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[54] **SPRAY DEFLECTOR FOR DISHWASHERS**

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[52] **U.S. Cl.** **134/176;** 134/182; 239/251; 239/524

[51] **Int. Cl.²** **B08B 3/02**

[58] **Field of Search** 134/176, 179, 182, 183; 239/243, 251, 231, 499, 514, 515, 275, 518, 524

[56] **References Cited**

UNITED STATES PATENTS

582,125	5/1897	Hatch	239/275
687,378	11/1901	Leahy	239/275 X
1,691,607	10/1928	Kerr	239/524 X
2,608,983	9/1952	Idle	134/183
2,960,093	11/1960	Heerlein	134/182
3,067,759	12/1962	Guth et al.	134/182 X
3,288,155	11/1966	Swetnam	134/176 X

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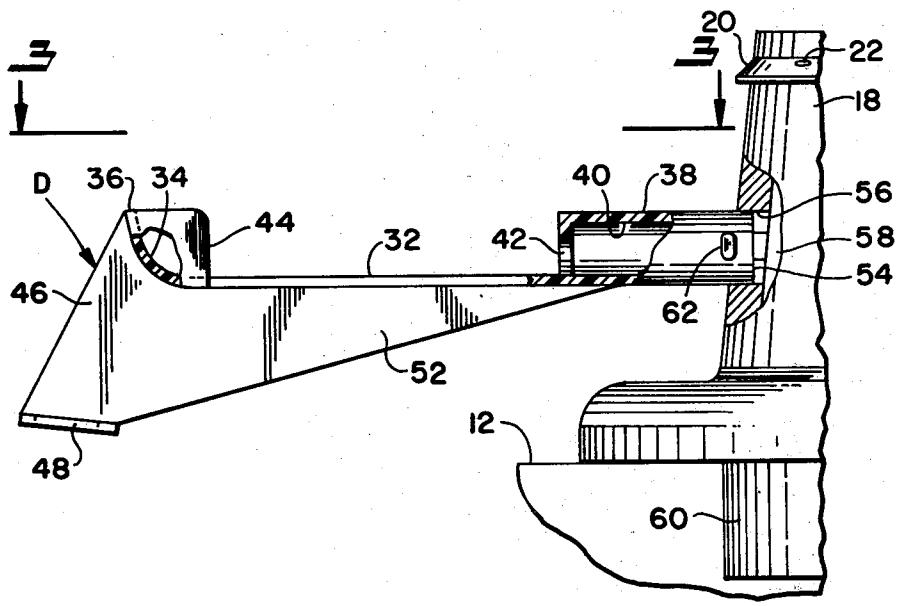
[57] **ABSTRACT**

A liquid deflector is stationarily positioned in a bottom spray dishwasher for dispersing and deflecting a high velocity water or washing fluid jet upwardly through a front located silverware basket.

