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(71) Applicant: **Vale Mill (Rochdale) Limited**
**Rochdale**
**Lancashire OL16 1TA (GB)**

(72) Inventors:
- **Howard, Michael**
  **Rochdale, OL16 4JP, Lancashire (GB)**
- **Trowsdale, Darren Brian**
  **Leeds, LS28 8NZ, West Yorkshire (GB)**

(74) Representative: **Badger, John Raymond**
**J.R. Badger & Co.**
**6 Simpson Road**
**Wylde Green**
**Sutton Coldfield**
**West Midlands B72 1EP (GB)**

## (54) Mop

(57) A mop (1) having a handle (3) and a mop head (5) which is attached to the handle. An edge of the mop head has two parts (9, 11) that are angled relative to one another at less than 180 degrees. At least part of the mop head may be V-shaped. The mop head (5) may have a pad (22) of material intended, in use, to be brought into contact with the surface to be cleaned.

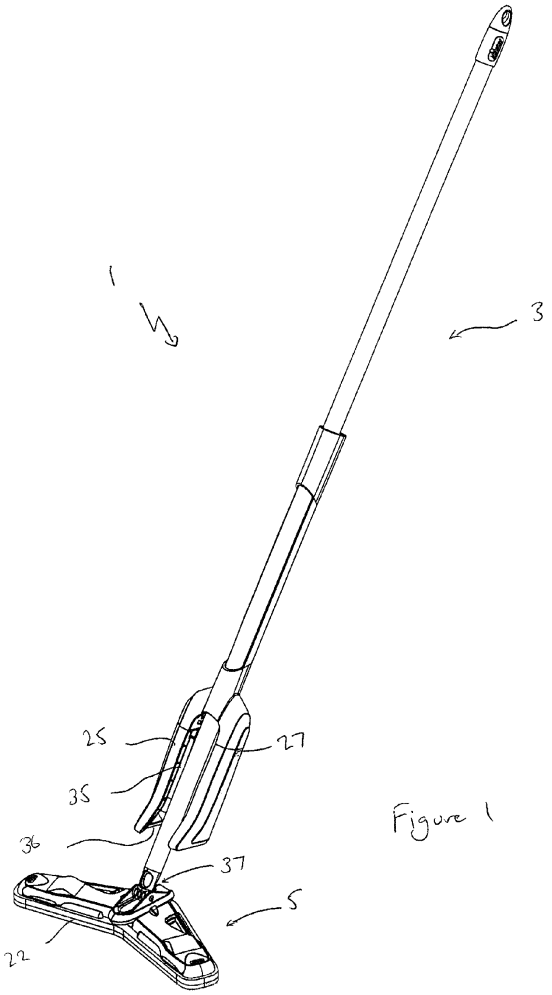


Figure 1

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## Description

Technical Field of the Invention

**[0001]** The present invention relates to a mop.

Background to the Invention

**[0002]** Many types of mops have been developed for cleaning surfaces. Conventional mops typically comprise a longitudinal handle to the end of which is attached a mop head. Mop heads can take many forms but one commonplace mop head comprises a rectangular plate to which a sponge is attached. The plate is normally designed to fold across its width in order to squeeze and rinse the attached sponge. A problem with such mop heads is that they can sometimes be difficult to press and squeeze the sponge.

**[0003]** Alternative mop heads have been proposed. One such mop head is disclosed in EP1208788 which describes a mop having two mop plates and a mop pad. The mop plates are fastened to a handle and connected with the interposition of a double joint. The mop plates can be pressed against one another by press arms which are arranged on a sliding sleeve, with the handle being pivotally fastened to the double joint and with the sliding sleeve being mounted on the handle. The press arms are integrally formed on the handle and can be placed in engagement with the mop plates. The handle is fastened to the double joint by means of a cardan joint and guide devices are provided on the mop plates and/or the press arms for defined folding of the mop plates by means of the press arms.

**[0004]** A problem with all of these embodiments is that they can be difficult to manoeuvre over the surface intended to be cleaned. It is an object of the present invention to provide a mop with enhanced squeezing properties, improved manoeuvrability and an improved ability to collect dirt and other unwanted debris.

Summary of the Invention

**[0005]** According to an aspect of the present invention, there is provided a mop comprising a handle and a mop head which is attached to the handle, wherein an edge of the mop head comprises two parts that are angled relative to one another at less than 180 degrees.

**[0006]** Advantageously, the angled relationship between the two parts of the edge means that debris and dirt are preferentially collected between the two parts.. The angled relationship between the two parts of the edge also makes the mop more stable in a forward mopping stroke and less likely to tip forward, for example, when used on a rough surface.

**[0007]** At least part of the mop head may be V-shaped. The mop head may comprise a pad of material intended, in use, to be brought into contact with a surface to be cleaned. An edge of the pad may comprise two parts that are angled relative to one another at less than 180 degrees.

**[0008]** The mop head may comprise two or more supports that are foldable relative to one another and that are retainable in a substantially fixed position. The pad may be attached to the supports. The pad may be attached to the supports by two clips which each extend along respective planes and wherein the clips are releasable by urging the clips toward the plane along which the other clip extends. Folding of the supports may cause the pad to fold.

**[0009]** The mop head may be arranged to fold along a line of approximate symmetry. The line of approximate symmetry may be between the two parts.

**[0010]** The mop may further comprise one or more formations extending from the handle and arranged to define a space into which the folded mop head may be drawn. The space may be sufficiently small such that at least a part of the mop head is brought into contact with the or each formation when the mop head is drawn into the space so that the folded parts are urged together. The mop head and the or each formation may comprise mutually cooperating elements that guide the mop head into the space.

**[0011]** The mop head may be arranged to tilt relative to the handle so that the two parts of the edge of the mop head can be arranged in the folded state to be substantially parallel to the handle.

Detailed Description of the Invention

**[0012]** In order that the invention may be more clearly understood an embodiment thereof will now be described, by way of example only, with reference to the accompanying drawings, of which:

Figure 1 is a perspective view of a mop according to the invention;

Figure 2 is a front view of the mop shown in Figure 1;

Figure 3 is a rear view of the mop shown in Figure 1;

Figure 4 is a side view of the mop shown in Figure 1;

Figure 5 is an enlarged front view of the mop head and a part of the handle of the mop shown in Figure 1;

Figure 6 is an enlarged front view of the mop head shown in Figure 5 when in a squeezed state;

Figure 7 is an enlarged front view of the mop shown in Figure 1 when part of the mop head is detached from another part;

Figure 8 is a front view of an alternative mop accord-

ing to the invention in a flexed state;

Figure 9 is a front view of the mop shown in Figure 8 when in a different flexed state; and

Figure 10 is an enlarged front view of an alternative mop accoding to the invention when part of the mop head is detached from another part.

**[0013]** With reference to Figures 1 to 7, there is shown a mop 1 comprising a longitudinal handle 3 made from plastics material and a mop head 5 which is pivotally attached to an end of the handle 3.

