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W. E. SHARP
CLEANING MACHINE

1,977,650

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2 Sheets-Sheet 1

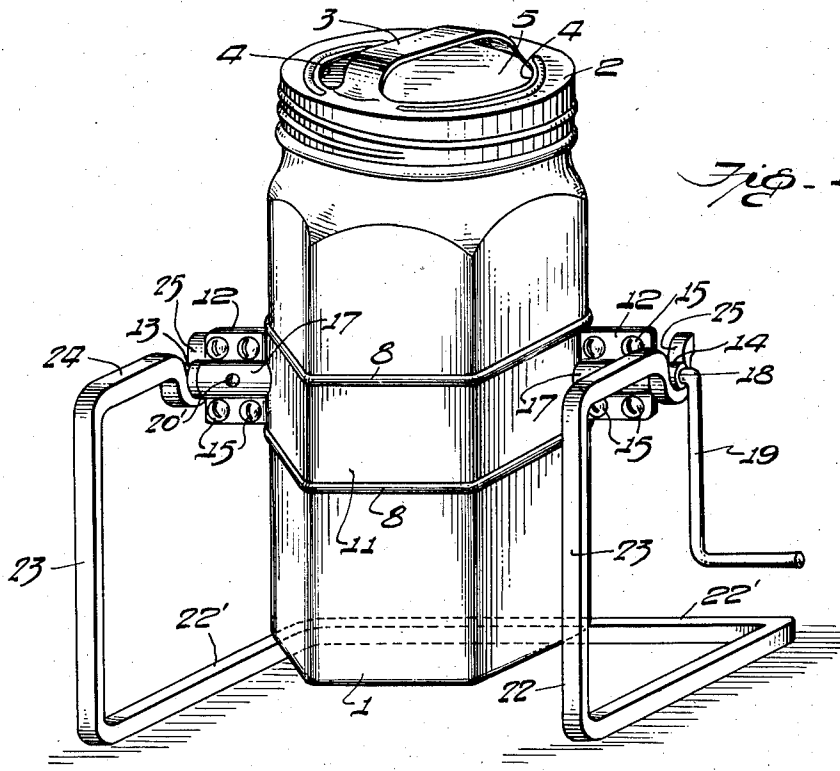


Fig. 1.

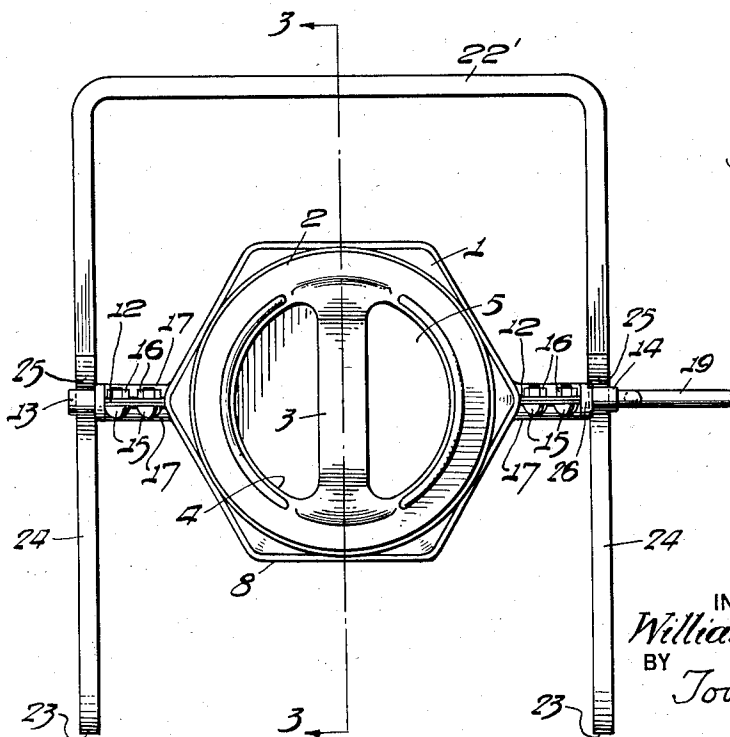


Fig. 2.

