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LAUNDRY MACHINE WITH IMPROVED DRAIN CONSTRUCTION

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Filed Aug. 12, 1959, Ser. No. 49,361

1. Claim. (Cl. 68—143)

The present invention relates generally to laundry appliances and more particularly to a combination washer-extractor.

Briefly described, the present invention contemplates the utilization of a rotatable basket or drum which is adapted to be rotated on a horizontal axis either at a tumbling speed or at two different centrifuging speeds and the drum or basket is characterised by having formed therein four separate compartments. The outer peripheral wall of the drum is foraminous, however, the radial wall in between the compartments is imperforate, thereby developing a scoop action which lifts up the laundry liquid at the bottom of the casing and assists in promoting multiple independent washing actions within the interior of the drum.

The casing of the machine is particularly characterized by a special support including a curved plate extending between the front and rear support walls and connected in firm assembly directed to the outside of the casing, whereby providing improved support which prevents murmur particularly at high centrifuging speeds. Each of the four separate compartments in the drum or basket has a separate door and such compartments are arranged to place two of the compartments in register with two separate outside doors located in the front wall of the outer casing. Thus two compartments may be loaded or unloaded simultaneously.

Further, there is provided a sloped wall between the actual door openings in the front wall of the basket and the partitions forming the compartments in the basket. Such sloped wall not only serves as rigidification but also facilitates the sliding action of the clothes upon either loading or unloading the machine.

The drum or basket is supported on a shaft having an enlarged central portion and reduced ends. Thus, the enlarged center portion avoids whipping and flexure, particularly when the basket is rotated at high centrifuging speeds while the reduced ends permit the shaft to be journalled in small size bearings.

The machine is provided with a sump at the bottom thereof and a discharge outlet is located in general register with a tangent draw to the current portion of the sump. The radial imperforate walls of the basket or drum, therefore, develop a pumping action in combination with the trough at the bottom of the sump and such combined action operated to empty the machine with extreme rapidity.

The double door arrangement is provided with a locking device including a turn handle to wedge a locking bar extending between the two doors so that both doors are locked and unlocked simultaneously. Safety air locks are also provided to prevent the outside doors in the casing from being opened while the machine is in spin operation. An electrical interlock is also provided to engage the edges of the door so that upon opening the door the electrical interlock of the machine is broken.

The bearing assembly journaling the front end of the rotatable drum or basket is carried on a shelf formed on the front wall of the outer casing which in turn is supported by four tapered uprights depending from the lower surface of the shelf and firmly assembled to the front wall. The bearing may be a water seal type bearing and a trough is provided on the front wall of the outside casing beneath the bearing to carry leakage water through a carry away pipe extending down the front wall and to the drain gutter, thereby keeping the area in front of the machine free of water.

Still another object of the instant invention is to provide laundry apparatus wherein fabrics being laundered are subjected to a series of tumbling, rubbing and squeezing steps, whereby the fabrics are thoroughly washed and substantially the entire amount of laundry fluid extracted therefrom, followed by pre-conditioning of the fabrics so that they are thoroughly opened to facilitate their removal from the laundry apparatus in an untangled condition for immediate ironing.

Other objects and advantages of the invention will become more apparent during the course of the following description, particularly when taken in connection with the accompanying drawings.

In the drawings, wherein like numerals designate like parts throughout the same:

FIGURE 1 is a front elevational view of laundry apparatus constructed in accordance with the principles of this invention;

FIGURE 2 is a top plan view of an exemplary form of combination washer-extractor embodying the novel concepts of this invention;

FIGURE 3 is a side elevational view of the laundry apparatus;

FIGURE 4 is a vertical sectional view of one form of partitioned basket structure illustrating the rib arrangement;

FIGURE 5 is a sectional view taken substantially along the line V—V of FIGURE 4;

FIGURES 6 and 7 are more or less diagrammatic views illustrative of the different washing actions accomplished in basket structures constituted in accordance with this invention; and

FIGURE 8 is a vertical sectional view illustrative of another form of rotatable basket featuring the partition and rib arrangement herein provided.

