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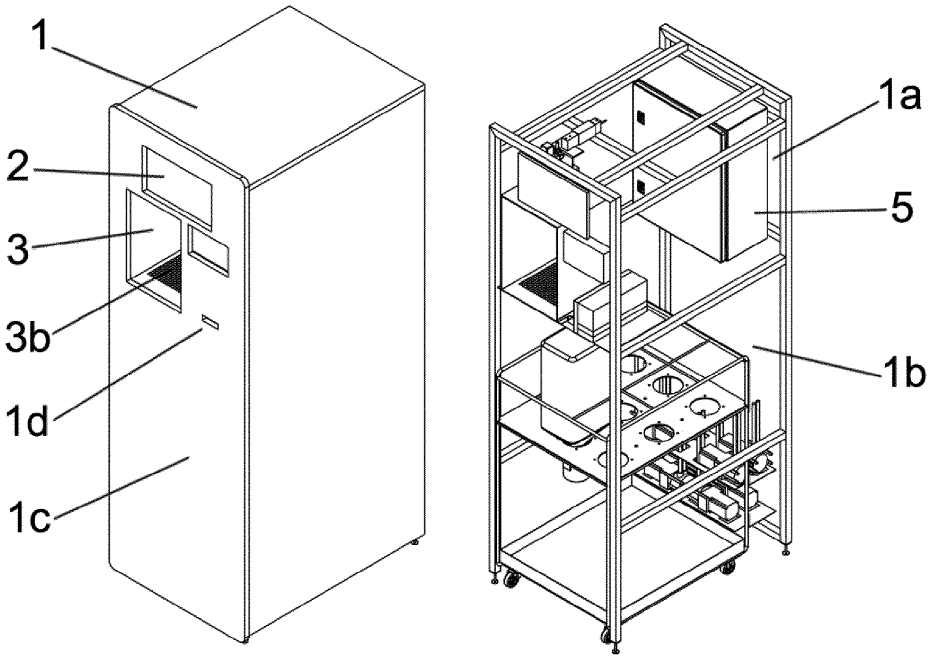
(54) **MACHINE FOR THE FILLING OF A CONTAINER WITH A CLEANING AGENT**

(57) Machine for filling a container with a cleaning product, comprising a chassis (1), divided into an upper zone (1a) and a lower zone (1b), the upper zone (1a) contains a filling zone (3), essentially prismatic and hollow, from which a nozzle (4) emerges through which the liquid and a laser measuring system or element configured to determine the position of the container in the nozzle (4) emanate; and where the lower zone (1b) is configured to house at least one tank (6) connected to at least one flow meter (7), a valve (8) and a peristaltic pump (9).

FIG. 1



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Description

Object of the invention

[0001] The object of the present report is a machine for filling a container with a cleaning product, and where said cleaning products can be used in the field of textile cleaning (concentrated detergent and/or fabric softener), cleaning of crockery, floors or equivalent and even, finally, personal hygiene products, such as gels, soaps, etc.

[0002] Its main advantage lies in the creation of a product that can be easily installed in retail outlets such as supermarkets. Where, in a simple way, the user can go with his receptacle or container to select the type of product to buy, and thus, be filled quickly, easily, and cleanly thanks to the presence of a special nozzle that is able to hold the container autonomously.

Background to the invention

[0003] Currently, the sale of products for laundry care, household cleaning or dishwashing is done through individually sold, plastic-based dosed packaging, which generates a large amount of waste in the form of non-returnable packaging, which due to its indiscriminate use (and low recycling) has become an environmental problem.

[0004] Another aspect associated with this way of selling this type of products is the carbon footprint they generate as a result of their palletised arrangement, which facilitates their transport, but which implies an expense in associated products and/or a greater need for elements for their transport (generally of a terrestrial type), which means that these products have a great ecological impact.

[0005] For all these reasons, various regulations have been implemented to put an end to their use, or at least to reduce their weight in commerce by a high percentage. There is therefore an urgent need for solutions aimed at centralising the provision or sale of these products in a simple and quick way in the form of supply machines (such as the one presented here) that solve the known problem.