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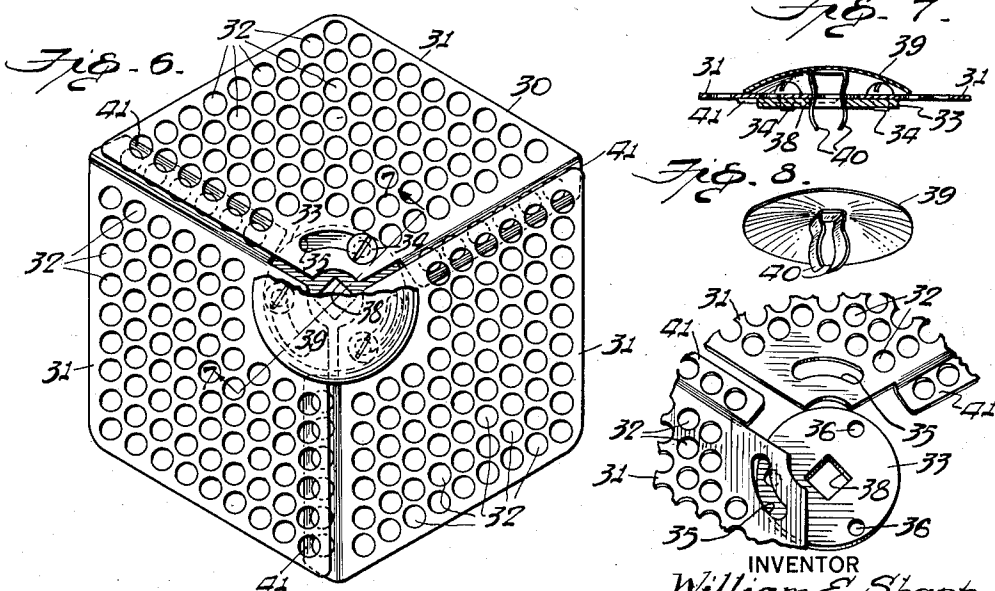
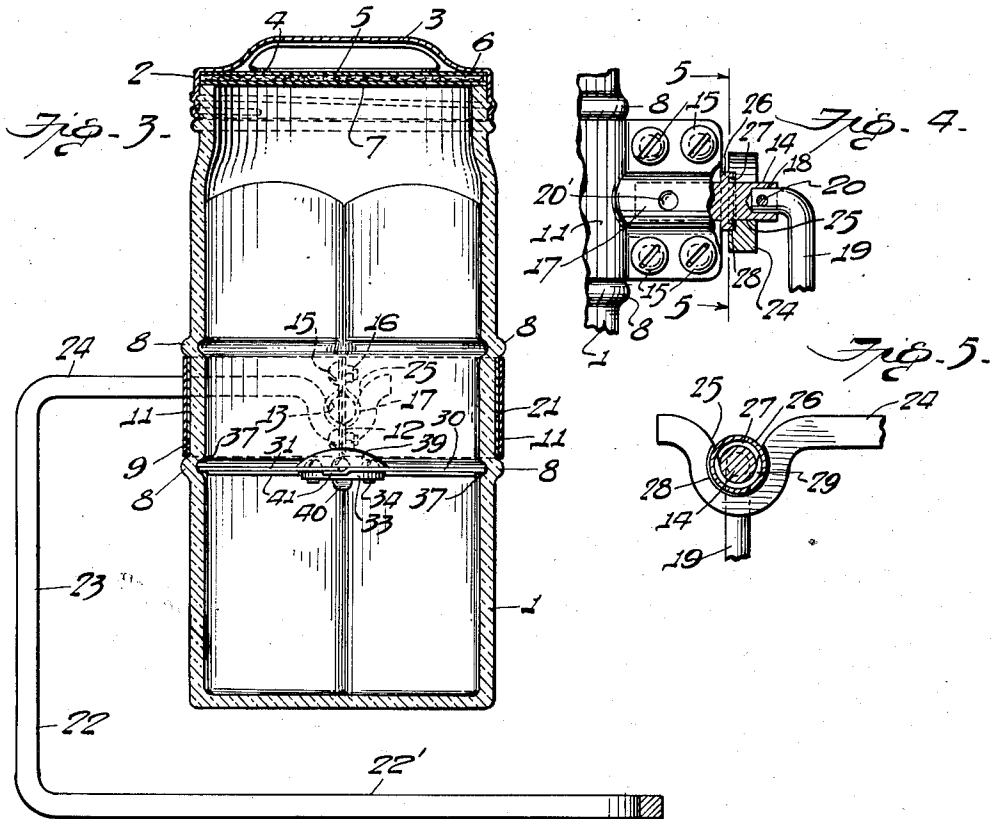
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UNITED STATES PATENT OFFICE