Referring now to FIGURES 1 to 3, there is provided in accordance with the novel concepts of this invention a laundry apparatus generally designated by the legend A, and which comprises an outer casing designated in its entirety by the numeral 10. The casing 10 is provided by a pair of spaced plate-like front and rear walls 11 and 12 secured in any desired manner to opposite sides of a generally cylindrical casing body portion 13. The casing body portion 13 is of course imperforate, and the lower portion thereof is downwardly recessed as appears in FIGURE 3 to provide a sump 13a to accommodate a supply of laundry fluid. As is also shown in FIGURE 3, as well as in FIGURE 1, the lower portion of the outer periphery of the casing body portion 13 at the opposite sides thereof has welded or otherwise attached a pair of plate members 14 and 15 extending between the opposed front and rear walls 11 and 12 of the casing 10. Each plate member 14 and 15 is inwardly curved as designated at 14a and 15a and is generally coextensive at its opposite end with the casing front and rear walls 11 and 12 to be seated upon the supporting base or floor F for the apparatus A. The plate members 14 and 15 function effectively not only to provide additional support for the casing 10, but to prevent murmur of the apparatus A, particularly at high centrifuging speeds.

The front and rear walls 11 and 12 of the casing 10 each supports shelf means 16 and 17 mounted by a plurality of uprights 18 welded or otherwise secured to the front and rear walls 11 and 12. Each shelf 16 and 17 mounts thereon by fastening means 19 bearing means 20 journaling shaft means 21 supporting and rotatably driv-
The structural details of the rotatable drum 22 as appearing in FIGURES 4 and 5 are shown in FIGURES 21a and reduced diameter end portions 21b. A structure of this character, and first, the enlarged diameter central portion 21a essentially entirely avoids the possibility of whipping and flexure, particularly when the drum or basket 22 is rotated at high centrifuging speeds. Second, the reduced diameter shaft portions 21b permit journaling of the shaft in bearings 26 of lesser size than would otherwise be possible.

The basket drive shaft 21 at its rearwardly located end mounts grooved pulley means 25 about which is trained a plurality of belt means 26 wrapping pulley means 27 supported by shaft means 28 of an extractor motor means 29. The opposite end of the extractor motor drive shaft 29 mounts grooved pulley means 30 about which is trained a plurality of belt means 31 wrapping grooved pulley means 32 supported by shaft means 33 of wash motor means 34. The extractor motor 29 and wash motor 34 are supported upon shelf means 35, which may take the form of an inverted generally square having spaced dependent leg portions 35a attached to the casing rear wall 12 and providing an upper shelf portion 35b upon which the named motor means may be situated. The means of attachment of the motor means to the shelf member 35 may be widely varied, and illustrative of one such arrangement is shown in FIGURE 3.

In a manner conventional in the art, the basket drive belts 26 are encased in a guard housing 36, and similarly, the belt means 31 situated along the top wall of the apparatus A are safeguarded by a housing 37.

The extractor motor 29 is desirably equipped to provide an intermediate and high centrifuging speed, and when the laundry apparatus A is constructed to launder approximately 600 pounds of clothes or other fabrics in a single load, the extractor motor may have 12.5 and 25 horsepower capabilities, with an r.p.m. reading of 820 and 1690, respectively. The wash motor 34, on the other hand, is of a relatively low speed type, and can be provided by a 7.5 horsepower motor with a reading of 84 r.p.m. It is to be observed from the drawings that during the washing operation the wash motor 34 drives an idle extractor motor shaft 28 through the pulley and belt means 29 and 32, the extractor motor shaft 28 in a counterrotating fashion the basket 22 through the pulleys and belts 25-27. However, to drive the basket 22 at a speed of either of the centrifuging speeds, the basket is driven directly from the motor means 29 through the belts and pulleys 25-27. Accordingly, to prevent undue wear or even destruction of the wash motor 34 during centrifuging, the wash motor is equipped with overrunning clutch means 40 (FIGURE 2) to provide the requisite slippage.

