Dec. 4, 1962 O. BUTTER 3,066,333

WASHING MACHINE

Filed March 23, 1960

FIG. 1

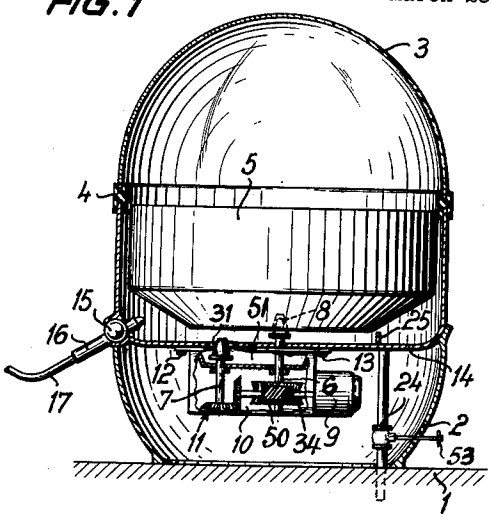


FIG. 2

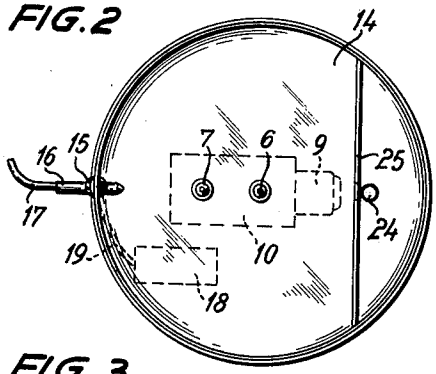


FIG. 3

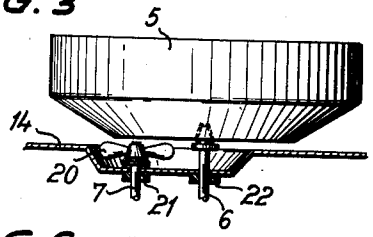


FIG. 6

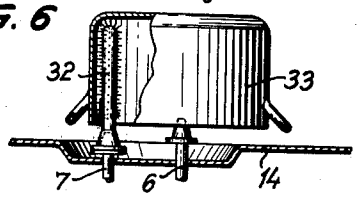


FIG. 4

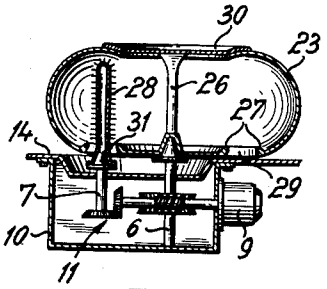


FIG. 5

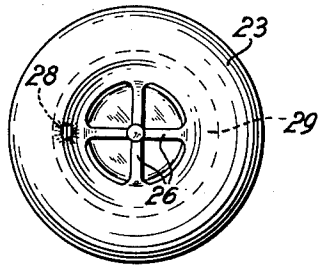
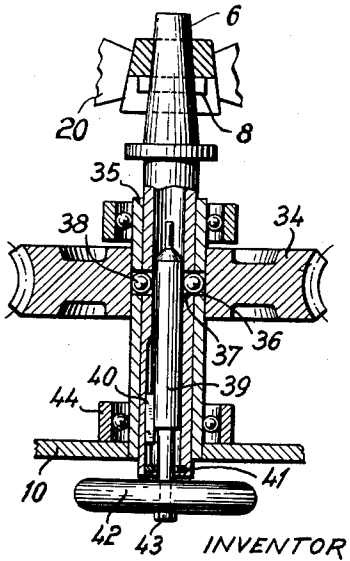


FIG. 7



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WASHING MACHINE

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The invention relates to a multi-purpose washer having a motor driving means and a rotatable container or drum which receives the material to be cleaned and which is mounted in a wash tub constituting the housing.

In known washers of this type having movable containers for the material, the washing or rinsing water is introduced either directly from a water supply line or by way of nozzles into the wash tub. The cleaning of the material to be washed is effected by moving the drum for the material.

All machine constructions of this type known from the prior art are wasteful and are useable only for special purposes. For example, it is hardly possible to employ a washer with the same effect for cleaning dishes and pots because the pots cannot possibly be cleaned with water alone, especially in the presence of adhered remnants. In such cases pre-cleaning is necessary which must be effected manually.

