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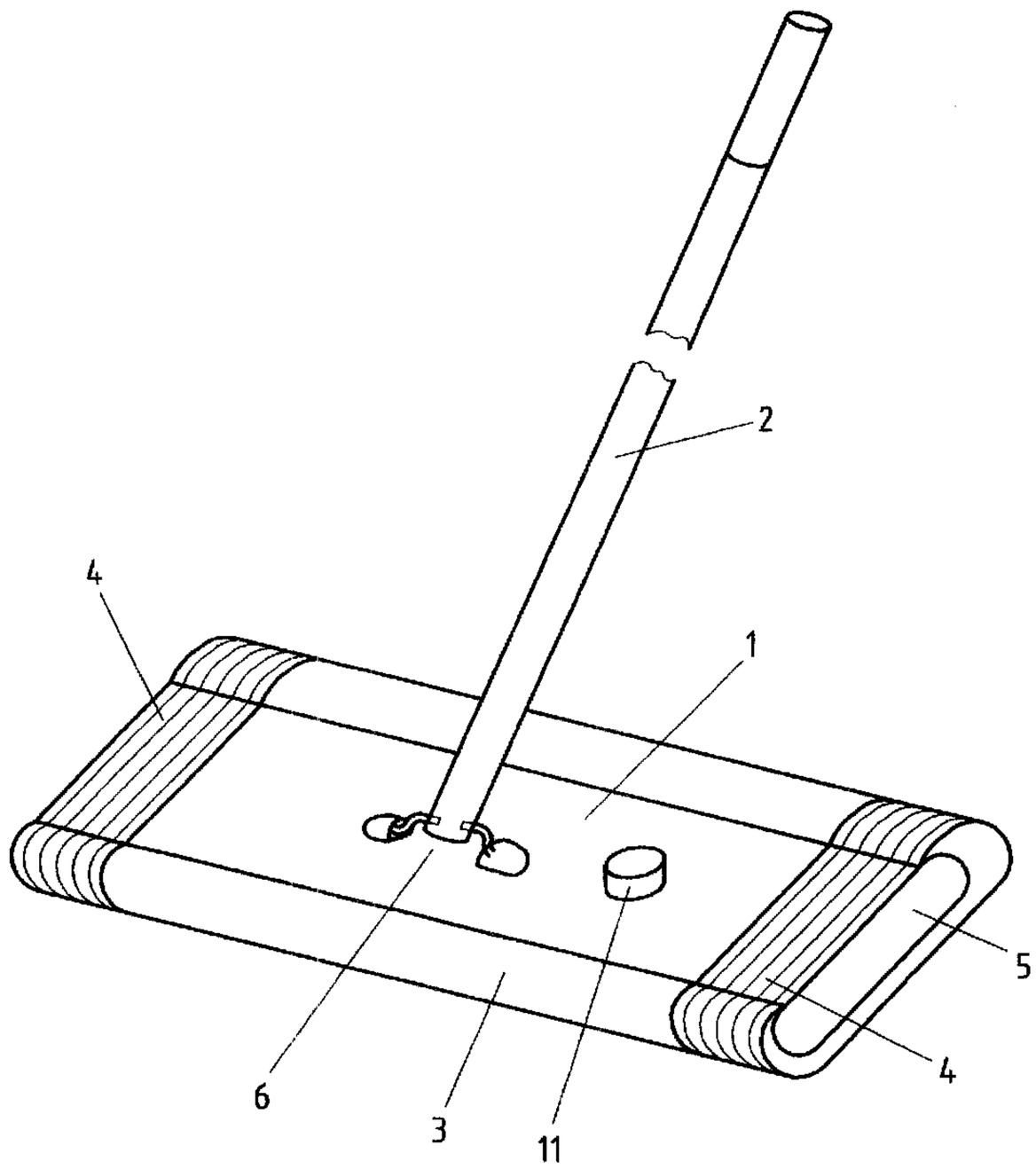
(54) Titre : DISPOSITIF D'ESSUYAGE ET DE NETTOYAGE DE SURFACES SALES
(54) Title: DEVICE FOR THE WIPING AND CLEANING OF SOILED SURFACES



(57) Abrégé/Abstract:
Disclosed is an apparatus for the wiping and cleaning of soiled surfaces, including a carrier body (1) for a wiper element (3), which carrier body (1) is constructed as a latent heat storage. The integrated heat storage obviates the need for an external power supply, rendering the apparatus more cost efficient and facilitating the use of the apparatus.

ABSTRACT

Disclosed is an apparatus for the wiping and cleaning of soiled surfaces, including a carrier body (1) for a wiper element (3), which carrier body (1) is constructed as a latent heat storage. The integrated heat storage obviates the need for an external power supply, rendering the apparatus more cost efficient and facilitating the use of the apparatus.

DEVICE FOR THE WIPING AND CLEANING OF SOILED SURFACES

FIELD OF THE INVENTION

The invention relates to cleaning apparatus and in particular to apparatus for the wiping and cleaning of solid surfaces and including a carrier body for a wiper element.

BACKGROUND ART

A cleaning apparatus is known from DE 300558 which includes a handle and at a bottom end thereof a holder for a liquid container and a heating plate for the heating of a wiper cover. The liquid container is moveably mounted on the holder in such a way that a valve is opened upon pressure being applied to the container so that the wiper cover thereunder is wetted. An excessive discharge of cleaning liquid can thereby occur, which can adversely affect the usage value and appearance of moisture sensitive wood surfaces. Furthermore, this cleaning apparatus is of extremely costly construction and requires a power connection for supplying energy to the incorporated heating resistors of the heating plate.

