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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES

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Bogotá, D.C., 09 de noviembre de 2007

Abogada
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(Apoderada)

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 03-088279- -00004-0000

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	Trámite	002
	Evento	001
	Actuación	430
	Oficio	
	Folios	013 14682

Patente de Invención	☐	Patente de Modelo de Utilidad	☒
Vía Nacional	☐		
Vía PCT (fase nacional)	☐	Cap. I	☐ Cap. II ☐
No. Sol. Internacional			
Fecha de Presentación Internal.			

Como resultado del examen de fondo, realizado con fundamento en el artículo 85 en concordancia con el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. De los documentos estudiados

- | | |
|-------------------------------|--|
| 1.1. <u>Descripción:</u> | Folios 10 a 22 como se radicó inicialmente |
| 1.2. <u>Reivindicaciones:</u> | Folios 23 a 28 como se radicó inicialmente |
| 1.3. <u>Dibujos:</u> | Folios 30 a 43 como se radicó inicialmente |
| 1.4. <u>Prioridad:</u> | Folios 52 a 98 02-04-10, BR, PI 0208177 |

2. Análisis de la Prioridad

- Las enseñanzas del documento sobre el cual se reclamó prioridad coinciden con las enseñanzas de la presente solicitud.
- Se admite la prioridad para la materia contenida en ambas solicitudes.

3. Del objeto de la invención

- Título de la solicitud: *Agitador para máquina de lavar ropa, con elementos movibles* Folio 1

- El objeto de la presente solicitud de patente de invención consiste en suministrar un agitador para una máquina lavadora doméstica de ropa, el cual contiene diversos elementos móviles que se desplazan giratoriamente o longitudinalmente dentro de unas cápsulas o unos canales que tienen diferentes formas, de tal manera que tales elementos no pueden salir de la cápsula o canal pero sí pueden girar o desplazarse libremente dentro de o a lo largo del miembro que los contiene.

El problema planteado en esta solicitud es facilitar el procedimiento del lavado de la ropa doméstica sin que se maltraten los tejidos y sin que se enreden las piezas de ropa.

Para solucionar este problema técnico la solicitud en estudio proporciona un agitador que tiene elementos móviles que se ponen en contacto con la ropa de tal manera que se suaviza el trato de los tejidos y se evitan, en buena proporción, los enredos de las piezas sueltas de ropa.

La Clasificación Internacional de Patentes (IPC) asignada es: D06F 13/02, 13/00

4. De la solicitud de Patente

4.1 De la descripción (artículo 28 D. 486)

Durante el análisis del texto de la descripción y de las ilustraciones anexadas, se observaron los siguientes defectos:

- 1) Hay abundancia de gerundios mal empleados: en la primera página de la descripción, folio 10, por ejemplo, se encuentran siete (7) gerundios mal empleados.
- 2) El significado de la expresión *ejecutorio* que se encuentra en la página 2, folio 11, no concuerda con el contexto.
- 3) Se desconoce el significado de la expresión *inclinadamente dispuestos en la vertical* que aparece por primera vez en la página 2, folio 11.
- 4) Se desconoce el significado de las expresiones *girantes/deslizantes*, y/o que aparecen en la página 4, folio 13.
- 5) El significado de la expresión *sin pasantes* que aparece por primera vez en la página 5, folio 14, no concuerda con el contexto.
- 6) Se desconoce el significado de la expresión *secundarios ejes imaginarios* que aparece por primera vez en la página 9, folio 18.
- 7) Se desconoce el significado de la expresión *cilíndrico cónicos* que aparece por primera vez en la página 12, folio 21, porque contiene términos mutuamente excluyentes.

- La descripción no cumple con el requisito de claridad que exige el Art. 28 de la Decisión 486.

4.2 De las Reivindicaciones (artículo 30 D 486)

Durante el análisis del texto de las reivindicaciones se observaron los siguientes defectos:

- 1) También en el capítulo reivindicatorio se encontraron numerosos gerundios mal empleados.
- 2) En la reivindicación 1, folio 23, se reclama [Un] Agitador ... caracterizado porque comprende: Un agitador ... , lo cual no es admisible porque lo definido no debe estar dentro de la definición.
- 3) Lo reclamado en la reivindicación 2, folio 23, no está debidamente soportado por el texto de la descripción y, en consecuencia debe desistirse de ello.

- 4) La reivindicación 5, folio 23, contiene la expresión *o, opcionalmente ...* lo cual no es admisible porque no contribuye a definir los alcances de lo que se desea proteger mediante la patente de modelo de utilidad.
- 5) El contenido de la reivindicación 13 no concuerda con la reivindicación a la que se remite, porque depende de la reivindicación 12, y, esta, a su vez, depende de las reivindicaciones 7 a 11 [entre otras] en donde los elementos móviles son esferas lo cual excluye la posibilidad de que sean rodamientos tronco-cónicos como se reclama en la reivindicación 13. En ninguna parte de la descripción se insinúa siquiera que los dos tipos de elementos puedan ir simultáneamente en un mismo agitador.
- 6) Las reivindicaciones 14 a 26, folios 26 a 28, tienen análogas faltas de concordancia a la mencionada para la reivindicación 13.
- 7) La reivindicación 26, folio 28, no define ninguna característica propia del agitador que se reclama en ella.
- 8) Las reivindicaciones 4 a 7, 9 a 12, 14 a 20 y 22 enumeran cada una de las reivindicaciones a las que se remiten, cuando la enumeración se puede sustituir por expresiones más concisas.
- 9) Las reivindicaciones 2 a 5, 7 a 18 y 20 a 26 reclaman *Un agitador* donde debería ser *El agitador* porque se refieren al agitador reclamado en alguna, o algunas, reivindicación, o reivindicaciones, anterior(es), o sea un producto concreto, definido.

Las reivindicaciones no cumplen con los requisitos de claridad, de concisión y de sustento por la descripción que exige el Art. 30 de la Decisión 486.

