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(56) Documents Cited:
EP 1222956 A2 US 5782991 A
US 5180439 A US 20050091783 A1
US 20030089383 A1

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(54) Abstract Title: **Cleaning apparatus**

(57) The present invention relates to a cleaning device, such as a mop, comprising a body 2 including a cleaning head 4, and at least two liquid reservoirs 14a, 14b removably attached to the body 2, the liquid reservoirs 14a, 14b being in fluid connection with the cleaning head 4, wherein each of the at least two liquid reservoirs 14a, 14b can be removed separately from the body 2. Selection means 20 may be present to select which reservoir 14a, 14b is to be used. A method of using the apparatus is also disclosed.

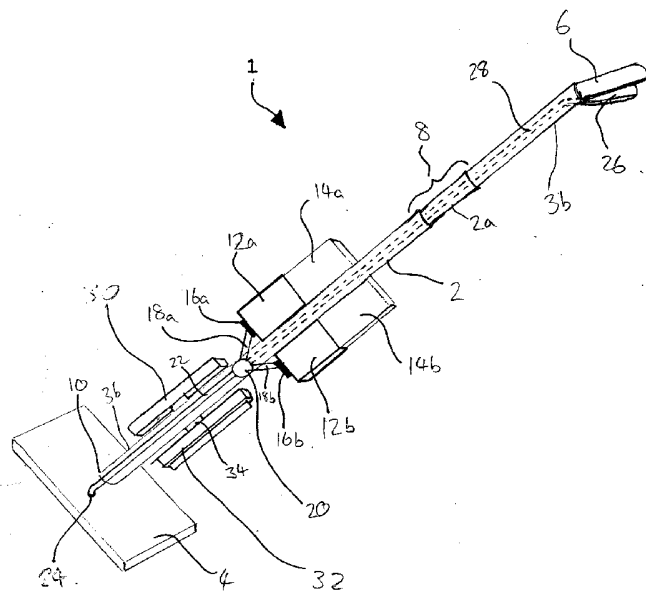


Fig. 2

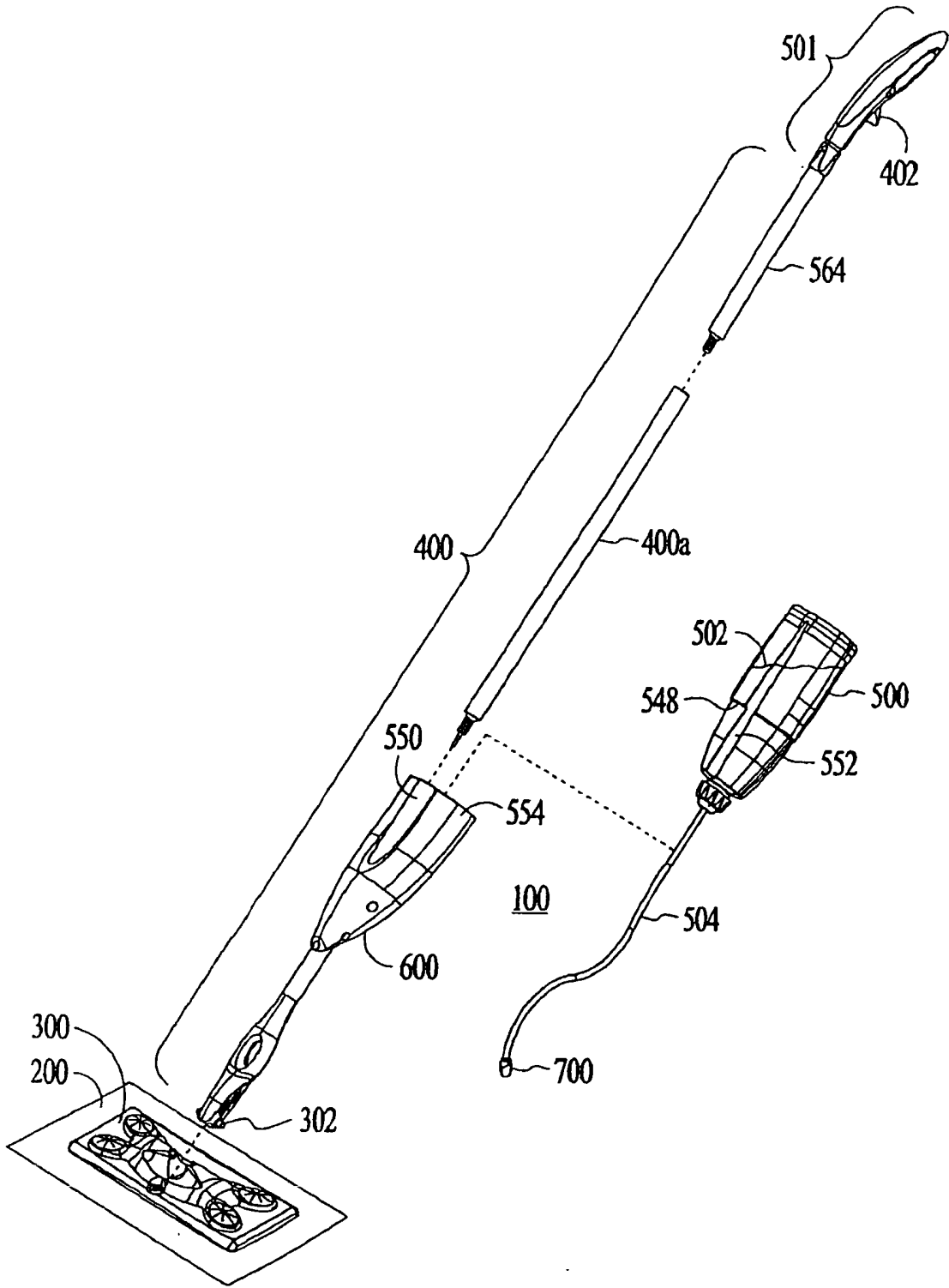


FIG. 1

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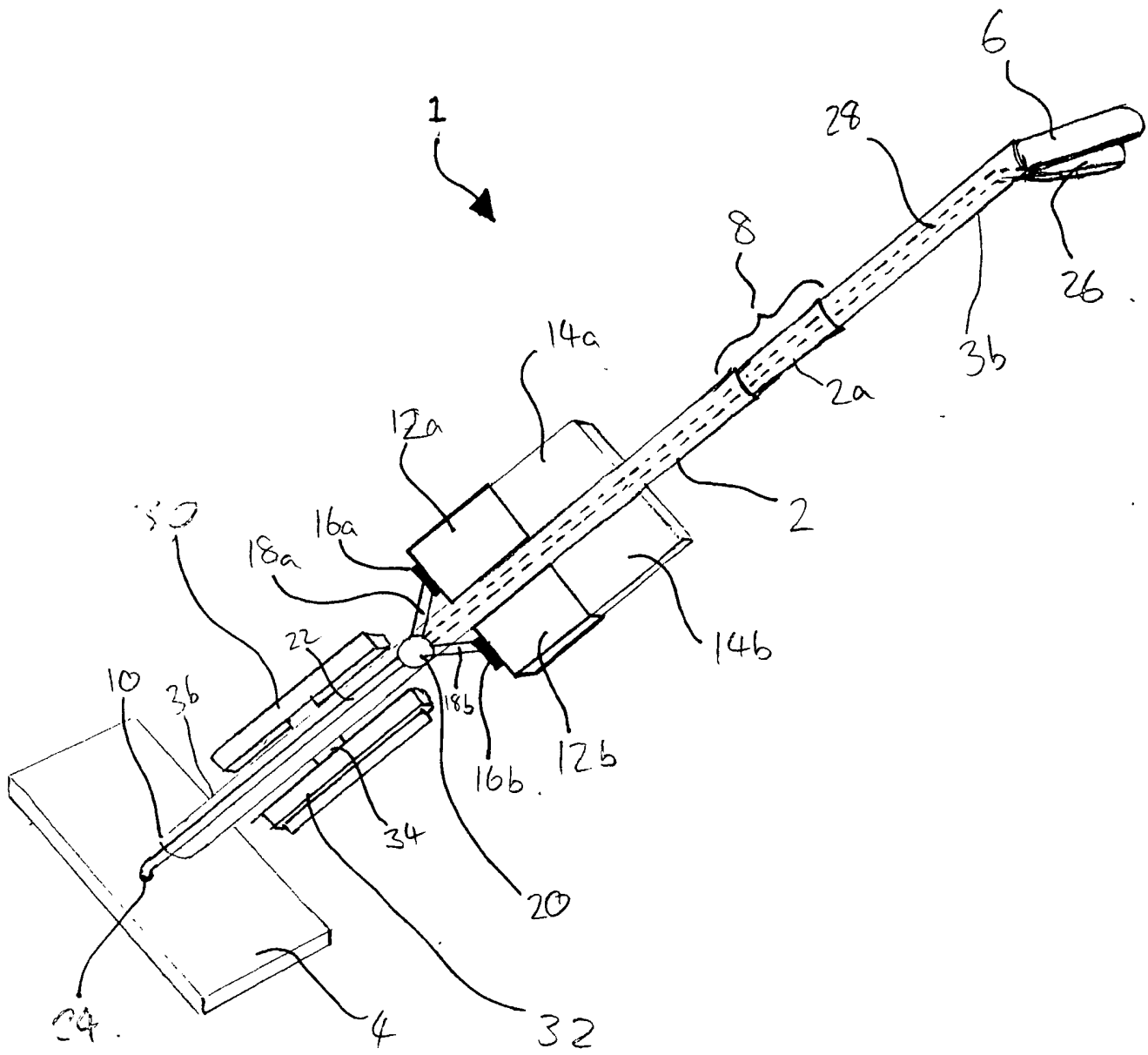


