PROVISIONAL PATENT APPLICATION

Title: Automated System for Allergy Immunotherapy Preparation

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Background of the Invention:
The field of the invention pertains to medical devices, particularly those involved in the preparation of personalized immunotherapy treatments for allergies. Traditionally, the preparation of allergy immunotherapy has been a manual, labor-intensive process, susceptible to human error and lacking standardization across different healthcare providers. In addition to requiring a lot of preparation time, this has led to inconsistencies in treatment quality and patient outcomes.

Summary of the Invention:
The present invention is an automated immunotherapy preparation system designed to streamline and standardize the process of creating personalized on-demand allergy treatment serums. The device leverages precision technology and software integration to minimize manual labor and error potential, offering a more efficient and reliable solution for allergy treatment preparation.

Brief Description of the Drawings:
Figure 1 depicts an isometric view of a micro-dosing immunotherapy preparation machine featuring the interface portion, which serves as the user interaction point for machine operation.

Figure 2 demonstrates a drawer designed to hold serum vials upside down to facilitate correct liquid flow within the machine.

Figure 3 provides a detailed illustration of a serum bottle within the drawer, showing the process of a serum bottle being punctured by a needle to enable liquid dispensing.

Figure 4 shows a series of peristaltic pumps that are employed for the sterile and noninvasive transfer of allergenic substances.

Figure 5 illustrates the micro-dosing immunotherapy preparation machine, complete with the interface portion and an integrated label maker for the generation of vial labels.

Detailed Description:
The invention consists of the following core components: a user interface **1**, a sterile compounding area **2**, a label-maker **3**, dual compartments for serum access and replacement **4**, and integrated software for patient data management. The sterile and refrigerated compounding area ensures an aseptic environment, crucial for the safe compounding of pharmaceuticals, especially for allergy immunotherapy.

Each compartment houses bottle holders **5** that are designed to securely store individual serum bottles **6**. Accompanying each serum bottle **7** within its holder is a syringe **8** for puncturing the serum bottle and a tube **9** through which the fluid flows, streamlining the preparation process.

Precision peristaltic pumps **11** are meticulously calibrated to pump allergens through sterile tubing **10** in exact quantities necessary for treatment vials, contributing to the accuracy of the serum. A stepper motor attached to a revolving belt **12** allows for tips to be switched and different allergies to be dispensed through thin nozzles **14** and into the treatment bottle **13**. The user interface serves as an intuitive conduit for healthcare providers to input patient-specific data and choose corresponding treatment regimens. Integrated software underpins the device, automating dosage calculations and managing patient profiles, thus guaranteeing the precision of each compounded serum.

The device's design is both compact and user-friendly, facilitating its integration into diverse healthcare settings, such as allergy clinics, ENT offices, and even retail pharmacies.

Description of the Method:
The method associated with the device encompasses the following core steps: selecting a patient profile from the integrated database; inputting or confirming personalized treatment details; the automated compounding of the serum sterilely by the device; and a verification process for the final product. The culmination of these steps is the production of a patient-specific, ready-to-use allergy treatment serum delivered on-demand.

Conclusion:
This invention heralds a major improvement in the domain of allergy treatment. Automating the serum preparation process not only augments clinic efficiency and serum accuracy but also establishes a standardized treatment protocol, potentially enhancing the quality of life for allergy sufferers globally.

Declaration:
I affirm that this submission is a result of my original work, and, to the best of my knowledge, it is a novel invention that significantly improves upon existing practices in the prior art.