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CLEANING MACHINE

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11 Claims. (Cl. 68—38)

This invention relates to cleaning machines and, more particularly, to a device adapted to dry-clean articles of clothing.

The principal object of my invention, generally considered, is to provide a machine involving a transparent rotatable container adapted for holding a dry-cleaner and articles to be cleaned, whereby such articles are cleaned upon the mere rotation of the container, and the progress of cleaning may be followed without opening said container.

Another object of my invention is to provide a cleaning machine preferably having a spring steel supporting frame involving bearings receiving trunnions on opposite ends of a band encircling a preferably transparent container for cleaning fluid and articles to be cleaned, one of said trunnions having a handle connected thereto for turning the container and normally interlocked with respect to the bearing on the frame to prevent undesired upward movement thereof during turning.

A further object of my invention is to provide a cleaning machine involving a bent spring steel base and stand formed of a preferably square steel rod bent to provide three sides of a rectangle forming the base portion, the ends of said rectangular portion being bent upwardly and extended horizontally to terminate in depending notched portions forming bearings for trunnions of a cleaning fluid container.

A still further object of my invention is to provide a cleaning machine involving a preferably glass jar formed with spaced parallel ribs between which is mounted a supporting band, to the opposite ends of which are connected bearing trunnions for rotatively mounting said jar, the inner surface of said jar involving a peripheral groove and an expansible partition normally interlocked in said groove, and upon which articles to be cleaned normally rest so as to provide a draining pocket therebeneath into which the cleaning fluid may settle from the articles after cleaning, whereby said fluid is conserved and the articles are drained of excess fluid before removal from the container.

Other objects and advantages of the invention relating to the particular arrangement and construction of the various parts will become apparent as the description proceeds.

Referring to the drawings illustrating my invention, the scope whereof is defined by the appended claims:—

Figure 1 is a perspective view of one embodiment of my cleaning machine.

Figure 2 is a plan of the machine shown in Figure 1.

Figure 3 is a vertical sectional view on the line 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a fragmentary elevational view of the end of the supporting band which receives the turning handle for the container and the corresponding portion of the frame showing the interlock therebetween.

Figure 5 is a fragmentary sectional view on the line 5—5 of Figure 4, looking in the direction of the arrows.

Figure 6 is a plan of the container partition on an enlarged scale, a portion being broken away to more clearly show the construction.

Figure 7 is a fragmentary sectional view on the line 7—7 of Figure 6, looking in the direction of the arrows.

Figure 8 is a fragmentary exploded view showing the manner of assembling the partition.

Referring to the drawings in detail, like parts being designated by like reference characters, there is shown a cleaning machine involving a container 1, which is preferably made of glass or transparent material, so that the fluid and materials therein may be inspected without opening. Said container 1 is also desirably non-circular in section, or hexagonal, as illustrated, so that agitation of the dry-cleaner or cleaning fluid when the container is rotated about a transverse axis is more effective for cleaning purposes than if the container were cylindrical.

