July 13, 1965 B. E. STEWART 3,194,610

RELEASABLY ATTACHABLE WHEEL DEVICE FOR USE WITH WIRE STRUCTURES

Filed March 27, 1963

Fig. 1.

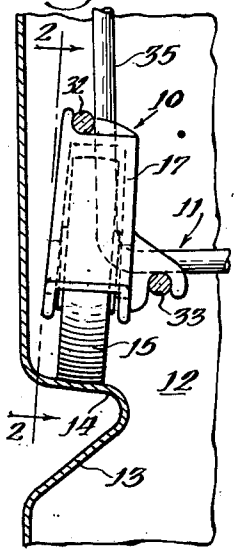


Fig. 2.

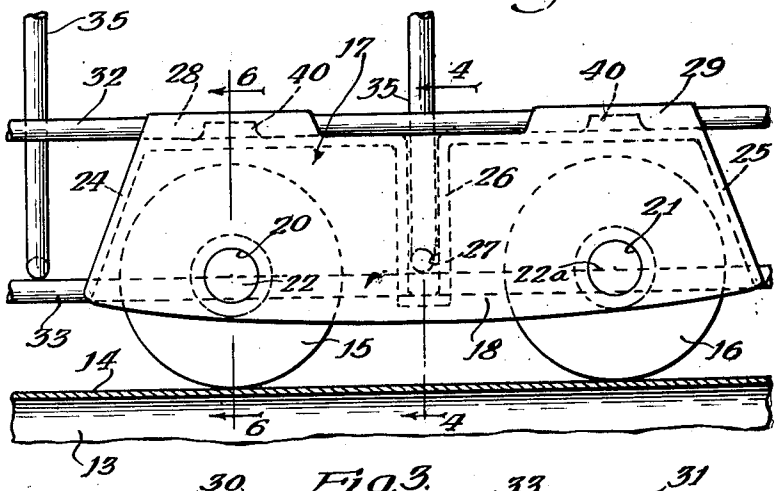


Fig. 3.

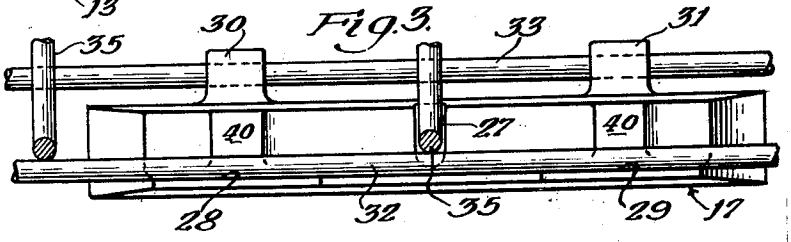


Fig. 4.

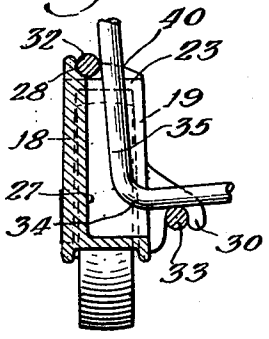


Fig. 5.

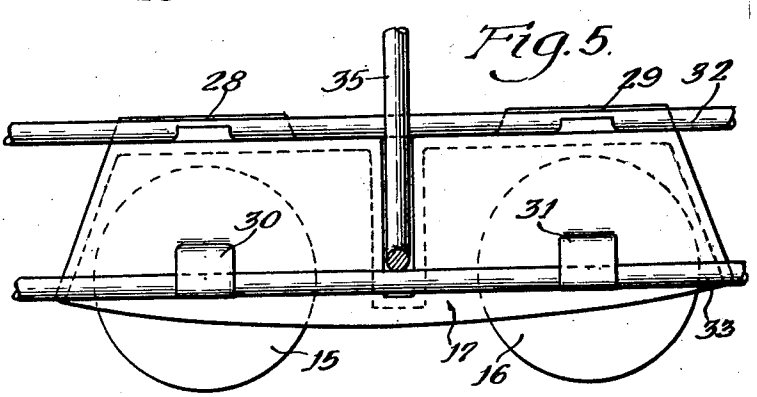


Fig. 6.