**[0014]** The mop head 5 comprises a central body 7 and two arms 9, 11 which are hingedly attached to the body 7 on opposite sides respectively of the body 7. The arms 9, 11 are arranged to hinge between a first position in which they extend along substantially the same plane and a second position in which they hang downwardly from the body 7 and are adjacent one another and substantially parallel. Both the body 7 and arms 9, 11 comprise cooperating, interfacing surfaces that urge against one another when the arms 9, 11 are arranged to extend out from the body such that they are substantially perpendicular to the handle 3. In this state, the body 7 and arms urge against one another such that the arms 9, 11 are maintained in the first position. The arms 9, 11 can be moved to the second position by hinging the arms 9, 11 downwardly so that they move beyond the point at which the cooperating surfaces interface and fall freely away from the body 7.

**[0015]** The arms 9, 11 are substantially longitudinal and taper toward their remote ends 7. The two arms 9,11 are shaped such that they extend away from the body 7 at an angle relative to one another when arranged in the first position. In this embodiment, the arms are arranged such that, on one common side, the angle therebetween in the first position is approximately 160 degrees. This leading edge of the mop head 5 is intended to collect water and debris when the mop is in use. Since the opposite sides of the respective arms are substantially parallel, the obtuse angle therebetween in the first position is approximately 200 degrees. Thus, the arms in the first position form a chevron or 'V' shape.

**[0016]** The arms 9, 11 are arranged to be attached to a cleaning pad carrier 19 which comprises two substantially flat moulded plastic pieces 21 that may be affixed to the upper surface of a cleaning pad 22. Each piece 21 is shaped similarly to the upper surface of an end of the cleaning pad 22 so that, when the pieces 21 are affixed to the upper surface of respective ends of the cleaning pad 22, they substantially cover the upper end surfaces. In this embodiment, the pieces are affixed to the cleaning pad 22 with glue and the cleaning pad itself comprises a sponge pad. Other cleaning pad materials are envisaged including microfibre foam pads.

**[0017]** Each piece 21 of the carrier 19 comprises an abutment 17 that extends from the upper face of the remote ends of each piece when affixed to the pad 22. The abutments 17 are arranged to engage with outwardly facing U-shaped groove 13 that are formed at the remote end of each arm 9, 11.A short flat projection 15 is provided on the inside of each groove 13. The U-shaped grooves 13 and the projections 15 help to guide the arms 9, 11 into the two abutments 17 that are shaped to receive the projections and hold the arms in place on the carrier 19 under tension. The combined cleaning pad 22 and carrier 19 forms a cleaning head that has a similar chevron shape to the arms 9, 11 when they are arranged in the first position so that the arms 9, 11, carrier 19 and pad can be attached together to form a mop head 5 with a leading edge that has two parts that are offset relative to one another by an angle less than 180 degrees. The mop head may be folded together by moving the arms 9, 11 from the first position to the second position thereby folding the carrier 19 and squeezing the sponge pad against itself. Since the arms 9, 11 and carrier 19 in combination are substantially symmetrical about a substantially central axis, one half of the sponge substantially meets the other half in the folded state.

**[0018]** The arms 9, 11 are held securely in place against the carrier 19 by two clips 23 that extend upwardly from the upper face of the carrier pieces 21. The two clips 23 are shaped and positioned to be inserted into two corresponding holes on the arms 9, 11. One hole is on one arm 9 and the other hole is on the other arm 11. The holes are positioned such when the arms 9, 11 are set in the first position, they are aligned with the clips 23 on the carrier pieces 21. The clips 23 are arranged to face one another and to flex toward one another so that they can be released from engagement with the holes by drawing the clips in a direction toward one another. This permits the arms 9, 11 and carrier 19 to be disengaged from one another by pinching the two clips 23 toward one another in a single action with one hand.

**[0019]** The mop 1 further comprises a squeeze head 24 which is arranged to interact with the mop head 5 to squeeze the two portions of the mop head 5 together and, thus, squeeze the sponge dry. The squeeze head 24 comprises a tubular portion 29 through which the mop handle 3, which is approximately three times longer than the tubular portion 29, extends and may slide. A pair of squeeze plates 25, 27 extends downwardly from an end of the tubular member 29 toward the mop head 5 in a direction which is substantially parallel to the tubular member 29 and handle 3. The squeeze plates 25, 27 and tubular member 29 are formed from separate mouldings that fit together to form the squeeze head 24. The squeeze plates are arranged to face one another and form a space into which the mop head can be drawn.

**[0020]** The inner face of each squeeze plate 25, 27 comprises a groove 35 that extends along the length of each squeeze plate 25, 27 and in-line with the handle 3 of the mop. Each groove has a wide mouth 37 relative to the groove 35 toward the free end of the respective

squeeze plates 25, 27 so that cooperating elements on the mop head 5 can be guided into the grooves 35. The distance between the two plates or prongs 25, 27 is chosen to be sufficient to enable the folded mop head 5 to be received into the space therebetween but narrow enough to ensure the arms 9, 11 are squeezed toward one another so that the sponge attached thereto is also squeezed.

**[0021]** The arms 9, 11 each further comprise a guide stud 31, 33 that is positioned toward the arm hinge and that extends substantially perpendicularly from the upper surface of each arm 9, 11. The guide studs 31, 33 are positioned on the arms 9, 11 so that, when the mop head 5 is in the second position (collapsed state) and hanging below the squeeze head 24, the guide studs 31, 33 line up with the grooves 35 on the adjacent squeeze plates 25, 27 of the squeeze head 24. Thus, the guide studs 31, 33 help to correctly position the mop head 5 between the squeeze plates 25, 27 so that the sponge is efficiently squeezed.

**[0022]** The mop handle 3 and mop head 5 are hingedly connected by a pivot joint 37 that enables the mop head to rotate about a single axle at the end of the handle 3. The connection is positioned toward a part of the mop head body 7 that is remote from the leading edge of the mop head 5. This ensures that any force applied to the mop head 5 through the handle 3 is directed toward the rear of the mop head 5 thereby making it easier to drive the mop in a forward direction without the mop head tilting away from the surface to be cleaned. The joint 37 is arranged so that the mop head 5 can tilt back when in the collapsed state and permitted to hang below the handle 3 and squeeze head 24. This ensures that the mop head becomes aligned with the handle 3 and squeeze head 24 so that the mop head 5 can be drawn upwards between the two squeeze plates 25, 27 as shown in Figures 6 and 7.

**[0023]** In use, the arms 9, 11 are urged into the fixed position in which they are held in place by their engagement with the body 7. In this position, the arms 9, 11 define a surface to which the carrier 19 may be attached. The carrier 19 is attached to the surface defined by the arms 9, 11 by urging the clips on the carrier 19 into the corresponding holes in the arms 9, 11. The mop 1 is arranged such that when the carrier 19 is attached to the arms 9, 11, the two angled parts of the mop head 5 define the leading edge of the mop 1 i.e. the direction in which the mop 1 is intended to be urged by a user.