4 Claims, 3 Drawing Figures



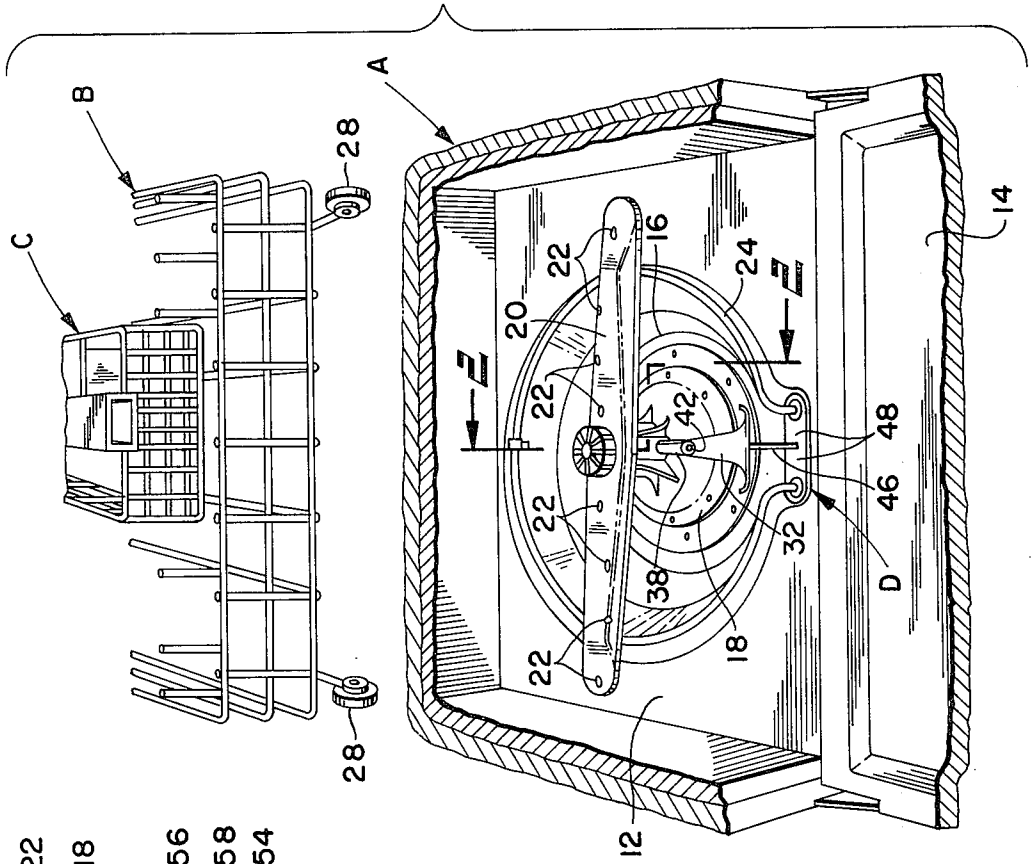


FIG. 1

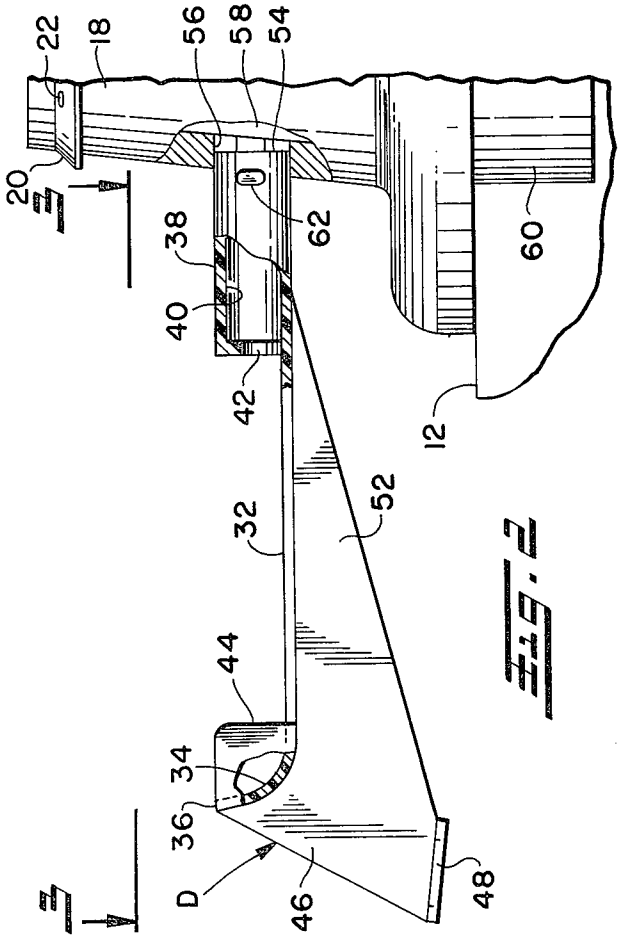


FIG. 2

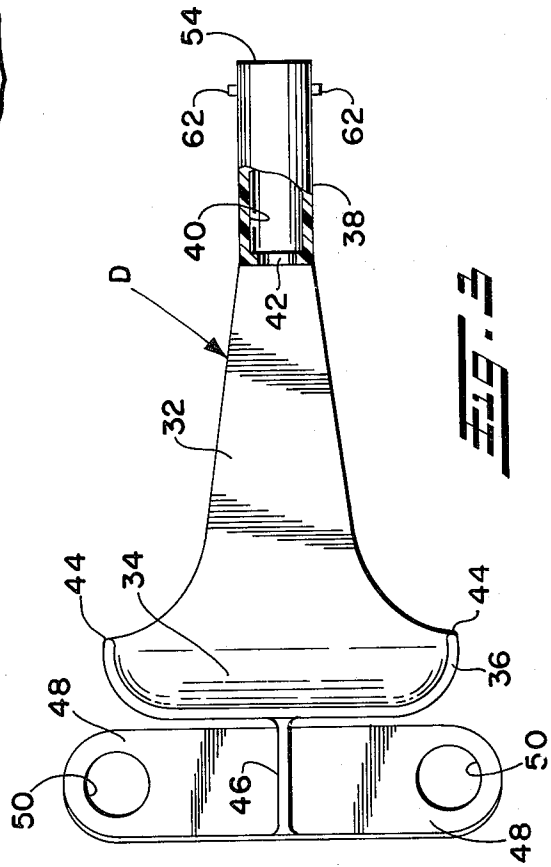


FIG. 3

SPRAY DEFLECTOR FOR DISHWASHERS

BACKGROUND OF THE INVENTION

This application pertains to the art of dishwashers, and, more particularly, to a spray deflector for the commonly provided separate silverware baskets or rack sections for the same. The invention is particularly applicable to dishwashers of the type having a bottom rotating spray arm and will be described with reference thereto. However, it will be appreciated that the invention has broader aspects and may be used in other dishwashers.

Conventional household dishwashers include racks for supporting dishes and other utensils, with a front bottom rack supporting a relatively small basket or holder section for silverware and the like. This type of basket or rack section is often very crowded and thorough distribution of high velocity spray through the same is not always obtained. It would, therefore, be desirable to have an economical and effective means to insure silverware cleaning as well as the ware also supported in the machine.

SUMMARY OF THE INVENTION

A stationary deflector is positioned beneath such a silverware basket in a dishwasher for directing a high velocity water or washing fluid jet stream upwardly through the basket.

In one arrangement, the deflector has an arcuate upstanding portion toward which the high velocity jet is directed, the arcuate portion having opposite sides which curve back toward the source of the jet flow. This arrangement thoroughly disperses the water jet into an upwardly directed laterally expanded spray.

In a preferred arrangement, the deflector is formed as one piece of plastic material and includes integral mounting means extending downwardly therefrom for mounting the deflector on the bottom of the dishwasher tub. The deflector includes a generally flat horizontal portion terminating at one end in the arcuate portion and the mounting means extends downwardly from the arcuate portion. The opposite end portion of the horizontal portion converges to a generally cylindrical hollow sleeve having an orifice facing toward the arcuate portion, with the sleeve connected with a pressurized liquid supply for directing the high velocity jet of the same through the sleeve orifice toward the arcuate portion.

The deflector is preferably positioned at the front bottom center of a dishwasher of the type having a rotatable spray arm and located beneath the path of travel of the spray arm.

It is a principal object of the present invention to provide an improved arrangement for high intensity washing action in a localized area of a dishwasher.