SUMMARY OF THE INVENTION

Advantageous embodimentsof the invention may simplify this type of apparatus for the wiping and cleaning of soiled surfaces and improve it in such a way that a better removal of dirt particles adhering to a surface to be cleaned is achieved in a simple manner without damaging the surface by excessive moistening.

According to an aspect of the present invention, there is provided a device for mopping and cleaning contaminated surfaces, having a carrying body for a mopping element, the carrying body being designed as a latent heat store, the mopping element covering a section of a wall of the heat store which forms a heat-conduction zone, wherein the carrying body consists of polymeric material, and wherein the heat-conduction zone is formed by a zone in a wall of the carrying body, designed as a heat store, which has a thickness which is reduced in relation to the thickness of other walls of the carrying body.

According to another aspect of the present invention, there is provided an apparatus in which the carrier body for the wiper element is constructed as a latent heat storage. The invention is thereby based on the realization that the loosening of dirt particles is facilitated with heat. This heat is supplied across the wiper element, which, heated by the heat storage, has a higher temperature than the temperature of the soiled surfaces. Wax stripes, for example, can thereby be removed very gently

and without high contact pressure from furniture surfaces or from glass. Since the energy source is hidden in the cleaning body and moved therewith, the power supply connection is obviated. The heat transfer to the soiled surface can be controlled during the wiping movement by accordingly adapted residence times. The need to carry along hot water in a bucket for the removal of strongly adhering dirt particles, is obviated with the apparatus of the invention including the latent heat storage. Therefore, the cleaning apparatus is especially well suited for the cleaning of

moisture sensitive surfaces, whereby it can be applied both in the domestic as well as the commercial area. The apparatus in accordance with the invention can be realized with different dimensions and used for the cleaning of different surfaces, such as window surfaces, furniture surfaces or floor surfaces.

The heat storage can include a sensor for display of the temperature. It can thereby be signalled to the user upon sinking of the temperature below the required temperature threshold that he/she needs to carry out a renewed heating of the heat storage and, if necessary, must refill the hot water. The sensor can be made of a plastic including a thermochrome material. The latter is preferably selected to change color when the temperature falls below a minimum acceptable temperature, which makes the required reheating especially conspicuously apparent. In a preferred embodiment, the plastic with thermochrome material content which forms the sensor also forms the casing which at least partially encloses the heat storage. It is hereby also possible to construct the casing at the same time as a tank for a cleaning liquid, for example, heated water.

The apparatus can therefore be of very simple construction. Heated water is always available in the household. The wiper element preferably covers a section of the tank wall which forms a heat conducting zone. The energy source of the heat storage is then sufficiently used in that the tank wall is constructed from a heat insulating material and only that portion located in the heat conducting zone is heat conducting.

A carrier body of polymeric material is preferred. The apparatus can thereby be very cost efficiently manufactured as an injection molded part. The wall in the region of the heat conducting zone advantageously includes a zone of reduced thickness. It is preferably stiffened by stiffening ribs in order to guarantee that the contact forces are evenly transferred onto the surface to be cleaned.

The carrier body is preferably shaped essentially as a flat rectangular prism. The stored heat can thereby be best transferred to the wiper element at a relatively low weight. For improved handling, a gripping element, for example, a grip or handle, is provided on its top. Especially when the apparatus is built as a floor cleaning apparatus, it is advantageous when the gripping element is connected to the carrier body by a cardanic joint at about the center of the carrier body top. This embodiment enables a comfortable cleaning even with space constraints and in corners.

It has been found advantageous when the wiper element is a removable wiping cloth of a non-woven material, a woven fabric or a knitted fabric. A knitted cloth is thereby preferably used. It can be fastened to the carrier body by a hook and loop fastener or by insertion pockets.

When a cleaning liquid is used as heat storage, it has been found advantageous when the tank has at least one opening through which the cleaning fluid can exit for the wetting of the wiper

element. It has been found advantageous in such an embodiment to provide a structure for closing the opening on demand. The amount of cleaning liquid used can thereby be controlled as desired and an improved cleaning effect achieved.

A further simplification of the handling results when means are provided by which the amount of the cleaning liquid discharged from the opening can be metered.

The apparatus can be especially simply constructed when the above discussed opening is located at the bottom of the tank. It has thereby further been found advantageous when a water distributor is positioned between the opening and the wiper element. The even wetting of the wiper element is thereby improved.

The means for metering the cleaning fluid can be constructed as a pump. A displacement body included therein can be formed by a piston or alternatively by an elastically deformable portion of the wall of the tank. Especially in an embodiment where the tank is made of plastic, its manufacture can be especially easily achieved by using blow molding techniques.

In order to guarantee an even pressing of the wiper element onto the surface to be cleaned, for example, a floor covering with certain surface irregularities, it has been found advantageous when the water distributor is made of an elastic plate, for example, a plate of closed cell foam. The latter can be provided with water distribution channels in order to guarantee an even wetting of the wiper element in all partial regions.