**[0024]** The mop head 5 is wetted with water and any desired cleaning solution and the mop 1 is drawn across a surface to be cleaned. Due to the angled relationship between the two parts of the mop head 5, water, dirt and debris is preferentially urged into the space between the two parts: When the sponge needs wringing and cleaning, the user grasps the tubular member 29 with one hand and pulls the handle 3 in an upwards direction through the tubular member 29. This upward motion brings the mop head 5 toward the squeeze plates 25, 27 until the arms 9, 11 are brought into contact with the squeeze plates 25, 27. The continued motion of the handle 3 relative to the squeeze head 24 causes the squeeze plates to urge against the arms 9, 11 and force them from their retained position into the folded position. The handle 3 is then pulled further through the tubular member to draw the folded mop head 5 into the space defined by the squeeze plates 25, 27. The mutually cooperating studs 31, 33 on the mop head and grooves/mouth 35, 36 on the squeeze plates 25, 27 guide the mop head 5 into position between the squeeze plates. Due to the tilting action between the mop head 5 and the handle 3, the two parts of the mop head 5 in the folded state are substantially parallel to the handle 3. As the mop head 5 is drawn into the space, the squeeze plates 25, 27 act on the arms 9, 11 and urge them together which causes the sponge 22 attached thereto to be squeezed against itself.

**[0025]** When the sponge 22 is sufficiently dry and clean, the handle is urged in a downward direction which urges the mop head 5 out from the space so that the arms 9, 11 can be manually returned to their retained position so that further cleaning can take place.

**[0026]** In an alternative embodiment, the manoeuvrability of the mop 101 is further enhanced by the addition of a rubber universal joint 150 between the pivot joint 137 and the mop handle 103. The rubber universal joint 150 has an hourglass shape with a narrow centre or waist relative to its two ends. The narrow centre is more flexible than the ends of the joint which enables the joint to be flexed about its centre. Thus, when the handle 103 and mop head 105 are attached to respective ends of the rubber joint 150, the handle 103 can be manipulated through all 360 degrees of movement relative to the mop head 105. Therefore, in this embodiment, the mop 101 can be more easily manoeuvred around the surface to be cleaned than the first embodiment.

**[0027]** In a further alternative embodiment, part of which is shown in Figure 10, the cleaning pad carrier 119 is integrally formed with the arms 109, 111 of the mop head 105 in a single piece moulding. The cleaning pad 122 is affixed to the underside of the mop head 105 via Velcro® hooks.

**[0028]** The above embodiments are described by way of example only. Many variations are possible without departing from the scope of the invention as defined in the appended claims.

## Claims

1. A mop (1) comprising a handle (3) and a mop head (5) which is attached to the handle, **characterised in that** an edge of the mop head comprises two parts (9, 11) that are angled relative to one another at less than 180°.

2. A mop as claimed in claim 2, **characterised in that** at least part of the mop head (5) is V -shaped.

3. A mop as claimed in any preceding claim, **characterised in that** the mop head comprises a pad (22) of material intended, in use, to be brought into contact with a surface to be cleaned.

4. A mop as claimed in claim 3, **characterised in that** an edge of the pad (22) comprises two parts that are angled relative to one another at less than 180°.

5. A mop as claimed in any preceding claim, **characterised in that** the mop head comprises two or more supports (9, 11) that are foldable relative to one another and that are retainable in a substantially fixed position.

6. A mop as claimed in claim 5 when dependent directly or indirectly on claim 3, **characterised in that** the pad (22) is attached to the supports (9, 11).

7. A mop as claimed in claim 6, **characterised in that** the pad (232) is attached to the supports (9, 11) by two clips (23) which each extend along respective planes and wherein the clips are releasable by urging the clips toward the plane along which the other clip extends.

8. A mop as claimed in any of claims 5 to 7, **characterised in that** folding of the supports (9, 11) causes the pad to fold.

9. A mop as claimed in any preceding claim, **characterised in that** the mop head (5) is arranged to fold along a line of approximate symmetry.

10. A mop as claimed in claim 9, **characterised in that** the line of approximate symmetry is between two parts.

11. A mop as claimed in claims 9 or 10, **characterised in that** it comprises one or more formations (25, 27) extending from the handle and arranged to define a space into which the folded mop head may be drawn.

12. A mop as claimed in claim 11, **characterised in that** the space is sufficiently small such that at least a part of the mop head is brought into contact with the or each formation (25, 27) when the mop head is drawn into the space so that the folded parts (9, 11) are urged together.

13. A mop as claimed in claims 11 or 12, **characterised in that** the mop head and the or each formation comprise mutually cooperating elements (31, 33; 35) that guide the mop head into the space.

14. A mop as claimed in any of claims 11 to 13, **characterised in that** the mop head is arranged to tilt (37) relative to the handle so that the two parts of the edge of the mop head can be arranged in the folded state to be substantially parallel to the handle.

