March 10, 1953 G. P. CASTNER 2,630,696

CLOTHES-WASHING MACHINE

Filed Jan. 14, 1950

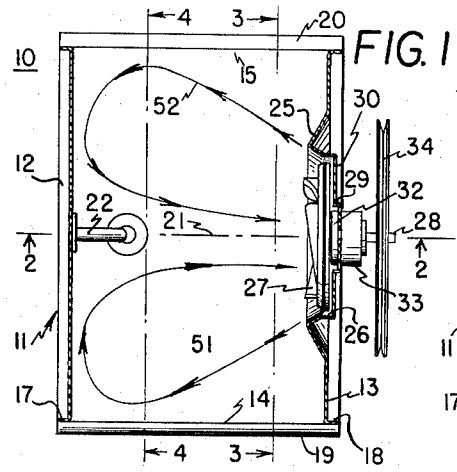


FIG. 1

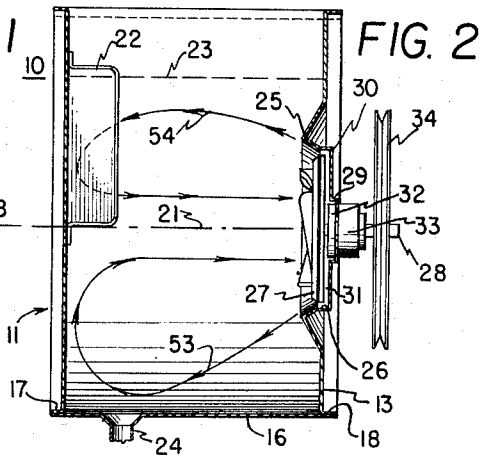


FIG. 2

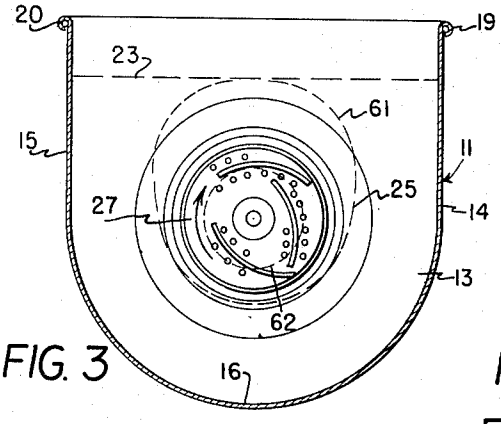


FIG. 3

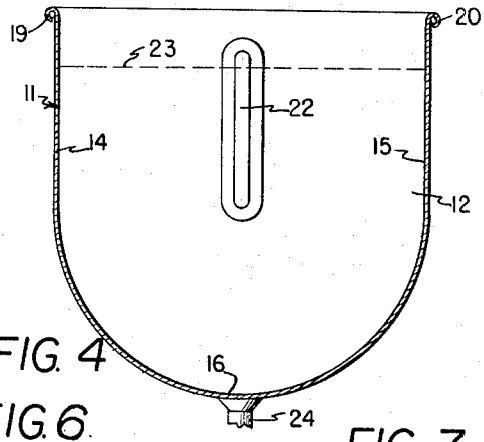


FIG. 4

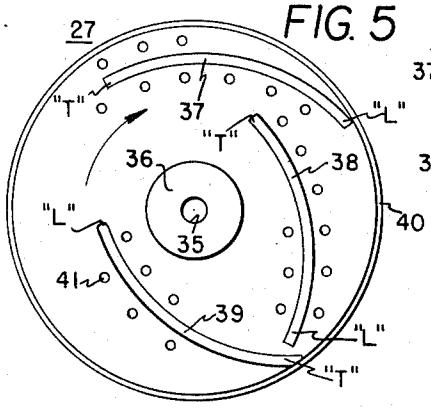


FIG. 5

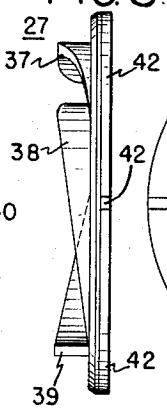


FIG. 6

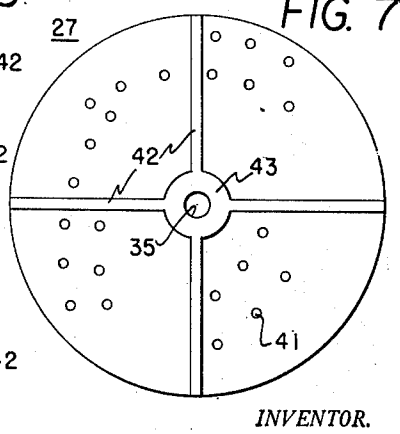


FIG. 7

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CLOTHES-WASHING MACHINE

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6 Claims. (Cl. 68—131)