Fig. 2

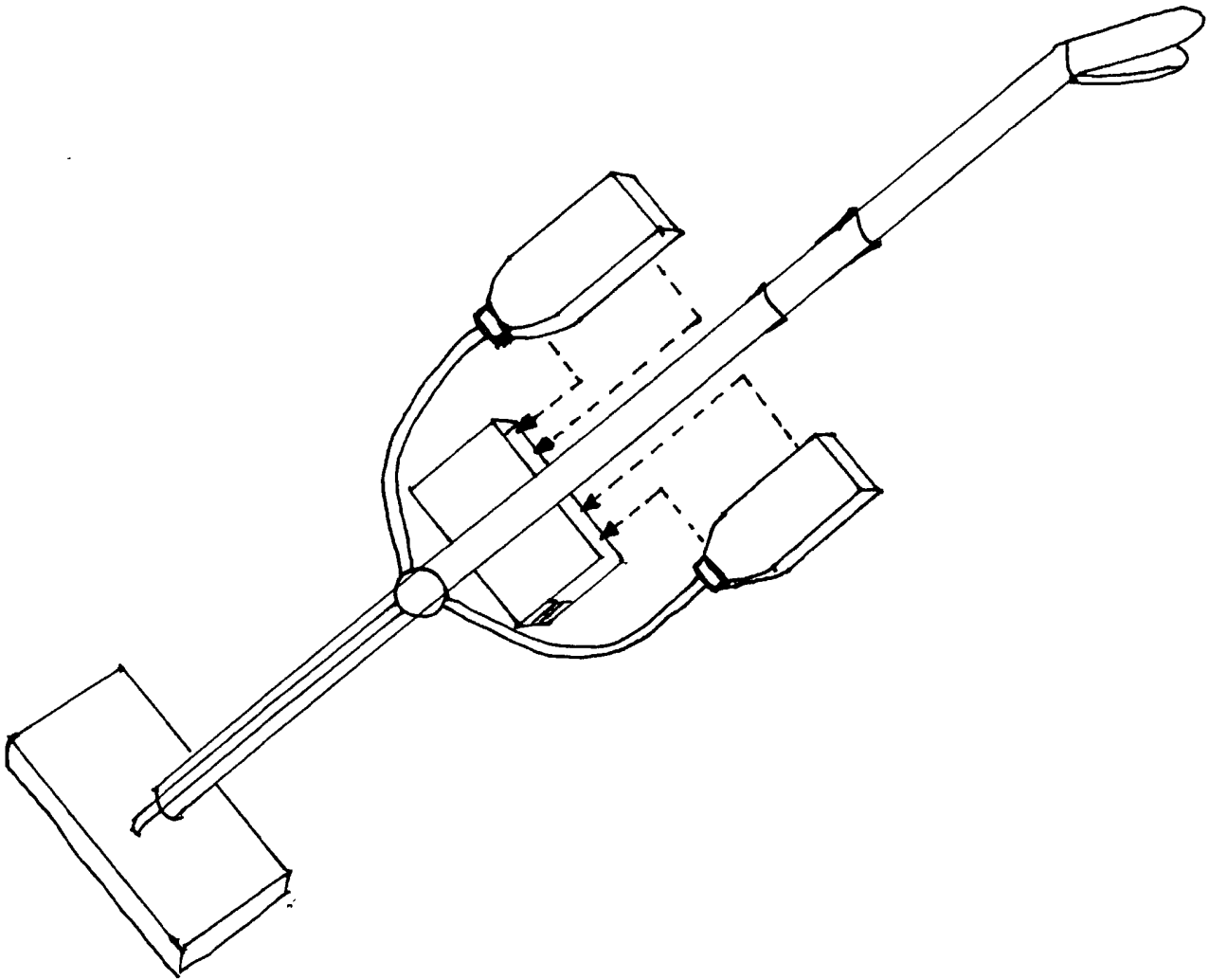


Fig. 2A.