5. De la determinación del estado de la técnica

- La fecha que se ha tenido en cuenta para determinar el Estado de la Técnica es

Fecha de presentación de la solicitud prioritaria 02-04-10

Durante la búsqueda de anterioridades se encontraron los siguientes documentos que forman parte del estado de la técnica más cercano al objeto de la solicitud:

n.º	Documento	Título	Fecha de publicación
D1	Patente US 3 233 436, cuyo inventor es George M. Gibson	'Apparatus for washing clothes' (Un aparato para lavar ropa)	66-02-08
D2	Patente US 3 388 570, cuyos inventores son Clifton A. Cobb, Clark I. Platt y Keith D. Salisbury, quienes le cedieron sus derechos a la Whirpool Corporation	'Washing machine agitator with adjustable vanes' (Un agitador para una lavadora, con paneles ajustables)	68-06-18

Se anexan copias de las páginas pertinentes

NOTA: No se realizó una evaluación de los demás requisitos de patentabilidad, porque se objetó la claridad de las reivindicaciones. Una vez hayan sido

superadas las objeciones establecidas en este Concepto Técnico, se podrán hacer los exámenes correspondientes.

6. De las conclusiones:

Los requisitos de patentabilidad de la presente solicitud se encontrarían afectados negativamente por la falta de claridad de la descripción y las reivindicaciones y por la falta de concisión y de sustento por la descripción de estas últimas.

En cumplimiento del artículo 85 en concordancia con el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica al solicitante que debe dar respuesta dentro del término de treinta días contados a partir de la fecha de notificación de la presente comunicación. Si el solicitante presentara una petición de modificación, deberá pagar la respectiva tasa vigente. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el artículo 8 de la resolución reglamentaria n.º 00210 del 15 de enero de 2001, advirtiéndole que contra él no procede recurso alguno en la vía gubernativa.


ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha

15 NOV. 2007

CONCEPTO TÉCNICO n.º 2159

EXAMINADOR TÉCNICO
Código n.º 202009

Feb. 8, 1966

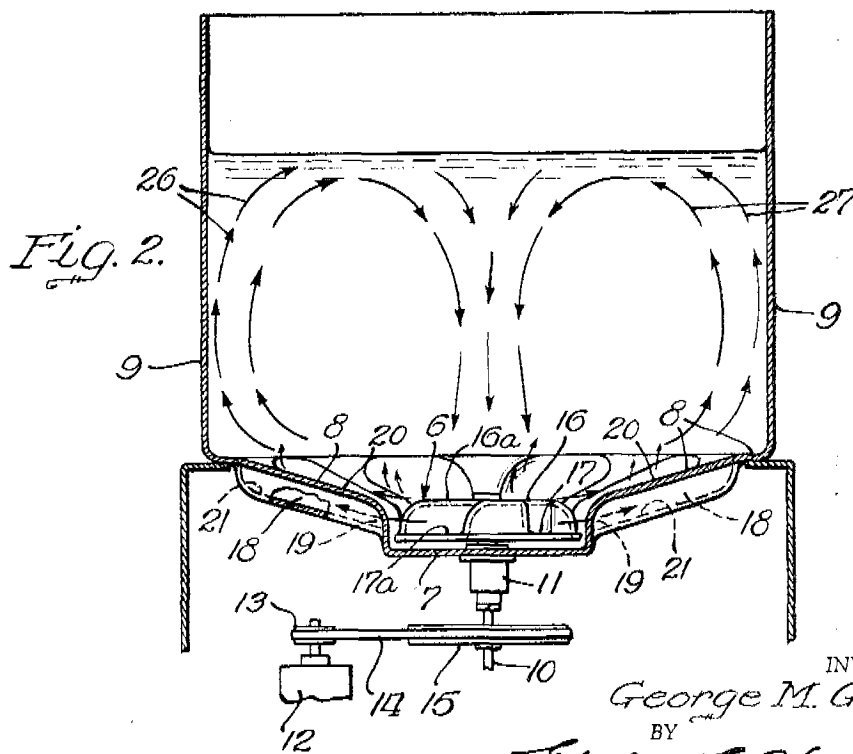
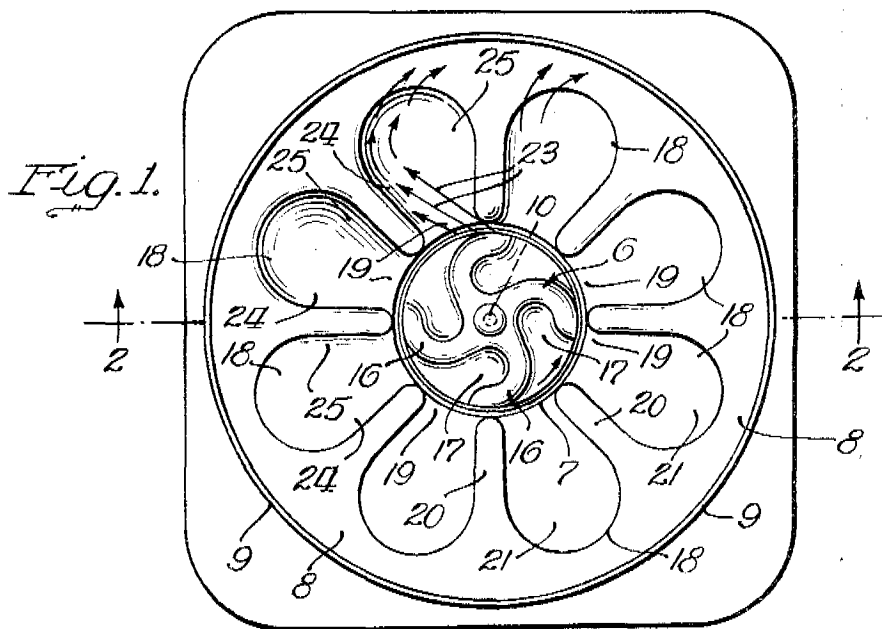
G. M. GIBSON

3,233,436

APPARATUS FOR WASHING CLOTHES

Filed March 21, 1963

3 Sheets-Sheet 1



INVENTOR:

George M. Gibson

BY

Eberhard E. Wetzel
Atty.

Feb. 8, 1966

G. M. GIBSON

3,233,436

APPARATUS FOR WASHING CLOTHES

Filed March 21, 1963

3 Sheets-Sheet 2

Fig. 3.

