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(54) Mop wringers and buckets.

(57) A mop wringer 1 has a lever operating handle 2 and mounts on the rear wall 5 of a bucket 3. When so mounted it is supported on the side walls 6 and 7 of the bucket 3 at or towards the front of the wringer 1 by a cross member 8 (or side support members). The wringer 1 engages the bucket 3 in a manner which opposes the tendency for the back of the wringer 1 to lift off the bucket 3 when an operating force is applied to the wringer handle 2.

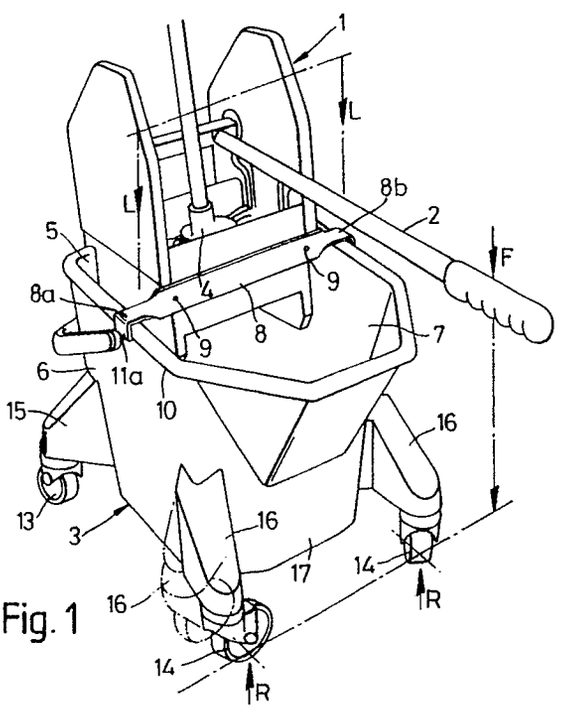

Fig. 1

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The invention relates to mop wringers and buckets for use in wet mopping. It is particularly concerned with wringers of the type which mount on a mop bucket and which are manually operated, by means of a lever handle, to squeeze out into the bucket a mop inserted in the wringer.

Known wringers of the foregoing type mount on the rear wall of the bucket, which is severely stressed with a buckling force which has to balance the operating force applied to the wringer handle. Thus the length of the handle which can be used is limited by the necessity of avoiding over-stressing of the bucket wall, which in turn limits the squeeze pressure which can be applied to a mop. A further disadvantage is that yielding of the bucket wall results in a non-positive yielding "feel" when applying the operating force to the handle.

A principal aim of the invention is to provide a wringer mounting which enables a longer operating handle to be employed with a resultant improved wringing-out action.

According to the invention a mop wringer with a lever operating handle mounts on the rear wall of a bucket and when it is so mounted is supported on the side walls of the bucket at or towards the front of the wringer, with the wringer engaging the bucket in a manner which opposes the tendency for the back of the wringer to lift off the bucket when an operating force is applied to the wringer handle. Preferably the mounting of the wringer on the rear wall of the bucket provides the engagement which opposes the tendency for the back of the wringer to lift.

Front support of the wringer may be by means of a cross member or side support members on the wringer, or a wringer support member or members may be may be mounted on the bucket. These arrangements can be employed to adapt existing wringer and/or bucket constructions designs to provide wringer support in accordance with the invention. Alternatively, front support of the wringer may be provided by a supporting formation of the bucket, for example by integrally moulded internal support ribs or ledges.

In a preferred arrangement a cross member fixed at the front of the wringer rests on the side walls, and this member may engage the bucket side walls so as to oppose any tendency for the side walls to spread apart as the wringer is operated. Such cross member is conveniently manufactured from a length of flat metal strip attached to the front of the bucket, with bent and twisted ends which provide a formation to engage the bucket side walls. This cross member may be manufactured and supplied for use to adapt an existing wringer for support on an existing bucket in accordance with the invention.

In another arrangement, outrigger support members integral with or having a firm connection to the sides of the wringer rest on the bucket side walls for support of the wringer towards the front thereof. Alternatively, support at the front of the wringer may be provided by a separate saddle member which extends over and between the side walls below the wringer, or separate individual saddle members may respectively fit over the side walls and project inwardly to support the wringer.