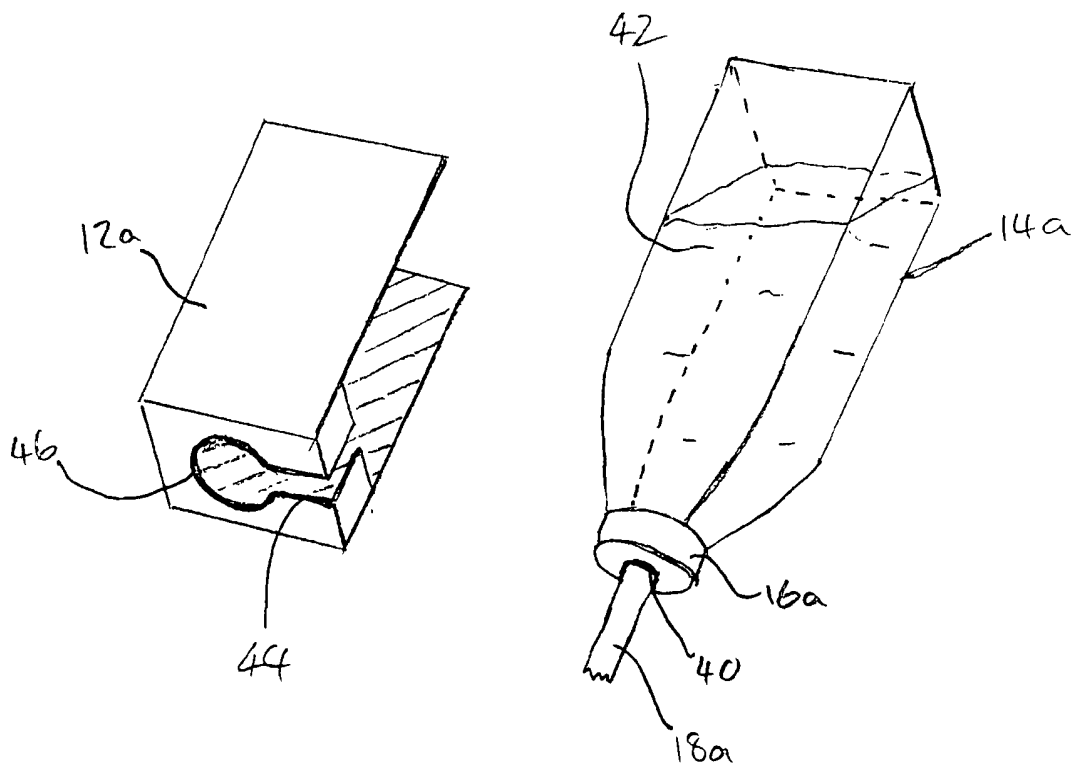


Fig. 3

u/s

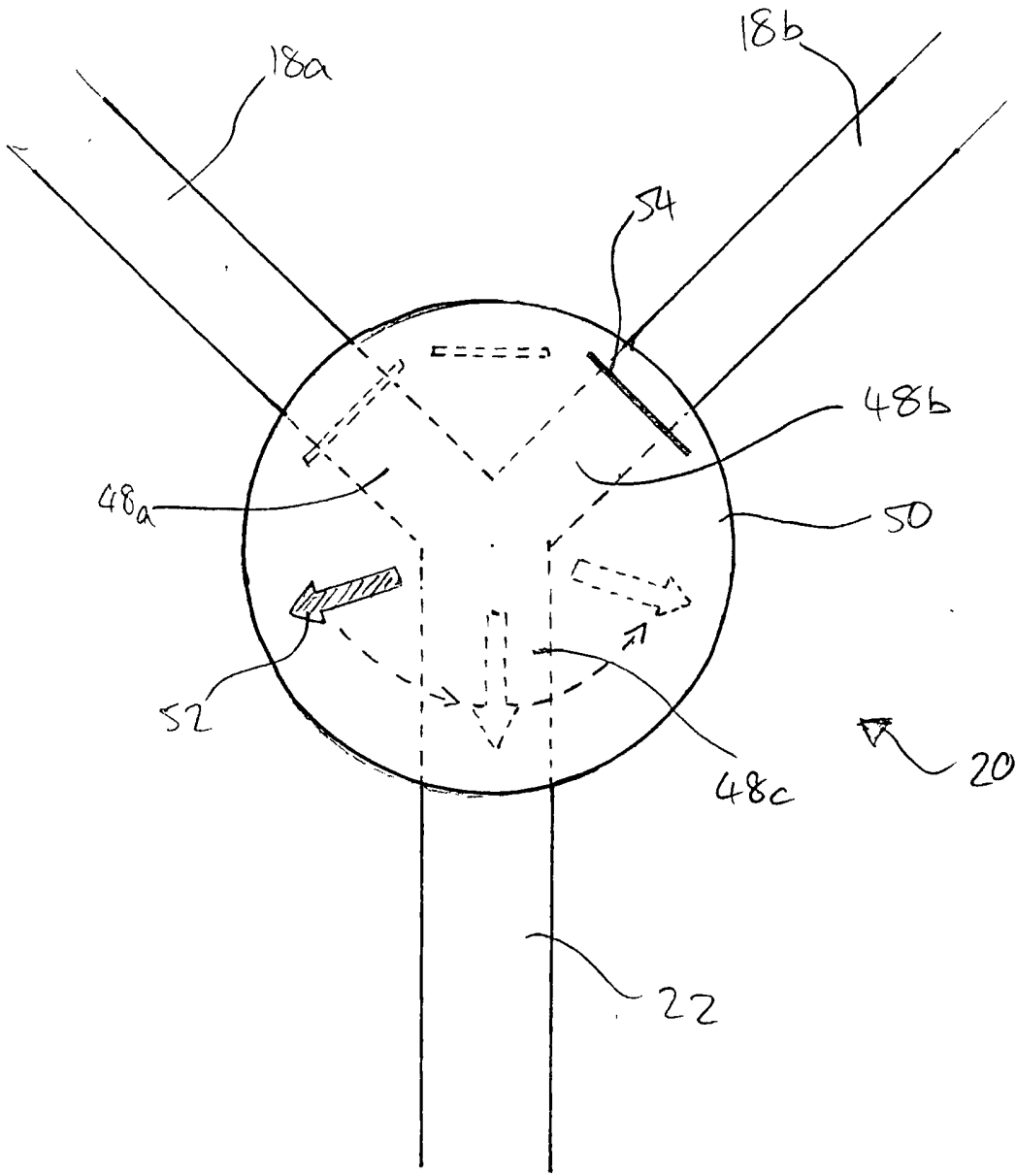


fig 4

Cleaning Apparatus

This invention relates to a cleaning apparatus, and in particular, to a cleaning apparatus
5 having at least two fluid reservoirs.

Cleaning apparatus, and in particular cleaning apparatus having a fluid reservoir
attached thereto for containing cleaning fluids for use during cleaning, are known.

10 An example of a cleaning device having a fluid reservoir is disclosed in European
Patent EP 1215988. This patent discloses a cleaning implement having a handle, a
cleaning head, a fluid reservoir for storing a fluid, and a means for releasing the fluid
from the fluid reservoir to an outlet nozzle connected to the cleaning head. A
disadvantage of this type of cleaning implement is that only one type of cleaning fluid
15 can be stored in the reservoir at any one time without the cleaning fluids coming into
contact with each other and mixing. Such mixing of cleaning fluids and chemicals can
cause adverse reactions including the production of dangerous fumes and the mixing
can, in some extreme cases, cause an explosion.

20 A cleaning device that attempts to overcome the disadvantage mentioned above is
disclosed in US Patent Application 2005/0058500. In this device, a fluid reservoir has
two or more chambers, thus allowing a number of different fluids to be contained and
dispensed during use. The two or more fluids are dispensed through a common spray
head causing the fluids to be mixed. Dispensation of the fluid from the two or more
25 chambers of the fluid reservoir can be actuated individually or commonly, using a
selection means.

Referring to the drawings, Figure 1 shows a cleaning device 100 as disclosed in prior art
document US 2005/0058500. The cleaning device 100 comprises a handle section 400,
30 a cleaning head 300 and a fluid reservoir 500 connected to a fluid outlet 700 on the
cleaning head via means of a fluid delivery tube 504. The fluid reservoir 500 is
removably attached to the handle 400 by means of a reservoir cradle 600. An actuating
handle 402 is positioned at the user end of the handle 400 and, when actuated, causes
the fluid reservoir 500 to release fluid via fluid delivery means 504 to fluid outlet 700.
35 The fluid reservoir 500 may contain two or more internal chambers (not shown), for

storing a number of different fluids or cleaning liquids. Each of the chambers is capable of storing and releasing a liquid individually of the others, or alternatively at the same time. The released fluid from each chamber passes along the separate fluid delivery tube to a fluid outlet, where the two different fluids are mixed and dispensed.