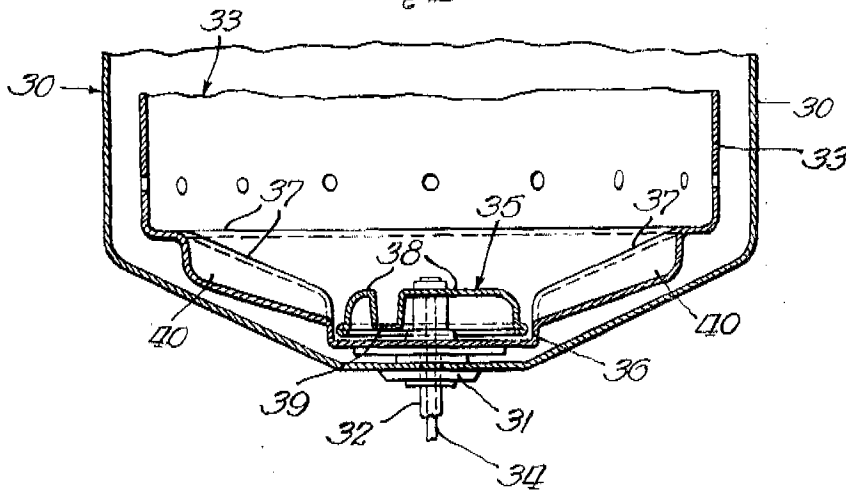


Fig. 4.

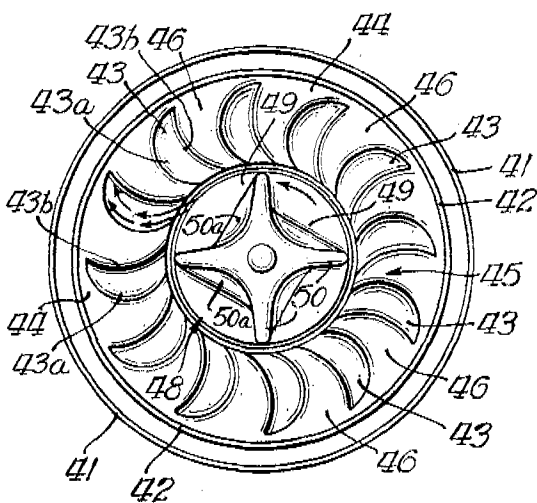


Fig. 6.

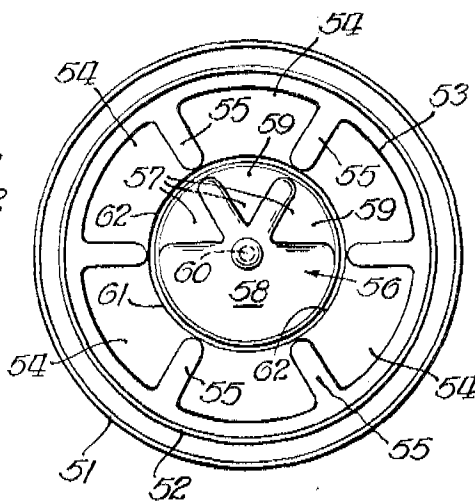
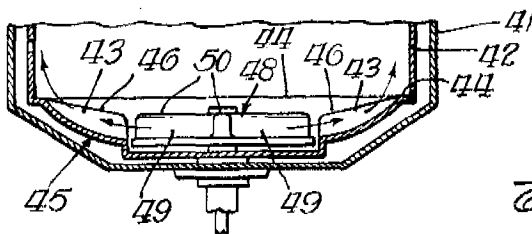


Fig. 5.



INVENTOR:
George M. Gibson
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Edward E. Whitley
Atty.

Feb. 8, 1966

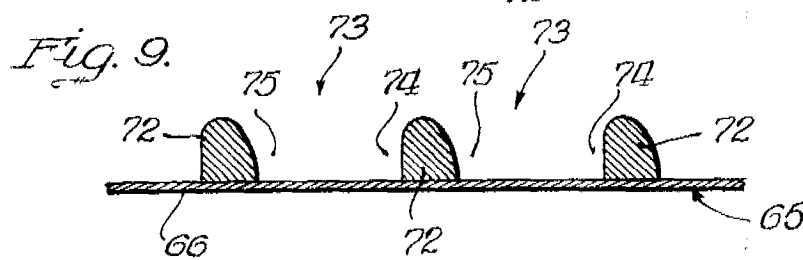
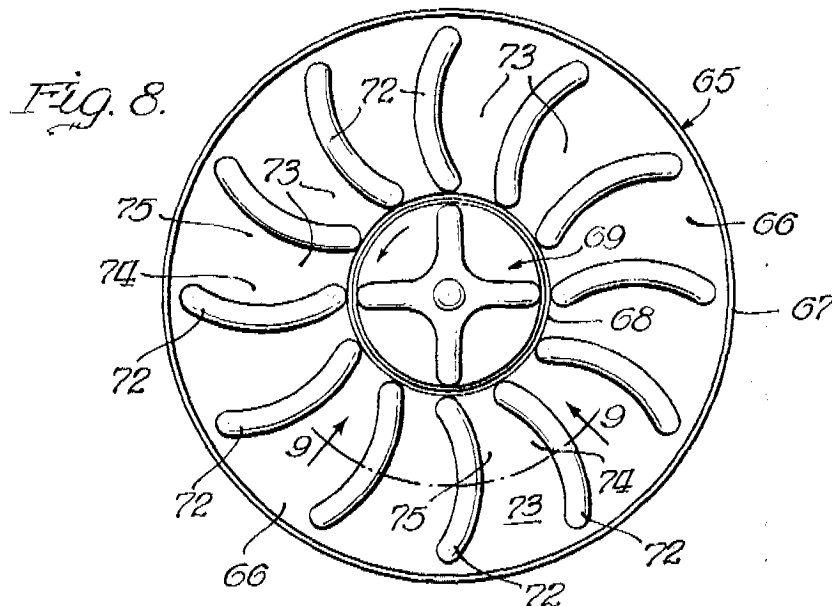
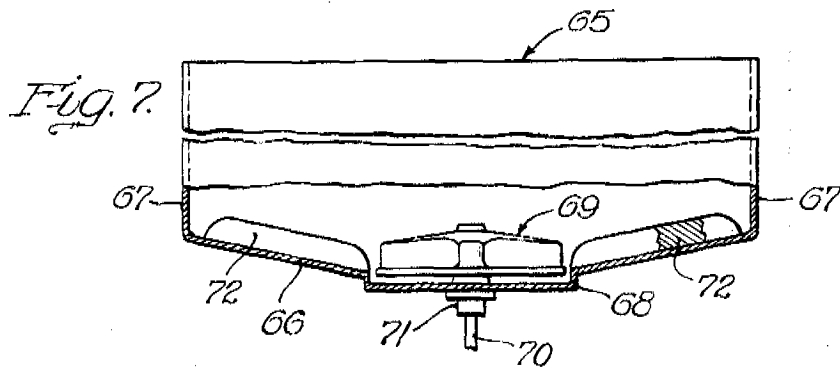
G. M. GIBSON

3,233,436

APPARATUS FOR WASHING CLOTHES

Filed March 21, 1963

3 Sheets-Sheet 3



INVENTOR:

George M. Gibson

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Eberhard E. Wherry
Atty.