As the operating moment applied to the wringer handle is no longer withstood by bending and buckling forces applied to the rear wall of the bucket, but by an upward tension at the rear wall and downward compressive forces at the side walls, a longer handle can be used and a more solid "feel" is provided as the operating force is applied. The longer leverage thus obtained enables a wringer to be manufactured with which the average cleaning operative can achieve a completely wrung-out mop, whereas with present handle lengths mops are commonly incompletely wrung out. At the same time thinner bucket walls will often suffice with a moulded bucket, thus saving on the cost of the moulding material and providing a cheaper bucket construction.

As the length of the handle is increased the front floor support of the bucket may have to be moved forwardly to prevent the bucket tipping over towards the operative when operating the wringer. Thus the forward floor support may be positioned in a lateral plane which is disposed in front of the bucket and which preferably contains the position on the handle to which the operative force is applied with the handle at the wringing position.

The invention will now be further described with reference to the accompanying drawings which illustrate, by way of example, several embodiments of the invention. In the drawings:

Fig. 1 is a perspective view of a hand-operated wringer mounted on a mop bucket, in accordance with a preferred embodiment of the invention;

Fig. 2 diagrammatically illustrates a rear mounting of the wringer of Fig. 1;

Figs. 3A and 3B are respectively top and front views of a cross member of the preferred embodiment;

Figs. 4 and 5 are partial views illustrating another embodiment;

Figs. 6 and 7 are diagrammatic views respectively illustrating two further embodiments;

Fig. 8 is a plan view of a bucket of yet another embodiment; and

Fig. 9 is a diagrammatic front view with the bucket sectioned on the line IX-IX in Fig. 8.

Fig. 1 illustrates a hand-operated wringer 1 with an operating lever handle 2 and which mounts on top of a mop bucket 3 as shown. Movement of the

handle from a generally upright resting position (not shown) to the more or less horizontal and forwardly projecting position ("wringing" position) illustrated applies a squeeze pressure to a mop, such as 4, inserted in the wringer 1 from above. The wringer 1 is of conventional general construction and hence is not further described herein except for the novel features associated with the invention.

In accordance with the invention the wringer 1 mounts on the rear wall 5 of the moulded plastics bucket 3, and it is supported at the front on the bucket side walls 6 and 7. Such front support is provided by a cross member 8 which is fixed at the front of the wringer 1, by suitable fixings 9 such as screws or rivets, and which rests on the rim 10 of the bucket. The ends 8a and 8b of the cross member 8 hook over and seat on the rim 10 so as to oppose any tendency for the side walls 6 and 7 to spread apart during a wringing operation.

The cross member 8, which may be manufactured and supplied for attachment to existing wringers to provide the manifold advantages of the invention, is as shown more particularly in Figs. 3A and 3B. As can be seen therefrom the member 8 is formed from a length of flat metal strip, for example being of galvanized mild steel, with end portions 8a and 8b twisted through 90° and then bent down at right angles to provide end flanges 11a and 11b. Thus the member 8 has end formations which hook over and seat on the bucket rim 10. The main flat body 8c of the member 8 has suitable fixing holes 8d for the described fixings 9.

The rear mounting of the wringer 1 on the rear wall 5 is such that it opposes a tendency for the back of the wringer 1 to lift off the bucket as the operating force is applied to the handle 2 as indicated by the arrow F. In Fig. 2 there is illustrated an example of a suitable rear mounting of the wringer 1, comprising a hook-like rear formation which as the wringer 1 is fitted hooks around and beneath the rim 10 of the bucket. This formation may be provided on each of two space mounting projections 12 at the rear of the wringer 1.

As a result of the rear mounting and front support of the wringer 1 the wringing force is distributed, largely as a compressive load on the bucket 3 by the cross member 8 as indicated by the arrows L in Fig. 1. As the wringing force is not withstood by buckling forces on the rear wall, as it is in a conventional arrangement, the wringing action has a "solid" feel and wringer deflection does not dissipate the wringing forces. Furthermore, a longer handle 2 can be employed which enables much greater wringing forces to be applied for given operative effect. The invention enables a handle to be used which in some circumstances can be of the order of twice the length of the handles as normally used in the past.