As is shown in FIGURE 1, the front wall 11 of the casing 10 mounts hinge means 41 swingably supporting a pair of access doors 42 and 43 to permit insertion and removal of fabrics to be laundered through a pair of access openings 44 and 45 in the casing front wall 11. The access openings 44 and 45 are arranged for registry with a pair of horizontally aligned access openings 46a-b or 46c-d (FIGURE 4) in front wall 22a of the basket or drum 22. In this manner, a pair of detergent compartments may be loaded or unloaded simultaneously, substantially reducing the total laundering time. While not specifically illustrated, the access openings, 46a-d in the basket 22 are closed after insertion of the fabrics by suitable door means.

The access doors 42 and 43 on the casing front wall 41 are mechanically locked in a closed position by a locking device 50 which may include a swingable wedge bar 51 under control of handle means 52 operable to wedge the bar means 51 in overlapping wedging contact with the inwardly facing edges of the doors 42 and 43.

Additionally forming part of the door locking system is a pneumatic locking device 55 comprising of plunger means 56 movable in valve means 57 by air pressures supplied through conduit means 58, the plunger means desirably being received in suitable apertures of the door 42 and 43. The locking device 55 is effective to prevent opening of the doors 42 and 43 after initiation of the laundering operation, and for this purpose, the air supply to the conduit means 58 may be under control of the timing circuitry of the laundry apparatus A, in a manner well known to the art.

The access doors 42 and 43 may further be engaged by switch means 59 and 60 (FIGURE 1) equipped with suitable contact means and connected to the electrical circuitry of the apparatus A so that the laundry machine is shut off when the access doors 42 and 43 are opened. As appears in FIGURE 1, the switch means 59 and 60 are engageable with the door edges or periphery.

An additional structural feature of the instant invention lies in the provision of means for assuring that the area adjacent the site of installation of the apparatus A is maintained essentially free of laundry fluid or water. The means provided for this purpose appears in FIGURE 1, and comprises a trough member 61 attached to the under surface of the front shelf 16 and positioned beneath a slotted opening (not shown) adjacent the casing front wall 11 and beneath the front bearing assembly 29. The bearing assembly 29 is a water seal-type bearing and leakage occurs therethrough to maintain an effective seal. Such water leakage is received in the trough member 61, which in turn communicates with a pipe or the like 62 leading to a suitable drain opening in the floor or other foundation upon which the laundry apparatus A is positioned and secured. While not shown, a trough and pipe drain liquid from the rear shelf 17.

Prior to proceeding to a description of the structural features of the basket structures of this invention, it is desired to note that the laundry apparatus A is equipped with an automatic control device 63 (FIGURES 1 and 2) situated upon an extension of the casing front wall 11. The control device 63 is part of the electrical circuitry of the laundry apparatus and automatically and sequentially controls the admission of laundry fluid, liquid or granular laundry materials and the performance of the washing, extracting and preconditioning steps. The control device 63 and electrical circuitry of the laundry apparatus A can be provided in a manner well known to the art, and no further description thereof is required for a complete understanding of the instant invention.

The washing materials can be housed and supplied to the casing interior in various ways and illustratively, the body portion 13 of the casing 10 may mount a soap or detergent container 64, as well as a compartmented container 65 for housing the requisite supplies of additional soaps or detergents, bluing compound and bleach. For this purpose, the container 65 is divided into four chambers 65a-d, although this is of course can be varied. The materials in the compartments 65a-d are directed to the sump 13a through conduit means 66a (FIGURE 2), and since it is not normally desired to supply concentrated bleach or other materials into direct contact with the fabrics being laundered, one or more of the compartments 65a-d can be closed. A pump 65b and conduit 67 connected to the fresh water supply for the apparatus A. In this manner, the laundry materials in the compartments 65a-d can be diluted prior to transfer to the sump 13a. Of course, the supply of materials from the container 65 to the sump 13a is under control of the timing circuitry of the laundry apparatus A.