United States Patent Office

3,233,436

Patented Feb. 8, 1966

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3,233,436
APPARATUS FOR WASHING CLOTHES
George M. Gibson, % G. M. Gibson Corp.,
Bellevue, Iowa
Filed Mar. 21, 1963, Ser. No. 267,887
24 Claims. (Cl. 68—133)

This invention relates to a coacting fluid or wash water and tub contour generated washing action developed in an apparatus for washing various fabrics, garments or clothes and the like.

More specifically, the invention concerns a new and novel washing mechanism developed for washing clothing in a body of water as in a domestic or commercial washing machine equipped with a unidirectional impeller means combined with a predetermined tub wall water diversion configuration to establish a new clothes washing concept in a freely open and unobstructed clothes washing tub as herein disclosed and described.

This invention is an improvement over the inventions fully described in my prior Patents No. 2,071,622 issued February 23, 1937, and No. 2,478,188 issued August 9, 1949.

The prior art practice relates to washing machines in general using unidirectional "dashers" actually in the form of rotors or fluid impellers which were made to occupy certain predetermined positions in relation to various wash tubs of special contour shapes. Actually the impellers used had inherent qualities that produced certain predetermined water currents in the tub water that caused the clothes to follow given paths of operation in relation to the position of the rotor or impeller in the tub.

As shown in Patent No. 2,478,188, the rotating impeller was mounted on the vertical or upright wall structures while the tubs were made in various external shapes to produce the washing results. None of the tub walls were deformed or shaped for direct cooperation with the rotor as in the present invention.

In Patent No. 2,071,622, the rotor agitator occupied an eccentric location in the tub and three high baffle plates were used in the upright tub area in the washing space for the purpose of retarding whirling of water and clothes next to the tub wall. The low height beads in the tub bottom of this patent only act to strengthen the tub bottom and serve no purpose as far as the washing cycle is concerned.

The present invention is directed to a washing machine which eliminates side wall mounting of the rotor agitator and provides a clear open washing tub free of baffles or other deflectors that are located in the clothes washing area of the machine. The new machine also provides a centrally located rotor agitator which by the use of the new cooperative means on the rotor and tub bottom wall opposes objectionable clothes load rotation within the open wash tub.

One of the objects of the present invention, therefore, is to provide cooperative means on both an impeller or turbo rotor agitator and on the tub or clothes basket, as the case may be, to control the clothes washing water action and the movement of the clothes, with the rotor occupying a position at the bottom of the tub or basket and with the cooperative means surrounding the rotor.

It is a further object to establish a wash water current control rotor in the mid-portion or axial center of a washing machine tub or basket for the symmetrical washing treatment of a complete load of clothing so as to avoid preferential and/or more efficient treatment of the clothing in one portion of the machine tub or basket in contrast to some inferior washing action in certain other portions of such tub or basket.

A further object of this invention is to provide coacting mechanisms located generally centrally of a tub or

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basket of a clothes washing machine wherein such mechanisms produce a washing action that will generate a water flow pattern to counteract any objectionable rotation of the clothes load about the tub or basket to lead to inefficient clothes washing conditions due to this relatively inert but more or less bodily rotating action of the clothing in a tub.

Another object is to provide a clothes washing action wherein a unidirectional agitator or rotor is employed to kinetically sling or propel wash water in a given plane or into an annular ring zone of water discharge activity and to force the water into multiple pocket areas provided in a tub and in its bottom or in the bottom wall of a clothes basket carried within a tub as the case may be all to qualify the washing action to meet certain conditions of operation and manipulation.

A still further object is to provide a unidirectional agitator or rotor having an exterior surface contour with ledges and pockets having their limits ranging between given spaced horizontal planes and wherein a tub or basket bottom is also provided with annularly aligned troughs or pockets with ridge or ledge and bottom areas also disposed in spaced horizontal planes, at least adjacent the rotor, which respective spaced planes are substantially coplanar with the top and bottom horizontally arranged ledges and pocket bottom areas of the rotor. Thus the wash water transition from convoluted rotor impeller into the fixed tub convolutions provides and develops new washing action that imparts a radially vertical encircling motion to the clothes load within various specified radial zones in the tub or basket while also holding such annular clothes load against objectionable horizontal rotation around the tub or basket because of the unidirectional agitator or rotor unit action in the machine.

Another object of this invention is to be able to establish and confine the washing apparatus of this clothes washing machine in or at one tub wall or on the bottom wall of the tub or basket as will be hereinafter shown thereby making available and free the entire space of the tub or basket compartment for the clothes load with the washing apparatus developing the washing cycle activity within the open and unobstructed tub or basket water area by means of the new and novel mechanism of this invention.

Other objects and advantages of this invention shall hereinafter appear in or become evident from the following detailed description having reference to the accompanying drawings forming a part of this specification and disclosing the inventive concept involved.

In the drawings:

FIG. 1 is a diagrammatic plan view of a washing machine embodying the coacting elements of the present invention that provide the new and novel washing principle of this invention;

FIG. 2 is a vertical cross sectional view of the washing machine illustrated in FIG. 1 and as it is substantially viewed in the plane of the line 2—2 in FIG. 1;

FIG. 3 is a fragmentary vertical cross sectional view of another washing machine type embodying the same general washing mechanisms illustrated in FIG. 1;

FIG. 4 is a plan view of a modified washing machine to demonstrate certain other applications of the apparatus of this invention;

FIG. 5 is a vertical cross sectional view of FIG. 4;

FIG. 6 is a plan view of a modified washing machine arrangement with a pulsating rotor agitator;

FIG. 7 is a vertical cross sectional view of another stationary vane washer construction;

FIG. 8 is a top plan view of FIG. 7; and

FIG. 9 is a detail section on line 9—9 in FIG. 8.