For mobility the bucket 3 is mounted on four corner castors, referenced 13 at the rear and 14 at the front. As can be appreciated from the view of Fig. 1, the increased length of the handle 2 not only increases the wringing efficiency but it facilitates use of the handle 2 for propelling and steering the bucket 3 on the castors 13,14. The rear castors 13 are fitted to floor support outriggers such as 15 and the front castors 14 to outriggers 16. The outriggers 15 are generally aligned with the rear wall 5, and normally the outriggers 16 would be similarly disposed with respect to the front wall 17 of the bucket 3, as is shown in broken lines for the left-hand corner in Fig. 1. However, in view of the increased length of the handle 2 the front castors 14 are moved forwardly, to prevent the bucket 3 tipping over forwardly when the operating force is applied to the handle 2. The outriggers 16 are now cranked to extend forwardly so that the front floor reaction forces indicated by the arrows R lie in a lateral plane, in front of the main body volume of the bucket 1, which plane also contains the arrow F. Thus the castors are effectively brought into line with the vertical handle load to prevent the bucket tipping.

In the modification of Figs. 4 and 5 outrigger support members 30 and 31 are positioned at the two sides near to the front of the wringer 1. Each support 30 or 31 has a lower recess, 32 or 33, which seats on the bucket rim 10 to provide the same advantages as the cross member 8 of the arrangement of Figs. 1 to 3. However, in this case the rim 10 is engaged on both its inner and outer sides so that the support members 30 and 31 act to strengthen the bucket side walls against both inward and outward movement and thus provide particularly firm lateral relative location of wringer and bucket. The cross member of the earlier embodiment may if desired be modified so that it likewise engages on both sides of the rim 10. The supports 30 and 31 are detachably secured to the wringer 1, each having a plug-in connection thereto as shown in Fig. 5. Flanged projections 34 and 35 respectively engage at a lower open ended slot 36 and an upper keyhole slot 37 at the sides of the wringer.

Fig. 6 illustrates how the front support of the wringer 1 may be provided by a separate saddle member or sling 40 which at the ends 41 and 42 hooks over the side walls 6 and 7. The member 40 extends below the wringer 1 under wringer cheek plates 43,44 near the front thereof to provide direct vertical support. The support member 40 may be sufficiently rigid to tie in the bucket sides and thus oppose any tendency for outward spreading of the side walls 6 and 7.

In the embodiment of Fig. 7, the single sepa-

rate saddle member 40 is in effect split into two double-hook like support members 50 and 51. At the upper ends 52 and 53 the members 50 and 51 respectively hook over the bucket side walls 6 and 7. At the lower ends 54 and 55 the members 50 and 51 respectively hook under the cheek plates 43 and 44 near to the front of the wringer 1.

The remaining embodiment of Figs. 8 and 9 employs a design of bucket which enables the advantages of the invention to be achieved with an existing wringer construction. The bucket 60 is moulded with internal ledges 61 at the sides, these ledges 61 extending from the bucket rear wall 62 for a distance slightly greater than that spanned by the wringer 63. Front feet 64 of the wringer 63, which are normally provided to enable the wringer to be stood on the floor when not in use, respectively rest on the ledges 61. This supports the wringer 63 on the bucket side walls 65, of which the ledges 61 form part, at the front in accordance with the invention. The wringer 63 mounts on the rear wall 62 as before.

In that it enables a longer handle to be fitted to the wringer the invention has important ergonomic advantages in addition to that of better wringing-out of a mop. Thus the invention provides excellent benefits for people regularly using mop buckets and wringers, particularly in lessening the back strain commonly suffered by cleaning operatives. Not only can a given or improved wringing action be achieved with far less effort than hitherto, but the handle can be operated higher up so that less stooping is involved when wringing out a mop.

Claims

1. A mop wringer arrangement, wherein the wringer (1;63) has a lever operating handle (2) and mounts on the rear wall (5;62) of a bucket (3;60) and is supported on the side walls (6,7;65) of the bucket (3;60) at or towards the front of the wringer (1;63), with the wringer (1;63) engaging the bucket (3;60) in a manner which opposes the tendency for the back of the wringer (1; 63) to lift off the bucket (3;60) when an operating force is applied to the wringer handle (2).

2. A mop wringer arrangement according to claim 1, wherein the mounting on the rear wall (5,62) provides said engagement which opposes the tendency for the back of the wringer (1;63) to lift.

3. A mop wringer arrangement according to claim 1 or claim 2, wherein a cross member (8) [or side support members(30,31)] fixed at or adjacent the front of the wringer (1) is (or are) adapted to rest on the side walls (6,7) of the bucket (3) for support at or towards the front of the wringer (1).

4. A mop wringer arrangement according to claim 3, wherein the cross member (8) is adapted to engage the bucket side walls (6,7) so as to oppose any tendency for the side walls (6,7) to spread apart as the wringer (1) is operated.