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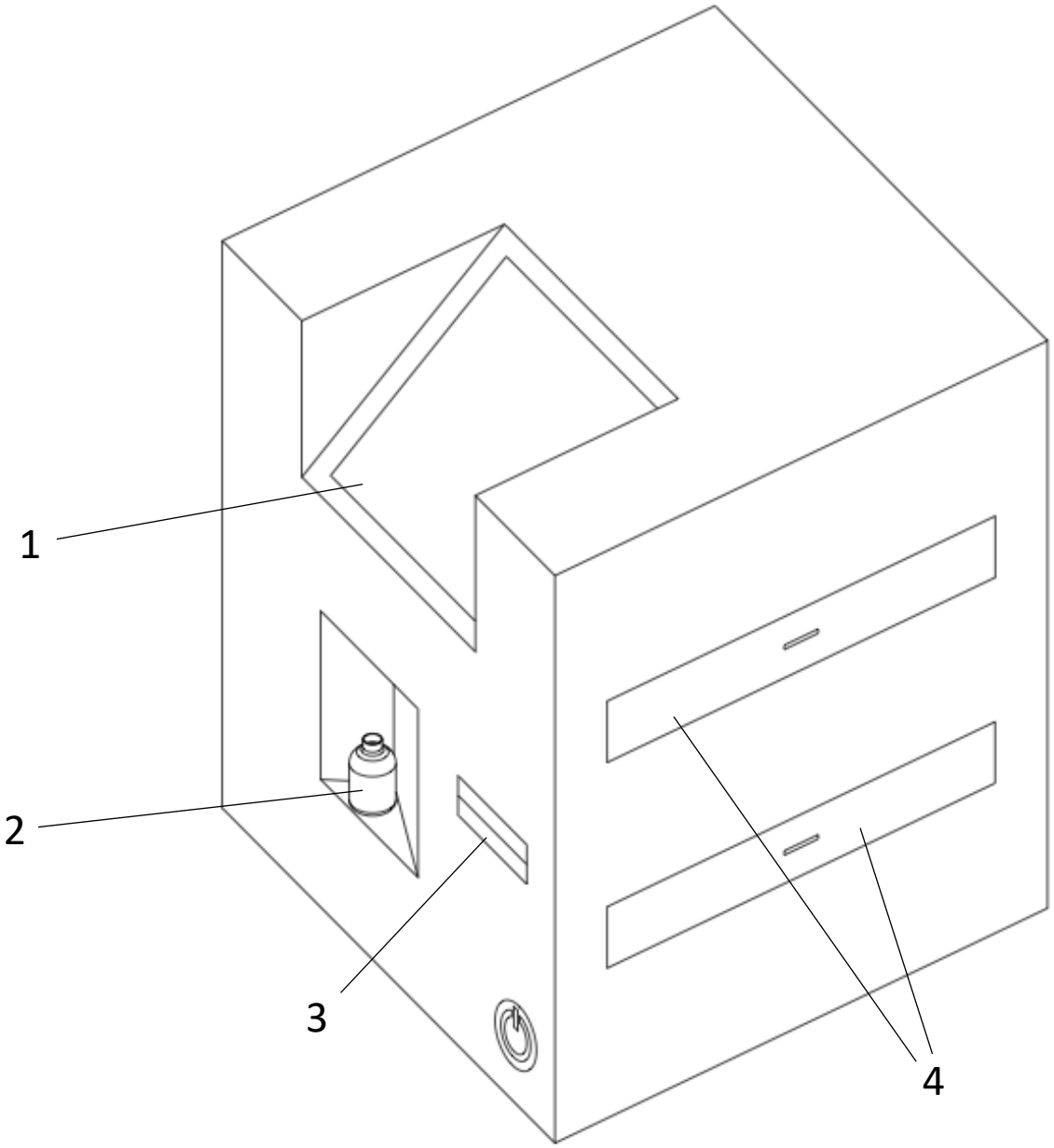