5

A disadvantage of US 2005/0058500 is that, in order to fill or refill one of the chambers of the multi-chamber fluid reservoir, the whole reservoir must be removed from the device, rendering the device unusable while filling or refilling of the chambers takes place. A further disadvantage is that mutually reactive chemicals cannot safely be used at the same time, due to the fact that the chemicals are mixed when they are dispensed through the spray nozzle.

10

An aim of the present invention is to provide an improved cleaning device having at least two separate fluid reservoirs for safely containing at least two separate cleaning fluids.

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In one aspect of the present invention, a cleaning device comprises a body including a cleaning head, and at least two liquid reservoirs removably attached to the body, the liquid reservoirs being in fluid connection with the cleaning head, wherein each of the at least two liquid reservoirs is separably removable from the body.

20

Preferably, each of the at least two liquid reservoirs can be used individually or simultaneously. In particular, preferably the cleaning device is arranged to dispense liquid from the at least two reservoirs either from one reservoir at a time, or from a plurality of such reservoirs. Dispensing from just one reservoir at a time means that potentially reactive chemicals (if dispensed together) may be used.

25

Advantageously, the cleaning device further comprises a selection means for selecting which of the at least two liquid reservoirs is used, and preferably, the selection means comprises an at least partially rotatable dial.

30

Preferably, the selection means comprises at least one blocking element for preventing fluid from at least one of the at least two liquid reservoirs from flowing to the cleaning head.

Advantageously, the cleaning device further comprises an actuation means for effecting the release of fluid from at least one of the at least two liquid reservoirs.

5 Preferably, the body further includes a handle, and even more preferably, the actuation means is located on the handle.

Advantageously, each of the at least two liquid reservoirs is individually attached to the handle by means of a cradle

10

Preferably, each of the at least two liquid reservoirs is formed substantially into at least one of the following group of three-dimensional shapes: cuboidal, rectangular prismatic, cylindrical, spherical, bottle-shaped.