Different materials can be used for the wiper element. A knitted or woven textile fabric has thereby proven most successful. The wiper element can be a removable wiper cloth for repeated usage or a one-way wiper cloth. The wiper cloth is preferably fastened to the carrier body by a hook and loop fastener or by insertion pockets and can therefore be easily removed from the carrier body and cleaned.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be further described by way of example only and with reference to the attached drawings, wherein equal reference numerals define equal parts.

Figure 1 is a side elevational view of a first embodiment in accordance with the invention;

Figure 2 is a perspective view of a second embodiment of the invention;

Figure 3 is a cross-section through a carrier body which is constructed as a flat rectangular prism;

Figure 4 is a cross-sectional view through an apparatus wherein the carrier body is constructed as a cleaning liquid tank; and

Figure 5 is a plan view of the water distribution channels provided on the carrier body shown in Figure 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Figure 1 illustrates an exemplary embodiment of the invention which has been found especially advantageous for domestic use. A carrier body 1 is formed on a gripping portion 2 which is constructed as a hand grip, whereby the carrier body forms a tank. The tank can be filled with heated water through a filler opening 11. A portion 8 of the wall of the tank is constructed as a heat conducting zone 8. The wiper element 3 is connected to the carrier body 1 by way of a hook and loop fastener 7. The cleaning process is aided by the supply of heat which reaches the surface to be cleaned from the heat storage 1 through the heat conducting zone 8 and the wiper element 3. The cleaning body illustrated in Figure 1 can be manufactured at low cost by injection molding technology and therefore is distinguished especially in the domestic area by its universal applicability. The wiper element 3 can be constructed according to the field of application. For example, it can be a dry rubbing cloth of micro fibre fabric, or a moistened sponge cloth.

A preferred embodiment for use as a flat wiping apparatus for the wiping and cleaning of floors is shown in Figure 2. The carrier body 1 is constructed as a flat rectangular prism and serves as latent heat storage which can be filled with heated water through a filler opening 11. A handle 2 is supported on the top of the rectangular prism shaped carrier body through a joint 6, preferably a cardanic joint. The wiper cloth 3 encloses a lower side and longitudinal sides of the rectangular prism and is fastened by insertion pockets 4 to the carrier body 1. The center of gravity of the wiping apparatus is very low and the cardanic joint facilitates handling even when used for overhanging furniture with tight space constraints. Damage to furniture during the wiping procedure is reduced in that the wiper cover 3 overlaps the base surfaces 5 of the rectangular prism. The carrier body 1 is preferably a blow molded part of polymeric material, whereby the manufacture of the cleaning apparatus can be achieved especially cost efficiently. The wiper element 3 can be differently constructed and adapted to the floor surface to be respectively cleaned. The cleaning apparatus is suited for dry cleaning as well as damp cleaning, whereby the wiper cover can be of different construction. The wiper cover 3, for example, can be a non-woven or a sponge of polyurethane or viscose. Further suitable are premoistened sponge cloths or textile fabrics or woven fabrics or knitted textiles.

The surface of the rectangular prism-shaped tank which faces the surface to be cleaned is preferably constructed as a heat conducting zone 8. The latter is schematically illustrated in cross-section in Figure 3. The heat conducting zone 8 is formed in the wall of the tank by reduction of the wall thickness towards the wiping surface. Reinforcing ribs 9 ensure that an evenly high contact force can be transmitted over the whole wiping surface. The wall of the tank is provided with an insulator 10, whereby the stored heat is efficiently used for the cleaning process. The carrier body 1

illustrated in Figure 2 can also be cost efficiently manufactured as an injection molded part. However, the heat conducting zone 8 can also be formed in a different manner, for example by using a material with a higher heat conductance number. Since the carrier body 1 in Figure 2 forms the reservoir for the brought along heated water, its inherent weight increases the contact force of the wiper cover with the floor surface to be cleaned. This is especially advantageous for the intermediate cleaning of floors, since because of the inherent weight of the carrier body, light soilage can often be removed by only a few wiping movements.

Figure 4 illustrates an apparatus for the wiping and cleaning of soiled surfaces, wherein the carrier body 1 is constructed as a tank for a cleaning liquid 15 and has the shape of a rectangular prism. For the refilling of used up cleaning liquid, the tank is provided with a filler neck which can be closed by a plug.

A means 16 is provided in a central area through which the opening 12 positioned in a central region of the bottom surface can be opened on demand in order to let the cleaning liquid 15 exit downwardly in this region. The means 16 consist of a push button 16 supported by a compression spring, which is connected with a shaft 18 having a valve plug 19 at its lower end. In the at rest position, the valve plug 19 is pressed from below against the valve seat 20 by the force of the compression spring 17. The opening 12 is thereby closed. If downwards pressure is exerted on the button 16, the valve plug 19 is moved downwardly against the force of the compression spring 17 and the opening 12 opened during the duration of the actuation of the button 16. The cleaning liquid 15 can thereby exit downwardly due to gravity.

After its exit from the opening 12, the cleaning liquid 15 reaches the water distributor 13 made of elastic, closed celled foam, which is provided at its upper surface with water distribution channels 14 and is penetrated in vertical direction by passages 21. The passages 21 are essentially evenly distributed over the whole surface of the water distributor 13. Upon operation of the push button 16, the liquid 15 exiting from the opening 12 is thereby evenly distributed over the whole surface of the wiper element 3. The latter can also be constructed as a one way cloth, if desired, which, once soiled, is removed from the water distributor and replaced with a new cloth. Such an embodiment has proven especially advantageous, especially with respect to the cleaning of lightly soiled surfaces.