[0006] An example of this type of solution is Spanish utility model ES 1 261 444, which describes a machine for dispensing liquid products, characterised by the fact that it comprises at least one tank containing a liquid medium, pumping means, means for dispensing to a user, volumetric counting means, means for measuring the filling of the liquid medium contained in the tank, selection means and control means; wherein the pumping means are provided for transferring the liquid medium from the at least one reservoir to the user dosing means; wherein the user dosing means are provided for discharging the liquid medium for removal by the user; the volumetric counting means are designed to count the volume of liquid medium transferred from the at least one tank; the selection means are designed to present to the user the liquid media available in the at least one tank and are designed for interaction with the user for selection of the liquid medium and its dosed quantity; the control means are linked in data communication and are able to control the pumping means, the volumetric counting means, the means for measuring the filling of the liquid medium and the selection means.

[0007] The main disadvantage of this solution is that it has a filling hole, where the user must place the container or container (which according to its description can be a bottle or a glass) adjusted in position to the nozzle through which the fluid to be dispensed will emanate.

[0008] This type of solution is commonly used in the catering sector or similar (restaurants, cinemas, etc.) and allows the quick and easy filling of glasses with liquids, since, although the liquid emanates in a controlled manner, due to the force at its exit, a small amount of product is diffused, which will be deposited both in the hole where the filling takes place and in a grid located in the lower part of this hole.

[0009] Therefore, although in essence, this type of machine could be used to fill any type of liquid, it would not be suitable for viscous liquids, which emanate in a more controlled manner and in which filling must be carried out to the millimetre in order not to lose even a drop of the liquid in question, as such losses would make the machine almost useless after a few uses.

[0010] In addition, this type of solution involves active work on the part of the user, as the user will have to position the device correctly according to the flow of liquid emanating from the container, holding the container to avoid the turbulence caused by the logical transit of the liquid flow to the container, thus preventing it from falling out of the container, with the fatal consequences that this would entail.

[0011] For this purpose, the present invention has a nozzle through which the liquid emanates, with a design that allows the correct adjustment of the container to be filled (bottles or plastic sachets) that house the nozzle, filling inside the container itself and thus preventing any drop of liquid from spilling out of the container itself.

Description of the invention

[0012] The technical problem solved by the present invention is to obtain a machine for filling cleaning products (soaps, detergents, gels, etc.) capable of filling the container from inside the container itself, holding it at the same time, and in this way being carried out in an autonomous and clean way; since the user will only have to place the container tightly and the machine will be in charge of filling it correctly, until once the user has finished, he will proceed to pick up the ready product. To this end, the machine for filling a container with a cleaning product, the object of the present utility model, comprises a chassis, divided into an upper and a lower zone, and where in the upper zone there is a filling zone, essentially prismatic and hollow, from which a nozzle emanates

through which the liquid emerges and a laser measuring system or element that determines the correct positioning of the container in the nozzle; and where the lower zone serves as a housing for at least one tank associated in turn with at least one flow meter, a valve and a peristaltic pump.

[0013] The upper area and the lower area are accessible through a door with a security lock to prevent tampering. In addition, the upper area includes a frame for housing a touch screen.

[0014] In turn, the nozzle is made up of two symmetrical bodies joined by means of a series of protrusions that allow it to be opened and/or closed, as well as fixing plates with holes for anchoring it to the chassis; and where, in turn, both bodies have a recess that forms a channel through which the liquid emerges through an orifice, divided into two halves, in the lower part of the nozzle. Likewise, the bodies have a hook-like protuberance, which allows the nozzle to precisely grip the container from the inside.

[0015] Thanks to its design, the machine presented here can fill all types of reusable containers, from bottles with thread and standardised opening diameter (with different formats) to sachets or empty plastic bottles, which are inserted into the nozzle which in turn serves as a clamp and filled with the chosen product, simply and quickly.