15 Advantageously, the at least two liquid reservoirs are arranged at least substantially in line along the shaft, or are arranged adjacent to each other, or are arranged substantially annularly, at least partially surrounding the shaft.

20 Preferably, at least one pipe is provided for fluidly connecting the at least two liquid reservoirs with the body.

Advantageously, a flushing means is provided for flushing the at least one pipe with a flushing agent, and preferably, at least one of the at least two liquid reservoirs is used to contain the flushing agent. Preferably, the flushing agent is water.

25

Preferably, the flushing of the at least one pipe is actuated automatically.

30 In a second aspect of the present invention, a method of using a cleaning device, the cleaning device having a body including a cleaning head, and at least two liquid reservoirs removably attached to the body, the liquid reservoirs being in fluid connection with the cleaning head, wherein each of the at least two liquid reservoirs is separably removable from the body, comprises the steps of

- 1) removing at least one of the at least two liquid reservoirs from the device;
- 2) pouring cleaning fluid into the removed at least one liquid reservoir;

- 3) reattaching the at least one liquid reservoir to the device; and
- 4) using the fluid in the at least one liquid reservoir for cleaning.

The invention will now be described in greater detail, by way of example, with
5 reference to the drawings, in which:

Fig. 1 is an exploded perspective view of a cleaning device according to the prior art;
Fig. 2 is a perspective view of a cleaning device in accordance with the invention;
Fig. 2A is a perspective view of the cleaning device of Fig. 2, demonstrating how
10 component parts fit together;
Fig. 3 is a perspective view of a fluid reservoir cradle and fluid reservoir of the cleaning
device of Fig. 2; and
Fig. 4 as a schematic view of the fluid selection means of the cleaning device of Fig. 2.

15 In Figure 2 a cleaning device 1 is shown in accordance with the present invention. The
cleaning device 1 has a shaft 2, the shaft having a cleaning end 3a and a user end 3b.
The cleaning end 3a is removably attached to a cleaning head 4. At an opposite end of
the shaft 2, a handle 6 is formed. An extendible region 8 of the shaft 2 is formed
approximately one third of the way along the handle. It will be appreciated that the
20 position of the extendible region 8 may be varied, depending on manufacturing
limitations and it may be nearer to the cleaning head 4 or to the handle 6. The
extendible region 8 consists of a number of shaft component parts 2a slotted together
and capable of being tightened and locked into position to create a shaft 2 of a desirable
length. Such length adjustment means are commonly known.

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The cleaning head 4 is pivotally connected to the shaft 2 by means of a ball joint 10
which allows the handle to freely rotate and pivot about the ball joint. Two fluid
reservoir cradles 12a, 12b, are attached to the shaft 2 at approximately half way along.
The cradles 12a, 12b are positioned and shaped to receive respective fluid reservoirs
30 14a, 14b which are arranged to contain cleaning fluid such as bleach, soapy water
solution, detergent and other desired fluids suitable for cleaning. Each of the fluid
reservoirs 14a, 14b is provided with a lid 16a, 16b which covers an opening in the
reservoir for filling and emptying the reservoir. Each lid 16a, 16b is provided with an
aperture (see Figure 3) into which a fluid delivery tube 18a, 18b is fitted. The fluid

delivery tubes 18a, 18b are preferably made from a flexible plastics material suitable for coming into contact with potentially corrosive fluids. The provision of the separate reservoir cradles permits each reservoir to be separately and individually removable from the cleaning device 1, for example for re-filling.

5

A fluid selection valve 20 is attached to the shaft 2. The valve 20 is shown in further detail in Figure 4. A fluid outlet tube 22 is attached to the valve 20 at one end and to the cleaning head 4 at another. Cleaning fluid from the fluid reservoirs 14a, 14b passes down the fluid delivery tubes 18a, 18b, through the valve 20, and along the fluid outlet tube 22 to an outlet 24 of the outlet tube, positioned in the cleaning head 4. The outlet 24 may be connected to a nozzle, a spray means, or some other means of distributing fluid ejected from the outlet. Such outlet nozzles are well known in the art.

Release of the fluid from the fluid reservoirs 14a, 14b is effected by actuation of a pumping trigger 26. The pumping trigger 26 is pivotally attached to the user end 3b of the shaft 2, and forms a trigger that can be squeezed by a user holding the handle 6 in order to release the fluid from the fluid reservoirs 14a, 14b. The pump trigger 26 is mechanically connected to the fluid reservoirs 14a, 14b by connection means 28. In use, when a user squeezes the pump trigger 26, the connection means 28 causes the fluid to be released from the fluid reservoirs 14a, 14b for the duration that the pump trigger is depressed.

The cleaning head 4 may be removed and replaced by an alternative head 30, 32, each of which may be any other cleaning implement attachment, for example, a mop head, a squeegee, or a cleaning head of a different size. These alternative heads 30, 32 are removably attached to the shaft 2 by attachment means 34 which is of the conventional type, well known in the art. The cleaning head 4 may be removed from the end of the shaft 2, and replaced by one of the alternative cleaning heads 30, 32, the alternative cleaning heads being connected to the handle and to the fluid outlet tube 22 by the same means, 10, 24 as the cleaning head 4.

