

[54] **DUAL NOZZLE INTRANASAL DELIVERY DEVICE**

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[52] **U.S. Cl.**..... **128/206**, 141/383, 141/329, 141/27, 128/235, 128/215

[51] **Int. Cl.**..... **A61m 3/00**

[58] **Field of Search** 128/206, 207, 208, 215, 128/218 R, 235, 247, 272, 173 H; 141/383, 329, 27, 2

[56] **References Cited**

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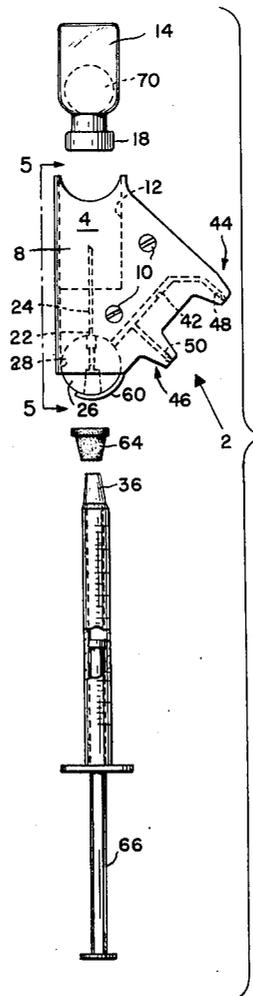
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[57] **ABSTRACT**

A dual nozzle intranasal delivery device has a housing with a cavity for the reception of a container having a pierceable stopper and having a first passage communicating with said cavity. A hollow needle secured in the passage extends into the cavity and is adapted to penetrate the stopper of the container. A pair of substantially parallel spray nozzles communicate with a second passage in the housing. A turret member is rotatably mounted in the housing and has a passage adapted to communicate alternatively with the first and second passages and having an opening for the reception of a syringe nozzle. Through the use of the turret a syringe can be placed in communication with the container and then, by rotating the turret, placed in communication with the second passage to provide for taking liquid from the container and delivering it through the nozzles.