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The present invention relates to clothes washing machines, and more particularly to improved clothes washing machines of the character of that disclosed in the copending application of George P. Castner, Serial No. 85,113, filed April 2, 1949, now Patent No. 2,596,980 of May 20, 1951.

Fundamentally the clothes washing machine disclosed in the Castner application mentioned comprises an upstanding tub formed of sheet metal and having connected front and rear and side and bottoms walls providing an open top, the bottom wall being substantially semi-cylindrical and extending between the lower portions of the side walls. A substantially disk-like dasher is mounted in an upstanding position directly upon the rear wall for rotation about a center substantially concentric with the arc of the bottom wall, the dasher being rotated unidirectionally. The dasher comprises a relatively shallow outstanding vane on the front face thereof that projects into the tub, the vane being removed from the center of rotation of the dasher and extending in a crosswise to radial direction with respect to the center of rotation of the dasher. The dasher occupies a submerged position in the wash liquid suspending the clothes and contained in the tub. This arrangement of the vane causes the dasher lightly to engage and pull the clothes by an angular sliding contact therewith and then quickly to discharge the clothes in order to move and to rearrange the clothes in a substantially upstanding circular path in an active area in the wash liquid disposed adjacent to the rear wall of the tub. Thus in the operation of this machine, and in accordance with the method thereof, the clothes ride the dasher intermittently in a relatively small substantially upstanding circular path disposed within and adjacent to the bottom of the first mentioned circular path, which arrangement is highly desirable in that the riding of the dasher by the clothes is productive of a vigorous washing action upon the clothes in order to loosen dirt and other soil therefrom; whereby the clothes are thoroughly cleansed.

However, in this machine the riding of the dasher by the clothes is not altogether uniform throughout the mass of the clothes; and the time interval during which a particular garment or garments ride the dasher is subject to considerable variation.

Accordingly, it is a general object of the present invention to provide an improved clothes washing machine of the general character of that described that is so constructed and arranged that

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all parts of the mass of the clothes substantially uniformly ride the dasher and wherein the time interval during which a particular garment or garments ride the dasher is substantially uniform so that a thorough and uniform washing action is produced.

Another object of the invention is to provide in a clothes washing machine of the type noted, a dasher that embodies an improved arrangement for circulating the wash liquid in the associated tub in order to cause the clothes to be moved into the dasher and to be rearranged in the tub so as to obtain a thorough and uniform washing of the clothes.

Another object of the invention is to provide in a clothes washing machine of the type noted, a dasher that embodies an improved arrangement of shallow vanes upon the front face thereof for engaging and moving the clothes first toward and then away from the center of rotation of the dasher.

Another object of the invention is to provide in a clothes washing machine of the type noted, an improved arrangement of an upstanding disk-like dasher mounted for rotation upon one wall of the associated tub and of an upstanding baffle mounted upon the opposite wall of the tub in order to insure positive circulation of the wash liquid from all parts of the tub into the rotating dasher.

A further object of the invention is to provide in a clothes washing machine of the type noted, a dasher of improved and simplified construction and arrangement.

Further features of the invention pertain to the particular arrangement of the elements of the clothes washing machine, whereby the above-outlined and additional operating features thereof are attained.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification taken in connection with the accompanying drawing, in which Figure 1 is a plan view, partly broken away, of a clothes washing machine embodying the present invention; Fig. 2 is a longitudinal sectional view of the machine, taken in the direction of the arrows along the line 2—2 in Fig. 1; Fig. 3 is a transverse sectional view of the machine, taken in the direction of the arrows along the line 3—3 in Fig. 1; Fig. 4 is another transverse sectional view of the machine, taken in the direction of the arrows along the line 4—4 in Fig. 1; Fig. 5 is an enlarged view of the front face of the dasher incorporated in the machine

shown in Figs. 1 to 4, inclusive; Fig. 6 is an enlarged view of the side of the dasher shown in Fig. 5; and Fig. 7 is an enlarged view of the rear face of the dasher shown in Figs. 5 and 6.