Fresh water is supplied to the sump 13a through conduit means 66 connecting with suitable mixing valve.
means (not shown), while steam may be admitted through a conduit 67a (FIGURE 2) having therein valve means 67. Casing interior may be provided at 69, and the fluid level in the sump 13c may be under control of level control means 70, the fluid level being visually observed if desired through a sight glass assembly 71 (FIGURE 1). As well, and if desired, an overflow pipe may be provided as indicated at 72, also in FIGURE 1. Referring now to FIGURES 4 and 5, there is shown one form of basket structure providing accommodation of a plurality of different washing actions productive of the important advantages of maximum whiteness retention, minimum loss of tensile strength, complete fluid extraction in a markedly reduced amount of time, and a pre-conditioning or preliminary shake out in the final cycle so that the clothes or other fabrics are opened up and can be easily unloaded and untangled for the subsequent ironing operation. These and other advantages are accomplished with marked reductions in water and laundering supplies and with savings in fuel and the advantages of mending required.

As was earlier stated, the basket 22 of FIGURES 4 and 5 has a foraminous outer peripheral wall 22a and rigidifying the basket is a plurality of circumferentially extending and axially spaced rib members 22c. The basket 22 is equipped with opposed end walls 22a and 22d, the front wall 22b being apertured as earlier stated to provide the access openings 46a-d. Both end walls 22a and 22d, on the other hand, are passaged to receive the basket drive shaft 21a, and to provide further shaft support along the basket front wall 22a there may be attached to this wall a rigidifying plate 73.

As is clearly shown in FIGURE 4, a sloped wall extends between the actual door openings 46a, 46b, 46c, 46d and the respective partitions 77a, 77b, 77c, 77d which not only serves as rigidification but also facilitates the sliding action of the clothes upon either loading or unloading the machine.

The inner periphery of the drum outer wall 22b mounts thereon at diametrically opposed locations raised surfaces or rib members 74a-d, each extending axially between the basket front and rear walls 22a and 22d and interiorly rigidified by an axially extending support 75. Each rib member 74a-d is of essentially identical construction, and when viewed in cross-section, presents a generally triangular configuration. As is now apparent, the rib members may be welded to the drum inner periphery, and like techniques may be utilized for attachment of the strengthening ribs 75.

Extending axially of the drum or basket 22 between the opposed end walls 22a and 22d are a plurality of sloping or inclined generally flat plate members 76a-d which together when viewed in cross-section provide a generally square configuration. The plate members 76a-d may be suitably equipped with flange portions, as shown, to facilitate their assembly to the other basket structure, and it is to be observed from FIGURE 4 that an imaginary radial line extending from the apex of each rib member 74a-d to the shaft means 21 passes centrally through the corresponding plate member 76a-d.

As will be later described in connection with operation of the drum or basket 22, the sloping wall members 76 not only rigidify the basket, but function importantly to facilitate sliding action of the fabrics or clothes during loading or unloading of the machine, locating the fabrics in easy access to the operator.

Extending radially inwardly from the drum inner periphery, the interior surface of the adjacent plate members 76a-d are a plurality of axially extending baffle or partition members 77a-d. The baffle members 77a-d extend between the opposed end walls 22a and 22d of the basket 22 to thereby divide the basket interior into four essentially identical compartments 78a-d. Of course, access to the compartments 78a-d is obtained through the door openings 46a-d, which as earlier indicated mount thereon hinged door means.

