

AN IMPROVED BUCKET

The invention relates to an improved bucket and in particular, an improved bucket for the use with a mop or other floor cleaning device.

Conventionally for cleaning floors, it is common practice to use a mop which is rinsed in a bucket of water containing some form of cleaning solution. The mop is then pressed down onto a concave perforated sheet fitted to the top of the bucket so that excess water is pressed out of the mop head before the mop is applied to the floor surface to be cleaned.

One of the problems with this conventional cleaning method is that the water in the bucket tends to turn dirty relatively quickly and dirt settlements collect in the bucket.

Accordingly, if it is desired to keep the water clean, it is necessary to change the water frequently. If the water is not changed then dirty water will be used to clean the floor, which will reduce the effectiveness of the floor cleaning operation.

Therefore, cleaning a large surface area can be time consuming due to the number of times the water in the bucket is changed.

In accordance with a first aspect of the present invention, a bucket comprises a first liquid chamber adjacent to the main opening in the bucket and adapted to permit a cleaning implement to be inserted into the first chamber, a second liquid chamber located in the bucket, at least a portion of the second chamber being located between the first chamber and the bottom of the bucket, and aperture between the first and the second chambers to permit liquid

communication between the chambers through the aperture; the aperture being located in a lower side wall of the first chamber, the aperture preventing a cleaning implement from passing from the first chamber into the second chamber but permitting particulate matter to pass from the first chamber to the second chamber.

An advantage of the invention is that by providing two chambers, communicating via an aperture through which particulate matter can pass but not the cleaning implement, particulate dirt in water in the first chamber can pass into the second chamber, thereby reducing the amount of particulate matter in the water in the first chamber.

Preferably, the lower side wall of the first chamber slopes towards the aperture. Typically, the aperture is located at or adjacent to the region of the first chamber closest to the bottom of the bucket.

Typically, the bucket may further comprise a valve mechanism in or adjacent to the aperture to minimise the possibility of particulate matter passing from the second chamber to the first chamber.

In accordance with a second aspect of the present invention, apparatus for squeezing liquid from a cleaning implement comprises a first surface, and a second surface movably mounted with respect to the first surface for movement between a first position, in which a cleaning implement may be placed on the first surface in use, and a squeezing position in which the first and the second surfaces are adjacent and substantially parallel to each other.

Typically, the apparatus further comprises activation means to permit a user to move the second surface between the first and the squeezing positions.

Typically, the surfaces may comprise grooves and/or ridges to help squeeze liquid from the cleaning implement.

Preferably, the apparatus is adapted to be fitted to a top of a bucket such that when the cleaning implement is squeezed between the two surfaces, excess liquid squeezed from the cleaning implement flows into the bucket.

In accordance, with a third aspect of the present invention, a filtration device for filtering particulate matter from water comprises a liquid container having an opening to permit entry of liquid to be filtered into the container, a liquid exit, and a filter located between the container opening and the container exit such that liquid in the container is filtered by the filter before passing out of the container through the exit, the exit being located in the bottom of the container and the filter being configured to extend upwardly from the bottom of the container.

Typically, the filter may be configured in the form of a conical or frusto conical shape. Alternatively, the filter may be configured in a pyramidal shape.

Preferably, the filtration device is adapted to be fitted to a bucket, such that water poured into the opening is filtered by the filter and passes out of the liquid exit in the filtration device into the bucket.

Preferably, the filtration device may form part of a bucket system which further comprises a pumping device to pump water from the bucket to the container so that water within the bucket is passed through the filtration device in order filter out particulate matter in the water in the bucket.

Preferably, the first, second and/or third aspects of the invention may be combined together in one bucket.

An example of a bucket in accordance with the invention, will now be described with reference to the accompanying drawings, in which:

- Figure 1 is a perspective view of a bucket;
- Figure 2 is a top view of the bucket shown in Figure 1;
- Figure 3 is a side view of the bucket showing internal features of the bucket in phantom;
- Figure 4 is an end view of the bucket showing the internal features in phantom;
- Figure 5 is a cross-sectional view of a filter apparatus for use with the bucket shown in figures 1 and 2;
- Figure 6 is a perspective view of the filter apparatus with the filter omitted;
- Figure 7 is a partial side of the bucket view showing in detail a squeezing mechanism for use in the bucket;
- Figure 8 is a plan view of a first surface for use with the squeezing mechanism;
- Figure 9 is a cross-sectional view along the line AA in figure 8;
- Figure 10 is a plan view of a second surface for use with the squeezing mechanism; and,
- Figure 11 is an end view of the second surface.