The conditions in connection with cleaning vegetables and fruits are similar when they are placed in a suitably constructed container. In those cases it will be found that the parts which are disposed in layers are not at all or only incompletely freed of the impurities so that it is necessary in most cases to wash them afterwards by hand.

It is an object of the invention to provide a multi-purpose washer which permits the washing of dishes and pots in a similar manner and where the manual washing which might be necessary may be eliminated.

It is another object of the invention that the washer in accordance with the invention provides for the washing of parts disposed in layers such as vegetables, fruits and the like in which connection good mixing and loosening of the material disposed in the drum for the material must be effected.

It is a further object of the invention to provide a multi-purpose washer which carries out all steps of washing and by which preliminary washing or subsequent washing of the material can be eliminated.

It is still a further object of the invention to solve the aforementioned problems by the use of a washer having several rotatable studs which project into the wash tub.

A particularly advantageous embodiment of the invention is attained in that the studs rotate at different numbers of revolution.

In using the washer, for example, for washing dishes or vegetables, the wash drum is mounted upon a rotatable stud and the casting or spraying wheel is mounted upon a further stud with the number of rotations of the spraying wheel being a multiple of that of the wash material containing drum. Due to the eccentric arrangement of the spraying wheel, all parts arranged in the wash material containing drum including also those along the border are contacted by the washing jet or spray so that a complete cleaning of the individual parts of the material to be washed is obtained. Contrary to the central positioning of the casting wheel, it is possible to manage with a lesser quantity of water when using the eccentric arrangement, because the spraying range of the jet or spray wheel may be smaller and at the most of a magnitude corresponding to the radius of the material containing drum. Accordingly the use of a smaller spraying wheel is made possible by the eccentric arrangement. For driving this smaller spraying or casting wheel a motor of smaller power may advantageously be used. This, in turn, provides the possibility of decreasing the dimensions of the entire washing machine or washer as compared to one having the spraying wheel arranged centrally so that a smaller weight and thereby a lower cost is made possible.

If the multi-purpose washer is to be employed for cleaning strongly soiled objects such as pots and vessels, and also for cleaning vegetables, potatoes or the like, a rotatable stud may be provided for receiving the material containing drum and others for receiving brushes or the like for cleaning the material.

These brushes or disks are suitably formed in accordance with the purpose for which they are used and make possible the cleaning of the material from the adhered impurities. In carrying out this type of work, the water supply or intake means as well as the sink or disposal is advantageously kept open so that satisfactory disposal of the impurities or sediment is insured. The water consumption therefore is only greater for cleaning strongly soiled objects or material.

When cleaning glasses and coffee dishes the sink or water outlet may normally remain closed during the washing operation so that the water consumption is small because owing to the arrangement of the spraying wheel the water is used repeatedly for washing. Advantageously the material to be washed is first rinsed with cold water and only shortly before terminating the washing operation after the cold wash water is completely released, hot water is introduced into the washer.

It is furthermore advantageous to make the housing of the washer at least partly of transparent material to enable observation of the washing operation and to determine whether and when the material has been fully cleaned.

If it is desired to peel potatoes or fruit previously cleaned in the washer, the invention provides at least one stud for receiving a peeling device, for example a hard brush driven by the eccentric rotatable stud, to grind off the material being peeled. Finally, in this connection, the invention provides also the possibility of driving the material containing drum at increased speed and to pass the material along peeling devices projecting into the container which devices can likewise be driven.

It is desirable that the conversion of the machine to the different types of working operations can be undertaken as rapidly as possible. Therefore, in accordance with the invention, the rotatable studs are provided with a rapid locking or snap on means for the spraying wheel, the basket for the dishes, the brushes and for the peeling device.

In accordance with a further object of the invention advantageous utilization of the space within the housing and small dimensions are obtained by providing the motor and necessary gearing arrangement for obtaining different

numbers of rotation of the rotatable studs below the base of the tub in a space which is in the form of a pedestal.