15. A mop as claimed in claim 15, **characterised in that** the pivot joint comprises a rubber joint (150).

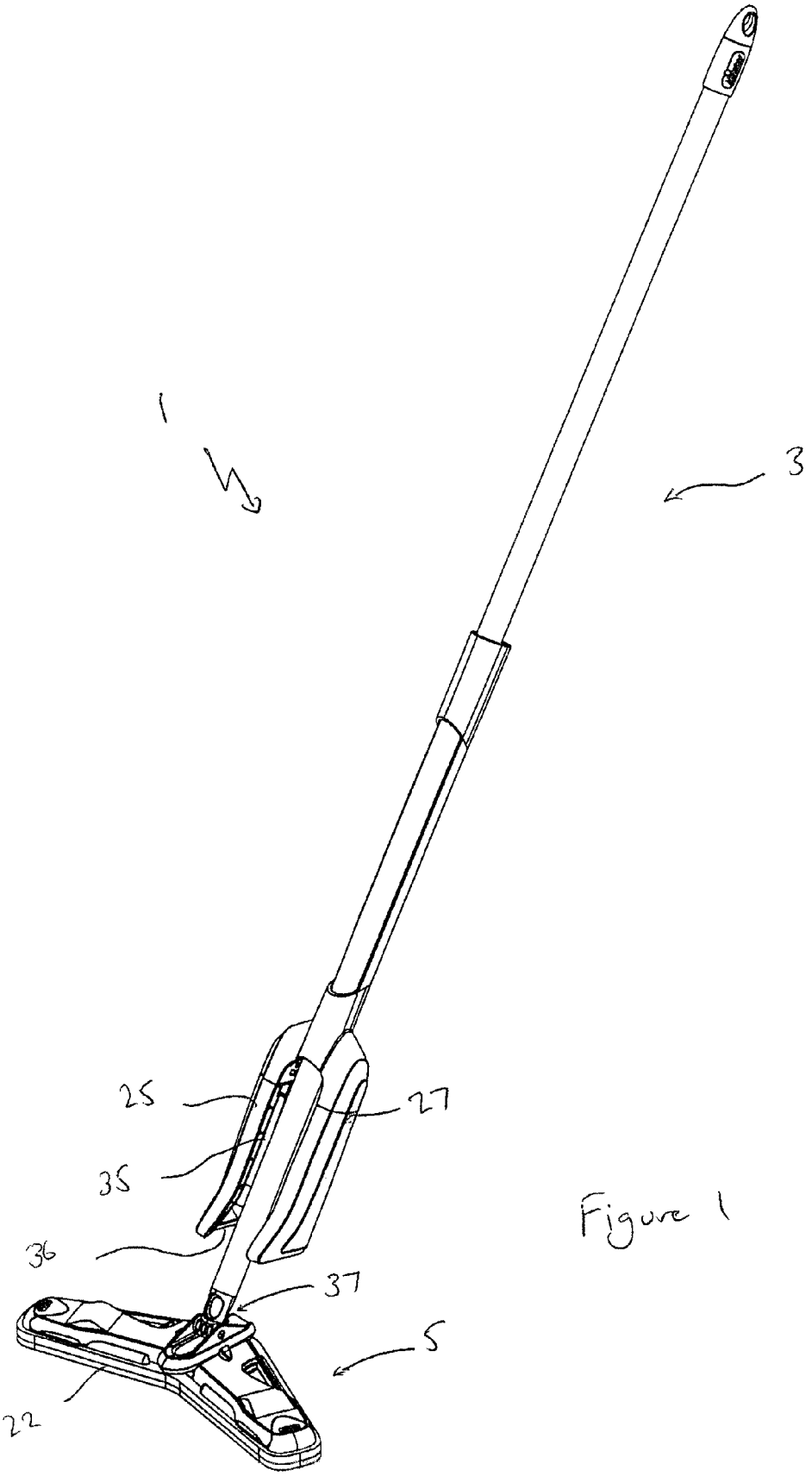


