

ABSTRACT

Mop plate (1) for a cleaning device (20) which is connectable with a handle (3) through a joint (2), whereby the joint (2) has a first bore (9) and is pivotably supported on a joint pin (4) positioned on the mop plate (1), whereby the mop plate (1) has a recess (5), whereby additional bores (7, 8) are positioned in the recess (5) which are coaxially oriented to the first bore (9) and the joint pin (4) is positioned in the bores (7, 8, 9).

MOP PLATE

Field of the Invention

The invention relates to mop plates for cleaning devices which are connectable with a handle by a joint, whereby the joint has a first bore and is swivelably supported on a joint pin position at the mop plate, whereby the mop plate has a recess.

Background Art

Such mop plates are known from EP 1 039 828 B1. In this known mop plate, the joint pin is positioned in a recess, whereby the recess is integrated into a step which protrudes from a main side of the mop plate. This results in a mop plate in which only one main side can be used as wiping surface. The range of motion of the joint positioned on the joint pin is limited. The joint pin is made in one piece with and of the same material as the mop plate and the fastening of the joint is achieved by way of a snap connection.

Summary of the Invention

It is an object of the invention to provide a mop plate with a robust, captive joint fastening.

This object is achieved with the features of claims 1 and 12. Preferred embodiments are dealt with in the dependent claims.

For the achievement of this object, additional bores are provided in the recess which are coaxial to the first bore and the joint pin is positioned in the bores. The joint pin is thereby a separate element and can be made of a strong material, for example, of a metallic material. Since the joint completely encloses the joint pin in the bore, the joint is connected in a captive manner with the mop plate and the joint cannot come apart by itself even under robust use, for example in the professional field. Furthermore, the complete enclosing of the joint pin with material of the mop plate, provides for the achievement of a maximum strength of the pin bonding at a minimum mop plate thickness. The mop plate can be constructed flat because of the recess in which the bores are positioned. For reasons of improved strength and easier manufacturing, the mop plate is preferably made in one piece and of a uniform material. Furthermore, the diameters of the bores can be selected so that the joint pin has play in the bore of the joint and has a press-fit in the bores of the mop

plate. The joint is thereby easily movable and captively connected with the mop plate by way of the press-fit.

The joint pin can be rigid. Such joint pins are cost efficient and especially sturdy in contrast to spring pins.

5 The mop plate can have two main sides constructed as wiping surfaces and the joint pin can be positioned at least partially between the two main sides. By positioning the joint pin below the wiping surfaces, interfering buildups or steps can be avoided and the wiping surfaces are constructed planar. With respect to the plate thickness of the mop plate, the joint pin can be positioned essentially in the center. The joint pin thereby is
10 located in the region of the center of gravity and the pivot axis of the joint pin is located in the region of the central plane of the mop plate, which facilitates the maneuvering of the mop plate. Furthermore, the mop plate can be constructed especially thin with such an arrangement.

A through hole can be positioned adjacent to the recess, which is connected with
15 the recess by a bore in the mop plate. The assembly of the mop plate is thereby facilitated, since the joint pin can be brought into a position in the through hole which is parallel to one of the bores. The diameters of the bores can be adapted to the joint pin so that a canting of the joint pin during the assembly is prevented.

A plug body can be positioned in the through hole. The plug body is constructed in
20 such a way that a plane surface results on the main sides, which are constructed as wiping surfaces. The plug body prevents an automatic loosening of the joint pin, whereby a press-fit of the joint pin in the bores of the mop plate is no longer necessary. The joint pin can thereby be movable and the assembly of the mop plate is simplified. Furthermore, the plug body prevents the intrusion of contaminations.

25 The plug body can be removably and formfittingly fastened in the through hole. This enables a disassembly of the joint pin without damage, for example for the exchange of individual components of the mop plate. In other embodiments, the plug body can also be glued in place.

The plug body can have a dovetail-shaped profile on at least two opposite sides
30 which is engageable with a complementary counter profile of the through hole. The dovetail-shaped profile as well as the counter profile are easily manufactured and the plug

body is easily installed with little effort, whereby a secure formfitting and non-positive connection is achieved.

The plug body can be made of an elastomeric material. The plug body is reversible deformable because of the elastomeric material, whereby the required effort during the assembly is additionally reduced. In other embodiments, the plug body can be made of multiple parts. A cost efficient material can be used therefor. The assembly can be carried out by an adhesive or snap together connection.

The recess can be open to one edge of the mop plate. This results in a large pivot radius for the joint which is larger than 180° , since the joint can be pivoted through the open recess. This is especially advantageous when both main sides of the mop plate are constructed as wiping surfaces and the main sides are to be brought alternately towards the floor to be cleaned.