Each partition member 77a-d is of identical structure, and is shaped to include a pair of radially extending leg portions 80 and 81 connected by a central generally Z-shaped portion 82. The generally Z-shaped central portion 82 thereby provides in each laundry compartment 78a-d a pair of raised surfaces or rib members 83 and 84. It is important to note at this point, as will be more fully understood when reference is made to FIGURE 7, that in each compartment 78a-d the raised surfaces 83 and 84 on the partition members 77a-d are offset with respect to the peripheral rib members 74a-d, so that the load of fabrics tumbles or falls within the compartments 78a-d, the raised surfaces 83-84 and 74a-d perform a scrubbing or washboard action on the fabrics, as well as a squeezing action.

Referring now to FIGURE 7, there is shown more or less diagrammatically the basket structure of FIGURE 4 with loads positioned in each of the compartments 78a-d. Like numerals have been applied to like parts used in FIGURE 7, and in this view the laundry liquid is identified by the legend W, while the four loads are identified by the legends L-1, L-2, L-3 and L-4. As well, it will be noted that the direction of rotation of the basket 22 is clockwise.

Referring to compartment 78b in FIGURE 7, it will be observed that as the partition member 77a passes beyond a twelve o'clock position, the clothes load L-2 is subjected to what may be termed a "big drop" or vertical fall, during which the clothes are impacted against a raised surface 83 on the partition member 77a, then against a raised rib 74a and next downwardly and across a raised surface 84 on the partition member 77b. This impacting action, and the path of clothes movement between the offset raised surfaces 83, 74b and 84 effects a washboard action and a squeezing action greatly facilitating maximum dirt removal. As well, when the clothes load L-2 proceeds in this manner through the compartment 78b, the clothes are considerably opened up, so that when they are forced through the laundry fluid W, maximum liquid penetration is effected.

The laundry liquid W is, as earlier indicated, generally stationary in the sump 13a, and accordingly, as the basket rotates within and through the liquid pool, the load designated at L-3 in FIGURE 7 is not only thoroughly soaked with laundry liquid, but by movement of the partition member 77b the clothes load is moved in a direction opposite to basket rotation. This accomplishes thereby a "wet rub," and in effect, the clothes load L-3 is again given a scrubbing or washboard action and squeezed between the raised surfaces in the laundry compartment 78c.

The partition member 77b as it advances through the pool of laundry liquid is also characterized by a scooping action, wherein the partition member in effect carries clockwise a substantial portion of the laundry liquid and cascades it over and through the clothes load. As was stated, the outer peripheral wall 22b of the basket 22 is foraminous, and accordingly, the laundry liquid effectively drains therethrough and returns to the sump 13a. Centrifugal force of course impels the clothes load L-3 against the basket inner periphery after the load has been soaked and tumbled in the laundry liquid. This is generally indicated in FIGURE 7, and particularly in the compartment 78d, wherein the clothes load L-4 is shown as largely against the drum inner periphery. However, as drum rotation continues, the clothes load L-4 tumbles within this compartment in contact with the raised surfaces therein, until the clothes load is positioned generally as indicated at L-1 in compartment 78a, at which time the clothes load is being prepared for an additional vertical drop, as earlier described.

In this manner, the clothes load is effectively washed,
tumbled and opened up, and is given the noted big drop, washboard action and squeezing action. The apparatus is constructed so as to provide both clockwise and counterclockwise basket rotation, or in other words, the basket 22 rotates clockwise 360°, followed by counterclockwise rotation for 360°. Accordingly, the described washing actions are again performed on the fabric loads, however, the clothes are then differently positioned so that the clothes are assured of thorough penetration with laundry fluid and performance of the stated washing actions on different clothes surfaces. This assures an open load for maximum liquid penetration, and the highestwhiteness retention using a minimum amount of water, and illustratively 2.5 gallons of water per pound of clothes.