5. A mop wringer arrangement according to claim 4, wherein said wringer support is provided by a cross member (8) formed from a length of flat metal strip attached to the front of the wringer (1), end portions (8a,8b) of the strip (8) being twisted with respect to the flat main body thereof and the ends bent downwards to provide end formations (11a,11b) which hook over the respective side walls (6,7) of the bucket (3).

6. A mop wringer arrangement according to claim 1 or claim 2, wherein support at the front of the wringer (1) is provided by a separate saddle member (40) which extends over and between the side walls (6,7) below the wringer (1).

7. A mop wringer arrangement according to claim 1 or claim 2, wherein support at the front of the wringer (1) is provided by separate individual saddle members (50,51) which respectively fit over the side walls (6,7) of the bucket (3) and project inwardly thereof to support the wringer (1).

8. A mop wringer arrangement according to claim 1 or claim 2, wherein support of the wringer (63) at or towards the front thereof is provided by a supporting formation (61) of the bucket (60).

9. A mop wringer arrangement according to claim 8, wherein the bucket side walls (65) are moulded with internal support ledges (61) or ribs on which the wringer (63) rests.

10. A mop wringer arrangement according to any one of the preceding claims, wherein front floor support means (14) of the bucket (3) are positioned in a lateral plane in front of the bucket (3).

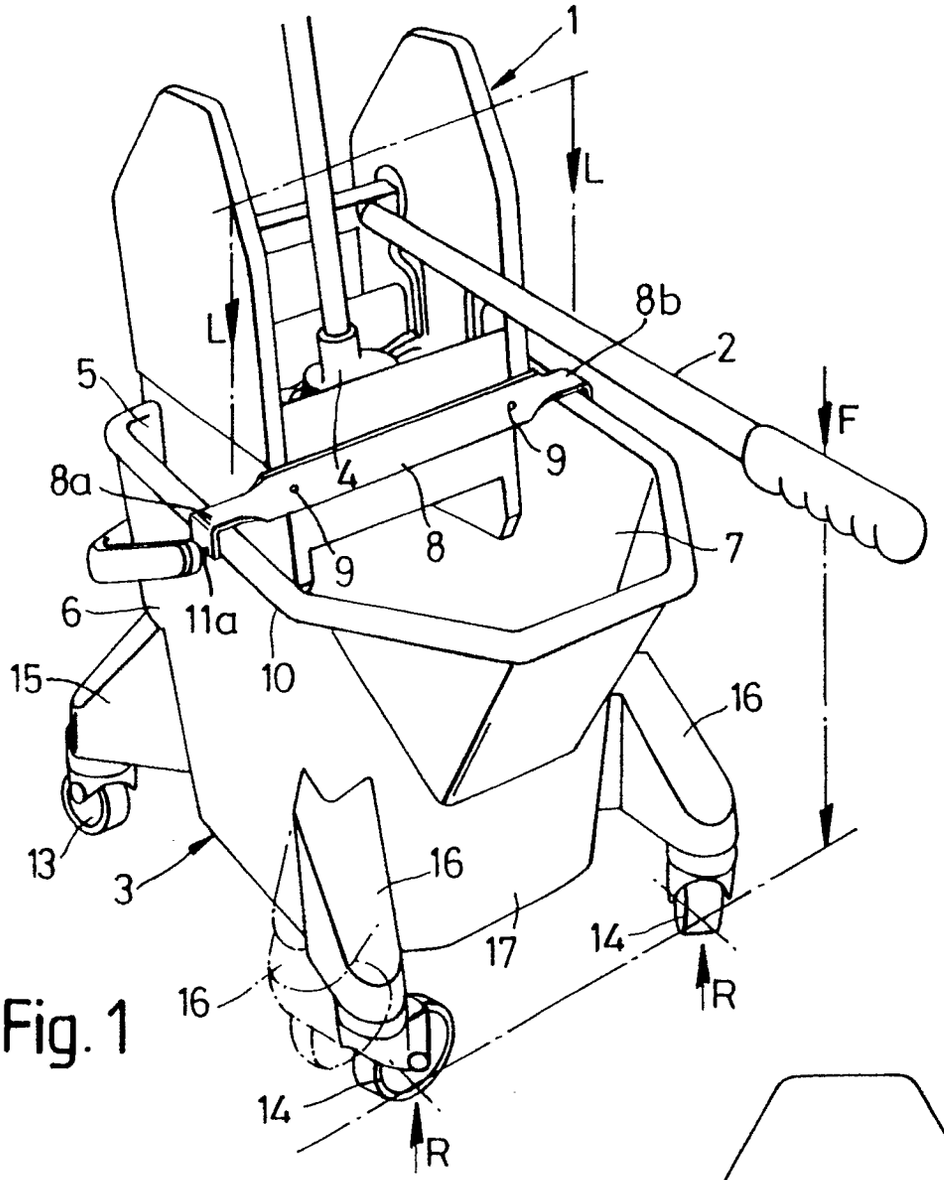
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Fig. 1

