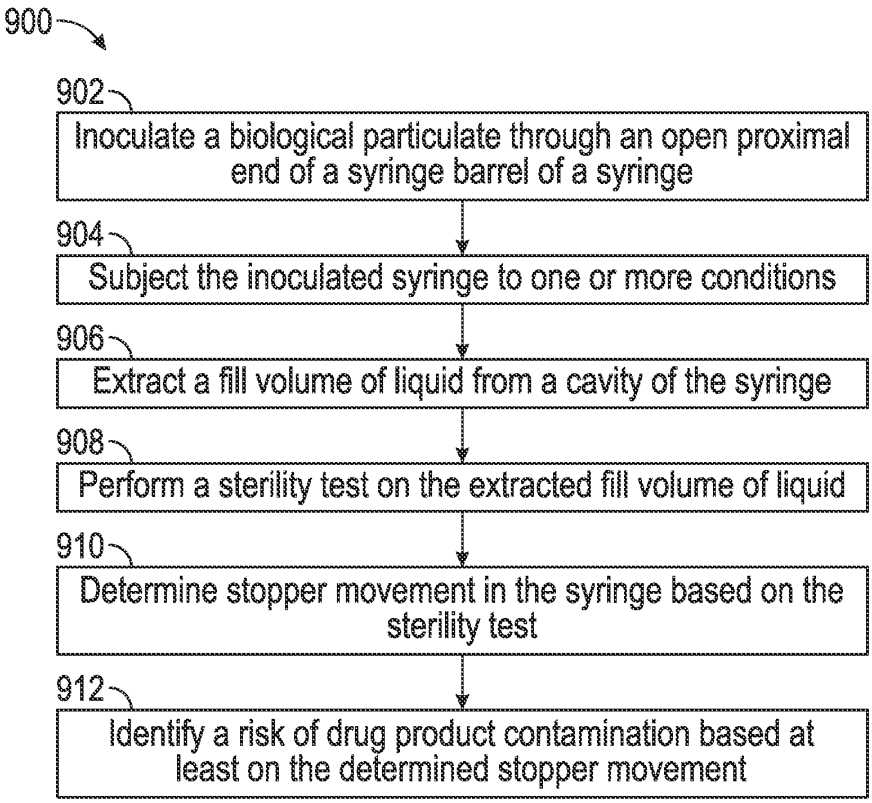

900
902
Inoculate a biological particulate through an open proximal end of a syringe barrel of a syringe
904
Subject the inoculated syringe to one or more conditions
906
Extract a fill volume of liquid from a cavity of the syringe
908
Perform a sterility test on the extracted fill volume of liquid
910
Determine stopper movement in the syringe based on the sterility test
912
Identify a risk of drug product contamination based at least on the determined stopper movement

FIG. 9