2 Claims, 5 Drawing Figures



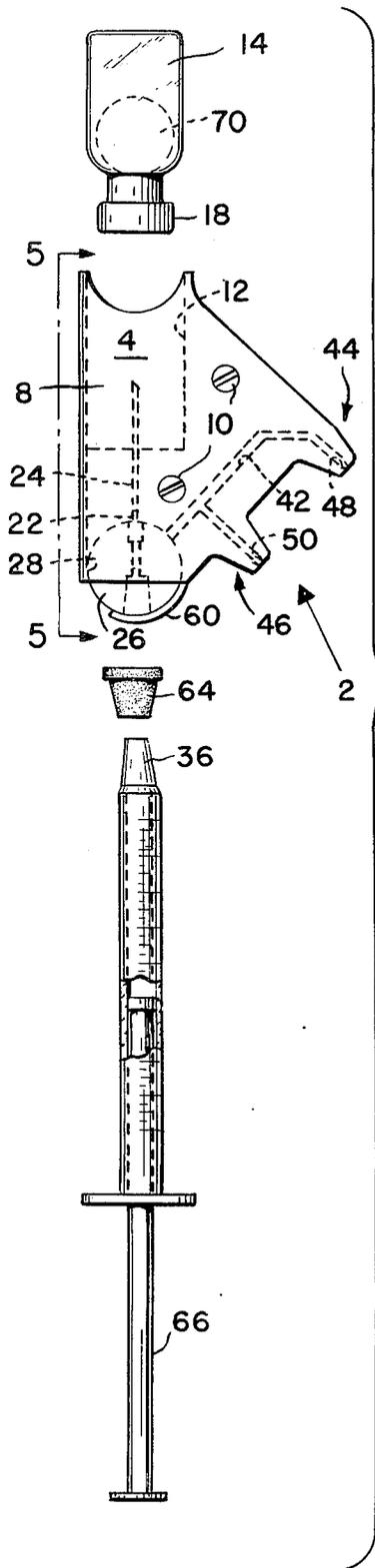


FIG. 1

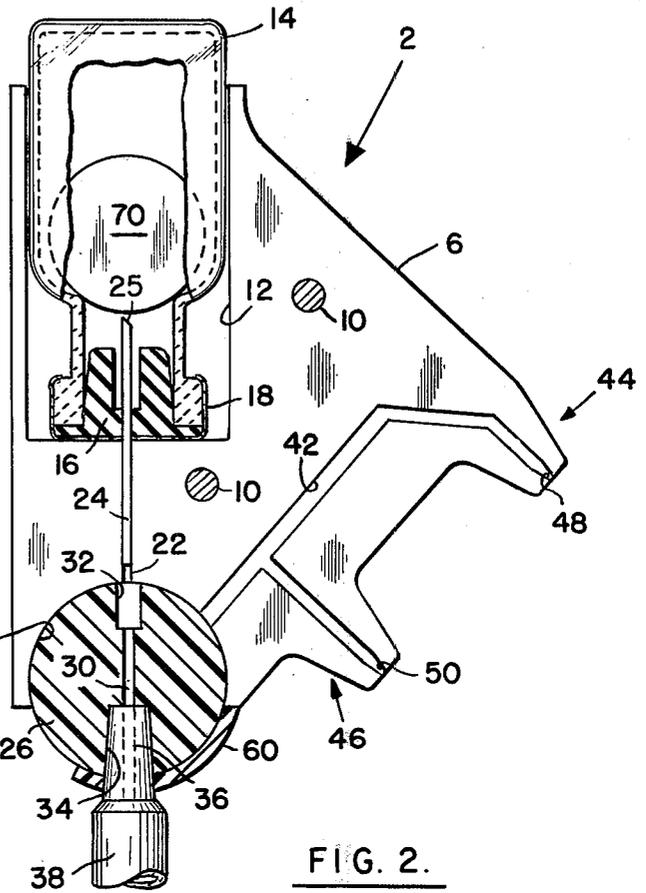


FIG. 2.

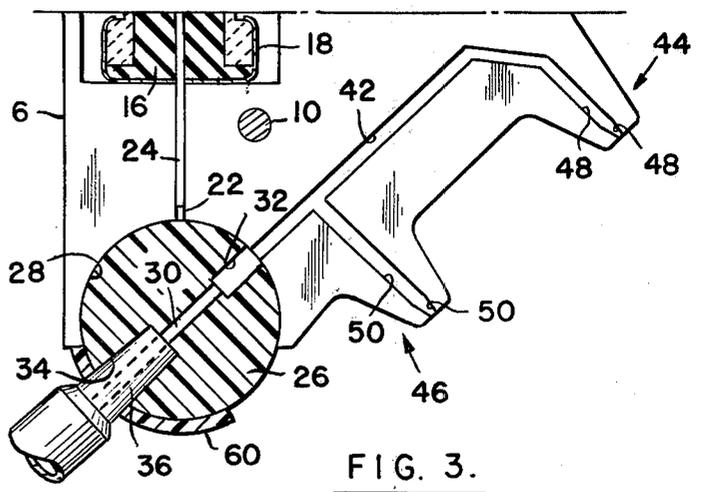


FIG. 3.

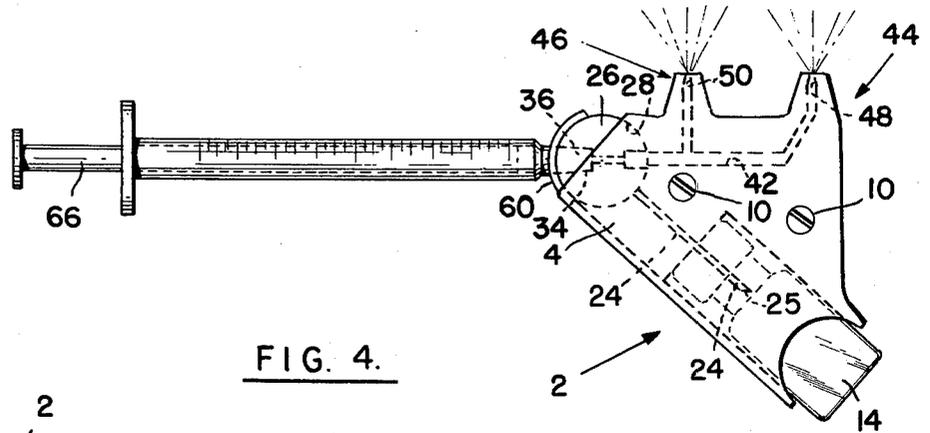


FIG. 4.

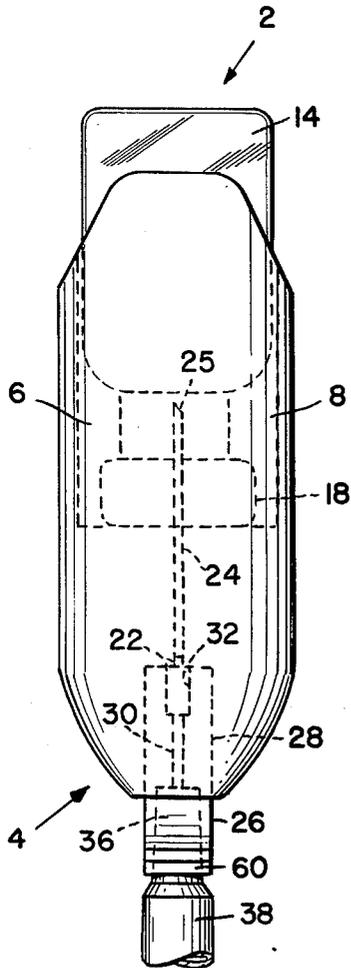


FIG. 5.

DUAL NOZZLE INTRANASAL DELIVERY DEVICE

BACKGROUND OF THE INVENTION

It is known to employ a pair of adjacent spray nozzles communicating with a conduit which is adapted to be connected to a syringe to deliver vaccine such as a flu vaccine or a measles vaccine in about equal doses to each nostril. While this operation is simple and effective, it still leaves the patient with a difficult problem in getting the dosage in liquid form into the syringe. This is particularly the case where the biological to be employed is lyophilized. In accordance with this invention a lyophilized medicament can be placed in solution in a syringe under sterile conditions with great ease by an unskilled patient.