The mop plate can be pivotable relative to the joint in such a way that both main sides of the mop plate can be pivoted towards the floor to be cleaned. Both main sides of the mop plate can thereby be constructed as wiping surfaces and the surface coverage of the cleaning device is increased.

The object is also achieved by a process for the assembly of a mop plate, in which the joint is positioned in the recess so that the bores of mop plate and joint are congruent and the joint pin is positioned in the through hole and inserted into the bores and the through hole is closed by the closure body. A large pivot radius for the joint results in that the recess in which the pivot joint is positioned is open to one side. This results in a pivot radius which is larger than 180° , since the joint can be pivoted through the open recess. This is especially advantageous when both main sides of the mop plate are constructed as wiping surfaces and the main sides are to be oriented alternately towards the floor to be cleaned. The pivot pin can be brought in the through hole into a position parallel to the bores. The diameters of the bores can thereby be adjusted to the pivot pin and a canting of the pivot pin during the assembly is avoided. The plug body prevents an automatic loosening of the pivot pin.

Brief Description of the Drawings

Several exemplary embodiments of the mop plate in accordance with the invention are further described by way of the Figures. They show the following, respectively schematically:

- 5 Fig. 1 is an exploded illustration of the mop plate;
 Fig. 2 shows the mop plate in perspective view.

Embodiment of the Invention

Figure 1 shows a mop plate 1 for a cleaning device 20 which is connected with a
10 handle 3 by way of a joint 2 and a compression fitting 18. The compression fitting 18 is connected with the joint 2 by a pivot connection 19 which at the same time forms the second joint axis of the joint 2 which is formed as a cardanic joint. The mop plate 1 has a recess 5 which is open to one edge 6 of the mop plate 1 and is at least partially shaped as a V in order to increase the pivot radius of the joint 2. Bores 7, 8 are provided in the recess
15 5. The joint 2 has a further bore 9, whereby the bores 7, 8, 9 are positioned coaxially to one another. A joint pin 4 is positioned in the bores 7, 8, 9 through which the joint 2 is pivotable relative to the mop plate 1. In this embodiment, the pivot pin 4 is rigidly constructed and positioned below the main sides 16, 17 and central with respect to the plate height of the mop plate 1. A through hole 10 is positioned adjacent to the recess 5
20 which is connected with the recess 5 by the bore 8. A plug body 11 is positioned in the through hole 10, which after assembly prevents an automatic loosening of the joint pin 4. In this embodiment, the plug body 11 has a dovetail-shaped profile 14 at two opposite sides 12, 13, which engages a counter profile 15 of complementary shape in the through hole 10. The plug body 11 is made of an elastomeric material, in this embodiment rubber,
25 and is thereby easily removable and formfittingly fastened in the through hole 10. The mop plate 1 is pivotable relative to the joint 2 so that both main sides 16, 17 of the mop plate 1 can be pivoted towards the floor to be cleaned. Both main sides 16, 17 are thereby constructed as wiping surfaces.

For assembly of the mop plate 1, the joint 2 is positioned in the recess 4 so that the
30 bores 7, 8, 9 of mop plate 1 and joint 2 are congruent. Thereafter, the joint pin 4 is positioned in the through hole 10 and inserted into the bores 7, 8, 9. Finally, the through hole 10 is closed by the plug body 11.

Figure 2 shows an assembled mop plate 1 according to Figure 1 in perspective view.

CLAIMS:

1. Mop plate (1) for a cleaning device (20) which is connectable with a handle (3) by way of a joint (2), whereby the joint (2) has a first bore (9) and is pivotably supported on a joint pin (4) positioned on the mop plate (1), whereby the mop plate (1) has a recess (5), characterized in that additional bores (7, 8) are positioned in the recess (5), which are oriented coaxial to the first bore (9) and that the joint pin (4) is positioned in the bores (7, 8, 9).
2. Mop plate according to claim 1, characterized in that the joint pin is rigidly constructed.
3. Mop plate according to claim 1 or 2, characterized in that the mop plate (1) has two main sides (16, 17) constructed as wiping surfaces and that the joint pin (4) is positioned at least partly between the main sides (16, 17).
4. Mop plate according to one of claims 1 to 3, characterized in that the joint pin (4) is positioned essentially central in relation to the plate height of the mop plate (1).
5. Mop plate according to one of claims 1 to 4, characterized in that a through hole (10) is provided adjacent to the recess (4) which is connected with the recess (4) by a bore (7, 8) of the mop plate (1).
6. Mop plate according to claim 5, characterized in that a plug body (11) is positioned in the through hole (10).
7. Mop plate according to claim 6, characterized in that the plug body (11) is removably and formfittingly fastenable in the through hole (10).
8. Mop plate according to claim 5 or 6, characterized in that the plug body (11) has a dovetail-shaped profile (14) on at least two opposite sides (12, 13), which is engageable with a counter profile (15) of complementary shape in the through hole (10).