Referring now to Figs. 1 to 7, inclusive, of the drawing, there is illustrated a clothes washing machine 10 of the general character of that disclosed in the previously mentioned Castner application and embodying the features of the present invention. The machine 10 comprises an upstanding tub 11 including front and rear walls 12 and 13, side walls 14 and 15, and a bottom wall 16. The front and rear walls 12 and 13 are arranged in opposed spaced-apart relation, and similarly the side walls 14 and 15 are arranged in opposed spaced-apart relation; whereby the tub 11 is provided with an open top substantially rectangular in form and narrower between the walls 12 and 13 than between the walls 14 and 15. Preferably the side walls 14 and 15 and the bottom wall 16 are formed from a single sheet of material, the bottom wall 16 curving between and extending into the side walls 14 and 15. Specifically, the front and rear walls 12 and 13 are respectively provided with outwardly directed boundary flanges 17 and 18 around which the sheet defining the side walls 14 and 15 and the bottom wall 16 is wrapped and secured in place by electric resistance line welding, or the like. Further, the upper edges of the side walls 14 and 15 respectively terminate in outwardly and downwardly rolled rims 19 and 20 lending rigidity to the tub 11. Preferably the bottom wall 16 is disposed along an arc having a center that is coincident with the longitudinal center line of the tub 11 as illustrated at 21; whereby the bottom wall 16 is substantially semi-cylindrical.

A substantially centrally disposed upstanding hollow baffle 22 is secured to the inner surface of the front wall 12 and projects upwardly from approximately the longitudinal center line 21 of the tub 11 to a position disposed somewhat below the open top of the tub 11 and somewhat above the normal level of the wash liquid contained in the tub 11 as indicated at 23. Further, the baffle 22 projects from the front wall 12 toward the rear wall 13 into the wash liquid contained in the tub 11 and is employed for a purpose more fully explained hereinafter. Of course, the tub 11 is liquid-tight; and the wash liquid may be supplied thereto in any suitable manner. A drain fixture 24 is provided in the lowermost portion of the bottom wall 16 and is connected to a flexible drain hose, not shown, so that the wash liquid may be selectively retained in the tub 11 and drained therefrom. Preferably the walls of the tub 11, as well as the baffle 22 and the drain fixture 24, are formed of a corrosion resistant material, such, for example, as stainless steel; and the parts are retained in assembled relation by electric welding, or the like.

An inwardly directed substantially annular emboss 25 is formed in the rear wall 13 in order to provide a substantially circular recess 26 surrounded thereby, the centers of the emboss 25 and of the recess 26 being substantially coincident with each other and with the longitudinal center line 21 of the tub 11. A substantially disk-like dasher 27 is arranged within the circular recess 26 and mounted upon the front end of a drive shaft 28 that extends through the central portion of an outwardly directed centrally located counteremboss 29 provided in the base 30 of the circular recess 26, the base 30 of the circular recess 26 being disposed somewhat rearwardly of the rear wall 13 in order to accommodate the dasher 27 and to provide a thin substantially annular space 31 therebetween. The drive shaft 28 is supported and journalled for rotation in bearing structure including complementary sections 32 and 33 respectively disposed interiorly and exteriorly of the base 30 of the circular recess 26 and consequently of the rear wall 13, whereby the sections 32 and 33 provide a liquid-tight joint preventing the escape from the tub 11 of wash liquid along the drive shaft 28. The rear end of the drive shaft 28 carries a pulley 34 rigidly secured thereto, whereby the drive shaft 28 and the dasher 27 may be rotated unidirectionally.