[0016] Thus, the turbulences produced by the liquid flowing from the nozzle to the container will not affect the stability of the container, avoiding possible accidents in the form of spills.

[0017] This will reduce the volume of packaging used in the operation and therefore reduce the carbon footprint associated with the sale of these products, as the logistics from the factory of these components to the shop where they are installed is minimised.

[0018] The machine, object of the present invention, is designed to be able to serve as a sales element for liquid or viscous products, both in concentrated format and in final sale format. Its tanks will be specially designed for the sale of these products, which require specialised storage.

[0019] The fact that the nozzle is used as a means of holding the container is not trivial, as it allows the filling operation to be carried out in the same way as the filling operation:

- Effective; filling the container with the desired amount of product.
- Adjusted: since the user will pay for what is contracted, given that product losses in the filling operation are practically nil, thanks to the presence of a laser system that detects the positioning and filling level of the product.
- Simple: the user only has to place the container correctly and remove it when the operation has been completed, closing the container afterwards; therefore, he/she does not have to interact with the machine more than necessary (beyond, logically, the selection of the desired product) compared to other known solutions in the state of the machine that require his/her expertise to place the container, and to hold it in place if he/she does not have any element used for this purpose.

[0020] Another differentiating element is that the machine proposed here has logical control means that control the machine and compare the results obtained by measuring sensors placed in the tank of the product used and the measurements of the peristaltic pump, to provide a filling in accordance with the customer's requirements, with a high degree of accuracy.

[0021] Throughout the description and the claims, the word "comprises" and its variants are not intended to exclude other technical features, additives, components or steps. To those skilled in the art, other objects, advantages, and features of the invention will be apparent in part from the description and in part from the practice of the invention. The following examples and drawings are provided by way of illustration and are not intended to restrict the present invention. Furthermore, the present invention covers all possible combinations of particular and preferred embodiments indicated herein.

Brief description of the figures

[0022] The following is a very brief description of a series of drawings which help to better understand the invention, and which relate expressly to an embodiment of the invention which is presented as a non-limiting example of the invention.

FIG 1. It shows a perspective view of the machine for filling a container with a cleaning product, which is the subject of this utility model.

FIG 2. It shows a perspective view of the lower area (1b) of the machine for filling a container with a cleaning agent.

FIG 3. It shows a detail view of the nozzle (4) of the machine for filling a container with a cleaning agent.

Detailed description of an embodiment of the invention

[0023] The attached figures show a preferred embodiment of the invention. More specifically, the machine for filling a container with a cleaning product, the subject of the present report, is characterised in that it comprises a chassis (1) which is divided into two zones, a first or upper zone (1a) and a second or lower zone (1b); both accessible by means of a door (1c) with a safety lock (1d) which prevents tampering.

[0024] The first or upper area (1a) comprises a frame for housing a touch screen (2).

[0025] Then, in its upper part, there is an area for filling

(3) configured as an essentially prismatic and hollow area, which in its lower part has a grid (3b) and which in its upper part has a hole through which a nozzle (4) emerges from which the liquid emerges, which is associated with a servomotor (5).

[0026] Finally, located downstream of the filling zone (3) along the vertical axis, there is a display screen (2), which allows the evolution of the filling phase to be viewed.

[0027] In a preferred embodiment, the filling area (3) incorporates a laser measurement system or element that determines the correct positioning of the container in the nozzle (4).

[0028] The lower area (1b) serves as a housing for at least one tank (6) for a liquid cleaning product, associated with at least one flow meter (7), a valve (8) and a peristaltic pump (9) in charge of flowing the liquid to the nozzle (4).

[0029] In a preferred embodiment, the nozzle (4) is composed of two symmetrical bodies (4a, 4b) joined by means of the engagement of a series of protrusions (4c) arranged respectively on each of the bodies (4a, 4b) which allow their opening and/or closing to effectively grip the container.

[0030] Both bodies (4a, 4b) shall have fixing plates (4d) with holes for anchoring them to the chassis (1) so that they are firmly fixed to the chassis.