A water distributor of the above mentioned type has good heat insulating properties because of its closed celled foam structure as is provided, for example, by the use of a closed celled, foamed, cross-linked polyethylene soft foam of a density of 30-120 kg/m^4, preferably a density of 60-90 kg/m^4. Undesired water and heat loss during the cleaning process is thereby avoided, while an improved cleaning action by controlled heat and water supply to the surface to be cleaned by way of the cleaning liquid supplied on demand is achieved. If no heat and moisture requirement

exists during the cleaning, it is also possible to use this embodiment in the dry condition for heat and liquid savings and to supply heat and moisture by way of the warm water only on demand to the surface to be cleaned. The amount of water and heat continuously remaining on the cleaned surface during the progression of the cleaning process subsequently further dries the cleaning cloth, which leads to an additional increase of its thermally insulating action and thereby again to an automatic savings of the limited amount of heat and liquid. This is especially advantageous with respect to the cleaning of large, only lightly soiled surfaces.

CLAIMS:

1. A device for mopping and cleaning contaminated surfaces, having a carrying body for a mopping element, the carrying body being designed as a latent heat store, the mopping element covering a section of a wall of the heat store which forms a heat-conduction zone, wherein the carrying body consists of polymeric material, and wherein the heat-conduction zone is formed by a zone in a wall of the carrying body, designed as the heat store, which has a thickness which is reduced in relation to the thickness of other walls of the carrying body.

2. A device according to claim 1, wherein the heat store has a sensor for indicating temperature.

3. A device according to claim 2, wherein the sensor consists of a plastic which contains a thermochromic material.

4. A device according to claim 3, wherein the plastic forms a sheath which encloses the heat store at least in part.

5. A device according to claim 4, wherein the sheath is designed as a tank for a cleaning liquid.

6. A device according to claim 1, wherein the zone is stiffened by stiffening ribs.

7. A device according to any one of claims 1 to 6, wherein the carrying body is designed essentially as a flat cuboid.

8. A device according to any one of claims 1 to 7, wherein the carrying body has a top side and a handle on the top side.

9. A device according to claim 8, wherein the handle is designed as a shaft and is connected approximately to the centre of the top side by a cardanic joint.

10. A device according to any one of claims 1 to 9, wherein the mopping element is a removable mopping cloth made of nonwoven material or a knitted sheet-like structure.

11. A device according to claim 10, wherein the mopping element is a disposable mopping cloth.

12. A device according to claim 10 or 11, wherein the mopping element is fastened on the carrying body by a touch-and-close fastener or by push-in pockets.

13. A device according to claim 5, wherein the tank has at least one opening through which cleaning liquid can pass out.

14. A device according to claim 13, wherein the opening can be closed if required.

15. A device according to claim 13 or 14, wherein means are provided which allow the quantity of cleaning liquid passing out of the opening to be metered.

16. A device according to any one of claims 13 to 15, wherein the opening is arranged at a base of the tank.

17. A device according to any one of claims 13 to 16, wherein a water distributor is arranged between the opening and the mopping element.

18. A device according to claim 15, wherein the means are formed by a pump.

19. A device according to claim 18, wherein the pump has a displacement body which is formed by a piston.

20. A device according to claim 18, wherein the pump has a displacement body which is formed by an elastically deformable constituent part of a wall of the tank.