Referring now more particularly to Figs. 5 to 7, inclusive, the substantially disk-like dasher 27 has a substantially centrally disposed hole 35 formed therein that receives the front end of the drive shaft 28, the hole 35 being surrounded by a substantially semi-spherical or bulbous boss 36 provided on the front face of the dasher 27 in order to lend strength thereto. Also, the front face of the dasher 27 carries three relatively shallow outstanding vanes 37, 38 and 39, the vanes 37 and 39 being disposed on opposite sides of the center of rotation of the dasher 27 and the vane 38 being disposed in an intermediate position with respect to the vanes 37 and 39. Thus the vanes 37, 38 and 39 are disposed in angular spaced-apart relation with respect to each other and removed from the center of rotation of the dasher 27 and extend in a crosswise to radial direction with respect to the center of rotation of the dasher 27. Each of the vanes is tapered between the leading and trailing ends thereof with respect to the direction of rotation of the dasher 27. As illustrated, the dasher 27 is rotated in the clockwise direction; and the vanes are provided with leading and trailing ends respectively marked "L" and "T." The vanes 37 and 38 perform a first function of engaging and moving the clothes in the tub 11 toward the center of rotation of the dasher 27, while the vane 39 performs a second function of engaging and moving the clothes in the tub 11 away from the center of rotation of the dasher 27. Accordingly, the leading ends "L" of the vanes 37, 38 and 39 are disposed closely adjacent of the front face of the dasher 27, while the trailing ends "T" of the vanes 37, 38 and 39 are disposed in spaced relation to the front face of the dasher 27; which construction produces the actions noted, since the leading ends "L" of the vanes 37 and 38 are disposed more remote from the center of rotation of the dasher 27 than are the trailing ends "T" thereof, while the leading ends "L" of the vane 39 is disposed closer to the center of rotation of the dasher 27 than is the trailing end "T" thereof.

As a constructional example, the diameter of the dasher 27 may be 5⅞ inches; the leading ends "L" of the vanes 37, 38 and 39 may be in the plane of the front face of the dasher 27; the trailing ends "T" of the vanes 37 and 38 may be spaced forwardly ½ inch from the plane of the front face of the dasher 27; and the trailing end "T" of the vane 39 may be spaced forwardly $\frac{9}{16}$ inch from the plane of the front face of the dasher 27. The leading end "L" of the vane 37 may be positioned approximately ⅛ inch inwardly from the perimeter of the dasher 27; the trailing end "T" of the vane 37 may be positioned approximately ½ inch inwardly from the perimeter of the dasher 27; and the vane 37 may curve substantially uniformly between the leading and

trailing ends "L" and "T" thereof. The leading end "L" of the vane **38** may be positioned approximately ¼ inch inwardly from the perimeter of the dasher **27**; the trailing end "T" of the vane **38** may be positioned approximately $1\frac{3}{16}$ inches inwardly from the perimeter of the dasher **27**; and the vane **38** may curve substantially uniformly between the leading and trailing ends "L" and "T" thereof. The leading end "L" of the vane **39** may be positioned approximately 1⅜ inches inwardly from the perimeter of the dasher **27**; the trailing end "T" of the vane **39** may be positioned approximately ⅛ inch inwardly from the perimeter of the dasher **27**; and the vane **39** may curve substantially uniformly between the leading and trailing ends "L" and "T" thereof. The vanes **37**, **38** and **39** may be approximately $\frac{3}{16}$ inch wide and may occupy substantially the relative positions illustrated in Fig. 5. A slight bevel indicated at **40** is provided on the front face of the dasher **27** adjacent to the perimeter thereof; and a plurality of series of holes **41** are provided through the dasher **27** between the front and rear faces thereof. As illustrated, three angularly spaced-apart holes **41** are provided exteriorly of the vane **37**, and six angularly spaced-apart holes **41** are provided interiorly of the vane **37**; six angularly spaced-apart holes **41** are provided exteriorly of the vane **38**, and three angularly spaced-apart holes **41** are provided interiorly of the vane **38**; three angularly spaced-apart holes **41** are provided exteriorly of the vane **39**, and three angularly spaced-apart holes **41** are provided interiorly of the vane **39**. The holes **41** may be of $\frac{3}{16}$ inch diameter and may occupy substantially the relative positions illustrated in Figs. 5 and 7. Finally, the rear face of the dasher **27** carried four substantially equally angularly spaced-apart shallow blades **42** extending from a substantially centrally disposed hub **43** to the perimeter thereof. The blades **42** may project rearwardly approximately ⅛ inch from the rear face of the dasher **27** and may be approximately $\frac{3}{16}$ inch wide. Preferably the dasher **27** is of one-piece construction, being cast from aluminum, or the like.

Also, in this constructional example the radius of the arc of the bottom wall **16** from the longitudinal center line **21** of the tub **11** may be 7 inches; and the distance between the open top of the tub **11** and the longitudinal center line **21** thereof may be 8 inches. The distance between the front and rear walls **12** and **13** may be 10⅜ inches; and the distance between the side walls **14** and **15** may be 14 inches. The normal wash liquid level **23** may be disposed approximately 2 inches below the open top of the tub **11**.