Figure 1

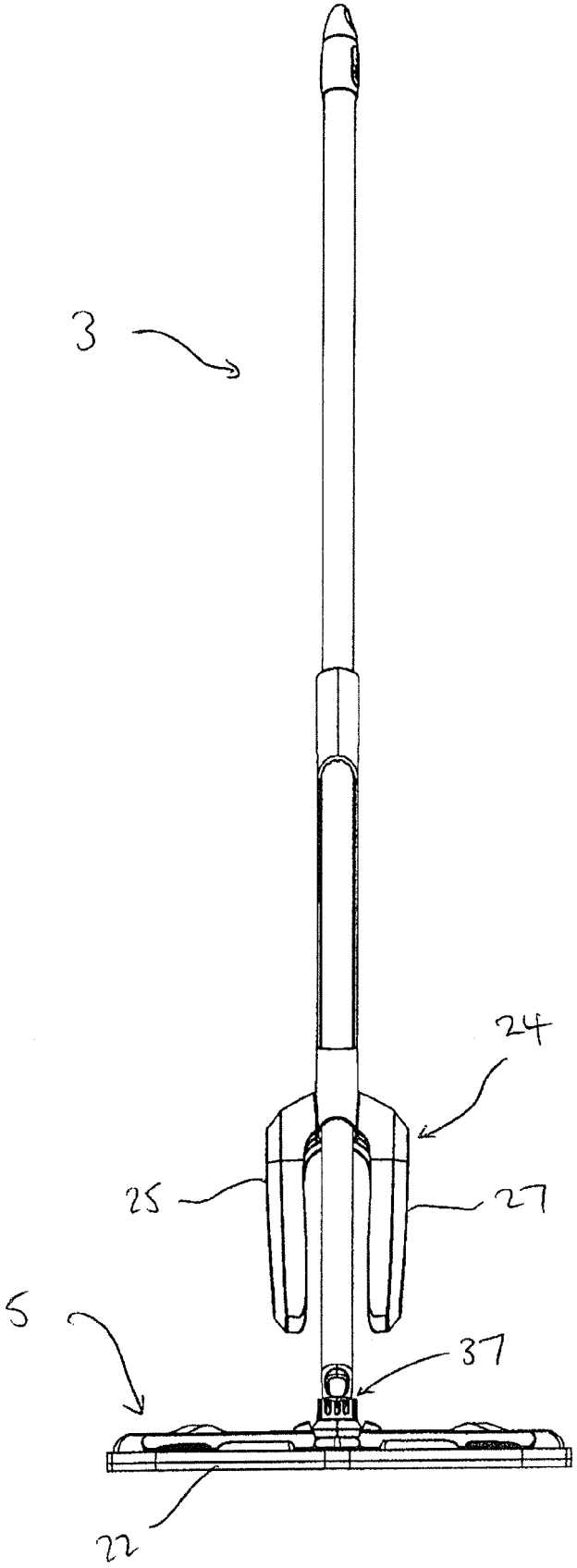


Figure 2

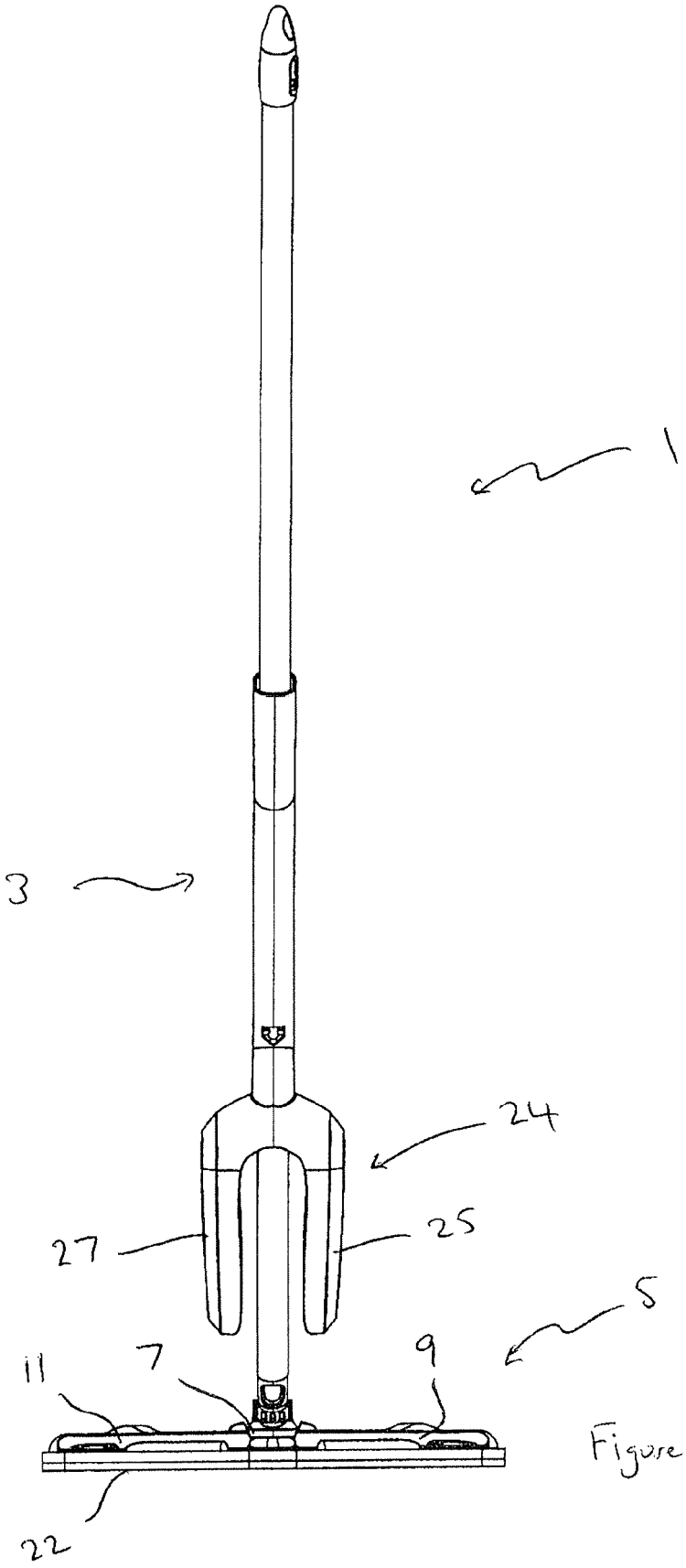


Figure 3