A further object of the invention is to provide an improved deflector arrangement for deflecting a high velocity liquid jet upwardly through a silverware basket or the like.

An additional object of the invention is to provide a dishwasher with such a deflector which is very economical to manufacture and assemble.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail a certain illustrative embodiment of the invention, this being indicative, however, of but one of the various ways in which the principle of the invention may be employed.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a fragmented perspective illustration of the lower part of a dishwasher tub having the improvement of the present invention mounted therein;

FIG. **2** is a side elevational view looking generally in the direction of arrows **2**—**2** of FIG. **1**; and

FIG. **3** is a plan view looking generally in the direction of arrows **3**—**3** of FIG. **2.**

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawing, wherein the showings are for purposes of illustrating a preferred embodiment of the invention only and not for purposes of limiting same, FIG. **1** shows the lower interior portion of a dishwasher tub A having a tub bottom **12** and a front opening closeable by a bottom hinged door **14.**

Tub bottom **12** includes a sump **16** having housing **18** of a pump mounted therein for supplying water to rotatable reaction type spray arm **20** having outlets **22.** A generally circular electric heating element **24** is mounted on tub bottom **12** in a known manner. Spray arm **20** rotates in a generally circular horizontal path for spraying water upwardly through outlets **22** throughout the interior of tub A.

A conventional rack B is positionable within tub A and includes downwardly projecting rollers **28** engageable with tub bottom **12** or other guides for rolling movement of rack B in and out of tub A on door **14** when open. Rollers **28** support rack B with the bottom thereof spaced above spray arm **20.** Rack B includes a forward pocket portion for removably supporting a silverware basket C with its bottom thus also spaced above tub bottom **12** and spray arm **20.**

In a conventional dishwasher of the type described, a high velocity liquid spray passes through basket C only when spray arm **20** passes therebeneath. Such periodic washing action is often insufficient to thoroughly clean utensils positioned within basket C. In accordance with the present application, means is provided for continuously directing a high velocity spray upwardly through basket C for thorough washing action of the ware supported therein.