Figure 1 shows a bucket 1 mounted on a base 2. The base 2 includes four casters 3 (only three shown) at each corner of the base 2 to permit the base 2 and bucket 1 to be rolled across a surface, such as a floor. In addition, the base 2 also includes two drawers 4 which can be used to store cleaning fluids and other cleaning materials.

The bucket 1 includes a filtration apparatus 5 and a squeezing device 6. The bucket 1 also has a water outlet 7 at one end and towards the bottom of the bucket 1. The bucket also includes two handles 8 mounted, each handle 8

being mounted on a handle support member 9. The handle support members 9 permit the handles 8 to be pivoted upwards along the axis of the support member 9 to permit a user to lift the bucket 1 off the base 2 for carrying and/or emptying and filling the bucket. The bucket also has a recess 10 into which a recycling container 11 may be placed. The recycling container 11 may be used to collect water from the bucket 1 from the outlet 7. The container 11 is shown in Figure 3.

Figure 3 is a side view of the bucket and also shows the internal construction of the bucket in phantom. The main section of the bucket includes a first water chamber 12 and a second water chamber 13 located below the first water chamber 12. The first and second chambers 12, 13 are in liquid communication with each other via a circular aperture 14 which permits water and particulate matter within the first chamber 12 to pass from the first chamber 12 to the second chamber 13. Particulate matter in the first chamber is channelled towards the aperture 14 by means of lower side walls 15 of the first water chamber 12 which slope towards the aperture 14. In addition, a ball valve 16 is located in the second chamber 13 and an outlet channel 17 extends from the second chamber 13 to the outlet 7.

Figure 4 is an end view of the bucket 1 and shows that when the bucket 1 contains water, the ball valve 16 sits adjacent the aperture 14 and help prevents particulate matter passing from the second chamber 13 back into the first chamber 12.

In addition, a channel 18 extends from the second chamber 13 to a pump 19 which may be used to pump water from the second chamber 13 via the channel 18 and into a conduit 20. An outlet separator 70 is fitted to end 21 of the conduit 20 and the end of the spout 70 extends over and into the

filtration apparatus 5.

Figures 5 and 6 show the filtration apparatus 5 in more detail. The filtration apparatus 5 comprises a generally rectangular container 25 having an open end 26 and a sloping bottom 27. The container also includes an upstanding tubular portion 28 which is open at its upper end 29. The tubular portion 28 forms an outlet 30 in the bottom 27. There is also a dirt chamber 31 which has an outlet 32.

Mounted to the tubular portion 28 is a conical shaped filter 33. Hence, water which is emptied into the opening 26 of the container 25 passes through the filter 33 and out of the outlet 30 into the first chamber 12 of the bucket 1. The filter 33 filters out particulate matter in the water introduced into the container 25 through the opening 26. Hence, by using the pump 19, conduit 20 and the spout 70, water within the bucket 1 can be passed from the second chamber 13 and filtered by the filter 33, before being returned to the first chamber 12 via the outlet 30 in the filtering apparatus 5.

The container 25 is adapted to fit within the bucket 1, as shown in figures 1 and 2. In addition, the filter 33 may be removed from the tubular portion 28 for cleaning and/or replacement.

The apparatus 5 also includes a recessed section 71 for holding a filter cleaning container 72 which holds clean water for cleaning the filter 33, as necessary.

The squeezing device 6 is shown in more detail in figures 7 to 11. As shown in figure 7, the squeezing device 6 includes a metal frame 40 and an upright handle 41. The handle 41 is removable from the frame 40. The metal frame 40 is pivotally connected to the bucket 1 by means of an

axle 42 which sits in recesses 43 within opposite side walls of the bucket. Please note that in Figure 2 part of the frame 40 and the handle 41 have been omitted for the purposes of clarity. As shown in figure 7, by pulling on the handle 41, the frame 40 moves in the direction of arrow 44, from an open position to a squeezing position which is shown in phantom in Figure 7. In the squeezing position (the position shown in phantom in figure 7), the portion of the frame 40 adjacent to the axle 42 lies adjacent to and substantially parallel to a sloping surface 45 formed at one end of the bucket 1 below the frame 40. The surface 45 includes a number of ridges 46 which are shown in detail in figure 8. The ridges 46 are separated from each other by grooves 47.

Figures 10 and 11 show in detail squeezing formations 48 which are attached to the frame 40. The cross-section of each squeezing formation 48 is triangular and a scalloped section 49 is formed in two of the squeezing formations 48.

