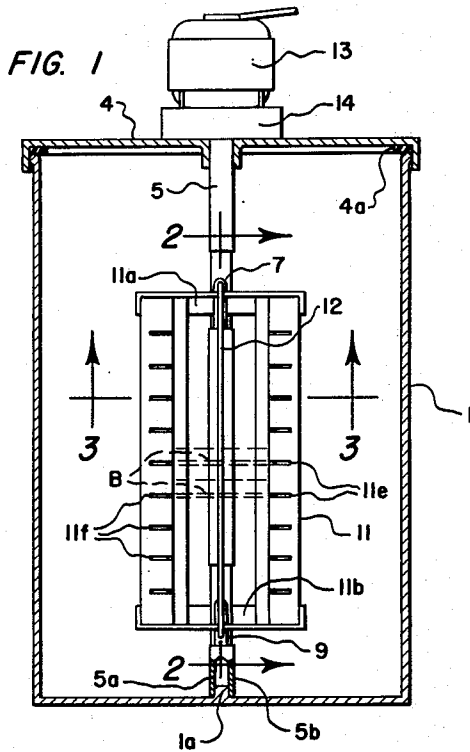
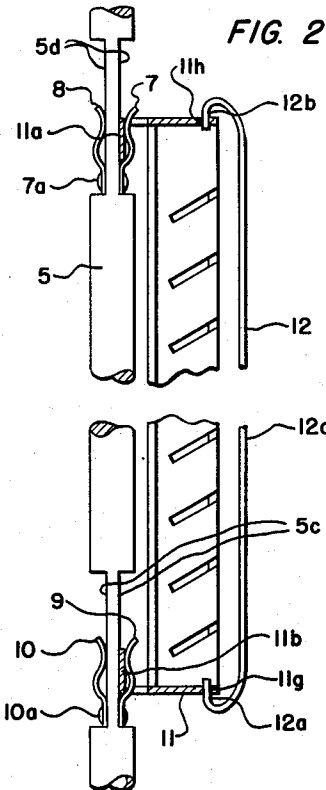
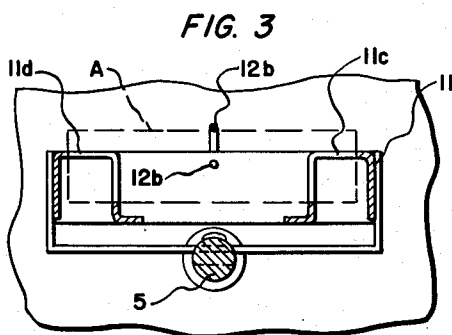
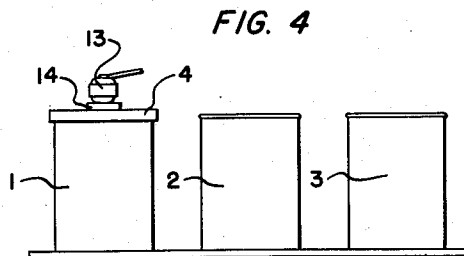


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MICROSLIDE WASHING MACHINE

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MICROSLIDE WASHING MACHINE

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5 Claims. (Cl. 134-140)

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Our invention relates to a micro-slide washing machine, for use in washing slides used in microscopy, and the objects of our invention are:

First, to provide a washing machine of this class which is adapted to concurrently clean and sterilize a plurality of frangible micro-slides, whereby the slides are thoroughly cleaned and sterilized, and the breakage thereof is reduced to a minimum;

Second, to provide a washing machine of this class in which a slide frame holding and reciprocating mechanism is readily transferable from one container to another, permitting a plurality of slides to be processed in a single frame and progressively transferred from one container to another for cleaning, rinsing and immersion in distilled water, so that slides are ready for use without removing any of them from the washing frame;

Third, to provide a washing machine of this class having a slide holding frame which is readily removably secured to an oscillating shaft, permitting the operator to successively connect slide holding frames to said shaft in order to process a large number of micro-slides without removing the same from the frame;

Fourth, to provide a washing machine of this class having an oscillating shaft which is axially transverse relative to the micro-slides on a frame connected to said shaft, promoting flow of cleaning solution over the planes of said micro-slides, attaining uniform cleaning action on all of the slides;

Fifth, to provide a washing machine of this class in which movement of the slides causes fluid flow over the side surfaces of the slides, whereby oscillation of said slides causes alternate opposed directional flow of cleaning fluid over the slides, which promotes thorough cleansing and rinsing thereof;

Sixth, to provide a washing machine of this class having a plurality of containers and a cover on which a motor is mounted, which is provided with an extending shaft having an outboard bearing engageable with the bottom of the container, permitting transfer of the motor and shaft from one container to another, in its supported relationship on the cover which fits the various containers; and

Seventh, to provide a washing machine of this class which is very simple and economical of construction, efficient in operation, and which will not readily deteriorate or get out of order.

With these and other objects in view, as will appear hereinafter, our invention consists of cer-

tain novel features of construction, combination and arrangement of parts and portions, as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, forming a part of this application, in which:

Fig. 1 is a vertical sectional view of our washing machine, showing portions thereof in elevation to facilitate the illustration; Fig. 2 is an enlarged fragmentary sectional view, taken from the line 2-2 of Fig. 1, showing parts and portions in elevation to facilitate the illustration; Fig. 3 is an enlarged sectional view, taken from the line 3-3 of Fig. 1; and Fig. 4 is a side elevational view of our micro-slide washing machine, showing a plurality of containers for said machine.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawings.