In Figure 3, one of the at least two fluid reservoirs 14a and the respective fluid reservoir cradle 12a are shown in more detail. The fluid delivery tube 18a is connected through an aperture 40 in the lid 16a. In use, cleaning fluid 42 is poured into the fluid reservoir

14a, and the lid 16a, which contains a screw thread (not shown) on an inner surface thereof is screwed onto a complementary screw thread (not shown) on a rim (not shown) of the fluid reservoir 14a. The fluid reservoir 14a is then upturned and positioned in the reservoir cradle 12a by passing the fluid delivery tube 18a through a slot 44 in the reservoir cradle. Once the lid 16a of the fluid reservoir 14a is aligned with a cradle aperture 46 in the reservoir cradle 12a, the fluid reservoir can be lowered until the lid 16a passes through the cradle aperture 46, securing the reservoir in place.

In Figure 4, the fluid selection valve 20 is shown in more detail. The fluid selection valve 20 contains hollow paths 48a, 48b, 48c passing through the selection means, into which the fluid delivery tubes 18a, 18b, and the fluid outlet tube 22 are connected. The selection valve 20 comprises a rotatable dial 50, onto which is marked an arrow 52 pointing to a periphery of the circle. At an approximately diametrically opposite position to the arrow 52, a blocking means 54 is positioned within the selection valve 20. The blocking means 54 is arranged to block neither or at least one of the fluid delivery tubes 18a, 18b, depending on its position which is determined by the rotation of the dial 50. When the dial 50 is rotated such that the arrow 52 is pointing substantially towards the fluid delivery tube 18a, the blocking means 54 is positioned such that fluid is unable to enter the tube 48b, and only fluid flowing from the delivery tube 18a is able to pass through the tube 48a and the tube 48c into the fluid outlet tube 22. When the dial 50 is rotated through approximately 45°, such that the arrow 52 is aimed substantially towards the fluid delivery tube 18b, the blocking means 54 blocks the fluid delivery tube 18a, preventing fluid from entering the tube 48a. In such a case, only fluid flowing from delivery the tube 18b is able to enter the tube 48b and the tube 48c, and pass into the fluid outlet tube 22. When the dial is set to a position roughly half way between the former two positions, when the arrow 52 is aimed substantially away from the fluid delivery tubes 18a and 18b and towards the fluid outlet tube 22, the blocking means 54 is rotated to a intermediate position between the two fluid delivery tubes 18a, 18b, and thus fluid from both of the delivery tubes is allowed to flow into the tubes 48a, 48b and into the fluid outlet tube 22. In this position, fluid from each of the fluid reservoirs 14a, 14b is able to pass to the cleaning head 4 for use in cleaning.

In a second embodiment of the present invention, a third fluid reservoir (not shown) is provided for containing a third cleaning fluid or clean water. Ideally, the third fluid

reservoir would be filled with clean water, which could be used for flushing out the fluid delivery pipes 18a, 18b, the tubes 48a, 48b, 48c, and the fluid outlet pipe 22. The third fluid reservoir may be attached to the shaft 2 on a third fluid reservoir cradle or by some other known means. In this embodiment, the fluid selection valve 20 is arranged to allow water to flow from the third fluid reservoir to each of the pipes and tubes 18a, 18b, 48a, 48b, 48c, and through fluid outlet pipe 22, to the outlet 24. As the water exits the outlet 24, it may be discarded by any conventional means. The flushing may be provided for by an automatic flushing means or a manually actuated flushing means, whereby, when one cleaning fluid has been used and passed through the fluid outlet pipe 22, before a second cleaning fluid is used, the automatic flushing means automatically (or manually) flushes water through the delivery pipes 18a, 18b, the tubes 48a, 48b, 48c, and the fluid outlet pipe 22, in order to prevent the risk of mixing chemicals. Following the flushing process, the pipes and tubes will be left substantially cleaner, ideally with a negligible amount of cleaning fluid in the surfaces thereof.

15

It will be appreciated that any other type of switching valve or fluid selection device known in the art could be used for selecting the desired input of cleaning fluids. Similarly, any known type of flushing means could alternatively be used.

20

It will also be appreciated that various other modifications to the cleaning device 1 may be made whilst keeping within the scope of the appended claims.

25

The fluid reservoirs 14a, 14b may be formed in any shape, suitable for removably connecting to the shaft 2 of the cleaning device 1. For example, the fluid reservoirs 14a, 14b may be cylindrical, cuboid, or formed from a regular bottle containing the desired cleaning fluid. The fluid reservoirs 14a, 14b may be connected directly to the shaft 2 of the cleaning device 1, without being positioned in reservoir cradles 12a, 12b. Furthermore, the fluid reservoirs 14a, 14b may be arranged in any suitable manner on the shaft 2 of the cleaning device 1, for example in line along the handle, side by side in front of or behind the handle, or even in annular form surrounding the handle.