BRIEF SUMMARY OF THE INVENTION

A dual nozzle intranasal delivery device has a housing with a cavity for the reception of a container having a pierceable stopper and having a first passage communicating with said cavity. A hollow needle secured in the passage extends into the cavity and is adapted to penetrate the stopper of the container. A pair of substantially parallel spray nozzles communicate with a second passage in the housing. A turret member is rotatably mounted in the housing and has a passage adapted to communicate alternatively with the first and second passages and having an opening for the reception of a syringe nozzle. Through the use of the turret a syringe can be placed in communication with the container and then, by rotating the turret, placed in communication with the second passage to provide for taking liquid from the container and delivering it through the nozzles.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view of an intranasal delivery device in accordance with the invention together with a container and a syringe;

FIG. 2 is a vertical section through the intranasal device of FIG. 1 showing a container and a syringe positioned to communicate with the container;

FIG. 3 is a vertical section through the intranasal device of FIG. 1 partially broken away and showing a syringe positioned to discharge liquid through the nozzles;

FIG. 4 is an elevational view of the intranasal device of FIG. 1 with a syringe positioned for the discharge of liquid through the nozzles; and

FIG. 5 is a view taken on the plane indicated by the line 5-5 in FIG. 1 and showing a syringe positioned for the discharge of liquid through the nozzles.

DETAILED DESCRIPTION

An intranasal delivery device 2 has a body 4 formed from two mirror image portions 6 and 8 which are secured together by screws indicated at 10. The body 4 has a cavity 12 which is adapted to receive a container 14 having a pierceable stopper 16 of rubber or the like. Stopper 16 is held in position by a metal cap 18. Container 14 is well known in the art.

A passage 22 is in communication with cavity 12. Secured by a pressed fit in cavity 22 is a hollow needle 24, which has a sharp chamfered end 25, extends into cavity 12 and is adapted to pierce the pierceable stopper 16 as shown in FIG. 2.

A cylindrical turret member 26 is rotatably mounted in a partial cylindrical opening 28 in body 4 which extends for somewhat more than 180° in order to lock in the turret member 26. Turret member 26 has a passage 30 which has an enlarged portion 32 and which is adapted to communicate with passage 22 and is connected to a tapered opening 34 which is adapted to receive a tapered nozzle 36 of a syringe 38.

Turret member 26 can be rotated clockwise as viewed in FIG. 2 to place it in communication with a passage 42 in body 4. Passage 42 communicates with a pair of substantially parallel nozzles 44 and 46 which have respectively reduced discharge passages 48 and 50. Nozzles 44 and 46 are spaced so as to permit the nozzles to be simultaneously introduced into the patient's nostrils.

A sector stop member 60 is secured to the exterior of turret member 26, for example by an adhesive, and engages body 4 to limit the rotation of turret 26 so as to communicate with passage 24 in one position and with passage 42 in its alternate position of maximum rotation.

Syringe 38 has a rubber stopper 64 to close off nozzle 36 and a plunger 66 to cause liquid to flow in and out of syringe 38.

OPERATION

Assuming that a lyophilized biological such as a lyophilized medicament tablet 70 is in container 14, container 14 is inserted into cavity 12 and thrust home causing needle 24 to pierce pierceable stopper 16 as shown in FIG. 2. A syringe 38 containing a reconstituting liquid will have its cover 64 removed with nozzle 36 pointing up and nozzle 36 inserted into opening 34. With passage 30 lined up with passage 22, plunger 66 is advanced to cause liquid to move out of syringe 38 through passage 30, passage 22 and needle 24 into container 14. When the tablet 70 has gone into solution, the plunger 66 is retracted to withdraw the solution from container 14 into syringe 38. The syringe 38 then is moved to cause the turret member 26 to rotate so that passage 30 is in communication with passage 42. Nozzles 44 and 46 are placed by the user in his nostrils. Again, plunger 66 is advanced to cause the discharge of fluid from syringe 38 into passage 42 and thence into the patient's nose through nozzles 44 and 46.

It will be understood that the foregoing description is illustrative and is not limiting.

I claim:

1. A dual nozzle intranasal delivery device comprising:

- a housing,
- said housing having a cavity for the reception of a container having a pierceable stopper and a first passage communicating with said cavity,
- a hollow needle secured in said passage and extending into the cavity, said needle being adapted to penetrate the stopper of said container,
- a pair of adjacent nozzles having substantially parallel axes a second passage in said housing communicating with said nozzles,
- a cylindrical opening in said housing,
- each of said passages communicating with said opening,
- a turret member mounted in said cylindrical opening and having a passage of which one end alternatively communicates with the first and second pas-

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sages and the other end is provided with an opening for the reception of a syringe nozzle whereby a syringe can be placed in communication with the container and then by rotation of the turret placed in communication with the second passage.

2. A device in accordance with claim 1 having stop means to limit the rotation of the turret to facilitate the alignment of the passage in the turret with the first and second passages.

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