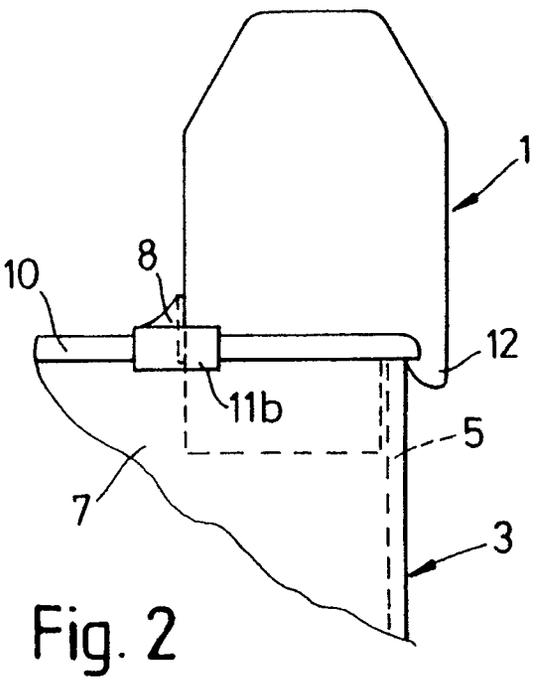
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Fig. 2

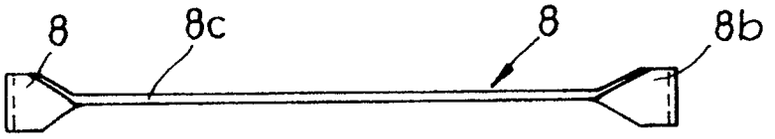

Fig. 3A

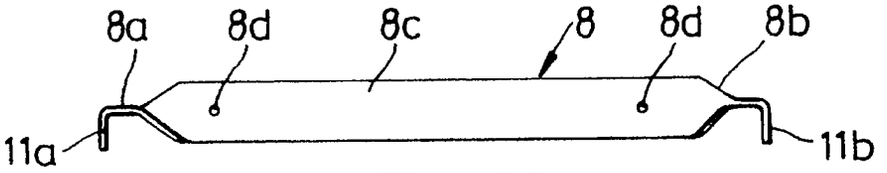

Fig. 3B

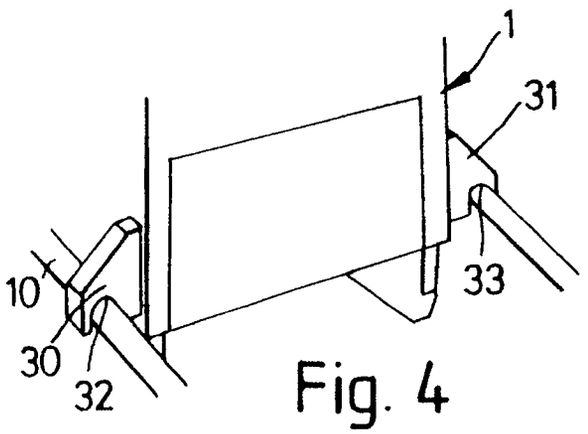

Fig. 4