Considering now the operation of the machine **10**, the dasher **27** is rotated unidirectionally in the clockwise direction as viewed from the front face thereof, and may be rotated at a speed of approximately 400 R. P. M. When the dasher **27** is thus rotated the shallow blades **42** carried upon the rear face thereof propel the wash liquid radially from the longitudinal center line **21** in the thin annular space **31** between the rear face of the dasher **27** and the base **30** of the circular recess **26**, whereby the wash liquid is projected outwardly over the annular emboss **25** into the tub **11** and is then drawn back into the front face of the dasher **27** along the longitudinal center line **21**, and thence passes through the holes **41** provided in the rotating dasher **27** and back into the thin annular space **31**. Thus the wash liquid is constantly recirculated by the rotating dasher **27** in the tub **11**. As illustrated in Fig. 1, two horizontal components of the current of wash liquid are projected outwardly from the annular emboss **25**, as indicated at **51** and **52**; and as illustrated in Fig. 2, two vertical components of the current of wash liquid are projected outwardly from the annular emboss **25**, as indicated at **53** and **54**. The component **51** is projected toward the junction between the side wall **14** and the front wall **12** and then turns along the front wall **12** toward the adjacent side of the baffle **22** and again turns adjacent to the longitudinal center line **21** toward the front face of the dasher **27**; and ultimately the component **51** passes through the holes **41** provided in the rotating dasher **27** into the thin annular space **31** in order again to be projected by the blades **42** carried by the rear face of the rotating dasher **27**. The component **52** is projected toward the junction between the side wall **15** and the front wall **12** and then turns along the front wall **12** toward the adjacent side of the baffle **22** and again turns adjacent to the longitudinal center line **21** toward the front face of the dasher **27**; and ultimately the component **52** passes through the holes **41** provided in the rotating dasher **27** into the thin annular space **31** in order again to be projected by the blades **42** carried by the rear face of the rotating dasher **27**. The component **53** is projected toward the junction between the bottom wall **16** and the front wall **12** and then turns around the front wall **12** below the baffle **22** and again turns adjacent to the longitudinal center line **21** toward the front face of the dasher **27**; and ultimately the component **53** passes through the holes **41** provided in the rotating dasher **27** into the thin annular space **31** in order again to be projected by the blades **42** carried by the rear face of the rotating dasher **27**. The component **54** is projected toward the junction between the normal wash liquid level **23** and the front wall **12** and then turns along the front wall **12** into the baffle **22** and again turns adjacent to the longitudinal center line **21** toward the front face of the dasher **27**; and ultimately the component **54** passes through the holes **41** provided in the rotating dasher **27** into the thin annular space **31** in order again to be projected by the blades **42** carried by the rear face of the rotating dasher **27**. Of course, since the dasher **27** is rotating in the clockwise direction, as viewed from the front face thereof, the components **51**, **52**, **53** and **54** of the wash liquid illustrated have a clockwise rotative component so that the wash liquid is, in fact, swirled in the clockwise direction incident to its movement described above. Also, the rotation of the vanes **37**, **38** and **39** provided on the front face of the dasher **27** effect some rotation of the wash liquid in the clockwise direction, as viewed from the front of the dasher **27**, the action of the vanes **37**, **38** and **39** upon the wash liquid being generally complementary to that of the blades **42**.

Accordingly, the clothes in the tub **11** are moved or sucked along the longitudinal center line **21** into the front face of the dasher **27**, whereby the vanes **37**, **38** and **39** produce an engaging, pulling and moving action thereupon. Specifically, the vanes **37** and **38** gently engage the clothes by an angular sliding contact therewith and move them toward the longitudinal center line **21**, while the vane **39** gently engages the clothes by an angular sliding contact therewith and moves them away from the longitudinal center line **21**. Thus it may be said that the vanes **37** and **38** engage the clothes and deflect them toward the longitudinal