The general concept of the invention is well illustrated in FIGS. 1 and 2 wherein the washing principle is effi-

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June 18, 1968

C. A. COBB ETAL

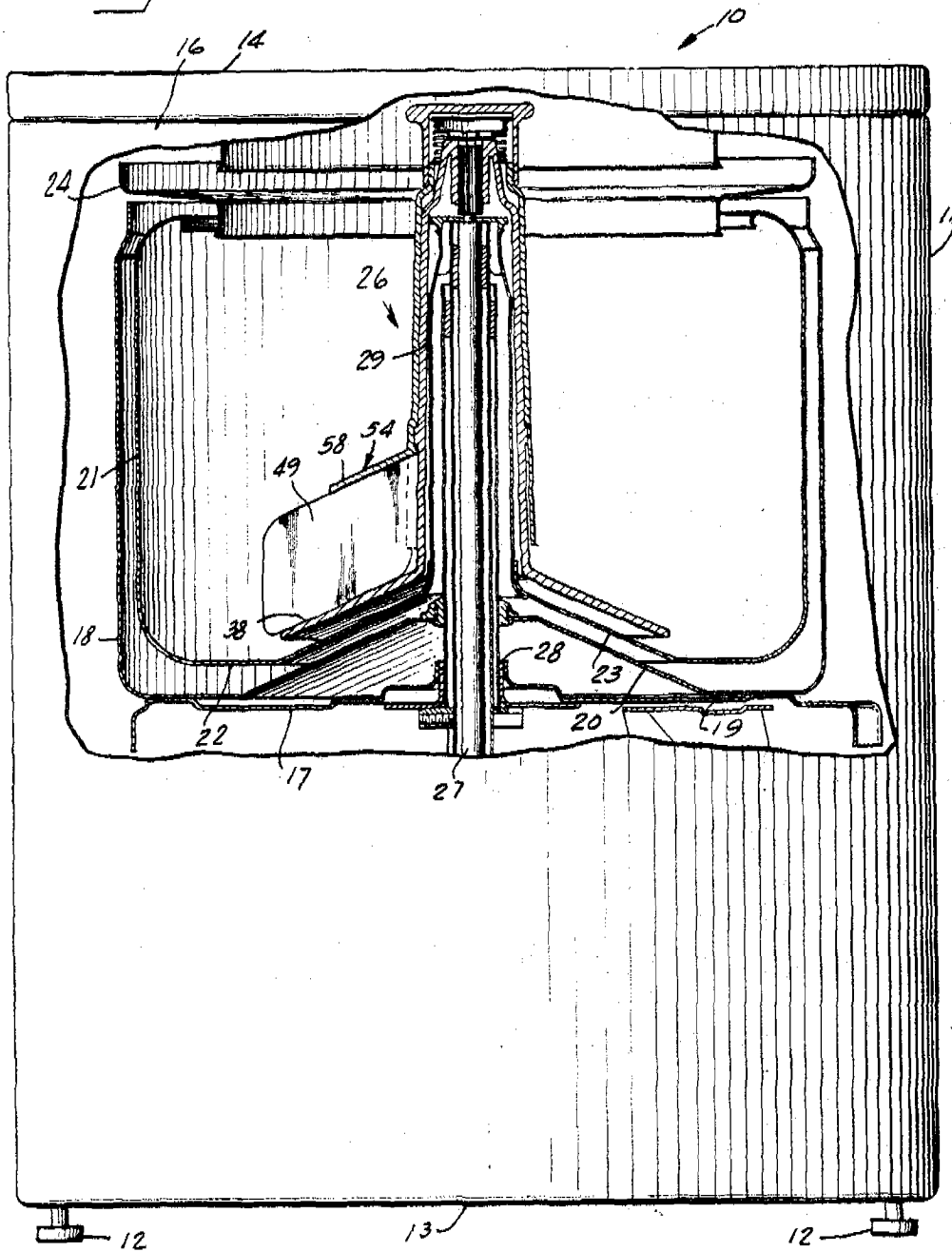
3,388,570

WASHING MACHINE AGITATOR WITH ADJUSTABLE VANES

Filed Oct. 10, 1966

3 Sheets-Sheet 1

Fig. 1



INVENTORS

CLIFTON A. COBB

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ATTORNEYS

BY

Kell, Sherman, Davis, Chad & Simpson

June 18, 1968

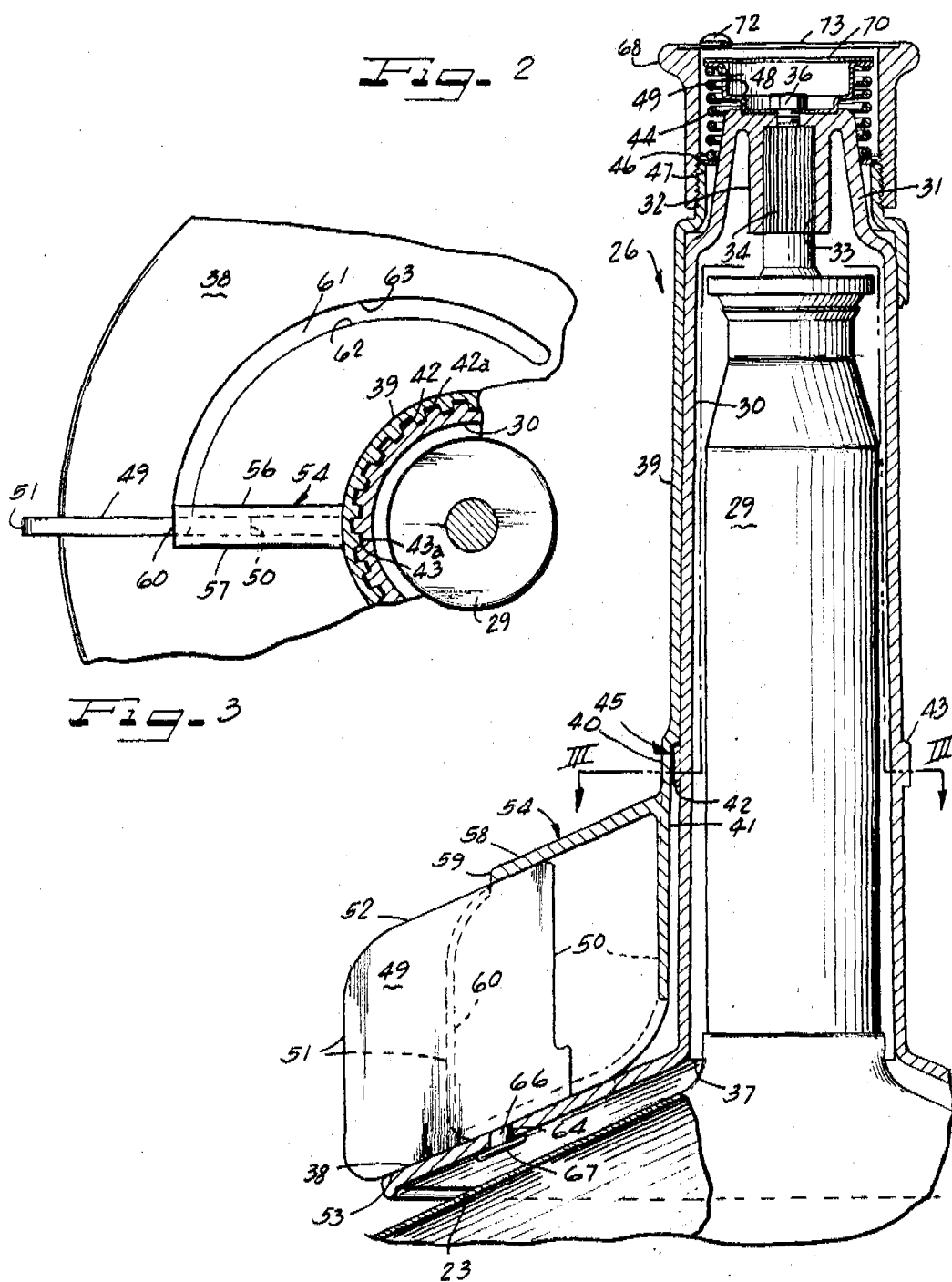
C. A. COBB ET AL

3,388,570

WASHING MACHINE AGITATOR WITH ADJUSTABLE VANES

Filed Oct. 10, 1966

3 Sheets-Sheet 2



INVENTORS

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116 116