Furthermore, the invention provides for better utilization of the washing and rinsing water in the washer in that a baffle plate is provided proximate the bottom of the tub so that besides a continuous flow off for the washing water a water collecting space is defined in which the stud of the spraying wheel is arranged. Advantageously the baffle is provided with an aperture which may be closed to make possible the flow off of the washing and rinsing water out of the water collecting space.

The invention furthermore provides for the introduction of the water through a pivotally mounted jet or spraying spigot of known form below the material containing drum in the wall of the wash basin or tub.

In this manner the water arrives from the bottom in the wash material containing drum and thus is able to loosen material resting in layers so that satisfactory cleaning is possible. It has been found to be advantageous to provide the spraying device in the wall of the tub in a manner that it may be removed. The aperture which thus becomes available is suitable for extending therethrough other auxiliary cleaning means.

In accordance with the invention a duct or the like is provided in the passage for the adjustable spraying device for introducing an additional washing agent. This additional washing agent may, if required, be introduced by injection when strongly soiled washing material is to be cleaned. The arrangement of the container for the auxiliary washing agent may suitably be in the space of the pedestal of the housing.

In order to make possible the adjustment of the material containing drum or basket in order to obtain a predetermined setting by manual means a hand wheel may be provided in the space of the support or pedestal for which purpose it is necessary to provide coupling means between the driven rotatable stud of the material containing drum and the driving motor because otherwise adjustment is not possible. By turning the hand wheel the wash material containing drum or basket can be set to any desired position so that it is possible to clean particularly soiled parts with the aid of the adjustable spraying device.

It is possible by means of the washer in accordance with the invention to clean all types of material or objects which need to be cleaned in a household by using suitably shaped baskets or the like.

Further objects, advantages and details of the invention will become apparent from the following description with reference to the accompanying drawings illustrating different embodiments in which:

FIG. 1 is a schematic sectional view taken longitudinally of the automatic washer when the material container such as a basket or drum is in position;

FIG. 2 is a plan view of the open washer with the container removed;

FIG. 3 is a schematic partial view of the washer with the container and spraying wheel mounted in position;

FIG. 4 is a further embodiment of a wash material containing drum or cage with a brush mounted upon a second rotatable stud;

FIG. 5 is the plan view of the wash material containing cage in accordance with FIG. 4;

FIG. 6 is a schematic partial illustration of the washer without a container having a cleaning brush mounted upon a stud for cleaning pots; and

FIG. 7 illustrates the arrangement of the hand wheel including the coupling means therefor for manual setting of the container.

The washer which includes a housing comprising a base **2** and a cover or cowling **3** is mounted on the base **1**, for example a table, and a gasket **4** is provided between the cowling and the base **2**. A wash material container such as an openwork basket for dishes **5** is mounted on rapid fastening means **8** provided on a rotatable stud **6**. A further rotatable stud **7** serves for mounting auxiliary cleaning devices as described more in detail hereinafter.

A rapid fastening means **8** is provided on the rotatable stud **6** for receiving the container or basket **5**. A motor **9** which is mounted in a housing **10** below the bottom and support **14** serves for driving the rotatable stud **6** by way of a worm **50** and a worm wheel **34**. The drive of the rotatable stud **7** is effected by the shaft of the motor **9** by way of a pinion gear **11**. The housing **10** is secured to the bottom and support plate **14** of the washer by means of screws **12, 13**.

A spraying device **16** which is connected in any suitable manner by way of a conduit **17** to a cold or warm water source is connected by means of a ball joint **15** to the wall of the washer below the basket **5**. An auxiliary washing aid container **18** having a supply conduit **19** related in the manner of an injector to the intake duct of the sprayer **16** is provided below the bottom and support plate **14** of the washer.

FIG. 3 illustrates the manner in which a spraying wheel **20** is mounted on the rotatable stud **7** similarly to the manner in which the basket **5** is mounted by a rapid fastening means **8** which may be a friction cone. The rotatable stud **7** is closed by means of a gasket **21** with respect to the bottom and support **14**. Similarly the rotatable stud **6** is provided with a gasket **22**.

It is expedient to provide a container such as a wire basket which is adapted for the special purpose when it is desired to clean potatoes or the like.