center line 21, while the vane 39 engages the clothes and plows them away from the longitudinal center line 21. More particularly, these correlated actions of the vanes 37, 38 and 39 provided on the front face of the dasher 27 cause the clothes to ride the front face of the dasher 27 during the short time interval that the clothes are in contact with the front face of the dasher 27 and then to be projected or discharged from the dasher radially toward the periphery of the dasher 27 and back into the moving currents of wash liquid that are circulated in the tub 11. Accordingly, the clothes that are suspended in the wash liquid contained in the tub 11 move in a substantially circular upstanding path as indicated by the dotted lines 61, and also in a smaller substantially circular upstanding path as indicated by the dotted lines 62, the paths 61 and 62 being arranged in an active area of the wash liquid positioned adjacent to the rear wall 13 and to the dasher 27. More particularly, the clothes move rather slowly in the path 61 in the clockwise direction, as viewed toward the front face of the dasher 27, until an individual garment or garments are grasped by the front face of the dasher 27 and whirled rapidly in the path 62. After a garment or garments are whirled rapidly in the path 62 as a consequence of riding the dasher 27, the garment or garments are quickly discharged from the path 62 back into the path 61. Accordingly, it will be understood that a garment moving in the path 61 at a relatively slow rate is seized by the front face of the dasher 27 and rotated in the path 62 at a relatively high rate and is then quickly discharged from the path 62 back into the path 61. The rate of movement of the clothes traveling in the path 61 and the rate of movement of the clothes traveling in the path 62 are substantially uniform; and the time interval during which a garment or garments are riding the dasher 27 is substantially uniform. Of course, the clothes moving in the path 61 are worked in and out upon themselves and are rearranged constantly as the clothes traveling in the path 61 weave back and forth adjacent to the front face of the dasher 27 during its rotation. It will be appreciated that the path 62 is disposed within the lower portion of the path 61 and that while the path 62 is substantially circular the path 61 is only generally circular as it has a tendency to become elliptical.

In the operation of the machine 10 the baffle 22 prevents inordinate swirling of the whole body of wash liquid in the clockwise direction, as viewed toward the front of the dasher 27, since the baffle 22 projects considerably into the tub 11; the projection of the baffle 22 from the front wall 12 into the tub 11 being approximately 2 inches in the constructional example previously noted. Moreover, the baffle 22 prevents the components 51 and 52 of the current of the wash liquid from interfering with each other and the consequent tendency of the clothes suspended in the wash liquid from being pocketed adjacent to the central portion of the front wall 12. Accordingly, the baffle 22 cooperating with the rotating dasher 27 insures substantially uniform circulation of the wash liquid in the tub 11 and the consequent constant rearrangement of the clothes suspended in the wash liquid, whereby all portions of the clothes are substantially uniformly and thoroughly cleansed.

Further, in the operation of the machine 10 the current of wash liquid that is projected outwardly from the thin annular space 31 over the annular emboss 25 by the rotating dasher 27 positively prevents the clothes suspended in the wash liquid in the tub 11 from working behind the dasher 27 into the circular recess 26, thereby preventing damage to the clothes and particularly the breaking of buttons from the clothes. Specifically, this substantially annular current of wash liquid issuing over the annular emboss 25 has a tendency to pocket the clothes adjacent to the front face of the dasher 27 so that the clothes may be drawn into the front face of the dasher 27 by the circulation of the wash liquid through the openings 41 provided through the dasher 27 in the manner previously explained, whereby the vanes 37, 38 and 39 provided on the front face of the dasher 27 may readily engage and move the clothes toward and then away from the longitudinal center line 21 and then quickly discharge the clothes from the path 62 back into the path 61, all in the manner previously explained.

In view of the foregoing it is apparent that there has been provided a clothes washing machine of compact, rugged and economical construction and arrangement that is efficient and simple in operation.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A clothes washing machine comprising an upstanding tub adapted to contain clothes and wash liquid, a substantially disk-like dasher arranged in an upstanding submerged position adjacent to a wall of said tub and mounted thereon for rotation, means for rotating said dasher continuously in a given direction, a first relatively shallow outstanding vane carried on the front face of said dasher and removed from the center of rotation thereof and extending in a crosswise to radial direction with respect to the center of rotation thereof, the trailing end of said first vane being disposed closer than the leading end thereof to the center of rotation of said dasher so that the clothes are engaged and moved toward the center of rotation of said dasher by said first vane in response to rotation of said dasher in said given direction, and a second relatively shallow outstanding vane carried on the front face of said dasher and removed from the center of rotation thereof and extending in a crosswise to radial direction with respect to the center of rotation thereof, the leading end of said second vane being disposed closer than the trailing end thereof to the center of rotation of said dasher so that the clothes are engaged and moved away from the center of rotation of said dasher by said second vane in response to rotation of said dasher in said given direction.