21. A device according to claim 17, wherein the water distributor comprises an elastic plate.

22. A device according to claim 21, wherein the water distributor is provided with water-distributing channels.

Fig.1

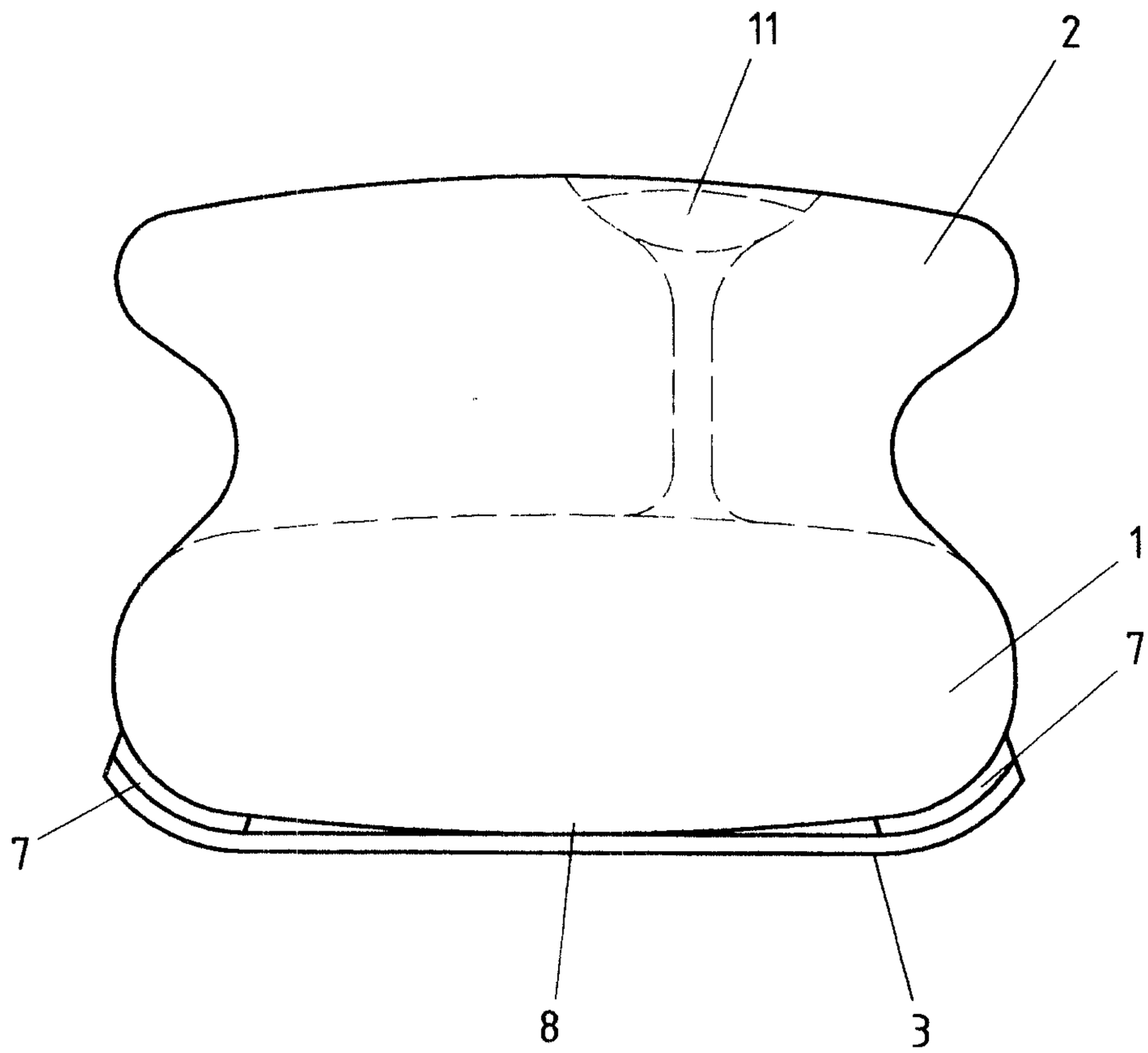


Fig.2