A screw cap 2 serves for closing the container. Said screw cap preferably has the upper surface thereof pressed outwardly to form a handle 3, angular or channel-shaped in section for stiffness. The formation of the handle from the top of the cap 2, of course, leaves apertures 4 on either side thereof, and said apertures are normally closed by a flat plate of metal, or other desirable material 5. The bottle or jar 1 is preferably closed by forcing the plate 5, associated felt pad 6 and a tin-foil faced pulpboard liner 7 into tight contact with the edge of the open end thereof by screwing on the cap 2 to the position shown most clearly in Figure 3. The felt pad is to furnish resiliency to compensate for any irregularity in the top of the container 1, and the tin-foil facing on the liner is to resist the action of the cleaning fluid or dry-cleaner.

In order to properly support the container 1 for rotation about a transverse axis, said container desirably has a pair of spaced parallel ribs 8 embossed in the glass thereof, as shown most clearly in Figure 3, encircling said container and preferably disposed on either side of the center of gravity thereof, thereby providing a groove 9 therebetween for receiving a supporting band. In the present embodiment, the band comprises a pair of metal plates 11 adapted to encircle the container between the ribs 8 and formed with outstanding engaging end portions 12 embossed to encircle the associated trunnions 13 and 14 and held in tight engagement therewith as by means of bolts 15 and

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associated nuts 16 extending through the ends 12 of the metal plates 11 on either side of the embossed portions 17 thereof. The drive trunnion 14 is desirably provided with a pocket 18 receiving an end of a crank 19 for turning the bottle or container 1. The crank 19 may be locked in place by means of a rivet, or the like, 20. The metal plates 11 forming the band are desirably of such a width that they snugly fit between the ribs 8, said plates being desirably constructed of 18 gauge steel and bent to follow the outside contour of the bottle or container 1, their ends being bent so as to normally lie flat one against another, as shown most clearly in Figure 1.

In order to interlock with, as well as frictionally hold, the trunnions 13 and 14 upon tightening the nuts 16, the embossed portions 17 of the plates are desirably provided with inwardly extending or embossed lugs 20' received in corresponding pockets in the embraced portions of the trunnions 13 and 14. In order that the bottle or container may be held snugly between the sections 11 of the band, felt or fiber packing 21 is desirably provided between the band and the bottle, as shown most clearly in Figure 3.

For rotatively mounting the container or jar 1, the stand or base with brackets 22 is provided, said stand being desirably constructed of a steel rod, square in section, bent to the desired shape, as shown most clearly in Figure 1. In other words, a rod of steel is, as shown in the drawings, bent to form a three-sided rectangular base portion 22' with upstanding bracket portions 23, the upper ends of which have horizontal supporting portions 24, the ends of which are formed with notches 25 providing bearings for the trunnions 13 and 14. The trunnions 13 and 14 are desirably constructed of hard bronze, whereby they will wear well against the steel supporting brackets.

Both trunnions 13 and 14 are desirably provided with collars or flanges 26, preferably snugly engaging the inner faces of the bearing portions 25 of the stand 22, whereby endwise movement is eliminated. In order to prevent undesired upward movement of the trunnion 14 to which the crank 19 is connected, said trunnion is desirably provided with an annular notch 27 formed in the collar or peripheral flange 26 thereof which abuts the bearing portion 25, said bearing portion being notched, as indicated at 28, to partially receive the annular collar 26, and formed with an annular flange 29 normally fitting the annular notch 27 in the trunnion 14, thereby interlocking the trunnion to the bearing portion, while not interfering with turning thereof. The relative dimensions of the parts are such that the spring stand has to be sprung slightly to permit the trunnion 14 to be interlocked with respect to the bearing flange 29 whereby, when assembled, the stand resiliently holds the trunnion 14 in interlocked position with respect thereto by axial pressure.

In order to facilitate thoroughly cleaning articles of clothing in the container 1 and, after cleaning, removing as much of the excess cleaning fluid or dry-cleaner from said materials before removing them from the container 1, a foraminous adjustable partition or draining rack 30 is desirably provided in said container. The preferred details of my partition are shown in Figures 6, 7 and 8, although it will be understood that modifications may be made without departing from the invention. In the present embodiment, the partition comprises three substantially diamond-shaped plates 31 formed with a series of apertures 32 to allow the cleaning fluid

or dry-cleaner to freely pass from one side of the partition to the other. The plates 31 are connected to a central circular plate 33 as by means of screws 34 passing through slots 35 in the plates 31 and threaded into holes 36 in the circular plate 33.