The containers 1, 2 and 3, cover 4, oscillating shaft 5, clips 7, 8, 9 and 10, slide holding frame 11, slide retainer 12, motor 13, and the oscillating gear box 14, constitute the principal parts and portions of our micro-slide washing machine.

The containers 1, 2 and 3 are hollow cylindrical containers, having enclosed bottom portions, and these containers are all similar in construction. The container 1 is provided with an upwardly concentric protrusion bearing 1a, adapted to engage the internal bore 5a of the hollow lower end portion 5b of the oscillating shaft 5. The oscillating shaft 5 is provided with opposed flats 5c and 5d, on which the clips 7, 8, 9 and 10 are fixed by rivets 10a and 1a, as shown in Fig. 2 of the drawings. The clips 7, 8, 9 and 10 are resilient clips, engageable with the end frame sections 11a and 11b of the slide holding frame 11, as shown best in Fig. 2 of the drawings.

Fixed to these end frame sections 11a and 11b are the channel-shaped side members 11c and 11d extending along the longitudinal edges of the frame, which are provided with slotted portions 11e and 11f, respectively, which are adapted to receive opposite ends of slides, as indicated by dash lines A in Fig. 3 of the drawings. These slides are also illustrated in Fig. 1 by the dash lines B.

The slide retainer 12 is a resilient wire, having inwardly directed clip end portions 12a and 12b, which fit into openings 11g and 11h in the end section 11b and 11a, respectively. Fixed to the cover 4 is a gasket 4a, which engages the upper end of the container 1, or either of the containers 2 or 3, as desired, all as shown best in Fig. 1 of the

drawings. This cover 4 supports the oscillating gear box 14, together with the motor 13, which operates the oscillating shaft 5.

The operation of our micro-slide washing machine is substantially as follows:

When it is desired to wash a plurality of micro-slides, as indicated by dash lines A and B in Figs. 3 and 1, respectively, the slide retainer 12 is removed by resiliently displacing one of the ends 12a and 12b from one of the openings 11g or 11h in the slide holding frame 11. The slides are then placed in the slotted portions 11c and 11d at their opposite ends, as shown in Figs. 1 and 3 of the drawings, and the slide retainer 12 is then replaced, as shown in Fig. 2 of the drawings, and the intermediate bar portion 12c thereof is positioned at the normally outer edges of the slides A, as shown in Fig. 3 of the drawings, retaining them in the slots 11c and 11d.

The frame sections 11a and 11b may then be slid into engagement with either the clips 7 and 9 or the clips 8 and 10, respectively, as shown in Fig. 2 of the drawings. It will be noted that placement of the sections 11a and 11b may be accomplished by engaging the flats 5c and 5d above the clips 7 and 9, and then longitudinally sliding the sections 11a and 11b into engagement inwardly of the clips 7 and 9, so that they are held against the flats 5d and 5c, which securely supports the slide holding frame in connection with the oscillating shaft 5.

When the slide holding frame 11 is connected to the oscillating shaft 5, as hereinbefore described, the cover 4, together with the motor 13 and gear box 14 having the shaft 5 connected therewith, is placed over the container 1, causing the shaft to be projected downwardly into the container, engaging the internal bore 5a thereof with the bearing projection 1a, which causes concentric support of the shaft 5 in the container 1. The motor 13 may be operated, causing the oscillating gear box 14 to transmit oscillatory motion to the shaft 5, which oscillates the slide holding frame 11, causing a washing action internally of the container 1, which is filled with cleaning fluid.

The slide holding frame 11, as it oscillates, moves the micro-slides A, causing reversal of the washing action each time the shaft 5 oscillates.

When it is desired to continue processing the micro-slides, the cover 4, together with the motor 13, gear box 14, shaft 5, and slide holding frame 11, may be placed in connection with the container 2, as hereinbefore described in connection with the container 1, in order to rinse the micro-slides A, and the micro-slides A may be subsequently moved into the container 3 for a rinse in distilled water in a similar manner.

Though we have shown and described a particular construction, combination, and arrange-

ment of parts and portions, we do not wish to be limited to this particular construction, combination and arrangement, but desire to include in the scope of our invention the construction, combination and arrangement substantially as set forth in the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a washing machine, a container, a shaft movably mounted in said container, a frame removably mounted on one side of said shaft, said frame having side portions provided with opposed slots therein for retaining opposite ends of micro-slides, a resilient slide retainer removably connected to the middle of said frame extending transversely of said slots for engaging edges of micro-slides supported in said slots, said retainer being configured to engage and to retain slides in said slots, said shaft having clips thereon removably and directly engageable with opposed end portions of said frame, a cover for said container, having an oscillating motor thereon, connected with said shaft for operating the same.

2. In a washing machine, a container, a shaft movably mounted in said container, a frame removably mounted on one side of said shaft, said shaft having resilient clips secured thereto and engageable with said frame.

3. In a washing machine, a driven shaft, axially spaced clips on said shaft, a slide holding frame having opposed portions removably and directly engaged with said clips.

4. A machine according to claim 3 and wherein said frame is elongated and said opposed portions are at the ends thereof and said frame has channel-shaped elements extending along the longitudinal edges of the frame, said elements having opposed inner flange plates, said flange plates having a plurality of spaced parallel slots for reception of individual slides.

5. A machine according to claim 4 and including a resilient linear member comprising a slide retainer removably and terminally secured to said opposed portions at the ends of the frame.

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