June 18, 1968

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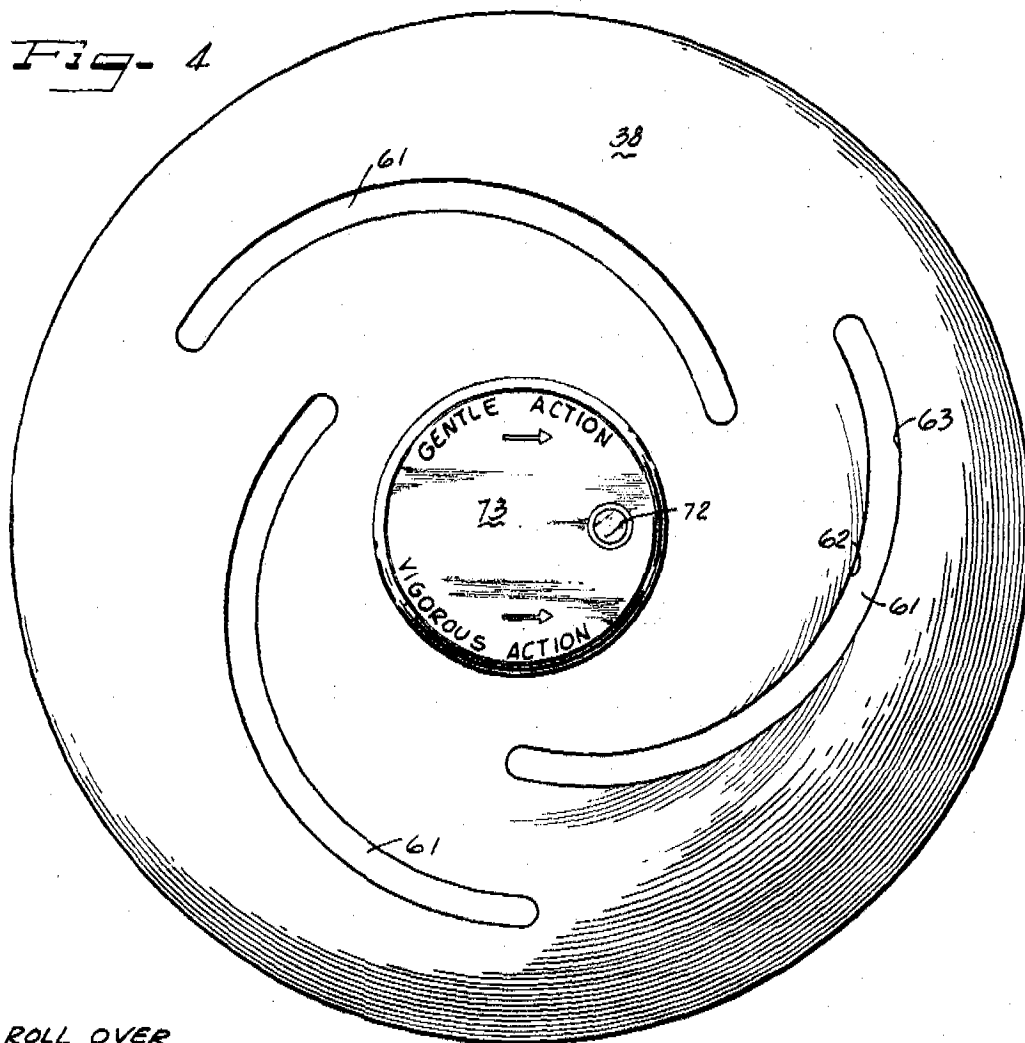
3,388,570

WASHING MACHINE AGITATOR WITH ADJUSTABLE VANES

Filed Oct. 10, 1966

3 Sheets-Sheet 3

Fig- 4



ROLL OVER

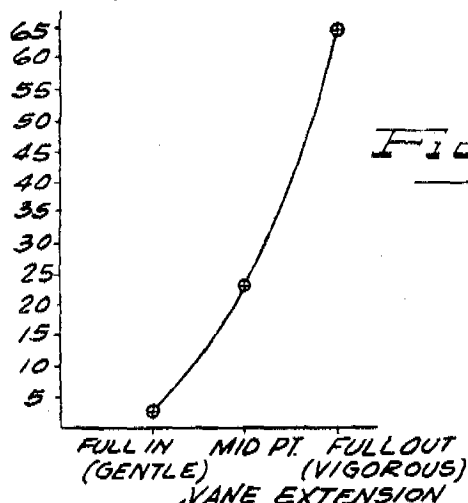


Fig- 6

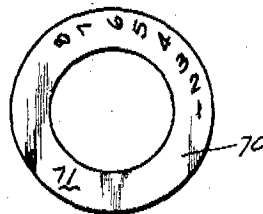


Fig- 5

INVENTORS

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KEITH D. SALISBURY

ATTORNEYS

BY

Hill, Sherman,

Shaw, Simpson

3,388,570

WASHING MACHINE AGITATOR WITH ADJUSTABLE VANES

Clifton A. Cobb, St. Joseph, Clark I. Platt, Benton Harbor, and Keith D. Salisbury, St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich., a corporation of Delaware