[0031] Internally, each of these bodies (4a, 4b) will have a recess (4e) to form a channel through which the liquid will flow through an orifice (4f) at the bottom of the nozzle (4), this orifice being subdivided into two halves, each one located respectively in each of the bodies (4a, 4b) that make up the nozzle (4).

[0032] Finally, in their lower part, each of these bodies (4a, 4b) will have a protrusion (4g) in the form of a hook, which allows the nozzle (4) to precisely grasp the inside of the container by means of the pressure exerted by these protrusions against the inner wall of the container, preventing it from falling out.

Claims

1. Machine for filling a container with a cleaning product, comprising a chassis (1), divided into an upper zone (1a) and a lower zone (1b), **characterised in that** the upper zone (1a) contains a filling zone (3), essentially prismatic and hollow, from which a nozzle (4) emerges through which the liquid and a laser measuring system or element configured to determine the position of the container in the nozzle (4) emanate; and where the lower zone (1b) is configured to house at least one tank (6) connected to at least one flow meter (7), a valve (8) and a peristaltic pump (9).

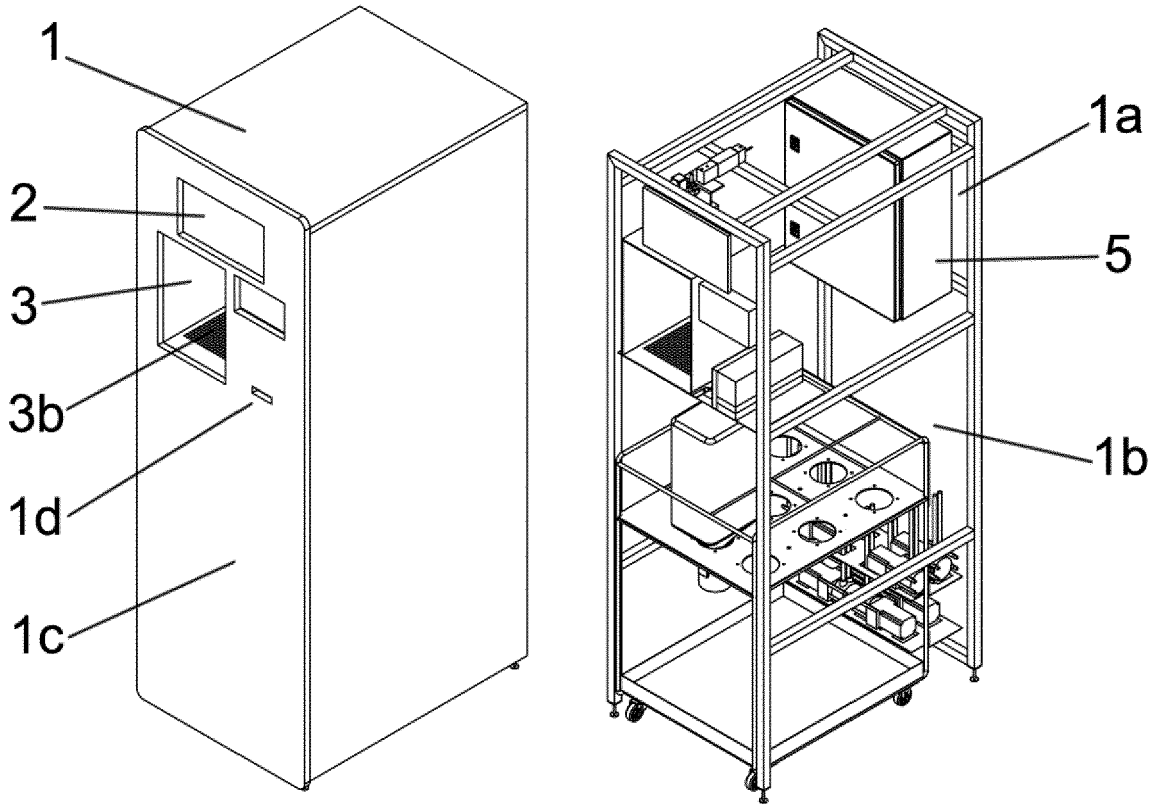
2. Machine for filling a container with a cleaning product according to claim 1, wherein the nozzle (4) is composed of two symmetrical bodies (4a, 4b) joined by means of a series of protrusions (4c) configured for opening and/or closing, as well as fixing plates (4d) with holes for anchoring to the chassis (1); and where, in turn, both bodies (4a, 4b) have a recess (4e) that forms a channel through which the liquid flows to emerge through an orifice (4f), divided into two halves, at the bottom of the nozzle (4).