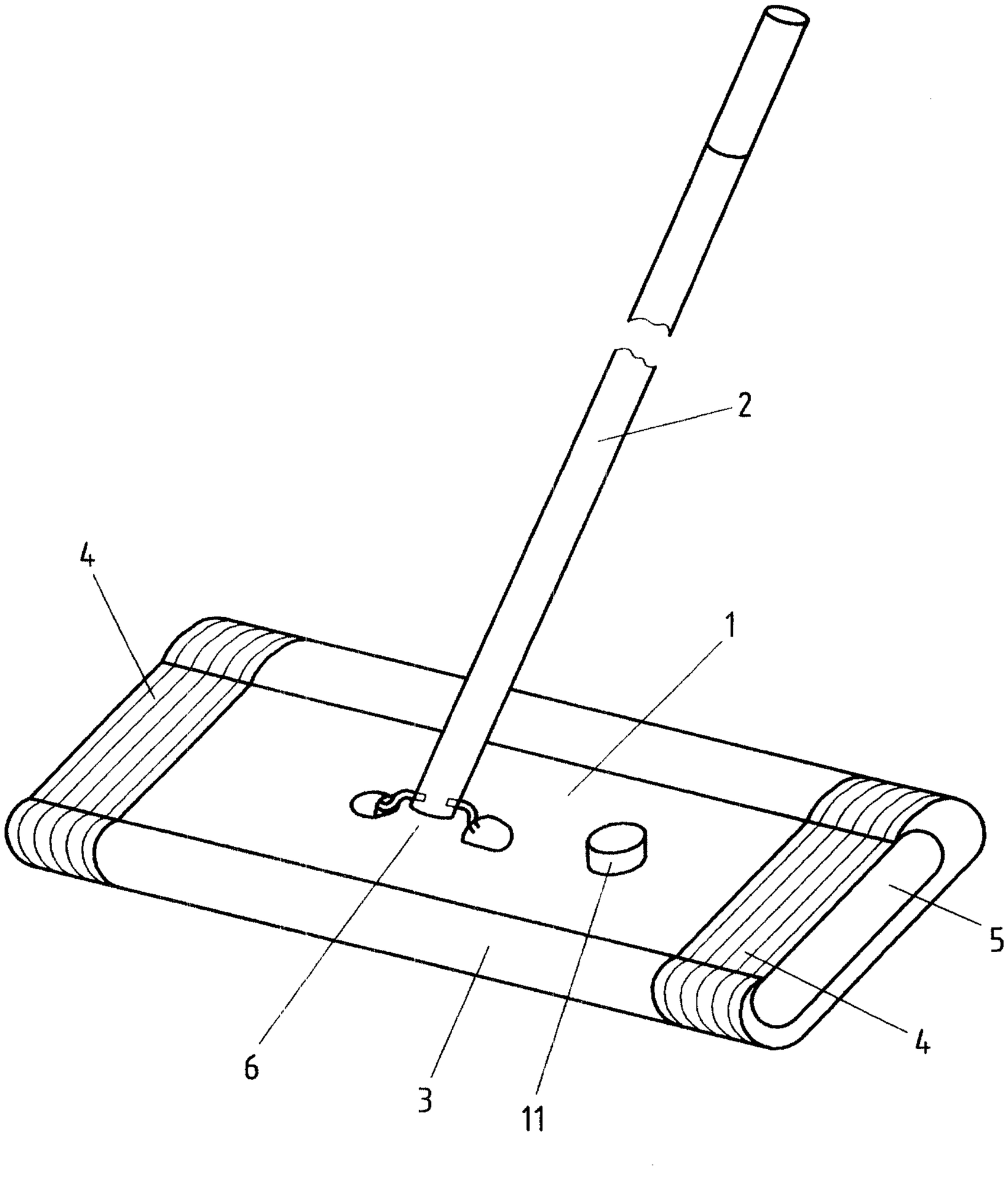


Fig.3

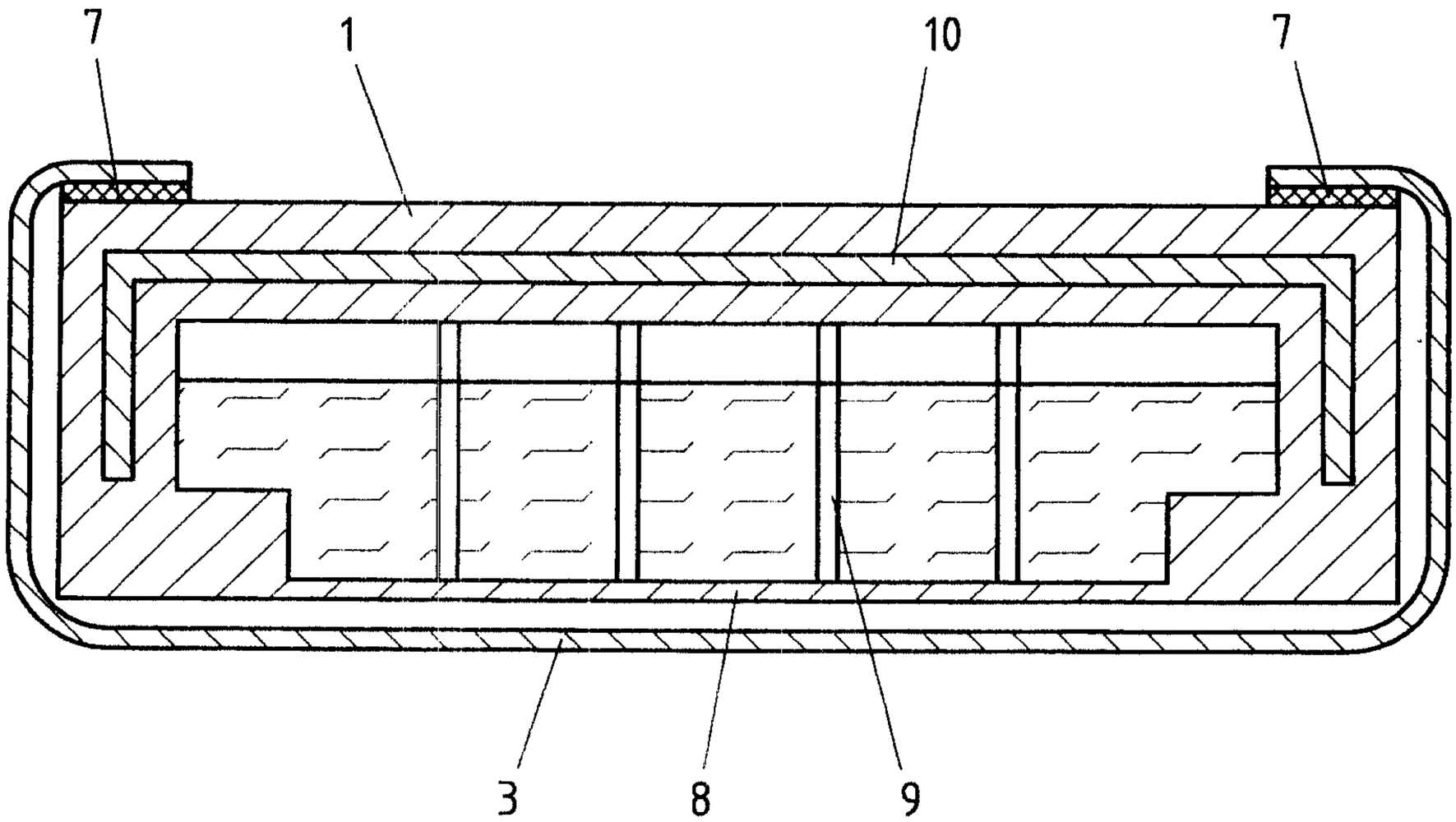


Fig.4

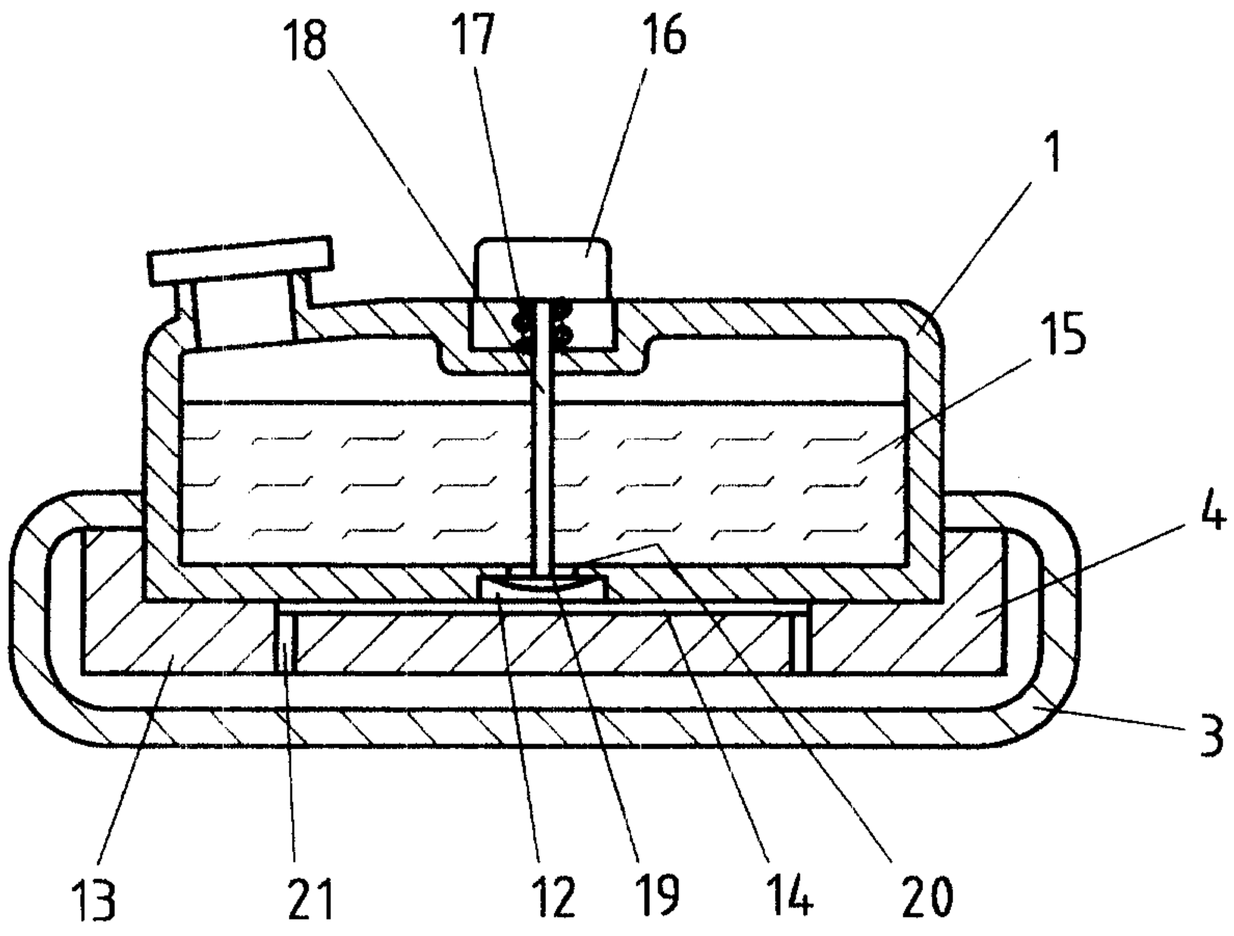