FIG. 1

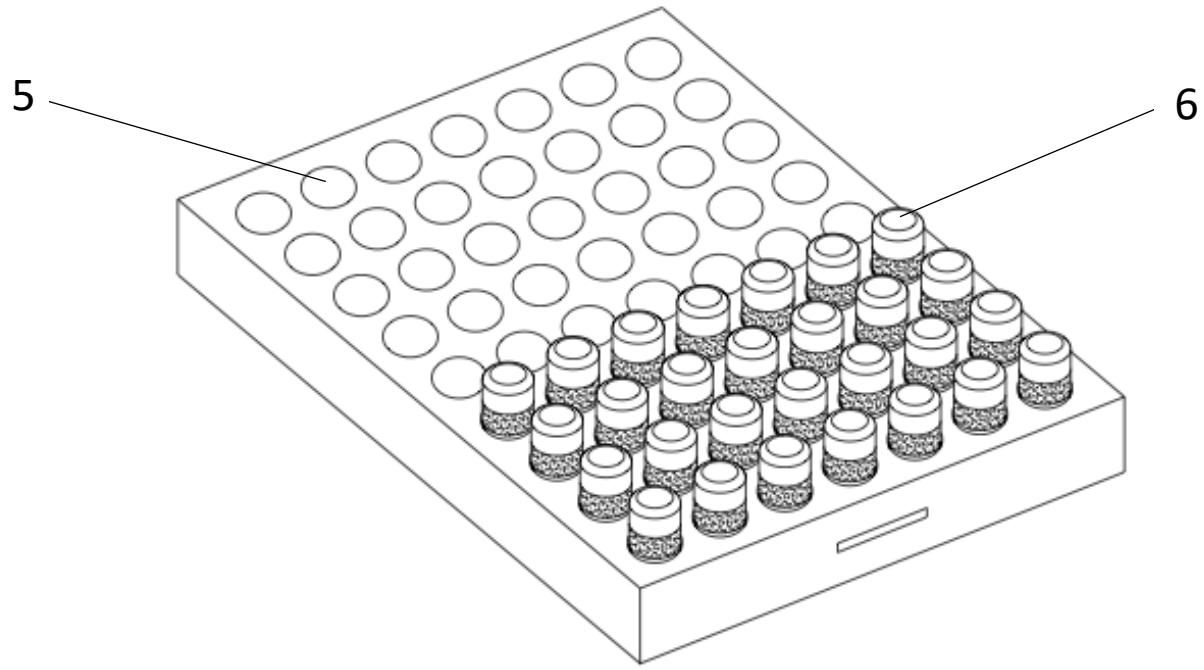

FIG. 2

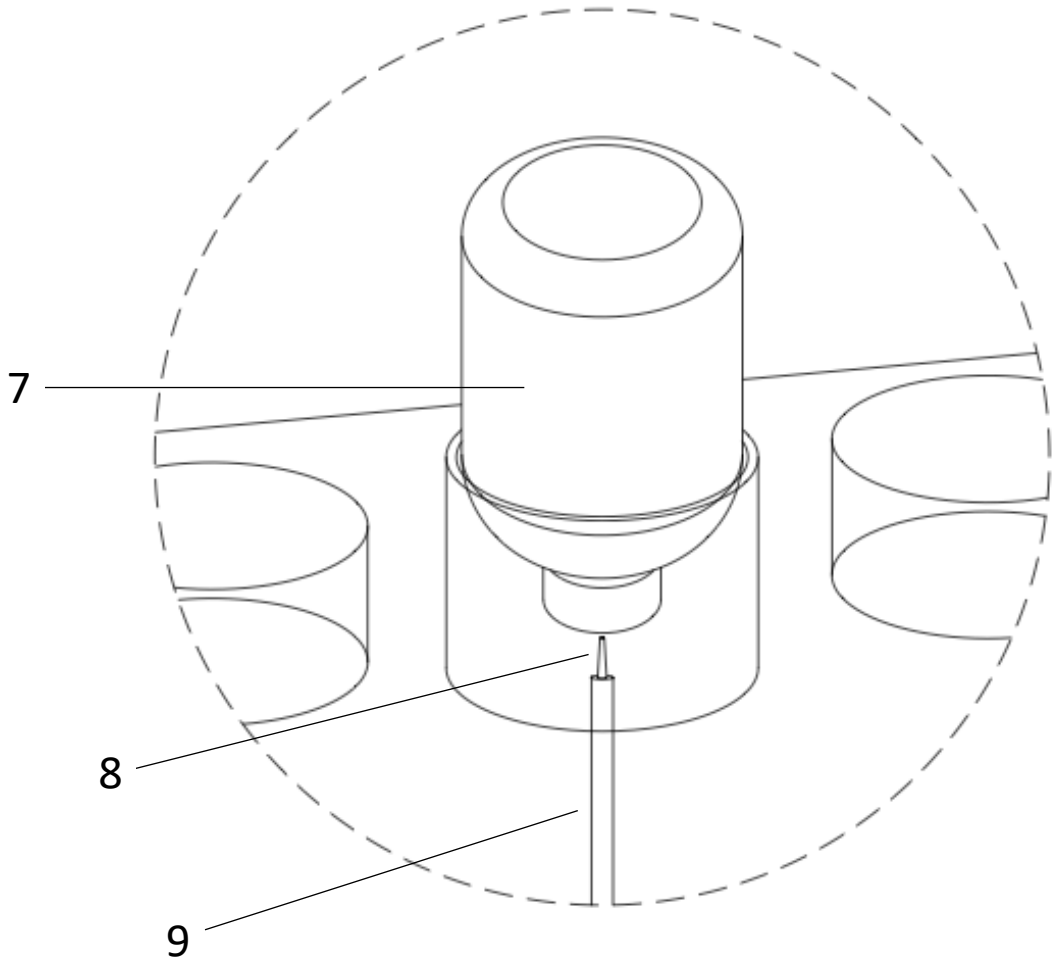