30

The fluid reservoirs 14a, 14b may be formed out of any suitable material, for example a non-corroding plastics material, metal, or glass. Furthermore, each of the fluid reservoirs 14a, 14b may be of a different size, for example one having a capacity of 500

ml, and the other having a capacity of 1L. Alternatively, both fluid reservoirs 14a, 14b could be of exactly or substantially the same size. Provisions may also be made for using different sized reservoirs 14a, 14b on different occasions.

CLAIMS

1. A cleaning device, comprising:
a body including a cleaning head, and at least two liquid reservoirs removably
5 attached to the body, the liquid reservoirs being in fluid connection with the cleaning
head;
wherein each of the at least two liquid reservoirs is separably removable from
the body.
- 10 2. A cleaning device according to claim 1, wherein each of the at least two liquid
reservoirs can be used individually.
3. A cleaning device according to claim 1 or claim 2, wherein the at least two
liquid reservoirs may be used simultaneously.
- 15 4. A cleaning device according to any one of the preceding claims, further
comprising a selection means for selecting which of the at least two liquid reservoirs is
used.
- 20 5. A cleaning device according claim 4, wherein the selection means comprises an
at least partially rotatable dial.
6. A cleaning device according claim 4 or claim 5, wherein the selection means
comprises at least one blocking element for preventing fluid from at least one of the at
25 least two liquid reservoirs from flowing to the cleaning head.
7. A cleaning device according to any one of the preceding claims, further
comprising an actuation means for effecting the release of fluid from the at least two
liquid reservoirs.
- 30 8. A cleaning device according to any one of the preceding claims, wherein the
body further includes a handle.

9. A cleaning device according to claim 7 when appended to claim 8, wherein the actuation means is located on the handle.
10. A cleaning device according to any one of the preceding claims, wherein each of the at least two liquid reservoirs is individually attached to the handle by means of a cradle.
11. A cleaning device according to any one of the preceding claims, wherein each of the at least two liquid reservoirs is formed substantially into at least one of the following group of three-dimensional shapes: cuboidal, rectangular prismatic, cylindrical, spherical, bottle-shaped.
12. A cleaning device according to any one of the preceding claims, wherein the at least two liquid reservoirs are arranged at least substantially in line along the shaft.
13. A cleaning device according to any one of claims 1 to 11, wherein the at least two liquid reservoirs are arranged adjacent to each other.
14. A cleaning device according to any one of claims 1 to 11, wherein the at least two liquid reservoirs are arranged substantially annularly, at least partially surrounding the shaft.
15. A cleaning device according to any one of the preceding claims, wherein at least one pipe is provided for fluidly connecting the at least two liquid reservoirs with the body.
16. A cleaning device according to claim 15, wherein a flushing means is provided for flushing the at least one pipe with a flushing agent.
17. A cleaning device according to claim 16, wherein at least one of the at least two liquid reservoirs is used to contain the flushing agent.
18. A cleaning device according to claim 16 or claim 17, wherein the flushing agent is water.

19. A cleaning device according to any one of claims 16 to 18, wherein the flushing of the at least one pipe is actuated automatically.

5 20 A method of using a cleaning device, the cleaning device having a body including a cleaning head, and at least two liquid reservoirs removably attached to the body, the liquid reservoirs being in fluid connection with the cleaning head;

wherein each of the at least two liquid reservoirs is separably removable from the body, comprising the steps of:

- 10
- 1) removing at least one of the at least two liquid reservoirs from the device;
 - 2) pouring cleaning fluid into the removed at least one liquid reservoir;
 - 3) reattaching the at least one liquid reservoir to the device; and
 - 4) using the fluid in the at least one liquid reservoir for cleaning.

15 21. A cleaning device substantially as herein described, with reference to, and as illustrated by, the drawings.

12

Application No: GB0718812.1

Examiner: Rhodri Evans

Claims searched: 1-21

Date of search: 19 December 2007

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-18, 20	US 2003/0089383 A1 (Biggs) figure 2 and paragraphs 0024 to 0029.
X	1, 2, 4, 6-18, 20	US 5180439 A (Allison) figure 1 and line 20 of column 5 to line 2 of column 6.
X	1-4, 6-13, 15-18, 20	EP 1222956 A2 (Royal Appliance) figure 1 and paragraphs 0056 to 0072.
X	1, 3, 8, 11, 13, 15, 20	US 2005/0091783 A1 (Sepke) figure 1 and paragraph 0183.
A	-	US 5782991 A (van der Heyden)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category	P	Document published on or after the declared priority date but before the filing date of this invention
&	Member of the same patent family	F	Patent document published on or after, but with priority date earlier than, the filing date of this application

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X:

Worldwide search of patent documents classified in the following areas of the IPC

A47L

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
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13

Subclass	Subgroup	Valid From
A47L	0011/34	01/01/2006
A47L	0013/26	01/01/2006