The slots 35 are desirably curved and eccentric, that is, one end of each slot is disposed a greater distance from the inner corner of the corresponding plate than the other, so that said plates may be either assembled in expanded position, adjusted to the size of the container 1, with their edges interlocked in the peripheral notch 37 in the inner surface of said container, or they may be deflated for removal, as will be understood. In other words, when the plates 31 are connected to the circular plate 33 with the screws 34 engaging the outermost ends of the slots 35, the assembled partition has a relatively small periphery, and when the screws 34 are loose the plates may be rotated one over the other, adapting the partition to be inserted or removed from the bottle or container 1, whereas when expanded by clamping the plates 31 to the circular plate 33, with the screws in those portions of the slots which make the periphery of the assembled partition tightly engage the peripheral notch 37 on the inside of the container 1, as shown in Fig. 3, said partition is properly interlocked with the container for the purpose described. It will thus be appreciated that the partition may be inserted and removed, as desired, to provide a shelf on which the articles to be cleaned may be allowed to lie after cleaning, so that the excess fluid will drain therefrom.

In order to facilitate expansion of the partition in place in the groove 37 of the container, the circular plate 33 is desirably provided with a square or non-circular aperture 38 adapted to serve for turning said plate 33 to cause expansion of the associated plates 31 after assembly, but before tightening the screws 34. The aperture 38 and the heads of the screws 34 are desirably covered, after assembly, by means of an embossed cover plate 39 carrying spring clips 40 which resiliently engage the edges of the circular plate 33 around the aperture 38 and hold said cover plate in position, thereby covering the heads of the screws 34 and protecting the clothing being cleaned from catching thereon.

In order to insure that the partition, when in expanded and adjusted position, will completely divide the container as desired, each plate 31 desirably has one radial edge formed with an offset flange 41 normally overlapping the adjacent edge portion of an associated plate, as shown most clearly in Figure 6.

From the foregoing description, taken in connection with the accompanying drawings, it will be seen that I have devised a cleaning machine which, although particularly adapted for dry-cleaning clothing, is not limited to such use, and which may be readily manufactured and assembled as the parts are few and relatively simple in form. To operate the machine, after assembly, as shown in Figures 1, 2 and 3, dry-cleaning fluid is poured into the container 1 to a level below that of the partition 30, the amount of cleaning fluid to be used, of course, depending on the amount of clothing to be cleaned, said amount, however, in no case, being more than that sufficient to reach the partition 30. The clothing or articles to be cleaned are then put into the container and rest on the shelf or partition 30. The container is then tightly closed by

the screw cap 2, and rotated a few minutes to clean the articles therein. The container is then allowed to stand until the excess cleaning fluid has drained from the articles being cleaned, 5 as can be determined by noticing when the fluid discontinues, or substantially discontinues, draining from said clothing into the bulk of the fluid beneath the partition 30. The screw cap may then be removed and the cleaned articles taken 10 from the container and allowed to dry.

Although a preferred embodiment of my invention has been illustrated, it will be understood that modifications may be made without departing from the spirit and scope of the appended 15 claims, and that the terms employed are used for purposes of description and not of limitation.

I claim:—

1. A cleaning machine comprising a container, trunnions extending outwardly from the sides 20 thereof and formed with flanges spaced from the ends of said trunnions, and a stand for said container formed of a resilient rod bent and provided with bearings the adjacent sides of which are axially pressed into engagement with the 25 flanges on said trunnions by the resiliency of the rod, and means extending axially from one of said engaging portions and received in the adjacent part for interlocking one of said bearings and its associated trunnion.