2. A clothes washing machine comprising an upstanding tub adapted to contain clothes and wash liquid, a substantially disk-like dasher arranged in an upstanding submerged position adjacent to a wall of said tub and mounted thereon for rotation, means for rotating said dasher continuously in a given direction, a first relatively shallow outstanding vane carried on the front face of said dasher and removed from the center of rotation thereof and extending in a crosswise to radial direction with respect to the center of rotation thereof, said first vane being tapered between the leading and trailing ends thereof outwardly from the front face of said dasher and

the trailing end of said first vane being disposed closer than the leading end thereof to the center of rotation of said dasher so that the clothes are engaged and moved toward the center of rotation of said dasher by said first vane in response to rotation of said dasher in said given direction, and a second relatively shallow outstanding vane carried on the front face of said dasher and removed from the center of rotation thereof and extending in a crosswise to radial direction with respect to the center of rotation thereof, said second vane being tapered between the leading and trailing ends thereof outwardly from the front face of said dasher and the leading end of said second vane being disposed closer than the trailing end thereof to the center of rotation of said dasher so that the clothes are grasped and moved away from the center of rotation of said dasher by said second vane in response to rotation of said dasher in said given direction.

3. A clothes washing machine comprising an upstanding tub adapted to contain clothes and wash liquid, a substantially disk-like dasher arranged in an upstanding submerged position adjacent to a wall of said tub and mounted thereon for rotation, means for rotating said dasher continuously in a given direction, first and second vanes on the face of the dasher for engaging and moving the clothes, both vanes having leading and trailing ends and being removed from the center of rotation of the dasher and located in other than radial directions with respect to said center, the first vane having its leading end further than its trailing end from the center of rotation to thereby move the clothes toward said center, and the second vane having its leading end closer than its trailing end to the center of rotation of the dasher to thereby move the clothes outward from said center.

4. A clothes washing machine comprising an upstanding tub adapted to contain clothes and wash liquid, a substantially disk-like dasher arranged in an upstanding submerged position adjacent to a wall of said tub and mounted thereon for rotation, means for rotating said dasher continuously in a given direction, first and second vanes on the face of the dasher for engaging and moving the clothes, both vanes having leading and trailing ends and being removed from the center of rotation of the dasher and located in other than radial directions with respect to said center, the first vane having its leading end further than its trailing end from the center of rotation to thereby move the clothes toward said center, the second vane having its leading end closer than its trailing end to the center of rotation of the dasher to thereby move the clothes outward from said center, and a third vane on the dasher located between the said first and second vanes and also having a leading end further than its trailing end from the center of rotation to also engage and move the clothes inward toward the center of rotation of the dasher.

5. A clothes washing machine comprising an upstanding tub adapted to contain clothes and wash liquid, a substantially disk-like dasher arranged in an upstanding submerged position adjacent to a wall of said tub and mounted thereon for rotation, means for rotating said dasher continuously in a given direction, first and second vanes on the face of the dasher for engaging and moving the clothes, both vanes having leading and trailing ends and being removed from the center of rotation of the dasher and located in other than radial directions with respect to said center, the first vane having its leading end further than its trailing end from the center of rotation to thereby move the clothes toward said center, and the second vane having its leading end closer than its trailing end to the center of rotation of the dasher to thereby move the clothes outward from said center, the said vanes being uniformly curved between their leading and trailings ends and also tapered with their trailing end projecting further than their leading ends from the dasher face.

6. A clothes washing machine comprising an upstanding tub adapted to contain clothes and wash liquid, a substantially disk-like dasher arranged in an upstanding submerged position adjacent to a wall of said tub and mounted thereon for rotation, means for rotating said dasher continuously in a given direction, first and second vanes on the face of the dasher for engaging and moving the clothes, both vanes having leading and trailing ends and being removed from the center of rotation of the dasher and located in other than radial directions with respect to said center, the first vane having its leading end further than its trailing end from the center of rotation to thereby move the clothes toward said center, the second vane having its leading end closer than its trailing end to the center of rotation of the dasher to thereby move the clothes outward from said center, and a baffle on a wall of the tub opposite said dasher, the said baffle being straight and vertically elongated and extending upwardly from a point substantially horizontally aligned with the center of rotation of the dasher to a point above the level of the wash liquid in the tub.

GEORGE P. CASTNER.

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