In accordance with one arrangement, deflector means D is mounted in tub A beneath basket C for deflecting and dispersing the high velocity liquid jet upwardly through basket D. Deflector means D is preferably molded in one piece of synthetic plastic material such as high temperature polypropylene or a polyamide. Deflector D includes a generally flat tapered horizontal portion **32** terminating at one end in a vertical arcuate defelector portion **34** having a top edge **36,** and at its opposite end portion in a generally cylindrical hollow sleeve **38** having an enlarged internal bore **40** communicating with orifice **42** with faces arcuate portion **34** above the upper surface of horizontal portion **32.** Arcuate portion **34** curves downwardly and toward sleeve portion **38** from top edge **36.** Arcuate portion **34** further includes opposite ends **44** which curve back toward the sleeve portion **38.**

Integral mounting means for deflector D includes a central mounting web **46** extending downwardly from arcuate portion **34** and having outwardly extending mounting flanges **48** with holes **50** therethrough for receiving the same fasteners which mount heating element **24** to tub bottom **12.** An integral central stiffening web **52** extends downwardly from horizontal portion **32** for stiffening deflector D against bending.

Sleeve **38** has an end portion **54** received in a hole **56** through housing **18** communicating with an outlet passage **58** provided from the pump which is driven by an electric motor **60** mounted beneath tub bottom **12** in a known manner. Abutment ears **62** extend outwardly from sleeve **38** to serve as locators for properly locating sleeve end portion **54** within hole **56.** A suitable adhesive or silicone sealant may be provided around the periphery of hole **56** and sleeve end portion **54** for securing sleeve **38** to housing **18.**

When the dishwasher pump is operating, a high velocity jet of liquid is directed through orifice **42** toward arcuate deflector portion **34.** The high velocity water jet is dispersed into a wide spray and deflected upwardly through basket C for thoroughly washing utensils supported therein. The high velocity jet travels generally horizontally toward arcuate portion **34** from the fluid supply means defined by the pump outlet. The location of deflector D beneath the path in which spray arm **20** travels is very advantageous because it does not interfere with normal operation of the dishwasher and does not require any modification to rack B or basket C. Deflector D is positioned so that it extends from housing **18** toward the front opening of tub A and arcuate portion **34** is generally centrally located beneath basket C when rack B is positioned within tub A.

Although the invention has been shown and described with respect to a preferred embodiment, it is obvious that equivalent alterations and modifications will occur to others skilled in the art upon the reading and understanding of this specification. The present invention includes all such equivalent alterations and modifications, and is limited only by the scope of the claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a dishwasher of the type including a tub having a tub bottom and support means for supporting a silverware basket above said tub bottom, stationary liquid deflector means positioned beneath said basket for dispersing and directing liquid upwardly through said basket, and liquid supply means for supplying a high velocity liquid jet in a direction toward said deflector means, said deflector means including an arcuate deflector portion elongated transversely of the direction in which said liquid jet is directed substantially horizontally toward said deflector means, said arcuate deflector portion having an upper substantially linear edge and an arcuate deflector surface facing toward said liquid supply means and curving in a direction downwardly and toward said liquid supply means to receive said liquid jet and to disperse the same while directing liquid upwardly through said basket, opposed deflector side portions on said arcuate deflector portion curving back toward said liquid supply means for further guidance of liquid toward said basket, said deflector means further including mounting means extending downwardly therefrom for mounting said deflector means to said tub bottom, said deflector means being longitudinally elongated and having a generally flat horizontal portion that terminates at one end in said arcuate deflector portion, said mounting means extending downwardly from said arcuate deflector portion, with integral stiffening web means extending dowardly from said generally flat horizontal portion for stiffening said deflector means against deformation.

2. The dishwasher of claim **1** wherein said generally flat horizontal portion terminates at its other end portion in a generally cylindrical hollow sleeve having an orifice facing toward said arcuate deflector portion, said sleeve being connected with said liquid supply means for supplying liquid through said orifice to produce said high velocity liquid jet.

3. The dishwasher of claim **2** wherein said liquid supply means comprises a pump having a pump housing and a lateral pump discharge passage, said sleeve being connected with said discharge passage.

4. The dishwasher of claim **3** including a spray arm rotatably mounted on said housing for rotation on a substantially vertical axis, said deflector means being located beneath the path of travel of said spray arm.

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