9. Mop plate according to one of claims 6 to 8, characterized in that the plug body (11) is made of an elastomeric material.
10. Mop plate according to one of claims 1 to 9, characterized in that the recess (5) is open towards one side (6) of the mop plate (1).
11. Mop plate according to one of claims 1 to 10, characterized in that the mop plate (1) is pivotable relative to the joint (2) in such a way that both main sides (16, 17) of the mop plate (1) can be pivoted in direction of the floor to be cleaned.
12. Process for the assembly of a mop plate (1) according to one of the preceding claims, wherein the joint (2) is positioned in the recess (4) so that the bores (7, 8, 9) of mop plate (1) and joint (2) are congruent and the joint pin (4) is positioned in the through hole (10) and inserted into the bores (7, 8, 9) and the through hole (10) is closed by the plug body (11).

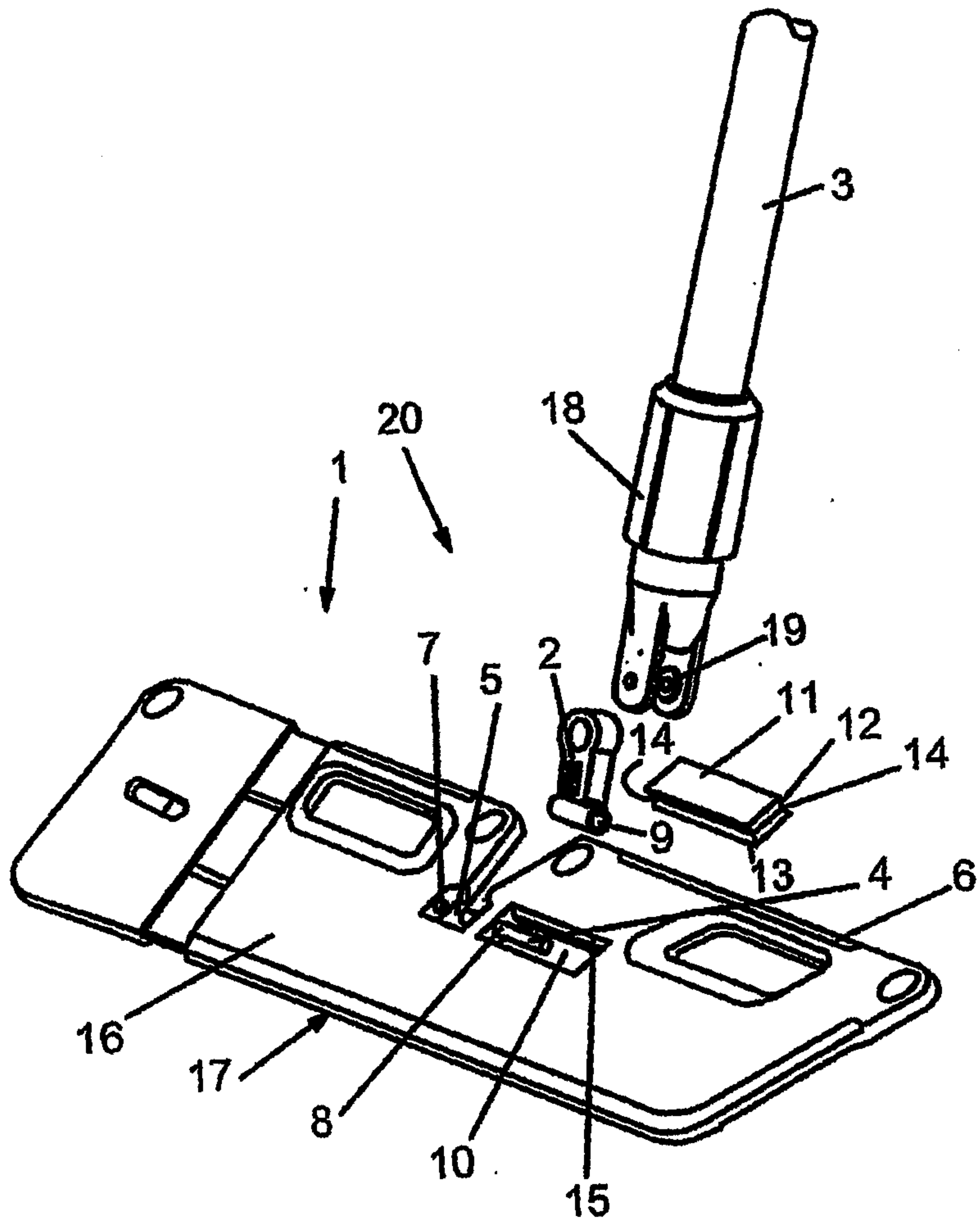


Fig. 1

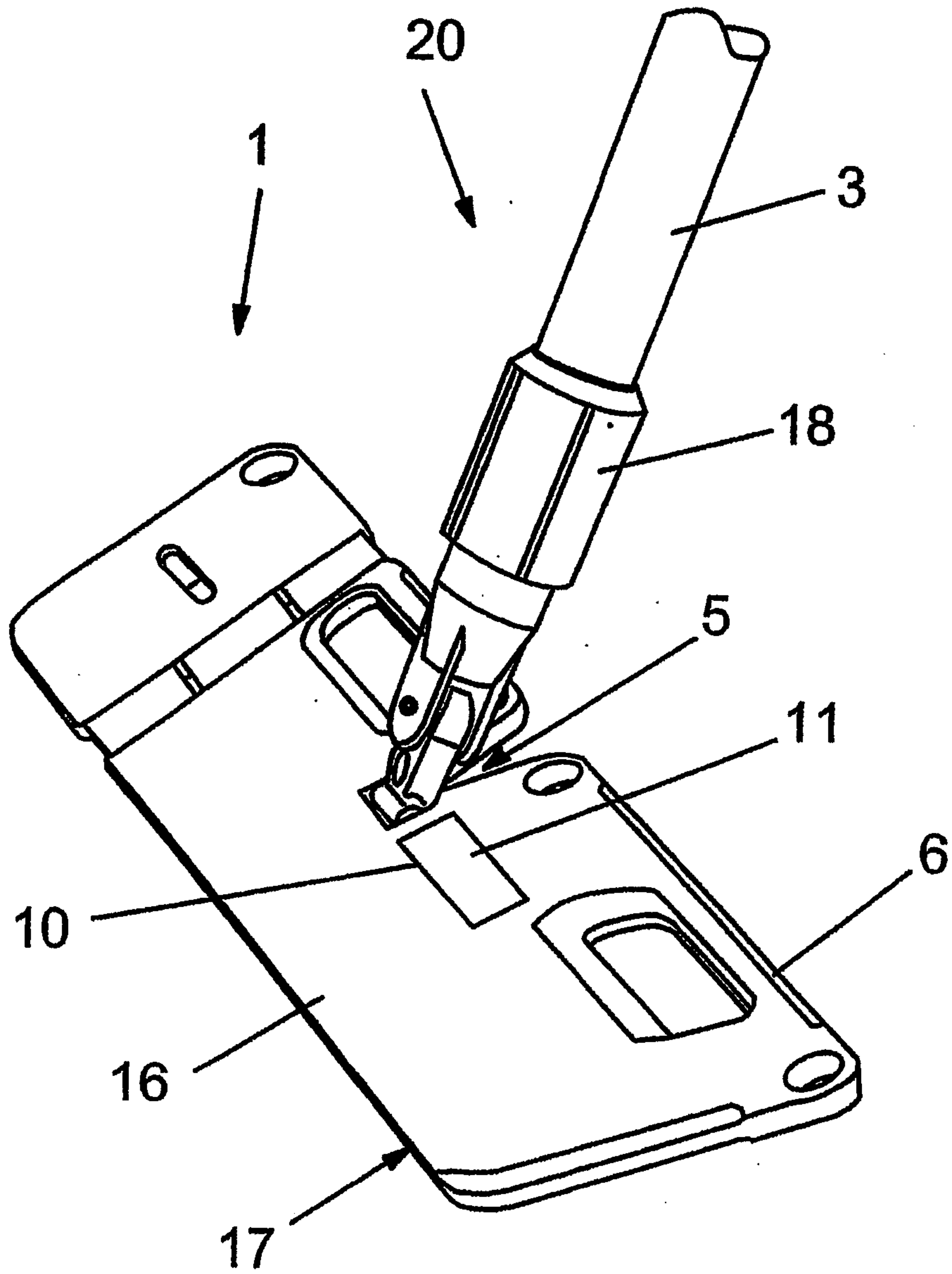


Fig. 2