Hence, in use, with the frame 40 in the open position, a cleaning implement, such as a mop, may be placed on the grooves 46 and the frame 40 and the squeezing formations 48 are then moved in the direction of the arrow 44 to the squeezing position shown in phantom in figure 7. In this position, the mop is squeezed between the squeezing formations 48 and the ridges 46 to squeeze excess water from the mop. The excess water squeezed from the cleaning implement drains along surface 45 and into the first chamber 12 of the bucket 1.

The purpose of the scalloped section 49 in the squeezing formations 48 is to permit the handle of the mop to extend outwardly through the squeezing device 6 during squeezing. That is when the frame 40 is in the squeezing position shown in phantom in Figure 7.

The bucket 1 also includes two tubular sections 75, 76. One section 75 can be used to store the handle 41 which is removable from the frame 40 and the other section 76 can have the handle of a mop inserted into it to support and hold the mop when not in use.

The invention has the advantages that it permits particulate matter introduced into the water in the first chamber 12, for example by a dirty mop, to pass from the first chamber 12 through the aperture 14 into the second chamber 13. This helps to maintain water within the first chamber 12 relatively clean.

In addition, the size of the aperture is chosen such that it is sufficiently large to permit particulate matter to pass from the first chamber 12 into the second chamber 13 but is sufficiently small to prevent the cleaning implement, such as a mop head, from passing from the first chamber 12 into the second chamber 13. For example, the size of the aperture 14 may be approximately 1" in diameter.

Furthermore, the invention has the advantage of permitting water from the chamber 13 to be filtered by passing the water via pump 19 and conduit 21 to the filtering apparatus 5 to filter the water before the water re-enters the first chamber 12. Alternatively, the water in the bucket 1 may be emptied into the recycling container 11 through the outlet 7 and the water then emptied from the recycling container 11 into the filtering apparatus 5 to filter the water before it re-enters the first chamber 12 through outlet 32 in the filtering apparatus 5.

The invention also has the advantage of providing a more efficient squeezing mechanism which squeezes the cleaning implement between two surfaces using a lever mechanism in order to squeeze excess water from the mop. The excess

water then re-enters the first chamber 12 in the bucket 1.

Claims

1. A bucket comprises a first liquid chamber adjacent to the main opening in the bucket and adapted to permit a cleaning implement to be inserted into the first chamber, a second liquid chamber located in the bucket, at least a portion of the second chamber being located between the first chamber and the bottom of the bucket, and aperture between the first and the second chambers to permit liquid communication between the chambers through the aperture; the aperture being located in a lower side wall of the first chamber, the aperture preventing a cleaning implement from passing from the first chamber into the second chamber but permitting particulate matter to pass from the first chamber to the second chamber.
2. A bucket according to claim 1, wherein the lower side wall of the first chamber slopes towards the aperture.
3. A bucket according to claim 2, wherein the aperture is located at or adjacent to the region of the first chamber closest to the bottom of the bucket.
4. A bucket according to any of the preceding claims, further comprising a valve mechanism in or adjacent to the aperture.
5. Apparatus for squeezing liquid from a cleaning implement comprises a first surface, and a second surface movably mounted with respect to the first surface for movement between a first position, in which a cleaning implement may be placed on the first surface in use, and a squeezing position in which the first and the second surfaces are adjacent and substantially parallel to each other.
6. Apparatus according to claim 5, and further comprising



activation means to move the second surface between the first and the squeezing positions.

7. Apparatus according to claim 5 or claim 6, wherein the surfaces comprise grooves and/or ridges.

8. Apparatus according to any of claims 5 to 7, wherein the apparatus is adapted to be fitted to a top of a bucket.

9. A filtration device for filtering particulate matter from water comprises a liquid container having an opening to permit entry of liquid to be filtered into the container, a liquid exit, and a filter located between the container opening and the container exit such that liquid in the container is filtered by the filter before passing out of the container through the exit, the exit being located in the bottom of the container and the filter being configured to extend upwardly from the bottom of the container.

10. A filtration device according to claim 9, wherein the filter is a conical or frusto conical shape.

11. A filtration device according to claim 9, wherein the filter is a pyramidal shape.

12. A filtration device according to any of claims 9 to 11, wherein the filtration device is adapted to be fitted to a top of a bucket.

13. A bucket according to any of claims 1 to 4, and further comprising a filtration device according to any of claims 9 to 12.

14. A bucket according to claim 13, and further comprising a pumping device to pump water from the bucket to the container.

15. A bucket according to any of claims 1 to 4, 13 or 14, and further comprising apparatus according to any of claims 5 to 8.