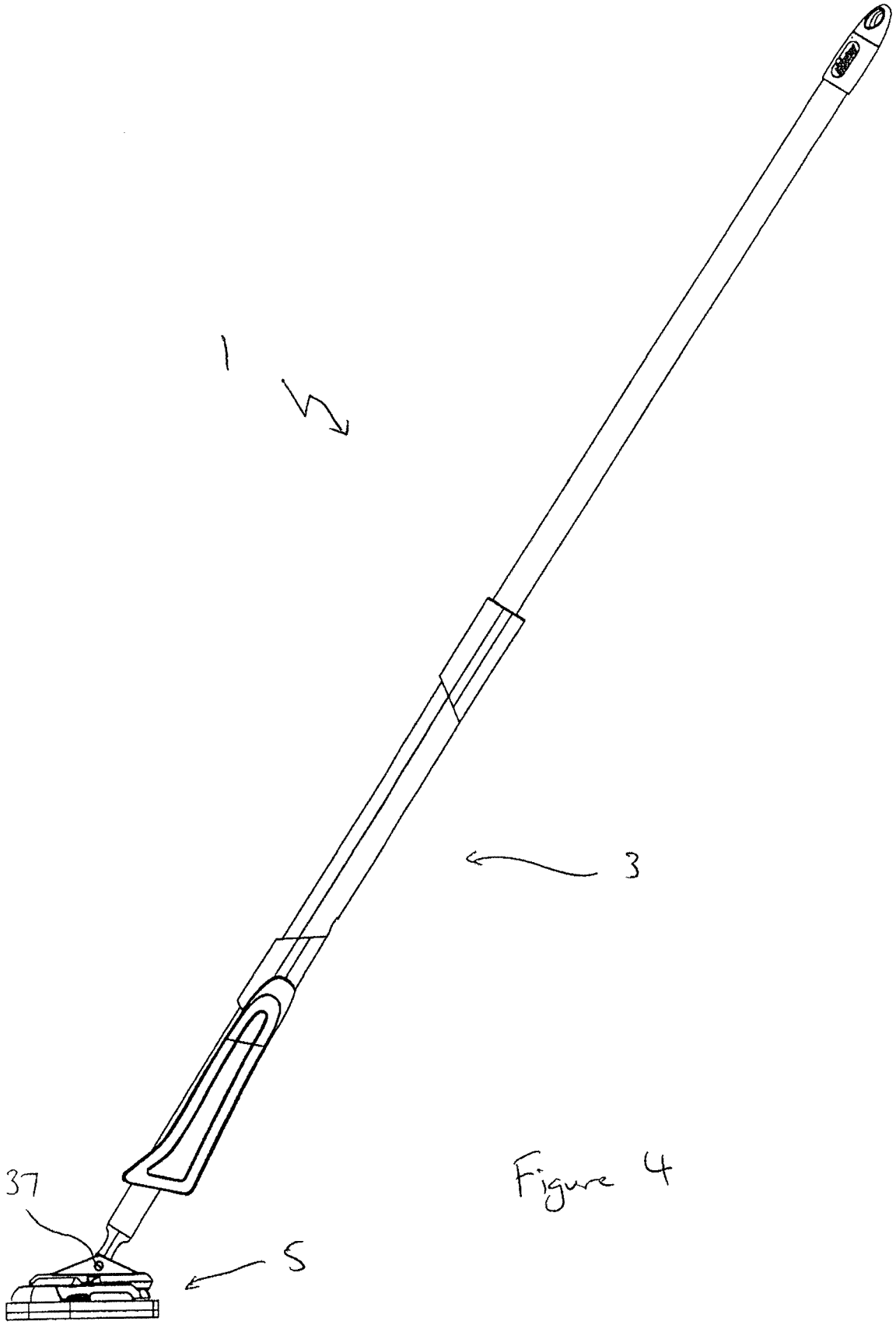


Figure 4

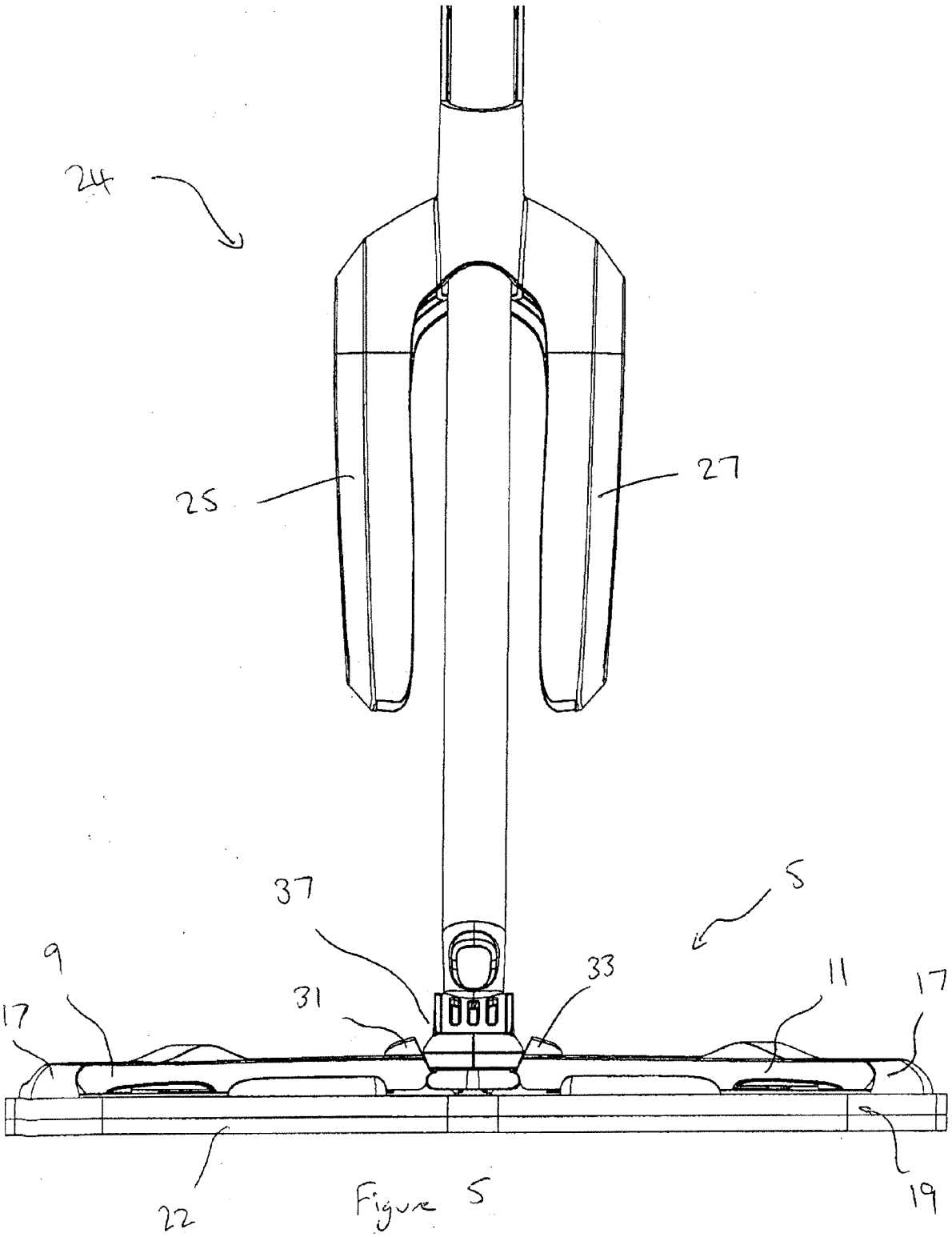


Figure 5

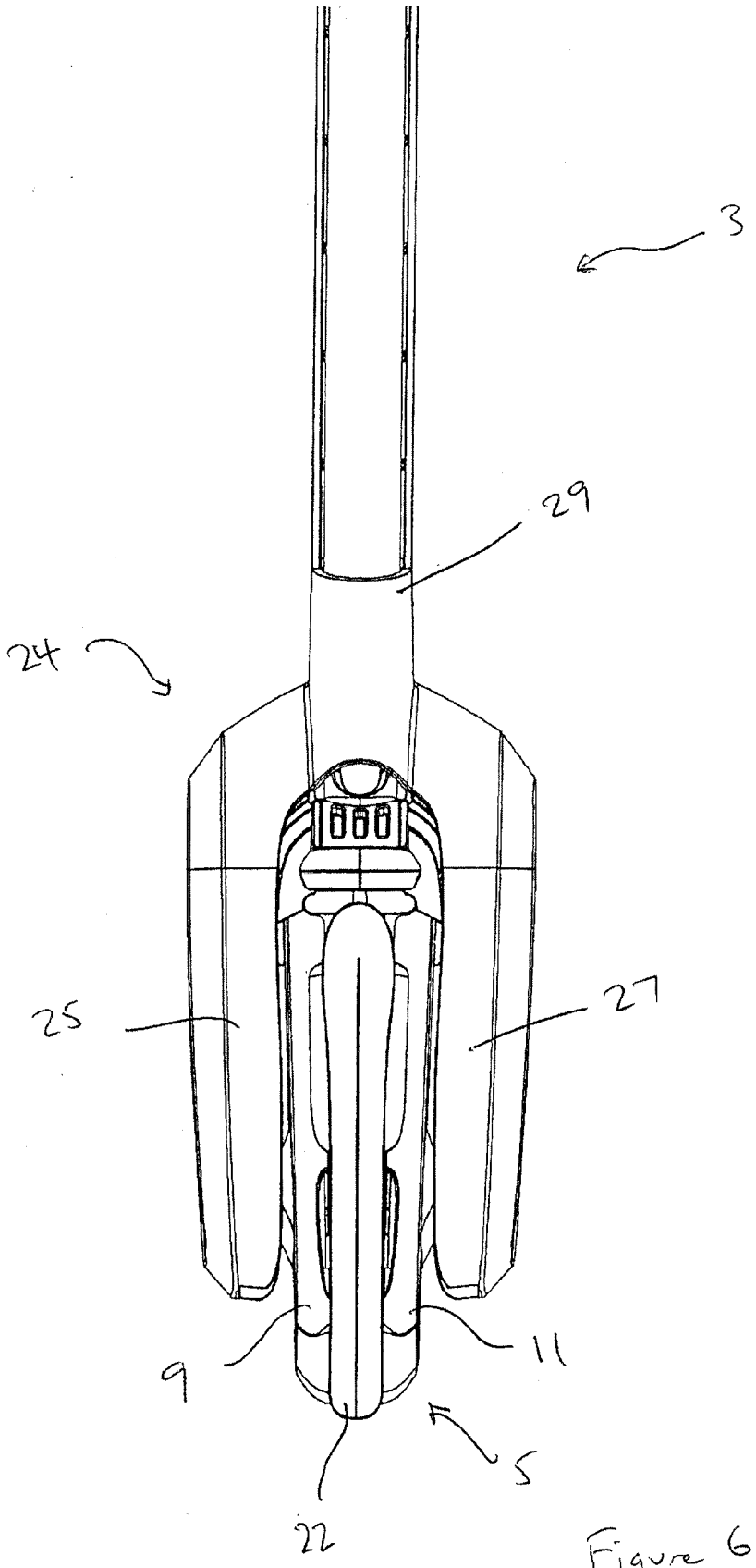


Figure 6