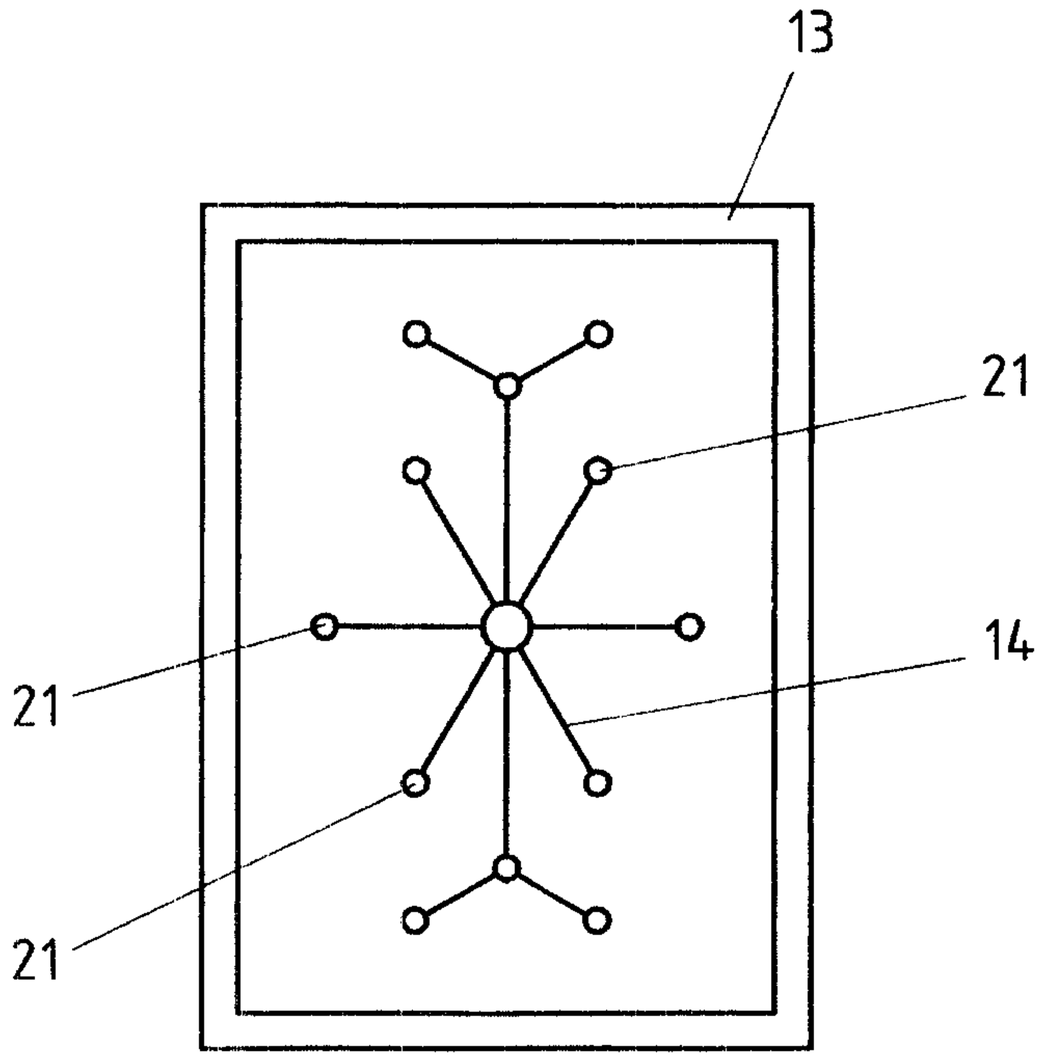
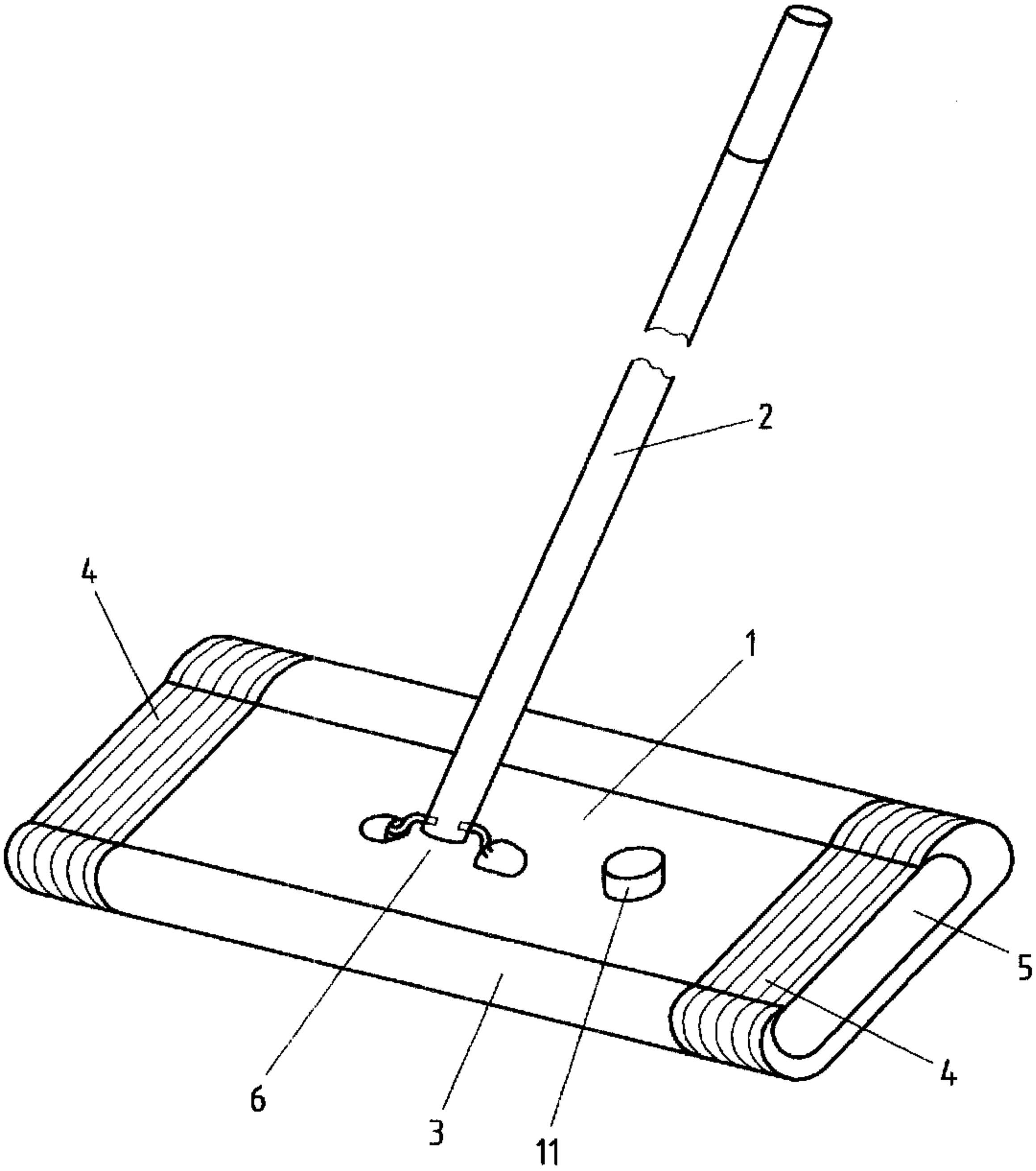


Fig.5

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