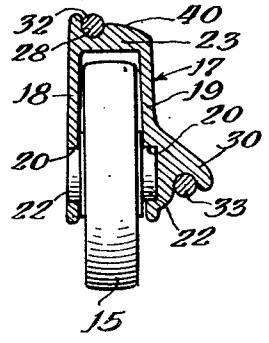


Fig. 7.

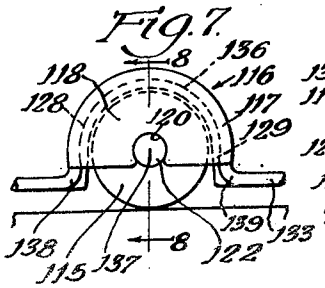


Fig. 8.

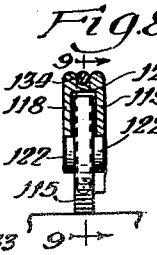
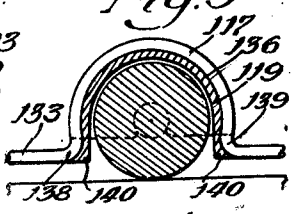


Fig. 9.



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3,194,610

RELEASABLY ATTACHABLE WHEEL DEVICE FOR USE WITH WIRE STRUCTURES

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11 Claims. (Cl. 308—3.8)

This invention relates to wheel mountings and in particular to wheel mounting for use in movably carrying wire structures such as automatic dishwasher baskets.

In one conventional form of automatic dishwasher, a basket is provided for carrying the dishes within the dish washing chamber. Means are conventionally provided for permitting withdrawal and insertion of the basket relative to the dish washing chamber, and in one well known form of dish washing apparatus such means comprises a plurality of wheels secured to the basket by suitable angle clips. The present invention comprehends an improved wheel mounting arrangement for retaining the wheels in attached association with the basket.

Thus, a principal feature of the present invention is the provision of a new and improved wheel structure.

Another feature of the invention is the provision of such an improved wheel structure including a member arranged for fitting engagement with a portion of the wire structure of a wire basket for retention of the member in attached association with the basket, said member including means for rotatably carrying a wheel.

Still another feature of the invention is the provision of such a wheel structure wherein the wheel carrying member is provided with a plurality of spaced channel portions for engaging different portions of the wire structure of the basket for facilitated attachment of the member to the basket.

Other features and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawing wherein:

FIGURE 1 is a fragmentary vertical section of a dishwasher apparatus having a wheel structure embodying the invention.

FIGURE 2 is a vertical section taken substantially along the line 2—2 of FIGURE 1;

FIGURE 3 is a top plan view of the structure of FIGURE 2;

FIGURE 4 is a transverse section taken substantially along the line 4—4 of FIGURE 2;

FIGURE 5 is a side elevation of the structure of FIGURE 4 looking from the righthand side thereof;

FIGURE 6 is a vertical section taken substantially along the line 6—6 of FIGURE 2;

FIGURE 7 is a side elevation of a modified form of wheel structure embodying the invention;

FIGURE 8 is a vertical section thereof taken substantially along the line 8—8 of FIGURE 7; and

FIGURE 9 is a vertical section taken substantially along the line 9—9 of FIGURE 8.

In the exemplary embodiment of the invention as disclosed in FIGURES 1 through 6 of the drawing, a wheel structure generally designated 10 is provided for carrying a wire device such as a dishwasher basket generally designated 11 within the dish washing chamber 12 defined by an inner wall member 13 of a dish washing apparatus. As shown in FIGURES 1 and 2, the wall 13 may be provided with an inturned rib 14 on which a pair of wheels 15 and 16 of wheel structure 10 rides in carrying the basket 11 into and from the chamber 12 as desired.