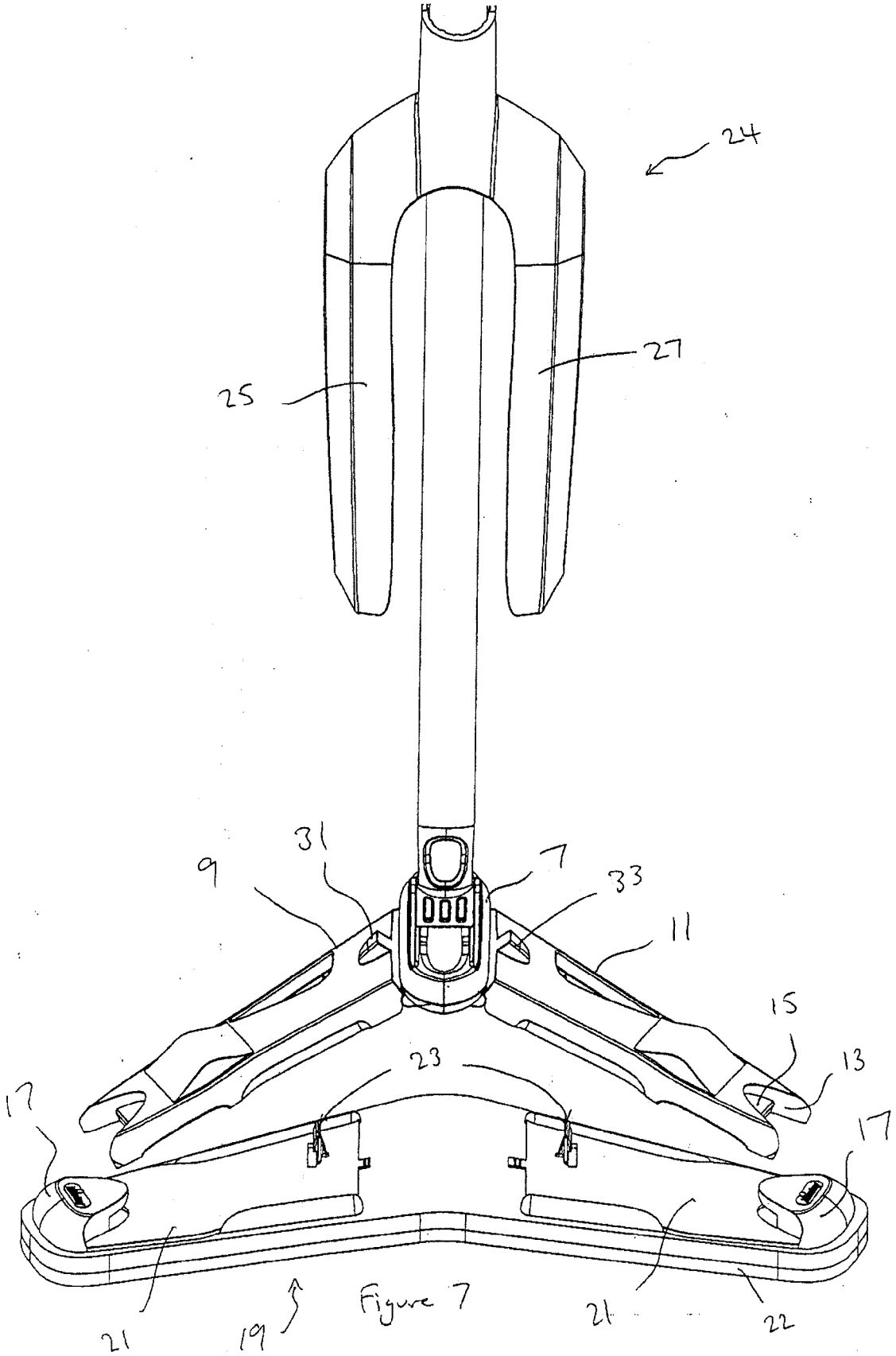


Figure 7

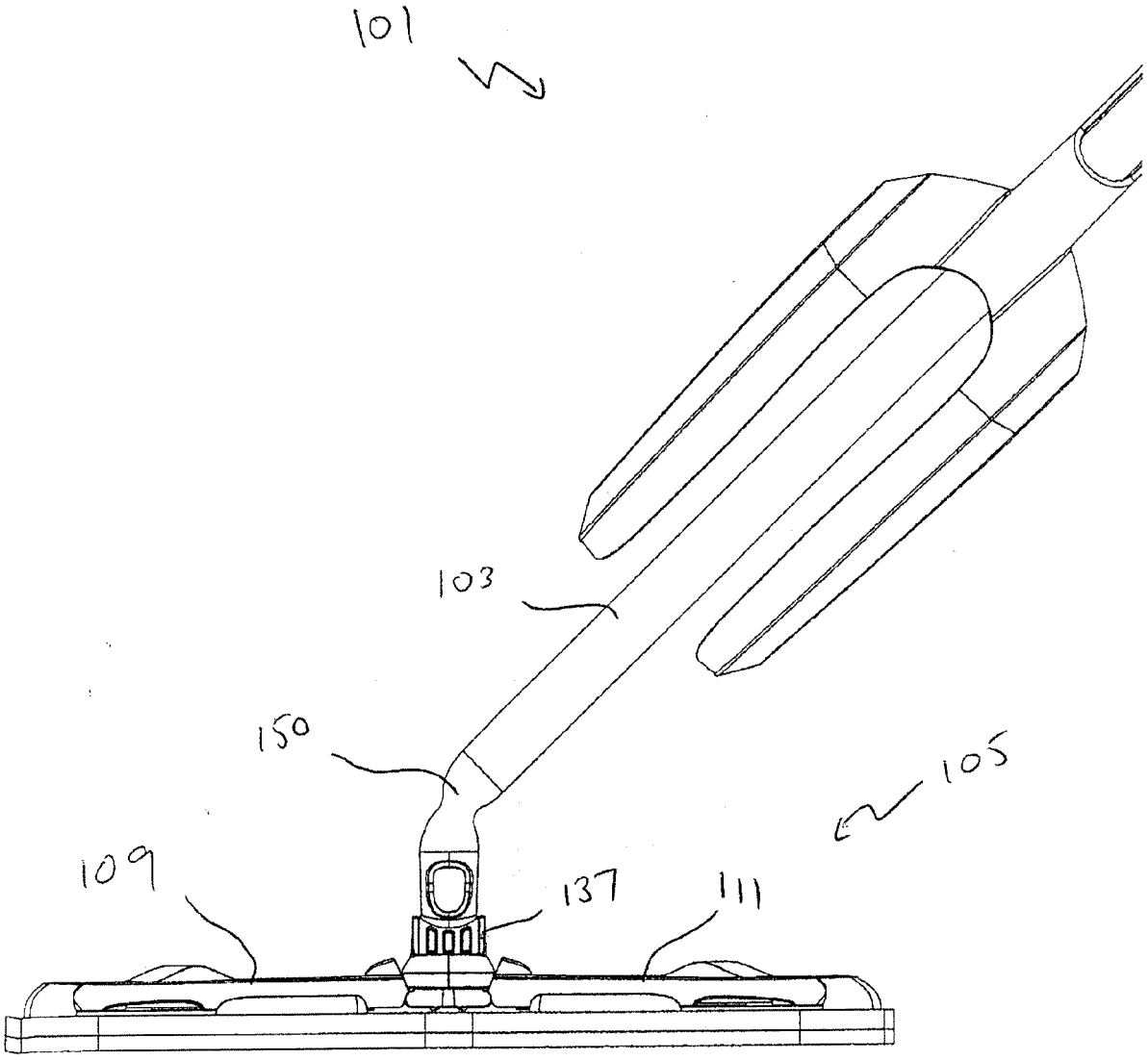


Figure 8

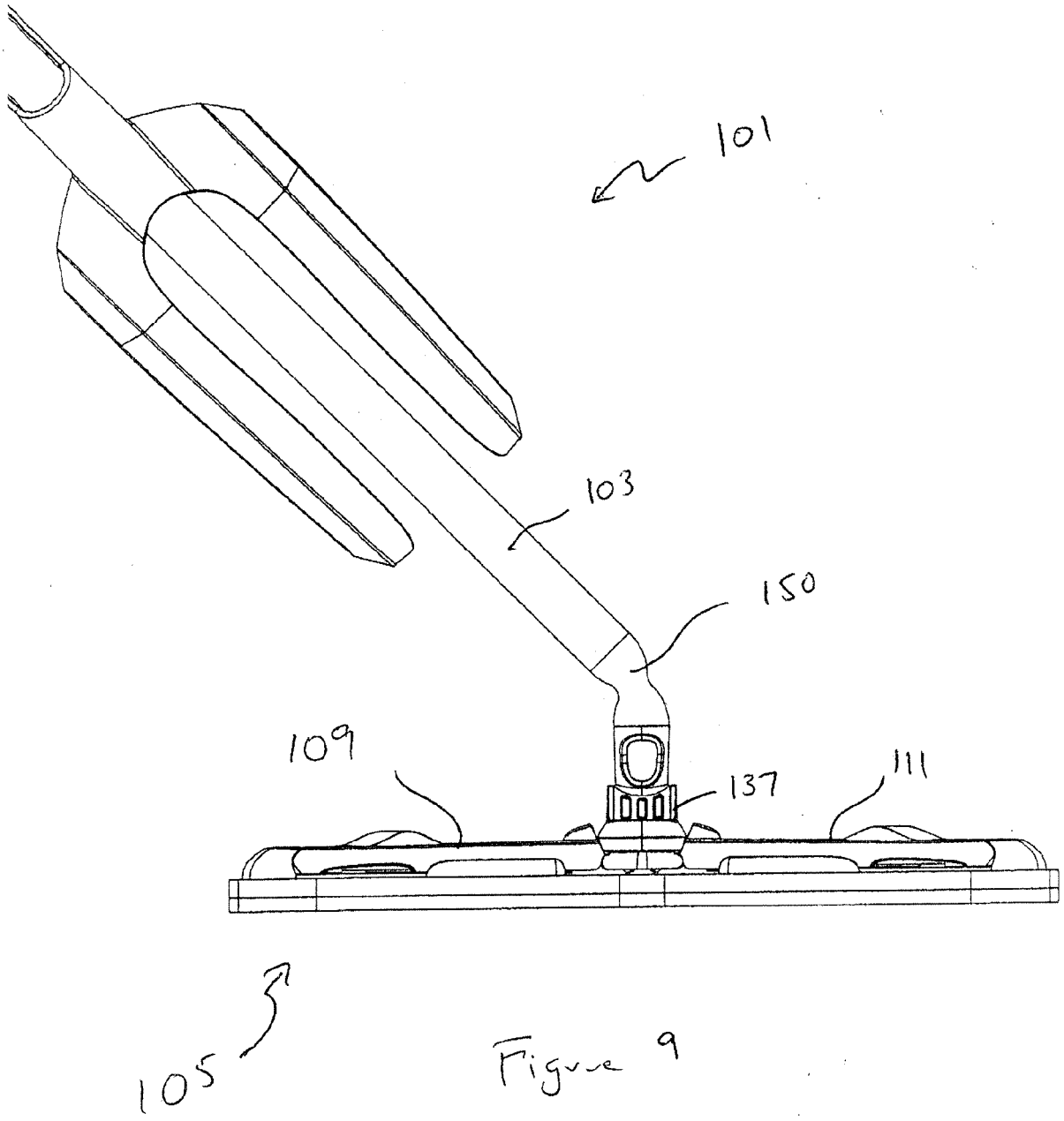