With a non-reception of clothes soaking as the load L=3 is forced through the laundry liquid pool, essentially the same actions occur during the extracting cycle. The clothes are continuously scrubbed and squeezed during basket rotation, and it will be later noted that means are herein provided to discharge the laundry liquid in a minimum amount of time, so that the extraction cycle is completed with considerable dispatch. In this connection, an intermediate extraction speed may be utilized to remove excess soil and alkali salts early in the extraction cycle, to thereby reduce the entire cycle by rendering unnecessary certain rinsing and auditing operations. As well, and at a high speed centrifuging advances to completion, the clothes loads are pre-conditioned or “shaken out” by the described tumbling action so that the clothes are open up and can be easily unloaded and untangled for the ironer or other unit. In fact, the extraction cycle provided by this invention is so effectively performed that application of heat energies are not required, but instead, after pre-conditioning the clothes may be moved directly to the ironing operation.

In addition to accomplishing the described multiple washing actions, the partition members 77a-d are effective to markedly increase the rate of laundry liquid removal from the sump 13c upon completion of the washing operation. This may be more fully understood upon reference to FIGURES 1 and 3, which illustrate the cooperation of the basket 22, casing 18 and sump or trough 13a thereof.

As appears in FIGURE 1, the casing body portion 13 along the lower portion is formed with an arcuate wall 13b to which the curved plate member 15 is attached, the curved arcuate wall 13b connecting with a relatively short sloping leg portion 12c, which in turn is integral with an inclined wall portion 13d connecting at its opposite end with the curved plate member 14. Further, as appears in FIGURE 3, the inclined wall portion 13d of the casing body portion 13 slopes downwardly toward the center of the body portion 13 and between the front and rear walls 11 and 12 of the casing 10.

Attached in any suitable manner to the casing structure is conduit means 90 communicating with the sump or trough 13a, as well as with dump valve means 91 having an outlet 91a leading to a suitable drain. It can now be appreciated that when the washing operation is completed, continued rotation of the basket 22 causes the imperforate partition members 77a-d to in effect scoop or pump the laundry fluid from the sump 13a toward the conduit 90 and into the dump valve 91 for discharge to drain because the discharge outlet is in general register with a tangent drawn to the curved portion of the sump. This forced discharge of laundry liquid markedly decreases the time required to evacuate laundry liquid, and permits initiation of the extracting step in the shortest time subsequent to completion of the washing step. In this manner, the total laundering time is markedly reduced.

The preceding description has been directed particularly to a four compartment basket 22 in combination with other novel components. However, the principles of the instant invention are equally applicable to a three compartment basket, which is adapted for certain reduced capacity machines. A three compartment basket is illustrated in FIGURE 8, and reference is now made thereto.

A basket as shown therein is designated generally by the numeral 109 and comprises a foraminous outer peripheral wall 108b and opposing rear wall 109a which forms the front wall 109b being illustrated. The front wall 109a is passaged to provide three access openings 109c-e, and as was described in connection with the preceding views, the access openings 109c-e are closed during drum rotation by suitable door means. The basket 109 is mounted for rotation upon shaft member 105, which desirably has the same configuration as the shaft 21 of FIGURE 5.

The enlarged central portion of the shaft means 102 supports thereon an axially extending hub member 103 presenting in cross-section a generally triangular configuration and providing side surfaces 103a-c. Secured by welding or other techniques to the side surfaces 103a-c of the hub member 103 are baffles or partition members 104a-c. Each partition member is of essentially identical configuration, and referring particularly to the baffle member 104a, it may be noted that each such member is shaped to provide through generally radially extending leg portions 105, 106 and 107, the radially extending leg portions 105 and 106 being connected by a generally Z-shaped intermediate portion 103 and the portion 106 and 107 being connected by a generally triangularly shaped portion 109. Each radial leg 107 is turned at 107a to provide a flange portion seated against an adjacent partition member, and providing means for attachment of one partition member to the other, as by welding.

The front wall 109c of the drum or receptacle 109 may mount thereon rigidifying members 110a-c, and in the manner of the basket of FIGURE 5, the outer peripheral wall 109b may be strengthened by 109d. Although the extending and axially spaced members 106c. Also in the manner of FIGURES 4 and 5, the basket 100 of FIGURE 8 has attached along the inner surface of its outer peripheral wall 100b circumferentially spaced and axially extending rib members 111a-c, secured by welding or the like and strengthened at axially spaced locations by supporting members 112.