Wheel structure 10 further includes a carrier 17 provided with a pair of opposed side walls 18 and 19, as seen in FIGURE 4, having two pairs of apposed openings 20 and 21, as best seen in FIGURES 2 and 6, for rotatably carrying a pair of laterally projecting axle portions

22 and 22*a* of the wheels. The side walls 18 and 19 are connected at their tops by means of a top wall portion 23 and at the ends of the carrier by end wall portions 24 and 25 to define a downwardly opening truck member in which the wheels freely revolve.

As best seen in FIGURES 2, 3 and 4, the carrier member 17 is further provided with a central well portion 26 defining a slot 27 opening laterally through the side wall 19 and upwardly through the top wall 23. The top wall further defines a pair of upwardly opening channels 28 and 29 in spaced, longitudinally aligned disposition overlying the respective wheels 15 and 16. The side wall 19 is further provided with a pair of laterally projecting, downwardly opening channels 30 and 31.

The carrier member 17 may be formed as by molding from a suitable plastic such as polypropylene. The wheels 15 and 16 may be similarly molded of a suitable plastic with the axles 22 and 22*a* formed integrally therein.

The channels 28 and 29 are arranged to receive at spaced portions thereof a horizontally extending wire 32 of the basket 11 and the channels 30 and 31 are arranged to receive spaced portions of a second horizontally extending wire 33 thereof. The location and spacing of the channels is preselected relative to the arrangement of the wires 32 and 33 so that the wires will snap into the respective channels when the carrier member 17 is installed therebetween as shown. As best seen in FIGURES 5 and 6, the channels 28 and 29 may be defined at one side by a sloped guide 40 for facilitating the movement of wire thereunto.

Wire basket 11 may further include a plurality of wires 35 having bend portions 34, one of which selectively extends into slot 27, as best seen in FIGURES 4 and 5 for preventing fore and aft movement of the carrier member relative to the wires 32 and 33.

Thus, carrier 17 is effectively positively retained on the wire basket 11 by the engagement thereof with the wires of the basket, no additional securing means being necessary. The installation of the wheel structure 10 on the basket is extremely simple, thus substantially reducing the cost of manufacture of the dish washing apparatus and permitting the wheel structure to be readily replaced if desired. Further, the simple arrangement of the wheel structure permits long trouble-free life effectively minimizing maintenance requirements.

Referring now to FIGURES 7 through 9, a modified form of wheel structure generally designated 110 is shown to include a carrier member 117 arranged to carry a single wheel 115. Wheel 115 is generally similar to wheel 15 including a pair of laterally projecting stub axles 122. The carrier member 117 includes a pair of spaced side walls 118 and 119 which are segmentally circular in shape extending somewhat beyond a semi-circular configuration. The top wall 123 of the carrier 117 defines an arcuate channel 136 extending somewhat beyond 180° to define spaced end portions 128 and 129 opening outwardly in substantially opposite directions. The side walls 118 and 119 define openings 120 in which the wheel axles are journalled, the axis 137 of the wheel axles being disposed slightly above the lower end of the side walls. Thus, the channel end portions 128 and 129 effectively define inturned channel portions below the horizontal axis of the wheel.

As shown in FIGURE 7, one of the wires 133 of the basket may be provided with a resilient arcuate loop portion 134 extending annularly slightly over 180° complementarily to and fitted in channel 136. As the opposite ends 138 and 139 of the arcuate portion 134 of wire 133 are effectively inturned, the wire is effectively retained in the channel, thereby positively attaching the wheel structure 110 to the basket wire 133.

As best seen in FIGURE 9, side wall 119 may be further provided with a pair of downwardly projecting extensions 140 at the opposite ends of the channel 136 for engaging the end portions 138 and 139 of the wire 133 and thereby preventing rotation of the carrier member.