Figure 9

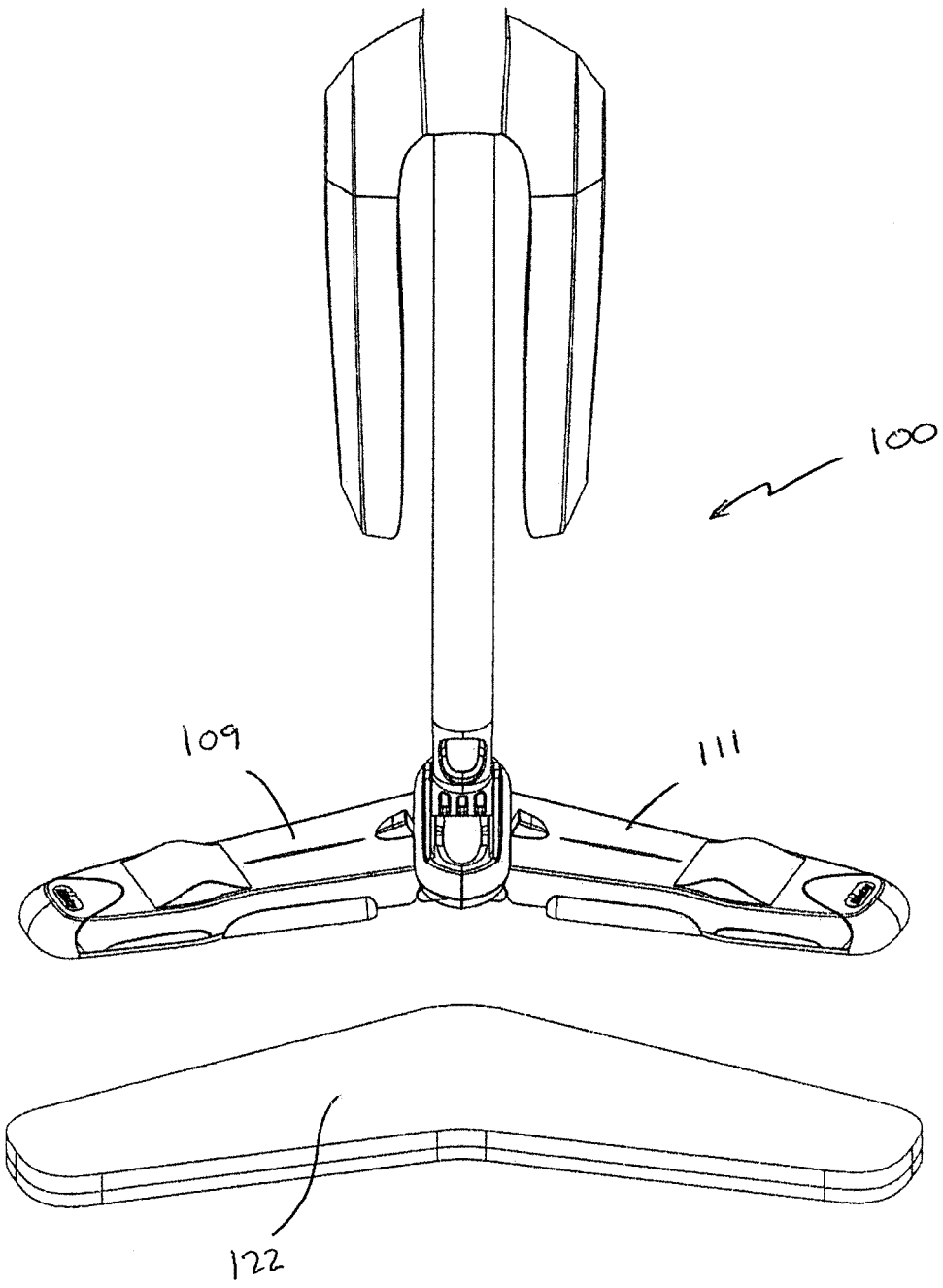


Figure 10

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


- EP 1208788 A **[0003]**