FIG. 3

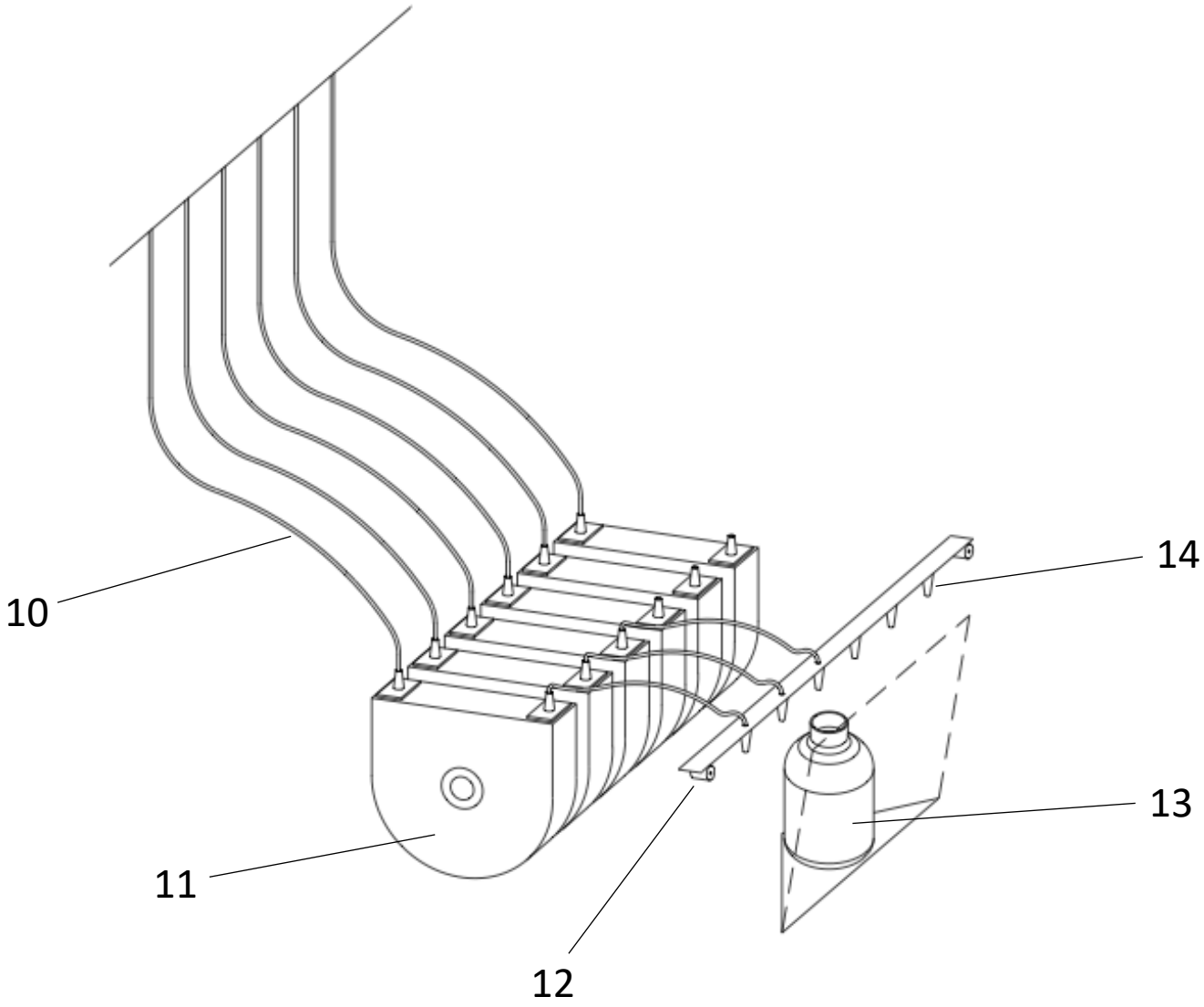

FIG. 4