Filed Oct. 10, 1966, Ser. No. 585,689

13 Claims. (Cl. 68—134)

ABSTRACT OF THE DISCLOSURE

An adjustable vane agitator including a center post, a skirt and one or more radially extensible vanes supported thereby. The radial extension of the vanes may be selectively adjusted and positively locked by manipulation of a center post-mounted control to vary the degree of washing action caused by oscillatory movement of the agitator.

This invention relates generally to washing machines and more particularly to a washing machine having a rotatable agitator with one or more radially extensible vanes thereon and including means for selectively and positively adjusting the radial disposition of the vanes upon rotation of the agitator about its axis of rotation.

An object of the invention is to provide means enabling the overall radial dimension of the vanes to be easily and quickly adjusted merely by rotating the agitator. Thus the vanes are moved radially inwardly or outwardly as the agitator is turned in one direction or the other.

Another object of the invention is to provide means for simply and easily locking the vanes in place after they have been so adjusted by moving the agitator axially. Thus in order to change the radial adjustment of the vanes the agitator is first moved axially upwardly to an unlocked position, then rotated in one direction of rotation or the other to move the vanes radially inwardly or outwardly, and then moved axially downwardly to lock the vanes in their adjusted position.

Another object of the invention is to provide indicating means in an easily observable and convenient location on top of the agitator to indicate the degree of agitation of the washing action as a function of the radial disposition of the vanes.

Still another object of the invention is to provide a plurality of radially movable vanes on the agitator and manually operable means for simultaneously adjusting the radial disposition of all the vanes in equal incremental amounts.

Many other features, advantages and additional objects of the present invention will become manifest to those versed in the art upon making reference to the detailed description which follows and the accompanying sheets of drawings, in which preferred structural embodiments incorporating the principles of the present invention are shown by way of illustrative example only.

On the drawings:

FIGURE 1 is a vertical elevational view of a washing machine constructed in accordance with the principles of the present invention with portions of various wall members cut away and other parts shown in section to reveal the relative disposition of various parts of the agitator;

FIGURE 2 is an enlarged fragmentary vertical sectional view of the agitator assembly of the machine of FIGURE 1;

FIGURE 3 is a fragmentary horizontal sectional view of the agitator taken along lines III—III of FIGURE 2;

FIGURE 4 is a top plan view of the agitator assembly with certain parts removed for clarity;

FIGURE 5 is a top plan view of an index ring of the agitator; and

FIGURE 6 is a graph which illustrates the degree of washing action as a function of vane extension.

As shown on the drawings:

Although the principles of the present invention are applicable to a variety of agitation and washing mechanisms a particularly useful application is made to household washing machines of the agitator type. An illustrative embodiment of such a washing machine having a vertically disposed agitator and constructed in accordance with the principles of the present invention is shown in FIGURE 1 and indicated generally at reference numeral 10.

Some of the principal parts of the washing machine 10 include an outer cabinet 11 having a plurality of levelling legs 12 mounted respectively at the four corners of a bottom wall 13 for supporting the machine on a floor or other suitable support member. A hinged door 14 is provided for gaining access into the interior of the machine 10 through a top wall 16 thereof having an access opening formed therein.

Situated within the washing machine 10 at about the elevational midpoint is a horizontal support wall 17 securely fastened to the walls of the cabinet 11 in order to support a vertically upstanding cylindrically shaped imperforate tub 18. The lower end of the tub 18 is closed by a bottom wall 19 which includes a central portion 20 shaped conically and extending upwardly toward an apex situated on the longitudinal axis of the tub 18.

The upper end of the tub 18 is open and disposed therein is a complementarily shaped but somewhat smaller perforate receptacle or basket 21. A bottom wall 22 of the basket 21 is situated in spaced relation to the bottom wall 19 of the tub 18 and includes a central portion 23 which extends in generally parallel relation to the central portion 20 of the tub wall 19.

The upper end of the basket 21 is also open in order to receive material to be laundered through the top wall 16 of the cabinet 11. During a washing operation the tub 18 receives a quantity of laundry liquid as well as detergents, additives and the like which may be desired. A shroud 24 overlies the upper ends of the tub 18 of the basket 21 to facilitate the loading and unloading operations.

During a washing operation the material to be laundered is immersed in the laundry liquid and subjected to a washing action which results from the rapid and turbulent agitation of the material and the laundry liquid within the basket 21.

Such agitation is conferred by an agitator assembly 26 which is disposed within the basket 21 and which, during a washing operation, oscillates about a vertical axis to impart a scrubbing and rollover action to the material and turbulence to the laundry liquid.

The agitator assembly 26 is oscillated by a vertical drive shaft 27 which extends upwardly from a lower portion of the washing machine 10 through a central aperture 28 formed in the horizontal support wall 17 and into an upstanding cylindrical sleeve 29 which extends upwardly from the conical portion 23 of the basket 21. The lower end of the drive shaft 27 is connected to a suitable oscillating mechanism which may preferably be driven by an electric motor.

Referring to the enlarged views in FIGURES 2 and 4, the agitator assembly 26 of this invention is more particularly characterized as comprising a tubularly shaped inner drive shell 30 which is slipped downwardly in surrounding relation over the drive shaft 27 and the sleeve 29. An upper end of the shell 30 is frusto-conically shaped as at 31 and includes a downwardly depending concentrically aligned tubular portion 32 having an inner wall 33

properly machined so as to receive in driving engagement a splined upper end 34 of the drive shaft 27. The inner shell 30 is securely fastened to the drive shaft 27 by means of a suitable fastener such as a threaded bolt indicated at 36.

A bottom end 37 of the inner shell 30 is open to receive the sleeve 29, and extending radially outwardly and downwardly therefrom is a skirt 38 formed integrally therewith and situated in substantially parallel relation to the conical portion 23 of the basket bottom wall 22 (FIGURE 1).