3. Machine for filling a container with a cleaning product according to claims 1 and 2, where the bodies (4a, 4b) have a protrusion (4g) as a hook, configured so that the nozzle (4) accurately grips the container from the inside.

4. Machine for filling a container with a cleaning product according to claims 1 to 3 where the upper zone (1a) and the lower zone (1b) are accessible through a door (1c) with safety lock (1d).

5. Machine for filling a container with a cleaning product according to claims 1 to 4 where the upper zone (1a) comprises a frame for housing a touch screen (2).

FIG. 1



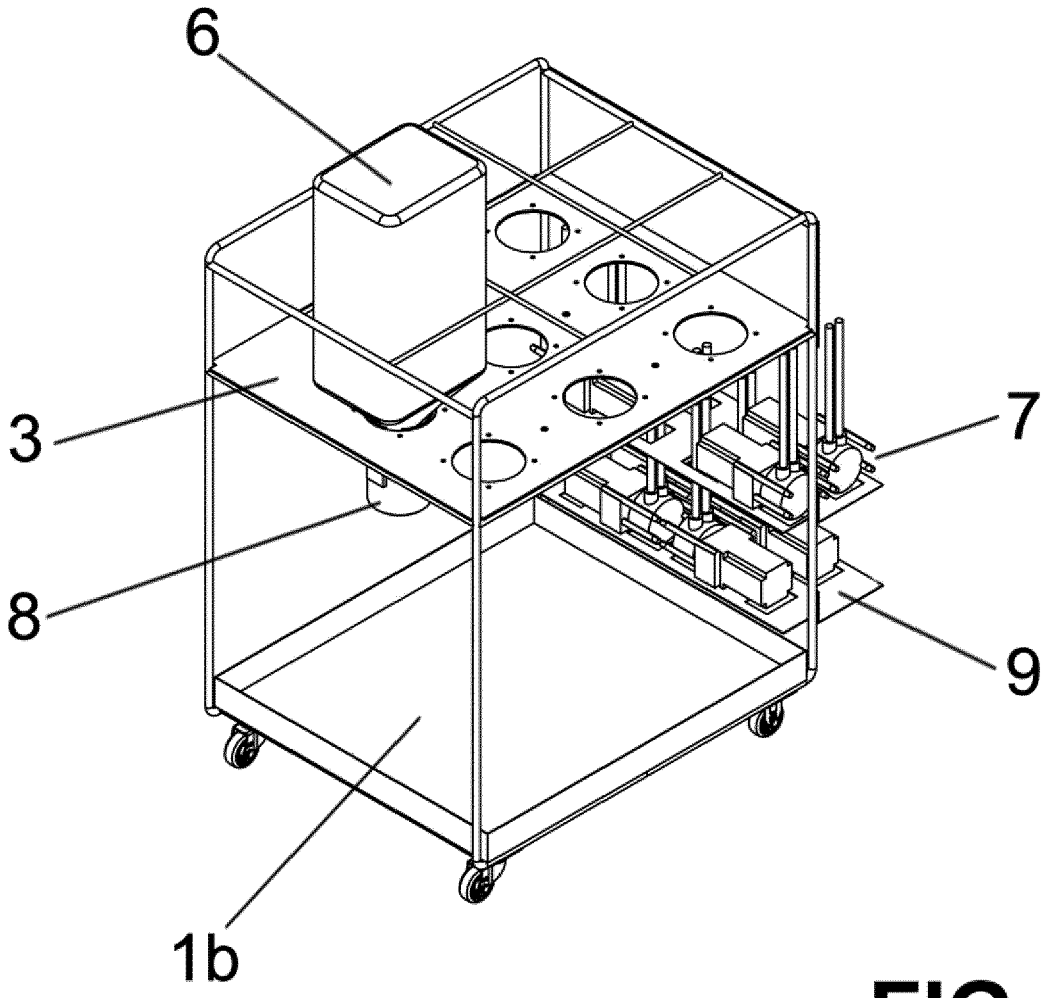


FIG. 2

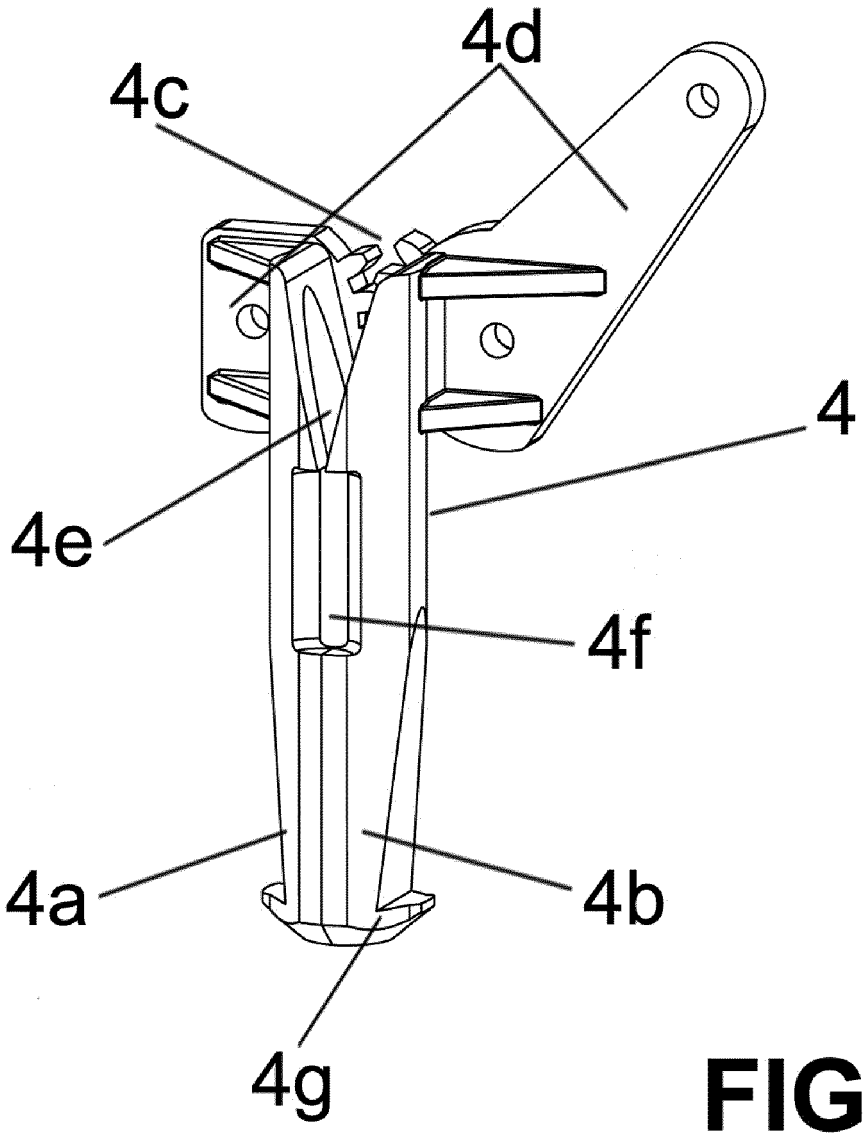


FIG. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 22 38 2926

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G07F
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	9 February 2023	Verhoef, Peter

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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