FIG. 4 illustrates the wash material drum **23** for receiving material in lumps, such as potatoes or apples. Inasmuch as larger quantities of dirt occur in the cleaning of potatoes, it is expedient to have the valve or spigot **53** of a drain **24** continuously open in order to provide for even disposal of the dirt particles which are removed. A baffle **25** is provided on the base plate **14** of the washer in a manner that a water collecting space **51** is defined beside the drain **24** which is continuously open, in which space the rotatable stud **7** is arranged with the spraying wheel **20** thereby providing for the repeated use of the water sprayed into the washer by the sprayer **16**.

The material container **23** (FIGS. 4, 5) for receiving the potatoes is in the form of a cage and is provided with bridges **26** at its upper portion which make possible the introduction of the material to be washed into the interior of the container **23**. At its bottom portion the material container **23** has an aperture **29** defined by two beads through which a rotatable friction device **28** mounted upon the rotatable stud **7** projects into the interior of the container **23**. The upper end of the container **23** may be closed by a lid **30** (FIG. 4). The friction device **28** is connected to the rotatable stud **7** by means of quick locking means **31**.

In cleaning pots it is possible to dispense with a material containing drum as indicated in FIG. 6. In that event the stud **6** runs idle. A cleaning brush **32** is mounted upon the rotatable stud **7** the length of which corresponds approximately to the height of the wall of a pot **33** to be cleaned.

The motor **9** provided for driving the rotatable stud **6** drives the worm wheel or gear **34** by way of the worm **50**. The worm gear is mounted upon a sleeve **35** which is provided with a plurality of apertures **36** distributed circumferentially of the inner wall of the sleeve. A plurality of apertures **37** is provided in the rotatable stud **6** which are disposed opposite the apertures **36** in the sleeve. For coupling the sleeve **35** with the rotatable stud **6** balls **38** are provided which are held by means of a sliding member **39** in the apertures **36** and **37** in a manner to carry along the rotatable stud **6** when the worm gear **34** is rotated. The sliding member **39** is connected by a key **40** with the rotatable stud **6** and its longitudinal movement is limited by a locking ring **41**. At the lower end of the sliding member **39** a manual wheel **42** is secured by means of screws **43** at the lower end of the sliding member **39**.

For operation of the machine the material containing drum or basket **5** is placed upon the rotatable stud **6** upon removal of the cowling **3** and after the spraying wheel **20** has been placed upon the rotatable stud **7** if the latter is required. The cowling **3** is again placed upon the lower container **2** and cold water for pre-rinsing or hot water for washing is introduced through the adjustable spraying member **16** from below into the wash material container **5**. The water dropping from the material being washed, only a part of which runs off through the drain **24**, which is provided with a spigot **53**, is caught in the water collecting space **51** defined by the baffle **25** and is again cast into the material containing drum **5** by the spraying wheel **20**. Due to the eccentric arrangement of the spraying wheel **20** with respect to the axis of the rotatable stud **6** it is insured that all parts arranged in the drum **5**, including those along the rim are sprayed with the water.

Upon conclusion of the washing operation which is normally performed with cold water while the drain **24** is advantageously open when larger quantities of impurities are present, hot water is sprayed by the spraying device **16**, particularly when dishes are being washed, into the wash basket **5**. In this manner the dishes being washed are heated to an extent that subsequent drying is no longer necessary.

If it is found during the washing operation that some dishes are particularly soiled and they are to be treated separately, for example in that a washing agent is added from the agent container **18** to the wash water of the spraying device **16**, it is necessary to interrupt the rotating of the material containing drum and to set it manually to the desired position. For this purpose the hand wheel **42** is drawn downwardly so that the smaller end of the slide **39** permits evasion of the balls **38** so that any rigid connection between the sleeve **35** and of the wall of the hollow rotatable stud **6** is interrupted. It is now possible to rotate the hand wheel **42** manually and this results in the rotatable stud **6** being carried along by way of key **40** so that in this manner it is possible to bring the wash basket **5** into the desired position.

During this time the motor **9** drives the worm gear **34** which is held in bearings **44**. If the hand wheel **42** is moved towards the worm gear **34**, the balls **38** are placed into effective position whereby the coupling of the sleeve **35** and of the rotatable stud **6** is again restored.