The agitator assembly 26 further comprises an outer driven shell or centerpost 39 having an inner diameter slightly oversized with respect to the outer diameter of the shell 30 such that the shell 29 can be moved easily slidably in telescoping fashion over the inner shell 30.

The outer shell 39 is adapted to be driven in an oscillating motion by the inner shell 30 and to provide a driving coupling 45 therebetween a lower portion 40 of the outer shell 39 is of an enlarged diameter and has formed on an axially extending segment of an inner wall 41 thereof a plurality of circumferentially spaced lands and grooves as indicated at 42 and 42a in FIGURE 2 as well as in the vertical sectional view of FIGURE 3.

Complemental lands and grooves as at 43 and 43a are formed on the periphery of the inner drive shell 30. In the relative positions of shells 30 and 39 shown in FIGURE 2 the lands and grooves 42 and 43 are in mesh or driving engagement with one another as a result of which the two shells will rotate or oscillate together. It should be noted, however, that if the outer driven shell 39 is moved axially upwardly a short distance the lands and grooves of shells 30 and 39 would no longer be in meshing engagement and the outer shell 39 would be free to rotate about its axis independently of the inner shell 30.

Normally the lands and the grooves of shells 30 and 39 are in axial alignment (meshing engagement) with one another not only because the axially movable outer shell 39 is urged downwardly gravitationally but also as a result of the biasing effect of a spring member 44 which is bottomed at its lower end on a washer 46 abutting a radial shoulder formed by a top wall 47 of the shell 39 and bottomed at its opposite end on a circumferentially continuous outturned flange 48 formed on a bracket 49. The bracket 49 is mounted in fixed assembly on the upper end 31 of the inner shell 30 by means of the threaded fastening device 36.

Thus while the outer shell 39 can be lifted axially such that the lands and grooves 42 and 42a thereof are moved out of meshing engagement with the lands and grooves 43 and 43a of the inner shell 30, the normal relative disposition of shells 30 and 39 is as shown in FIGURE 2 whereat the two shells are corotatably or drivingly interconnected.

The actual agitation of the fabric or other material to be laundered and the laundry liquid is accomplished by one or more agitation vanes which project radially outwardly from the centerpost or outer driven shell 39. The number of agitation vanes may vary and in the exemplary embodiment herein shown consists of three vanes which are spaced 120° circumferentially around the outer shell 39.

In the drawings the vanes are all identical and are indicated respectively at reference numerals 49. Each of the vanes 49 comprises a flat or disc-shaped structure which is relatively thin in horizontal cross-section and which is shaped in a front elevational view in the form of a parallelogram, having two vertical sides 50 and 51 and two other sides 52 and 53 which slope radially outwardly and downwardly in parallel relation with the skirt 38 formed at the bottom of the inner shell 30.

The vanes 49 are separate, individual structures made of either rigid material such as molded plastic or of elastic or resilient material such as rubber or polyethylene or polypropylene or synthetic rubber material. The bottom side 53 of each of the vanes 49 is supported on the skirt 38

of the inner shell 30 and the vanes are relatively adjustable with respect to the shells 30 and 39.

In order to maintain the vanes 49 in an upstanding position, a plurality of guides 54 are formed on the enlarged diameter portion 40 of the outer shell 39. Each of the guides 54 comprises a pair of horizontally spaced vertical side walls 56 and 57 which extend upwardly from the skirt 38 and a top wall 58 which slopes radially and downwardly from the outer shell 39 in parallel relation to the skirt 38.

An outer end 59 of each of the guides 54 is open to receive one of the vanes 49, and thus each of the guides 54 forms a guideway into which its corresponding vane 49 can easily slide, being supported from below by the skirt 38.

In FIGURE 2 a vane 49 is shown in full lines in an extended position with respect to the guide 54, that is, with the radially outermost end 51 of the vane 49 protruding substantially beyond an outermost end wall 60 of the guide 54. The vane 49 is also shown in dashed lines in its retracted position, that is, with the radially innermost end 50 thereof abutting the enlarged diameter portion 40 of the shell 39.

In the retracted position of the vane 49 of the outer end 51 thereof extends just beyond the outer end 60 of the guide 54. The corners of the vanes 49 as well as the corners of the sides 56 and 57 of the guides 54 are somewhat arcuately shaped to prevent damage to the fabric or the like being agitated.

The guides 54 extend radially outwardly from the outer shell 39 a distance which is almost equal to the corresponding radial length of the vanes 49 such that when the vanes 49 are in a fully retracted position the agitating effect is accomplished almost entirely by the guides 54 themselves. Thus the guides 54 may be characterized as fixed or permanent agitation vanes as contrasted with the movable vanes 49.

It will be appreciated that means may be provided for radially guiding the movable vanes 49 other than the fixed vanes 54 as shown but in a preferred embodiment movable vane guides also serve themselves as agitation vanes and the movable vanes 49 actually serve as extensions of the fixed vanes 54.

The radial disposition of the movable vanes 49 determines the degree of agitation to which the laundry liquid and fabric material is subjected, assuming a constant oscillating speed of the agitator assembly 26. If the movable vanes 49 are retracted as far as possible the agitation action is relatively subdute or gentle. However, when the movable vanes 49 are extended as far as possible the agitation action is appreciably more vigorous. Thus by adjusting the radial disposition of the movable vanes 49, the agitation action can be varied from gentle to vigorous.

In accordance with the principles of this invention the radial disposition of all of the movable vanes 49 can be adjusted simultaneously and in equal incremental amounts by a simple manual adjustment of the centerpost or outer shell 39 of the agitator assembly 26. In order to provide this salutary feature of the invention a series of segmental helical cam slots as shown respectively at reference numeral 61 are formed in the skirt 38 of the outer shell 39. The number of slots 61 corresponds to the number of movable vanes 49 and each of the slots provides a pair of interfacing axially extending side walls 62 and 63 which provide respectively cam surfaces for guiding a cam follower 64 which projects from the bottom wall 53 of each of the movable vanes 49 into its corresponding slot 61. In the illustrated embodiment seen in FIGURE 2 each of the cam followers 64 comprises a short stud 66 which extends through the skirt 38 and an enlarged head 67 formed at the lower end of the stud 66 below the skirt 38 to keep the cam follower 64 in place in the slot 61. It will be apparent that other cam and cam follower means could be used. Thus, raised ribs could be provided in the skirt 38 in place of the slots 61, with correspond-