The partition members 104a-c extend generally radially from their attaching flange portions 107a to the basket peripheral wall 109c, and as disposed in the manner of FIGURE 8, the partition or baffle members 104 divide the basket interior into three radially extending and axially spaced portions 113a-c. As well, within each compartment there is provided by the Z-shaped partition portions 108 a pair of fabric tumbling surfaces 114 and 115, while the generally triangularly shaped portion 109 provides a fabric tumbling surface 116 in each compartment 113. Further, within each ladening compartment, or load receiving chamber 113, the rib member 111 provides a fabric tumbling surface 117. It is important to note in this connection, and as will be further apparent when reference is shortly made to FIGURE 6, each tumbling compartment 113 has the tumbling surfaces 114 and 115 offset with respect to the tumbling surface 116, whereas the later surface 117 is offset with respect to the tumbling surfaces 115 and 116.

Referring now to FIGURE 6, wherein like numerals from FIGURE 8 have been employed, it may be observed from the more or less diagrammatic presentation of FIGURE 6 that the fabric engaged in the washing, extracting and pre-conditioning actions are accomplished generally in the same manner as in FIGURE 7. In FIGURE 6, the loads within the compartments 113a-c are designated by the legends 1-5, 1-6 and 1-7. Further, the laundry liquid in the casing trough or sump is designated as W-1. By provision of the improper partition members 104 and the offset tumbling surfaces 114-117, during basket rotation the partition member 104c accomplishes a wet
rub of the clothes load L-7, which is immersed or soaked in the laundry fluid W-1, and simultaneously the partition member 104c exerts a scooping action upon the laundry liquid, forcing the clothes load to be tumbled and squeezed in a direction generally reverse to the direction of basket rotation. After this action has been accomplished, the clothes load is elevated by the partition member 104c generally as indicated by the position of the clothes load L-5, and during this elevation a degree of tumbling action occurs. However, principally the clothes load L-5 is elevated by the partition member 104c, preparatory to the big drop or vertical descent, shown in FIGURE 6 as being performed in the compartment 1130 upon the clothes load L-6. The big drop causes a washboard action as well as a squeezing action, to be performed upon the clothes load L-6, in essentially the same manner earlier described in connection with the load L-2 in the compartment 786 of FIGURE 7. Since the fabric engaging surfaces 114-117 in FIGURE 6 perform essentially in the manner of the corresponding surfaces in FIGURE 7, no further description is believed necessary. However, by either of the basket structures described, multiple washing actions are performed to assure an open load for maximum liquid penetration, as well as a markedly increased degree of whiteness retention, as compared with earlier washer-extractors. Further, the basket structure of FIGURE 6 is characterized by improved extraction, as well as pre-conditioning of the clothes load so that the clothes are opened up and can be easily unloaded and untangled for immediate ironing.

Two forms of basket structures have been illustrated and described herein, and it is of course readily apparent that other modifications can be accomplished without departing from the novel concepts of this invention.

We claim as our invention:

In a laundry machine, a casing forming a tub and having front and rear support walls, a drum journaled in said casing for rotation on a horizontal axis, said drum having secured therein a plurality of substantially radially extending imperforate walls dividing the drum interior into separate compartments, a sump at the bottom of said tub including a curved portion spaced outwardly of said drum, a curved plate on one side of the tub extending between the front and rear support walls and extending generally outwardly away from said tub and then downwardly into connected relation with said curved portion of said sump, and means forming a discharge outlet in general register with a tangent drawn to the curved portion of the sump, said drum having a foraminous outer peripheral wall permitting the radially extending imperforate walls of the drum to develop a pumping action such as to empty the tub at a high rate of discharge.

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