It is likewise possible to mount a peeling device upon the rotatable stud **7** which may be for example a friction device **28** as in FIG. 4 provided with hard bristles, whereby a grinding or peeling of the upper surface of the material is effected.

Having now described my invention with reference to the embodiments illustrated in the accompanying drawings I do not wish to be limited thereto, but what I desire to protect by Letters Patent is set forth in the appended claims.

I claim:

1. In a multi-purpose washer having motor drive means, a main housing having an upper portion defining a tub, a rotatable container for material to be cleaned disposed in said tub and having one member of a rapid fastening means at the lower end thereof, a base for supporting said main housing and said container, a bottom and support plate in said main housing defining the bottom at the lower end of said tub and having said motor drive means secured to the lower side thereof, a drive means housing secured to the bottom of said support plate around said drive means, a plurality of rotatable studs having driving connections below said bottom side with said motor drive means and extending therefrom in sealed condition through said bottom and support plate, one of said studs having a member defining another member of said rapid fastening means adjacent to top side of said bottom and support plate

and adjacent the lower end of said container for engagement with said one member and operative to support and rotate said container, and another of said studs being disposed at a lower level than said one of said studs for supporting an exchangeable rotatable upwardly extending material treating device below the lower end of said container.

2. In a multi-purpose washer having motor drive means, a main housing having an upper portion defining a tub, a rotatable container for material to be cleaned disposed in said tub and having one member of a rapid fastening means at the lower end thereof, a base for supporting said main housing and said container, a bottom and support plate in said main housing defining the bottom at the lower end of said tub and having said motor drive means secured to the lower side thereof, a drive means housing secured to the bottom of said support plate around said drive means, a plurality of rotatable studs having driving connections below said bottom side with said motor drive means and extending therefrom in sealed condition through said bottom and support plate, one of said studs having a member defining another member of said rapid fastening means adjacent the top side of said bottom and support plate and adjacent the lower end of said container for engagement with said one member and operative to support and rotate said container, another of said studs being disposed at a lower level than said one of said studs for supporting an exchangeable rotatable upwardly extending material treating device below the lower end of said container, and liquid injecting means disposed within said tub radially of said studs, said driving connections including gears operable to rotate said studs at different speeds.

3. In a multi-purpose washer having motor drive means, a main housing having an upper portion defining a tub, a rotatable container for material to be cleaned disposed in said tub and having one member of a rapid fastening means at the lower end thereof, a base for supporting said main housing and said container, a bottom and support plate in said main housing defining the bottom at the lower end of said tub and having said motor drive means secured to the lower side thereof, a drive means housing secured to the bottom of said support plate around said drive means, a plurality of rotatable studs having driving connections below said bottom side with said motor drive means and extending therefrom in sealed condition through said bottom and support plate, one of said studs having a member defining another member of said rapid fastening means adjacent the top side of said bottom and support plate and adjacent the lower end of said container for engagement with said one member and operative to support and rotate said container, another of said studs being disposed at a lower level than said one of said studs for supporting an exchangeable rotatable upwardly extending material treating device below the lower end of said container, said driving connections including gears operable to rotate said studs at different speeds, and liquid spraying means comprising a spraying wheel mounted on another of said studs and said other stud rotating at a speed greater than said stud supporting said container.

4. In a multi-purpose washer having motor drive means, a main housing having an upper portion defining a tub, a rotatable container for material to be cleaned disposed in said tub and having one member of a rapid fastening means at the lower end thereof, a base for supporting said main housing and said container, a bottom and support plate in said main housing at the lower end of said tub having said motor drive means secured to the lower side thereof, a motor drive means housing secured to the bottom of said support plate around said motor drive means, a plurality of rotatable studs having driving connections below said bottom side with said motor drive means and extending therefrom in sealed condition

through said bottom and support plate, one of said studs having a member defining another member of said rapid fastening means adjacent the top side of said bottom and support plate and adjacent the lower end of said container for engagement with said one member and operative to support and rotate said container, and a rotatable upwardly extending material treating device mounted on another of said studs, said stud supporting said device rotating at a speed greater than that supporting said container, and rapid engagement means for said material treating device including a member of conical conformation on said stud and a corresponding member on said material treating device.

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