2. A cleaning machine comprising a supporting frame, a jar rotatable thereon about a transverse axis and formed with an inner peripheral groove, a foraminous partition with its peripheral portion normally received in said groove for divid- 35 ing said jar into two compartments, means for expanding and retracting said partition to allow for application and removal, and means for closing said jar.

3. In a cleaning machine, a supporting base 40 formed of a metal rod bent to provide three sides of a rectangular portion with the ends of said rod at the open side of said rectangular portion being bent upwardly and then extended horizon- 45 tally back over said first portion to terminate in depending notch portions forming bearings, and a container formed with trunnions extending from the sides thereof and rotatably mounted in said bearings.

4. In a cleaning machine, a container having 50 spaced parallel ribs, means for supporting said container comprising a pair of band segments engaging it between said ribs, said band segments having outstanding end portions with adjacent 55 faces adapted to lie against each other, said end portions being outwardly embossed to form pockets, trunnions mounted in said pockets between said outwardly embossed portions, means for lock- 60 ing said segments in place and holding the trunnions so that they are adapted to serve for rotatively mounting said container, and means mounted in said container between the ends thereof to serve as a draining rack for articles which have been cleaned.

5. In a cleaning machine, a container for clean- 65 ing fluid and articles to be cleaned, a resilient rod bent to form a base and upstanding bracket portions serving as supporting means for said con- 70 tainer, said container comprising trunnions extending outwardly from opposite sides thereof, the bracket portions of said rod being formed to provide upwardly opening bearings, which when free are more closely spaced than said trunnions, for receiving the latter when the bracket por- 75

tions are flexed apart, so that when released the bearings are urged into engagement with the trunnions by the resiliency of said rod, and one of said trunnions having an annular recess, the 80 engaging bearing portion of said rod having an annular projection fitting said recess for limiting upward movement of said trunnion.

6. In a cleaning machine, a container having a pair of spaced ribs, means for supporting said 85 container comprising a pair of band segments engaging said container between said ribs, trunnions disposed between said segments at the ends thereof, said segments being outwardly embossed to receive said trunnions and apertured on oppo- 90 site sides of said embossed portions, bolts passing through said apertures for holding said segments together and said trunnions in position, and means disposed in the container between the ends thereof, to support articles above the bot- 95 tom of the container and drain excess fluid therefrom.

7. A container formed with an interior peripheral groove and a partition formed of a plurality 100 of plates with overlapping marginal portions slidably adjustable with respect to one another so that it may be contracted for insertion in the container and expanded and held in normal position with the peripheral portion fitting in said 105 groove for the purpose described.

8. In combination with a container for clean- 105 ing fluid and articles to be cleaned, said container being formed with an interior peripheral groove, a partition with its peripheral portion normally received in said groove and dividing 110 said container into two compartments, said partition being retractable for insertion in the container, expansible to position therein, apertured, and adapted to support said articles for draining 115 after being cleaned and before removal from the container.

9. A partition for dividing a container into a plurality of compartments comprising a central 120 plate provided with threaded apertures, a plurality of complementary slotted foraminous plates connected to said central plate by screws 125 engaging in said slots and threaded apertures, said foraminous plates having overlapping radial edge portions, and the slots in said plates being 130 eccentric to allow adjustment of said partition.

10. A cleaning machine comprising a support- 125 ing frame, a container rotatable thereon about a transverse axis and formed with an inner peripheral groove, and a partition with its peripheral portion normally received in said groove and 130 dividing said container into two compartments, said partition comprising a central plate provided with threaded apertures, a plurality of 135 complementary slotted foraminous plates connected to said central plates by screws engaging in said slots and threaded apertures, said forami- 140 nous plates having overlapping radial edge portions, and the slots in said plates being eccentric to allow expansive and retractive adjustment of said partition for the purpose of application and 145 removal with respect to said container.

11. A supporting base formed of a metal rod bent to provide three sides of a substantially rec- 145 tangular portion with the ends thereof at the open side of said rectangular portion bent upwardly and then extended horizontally back over 150 said first portion, and terminating in notched portions forming bearings for rotatably support- ing a container.

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