Dec. 2, 1969 W. A. WASEMANN 3,481,161

FASTENING MEANS FOR DEFLECTOR RING

Filed Oct. 23, 1967 2 Sheets-Sheet 1

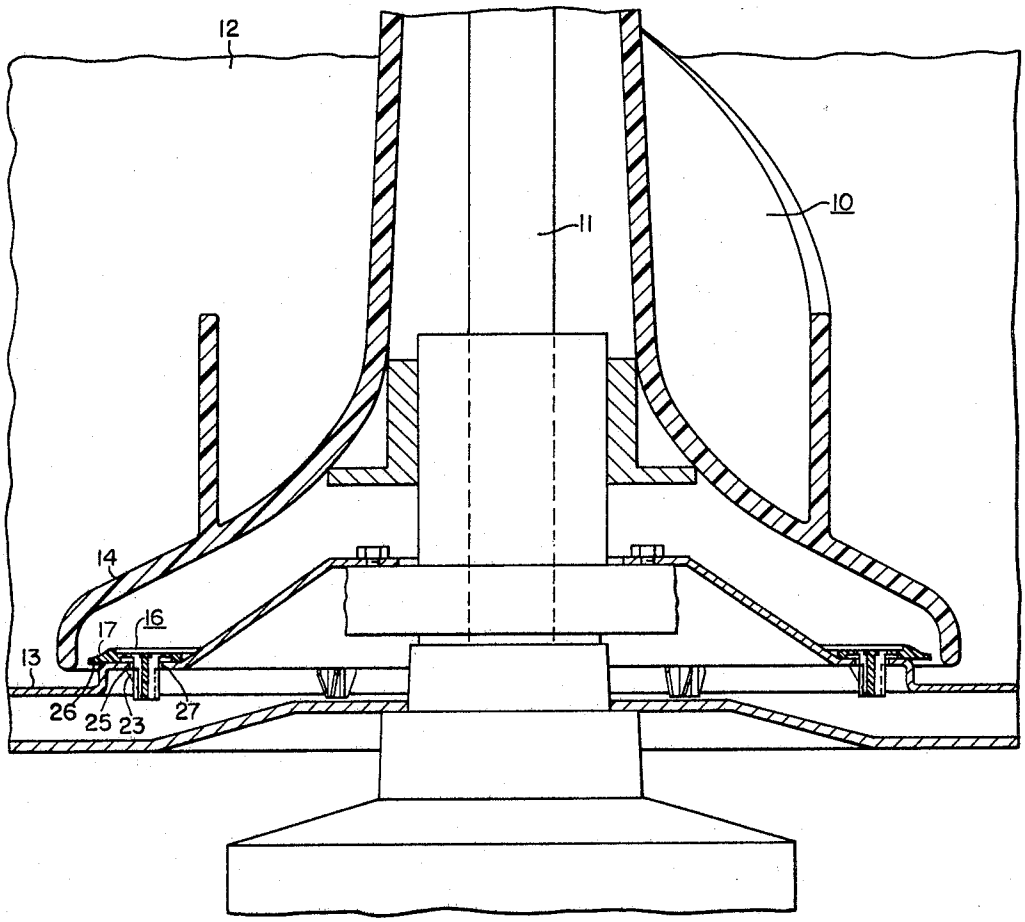


FIG. 1.

WITNESSES

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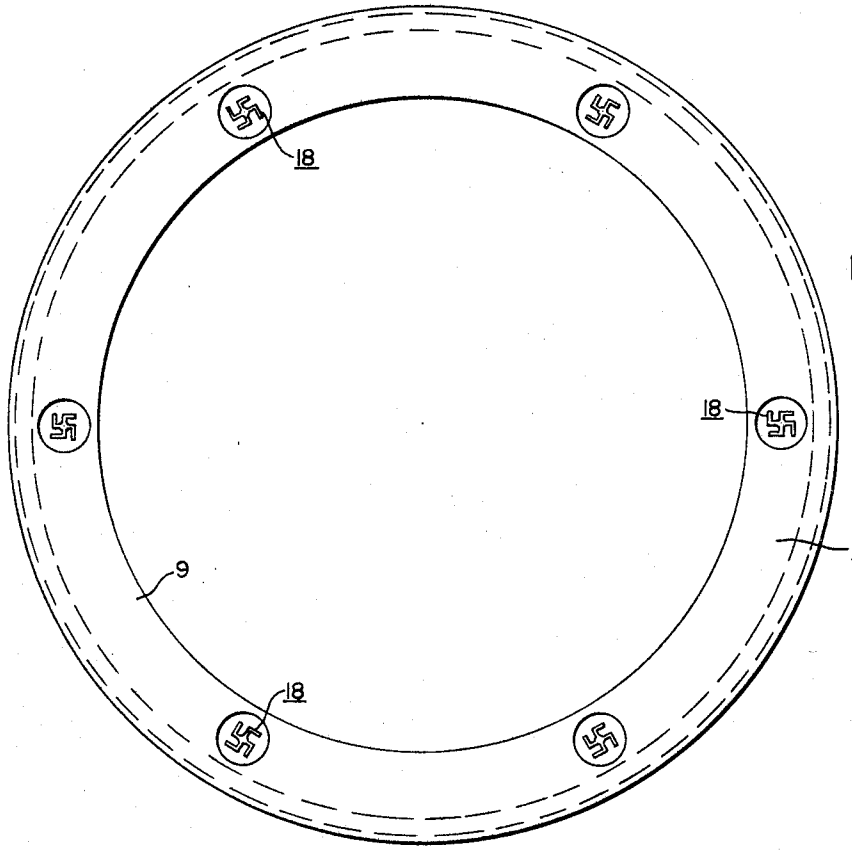