Thus, wheel structure 110 is generally similar to wheel structure 10 in the utilization of the arrangement of the dishwasher basket wires in a novel manner for attachment of the wheel carrier directly thereto without the need of additional securing means. Wheel structure 110 provides the highly desirable features of simplicity, economy of manufacture, and long maintenance-free life as does wheel structure 10.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as defined in the appended claims.

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

1. In a structure having a member to be carried provided with wire means, means for movably carrying the member, comprising: a wheel; a carrier having a portion in snap-fitted engagement with the wire means of said member for maintaining the carrier in releasable attached relationship to said member; and means for journalling the wheel on said carrier for rolling movement in carrying the member.

2. The structure of claim 1 wherein said wire means comprises a resilient wire portion extending arcuately over 180° and said carrier portion comprises spaced channel portions opening outwardly in substantially opposite directions in fitted engagement with diametrically opposite portions of said wire means.

3. In a structure having a member to be carried provided with a wire means, means for movably carrying the member, comprising: a wheel; a carrier having spaced portions in snap-fitted engagement with the wire means of said member for maintaining the carrier in releasable attached relationship to said member; and means for journalling the wheel on said carrier for rolling movement in carrying the member.

4. In a structure having a member to be carried provided with wire means, means for movably carrying the member, comprising: a pair of wheels; a carrier having a portion in snap-fitted engagement with the wire means for maintaining the carrier in releasable attached relationship to said member; and means for journalling the wheels on said carrier for rolling movement about parallel spaced axes in carrying the member.

5. In a structure having a member to be carried provided with a wire element extending arcuately more than 180°, means for movably carrying the member, comprising: a wheel; a carrier defining a peripheral, arcuate channel fittedly receiving the wire element for maintaining the carrier in attached relationship to said member, and means for journalling the wheel on said carrier for rolling movement in carrying the member.

6. The structure of claim 5 wherein said carrier includes a side wall having an extension portion beyond said slot engaging an end portion of said arcuate wire element to preclude rotation of the carrier relative to said wire.

7. In a structure having a member to be carried provided with wire means, means for movably carrying the member, comprising: a wheel; a carrier having a portion in fitted engagement with the wire means of said member for maintaining the carrier in attached relationship to said member; and means for journalling the wheel on said carrier for rolling movement in carrying the member, said wire means comprising a resilient wire portion extending arcuately over 180° and said carrier portion comprising an arcuate groove extending complementarily to and receiving said wire portion.

8. In a structure having a member to be carried provided with a wire means, means for movably carrying the member comprising: a wheel; a carrier having spaced portions in fitted engagement with the wire means of said member for maintaining the carrier in attached relationship to said member; and means for journalling the wheel on said carrier for rolling movement in carrying the member, said spaced portions of said carrier comprising oppositely opening channels.

9. In a structure having a member to be carried provided with a wire means, means for movably carrying the member, comprising: a wheel; a carrier having spaced portions in fitted engagement with the wire means of said member for maintaining the carrier in attached relationship to said member; and means for journalling the wheel on said carrier for rolling movement in carrying the member, said carrier including a slot and said wire means including a bend portion received in said slot.

10. In a structure having a member to be carried provided with wire means, means for movably carrying the member, comprising: a pair of wheels; a carrier having a portion in fitted engagement with the wire means for maintaining the carrier in attached relationship to said member; and means for journalling the wheels on said carrier for rolling movement about parallel spaced axes in carrying the member, said portion of said carrier comprising a pair of longitudinally aligned channel elements.

11. In a structure having a member to be carried provided with wire means, means for movably carrying the member, comprising: a pair of wheels; a carrier having a portion in fitted engagement with the wire means for maintaining the carrier in attached relationship to said member; and means for journalling the wheels on said carrier for rolling movement about parallel spaced axes in carrying the member, said portion of said carrier comprising a first pair of longitudinally aligned channel elements opening in a first direction, and a second pair of longitudinally aligned channel elements opening in a second, substantially opposed direction.

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