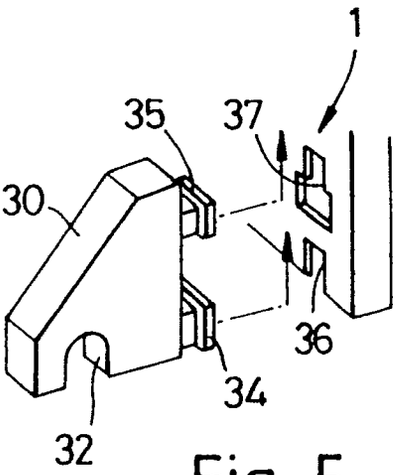

Fig. 5

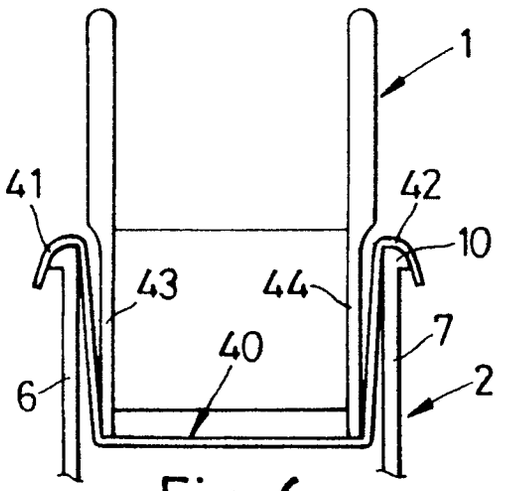

Fig. 6

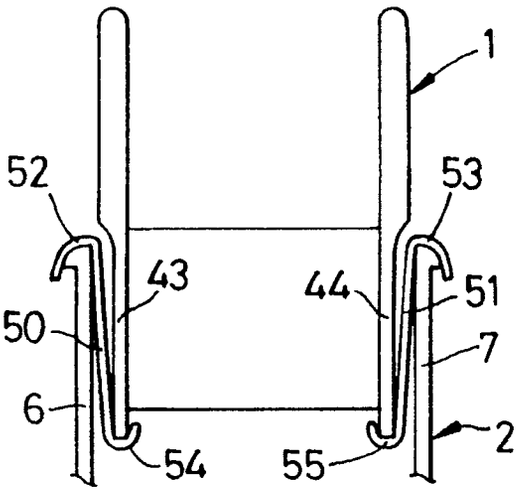

Fig. 7

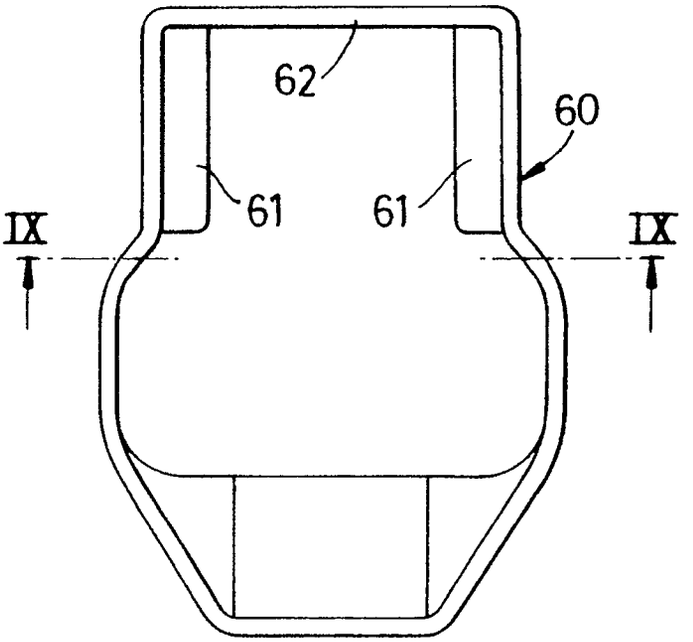

Fig. 8

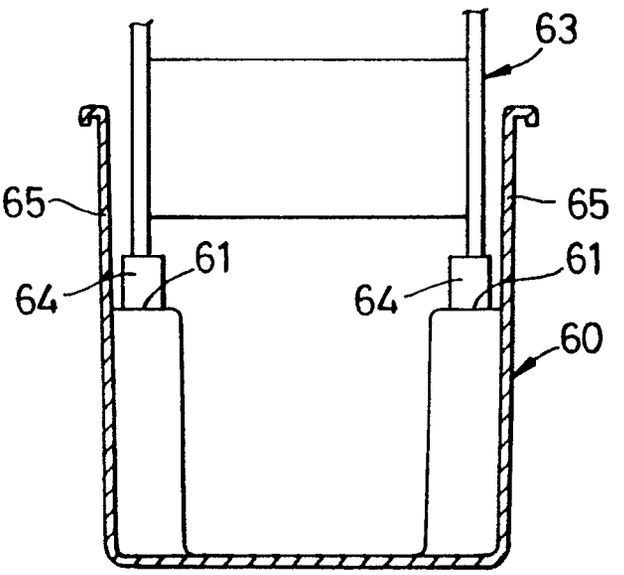

Fig. 9