FIG.2.

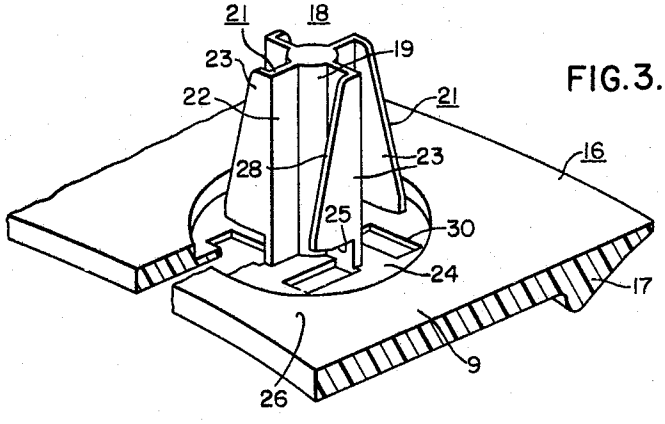


FIG.3.

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FASTENING MEANS FOR DEFLECTOR RING

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U.S. Cl. 68—3 7 Claims

ABSTRACT OF THE DISCLOSURE

Clothes deflector ring and integral fastener construction therefor for use in an agitator type washing machine. The ring has provided thereon a plurality of fasteners having a base with radial fins which curl inwardly toward the base as the fasteners are inserted through holes in the tub to which the ring is secured. There is a space between one end of the fins and surface of the ring, the space being variable due to the flexibility of the deflector in the area of attachment thereof to the fastener which flexibility is effected by reducing the thickness of the deflector in that area.

BACKGROUND OF THE INVENTION

This invention relates, in general, to clothes washing machines of the agitator type and, more particularly, to a fastener construction for attaching a clothes deflector ring to the inner tub thereof.

It will be appreciated that metallic fasteners utilized within the inner tub of a clothes washing machine must be of corrosion resistant material, otherwise articles of clothing would become irreparably damaged. Since such hardware is quit expensive, it is not desirable to use separate hardware for installing such things as a deflection ring. Heretofore, the practice had been to use existing hardware, however, present constructions do not lend themselves to this end.

Accordingly, it is the general object of this invention to provide a new and improved fastener construction.

It is a more particular object of this invention to provide a new and improved fastener construction for attaching a clothes deflector ring to the inner tub of an agitator type washing machine.

Another object of this invention is to provide a new and improved clothes deflector ring and fastener construction therefor which can be manufactured inexpensively by simple techniques.

SUMMARY

Briefly, the above cited objects are accomplished by providing a molded plastic clothes deflector ring having formed integrally therewith fastener constructions equally spaced on the bottom surface thereof. The fastener construction comprises a cylindrical base joined at one end to the deflector ring and a plurality of fins each having portions thereof extending radially from the base and a portion thereof extending in a direction tangential to the base and spaced therefrom. The tangential portions are tapered toward the free end of the base to facilitate insertion thereof into holes provided therefor in the tub. As the fastener is inserted the fins due to their unique construction curl inwardly toward the base to allow complete insertion of the fins through the holes in the tub. The end of the tangential portion of the fin nearest the deflector ring together with the ring provide a space in which the tub wall is received when the fastener has been completely inserted, the last mentioned end serving to retain the fins on the side of the tub wall opposite the deflector ring.

In the area of its attachment to the base, the ring portion is reduced in thickness such that it can be flexed when pressure is applied. This flexibility compensates for variation in thickness of the tub wall in a manner which will be more apparent from the description of the preferred embodiment of the invention.

Further objects and advantages of the invention will become apparent when considered in view of the following detailed description and drawings forming a part thereof.

DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a fragmentary front elevational view of an agitator type washing machine incorporating the invention;

FIG. 2 is a bottom plan view of a clothes deflector ring and integral fastener construction representing the invention; and

FIG. 3 is an enlarged fragmentary perspective view of the fastener construction incorporated in the deflector ring shown in FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings especially FIG. 1, reference character **10** designates generally an agitator structure carried by a centerpost structure **11** in a conventional manner. The agitator structure, which is carried within a spin tub **12** having a bottom wall **13**, has a skirt portion **14** extending toward but stopping short of the bottom wall **13**.

In accordance with well known practices, a clothes guard or deflector ring **16** is provided intermediate the agitator **10** and the bottom wall **13**. The ring comprises a wall **9** having an inclined portion **17** which along with the lower edge of the agitator prevent clothes from being washed under the agitator and about the centerpost structure.

The deflector ring **16** made from any suitable material, for example, plastic, has formed integrally therewith, a plurality of fastener constructions **18** substantially equally spaced about the bottom wall of the ring. Each fastener construction **18** comprises a base portion **19** (see FIG. 3) and a plurality of fins **21**, each having a radial portion **22** and a portion **23** extending in a direction substantially tangential to the base portion **19**.

One end of the base **19** and one end of each of the radial portions **22** is joined to the deflector **16** while neither end of the tangential portion **23** is attached. The end **25** of the tangential portion **23** adjacent the ring **16** is spaced therefrom and serves to captivate the bottom wall **13** therebetween. In order to compensate for varying thicknesses of the wall **13** the deflector ring **16**, in the area indicated at **24**, is reduced in thickness to render the deflector flexible thereat. This reduced area acts as a Belleville spring, therefore, flexing as pressure is applied. When a wall thickness is encountered which is greater than the dimension between the end of the tangential portion **23** adjacent the ring **16** and the surface of the ring indicated at **26** (see FIG. 1), the flexing of the reduced area **24** permits the ends **25** of this tangential portion **23** to completely penetrate the holes **27** in the bottom wall **13**. Flexibility of the area **24** is further increased by removing material therefrom to provide openings **30**.

The fins of the fasteners **18** are flexible and due to the tapered edges **28** of the tangential portion **23** curl inwardly toward the base **19** thereby compensating for variations in the size of the holes **27**. Additionally, the circumscription about the radial portions **22** adjacent the portions attached to the deflector **16** is sufficiently smaller than the holes to compensate for misalignment of the holes or fasteners.

It will now be apparent that there has been shown and described an integral fastener construction which compensates for wall thickness of one of the attached parts and which compensates for variation in size and alignment of holes in that part which receives the fastener construction.

I claim as my invention:

1. For use in an agitator type washing machine, clothes deflector ring structure for mounting between the agitator structure and the bottom wall of the spin tub, said ring structure comprising: a plurality of integral fasteners each comprising a base portion having means extending substantially radially therefrom and providing a space between the ring and one end of said radially extending means, said ring being reduced in thickness at its areas of attachment to said fasteners to thereby render it flexible to produce variable spacing between said one end of said radially extending means and said ring at points adjacent said area of attachment.

2. Structure as specified in claim 1, wherein said radially extending means comprises a plurality of fins each comprising a segment extending radially from said base and a segment extending substantially tangential to said base portion, the radial extent of said radial segments plus half the length of said base defining half the diameter of the hole which will receive said fins and said tangential segments being flexible thereby permitting curling inwardly toward said base portion upon insertion thereof to points where they coincide with a circle circumscribing said radial segments.

3. Structure as specified in claim 2, wherein said tangential segments are tapered to compensate for variation in the hole size into which it is inserted.

4. Structure as specified in claim 1, wherein said area of attachment is provided with a plurality of openings therethrough to provide greater flexibility thereof.

5. Fastener construction comprising: a wall having a flexible area of reduced thickness, a base portion attached to and extending perpendicularly from said area of reduced thickness, means extending radially from said base portion, said radial means being partially coextensive with only part of said base portion to provide

a space between the end thereof and said wall in an area of normal thickness, said area of reduced thickness being provided with a plurality of cut-out areas to produce optimum flexibility in that area.

6. Structure as specified in claim 5, wherein said radially extending means comprises a plurality of fins each comprising a segment extending radially from said base portion and a segment extending substantially tangential to said base portion, the radial extent of said radial segments plus half the base portion defining half the diameter of the minimum size hole which will receive said fins and said tangential portions being flexible thereby permitting curling thereof inwardly toward said base portion upon insertion thereof to positions intermediate their normal position and positions where they would coincide with the circumscription of said radial segments.

7. Structure as specified in claim 6, wherein said tangential segments are tapered to compensate for variations in the hole size into which it is to be inserted.

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24—214; 68—23.6, 133, 212; 85—80