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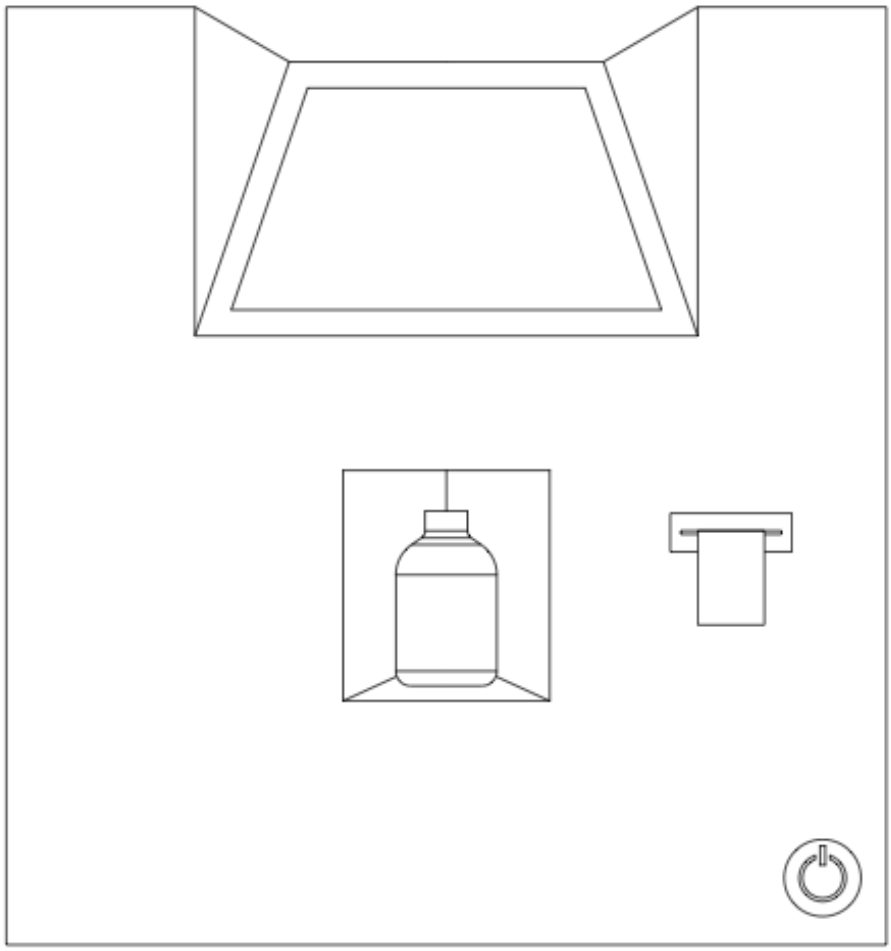

FIG. 5