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LINK CONVEYING BELT

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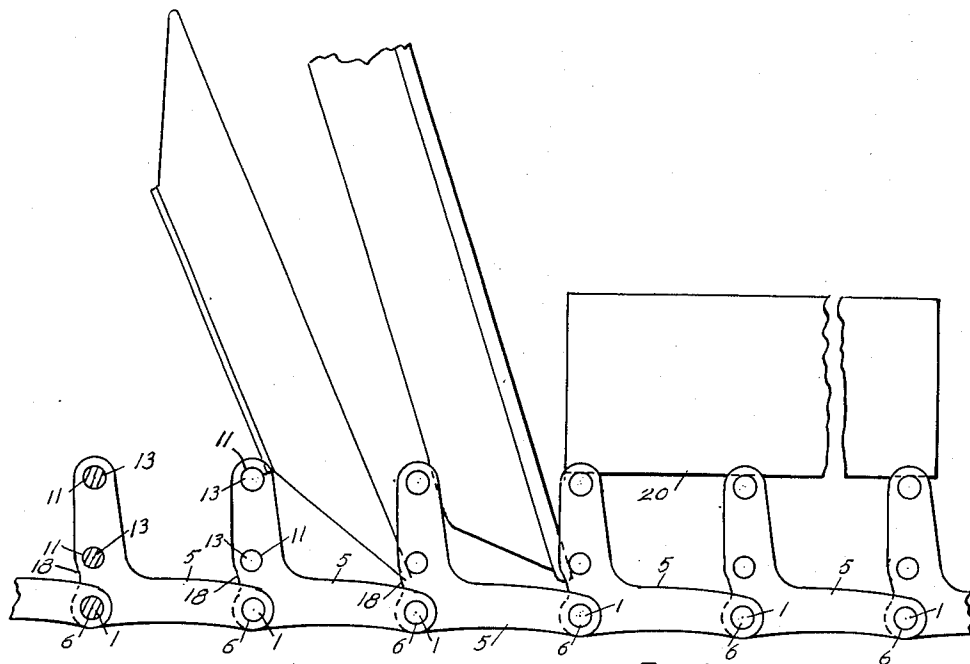


FIG. 1.

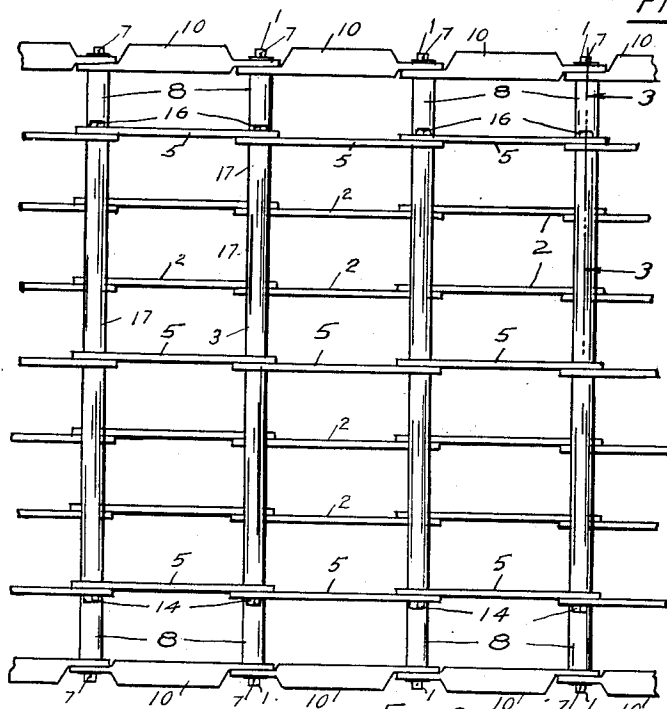


FIG. 2.

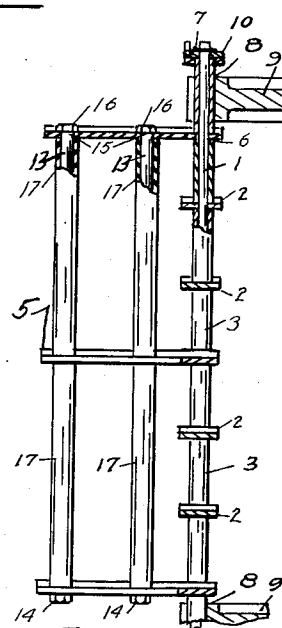


FIG. 3.

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LINK CONVEYING BELT

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3 Claims. (Cl. 198—131)

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This invention relates generally to link conveying belts and more particularly to a link conveying belt for a dish washing machine to carry dishes, trays, and the like in an upright position through the washing and rinsing fluid sprays in the machine.

In the operation of the conventional link type of dish washing machine conveyor, the dishes, trays, etc. lie flat with their major surfaces exposed to the direct impingement of the upper and lower sprays. This affords good efficiency and thoroughness in cleaning but retards the drying of the dishes, trays, etc. after their exit from the machine. It has been found that drying of the dishes, trays, etc. is much more rapid upon their exit from the machine if they are set on edge during their passage through the machine.

Attempts have been made to hold the dishes, trays, etc. on edge as they travel through a dish washing machine by providing a series of vertical pegs mounted in rows on lateral cross bars that are tied closely together onto the traveling chains of the conveyor belt. This type of belt precludes effective action of any spray from underneath thereof and it is not unusual in machines of this type to eliminate the lower spray entirely because of its ineffective action. For best washing effects on dishes, trays, etc., all surfaces of the articles to be cleaned must be exposed to the direct force of the wash and rinse jets disposed above and below the upper side of the belt. The prior belts with lateral cross bars cannot be used effectively to produce this result. These belts are cumbersome and their component parts have a comparatively shorter life.

It is, accordingly, an object of my invention to provide a link type belt for a dish washing machine with upwardly extending dish supporting members thereon which is simple in construction, economical in cost, economical in manufacture, and efficient in operation.

Another object of my invention is to provide upwardly extending supporting members on a link belt for a dish washing machine which permits spraying of plates or the like thereon from above and below the belt with a minimum of obstruction.

Another object of my invention is to provide a novel link conveyor belt for a dish washing machine which supports plates, trays, and the like in an upwardly extending tilted position by means of longitudinally spaced, transversely extending, horizontal dowels that permit practically unrestricted access of the upper and lower wash and rinse sprays to both sides of the utensils supported thereon.

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Another object of my invention is to provide an "endless dish rack" whereby the horizontally disposed, transversely extending dowels and the open bottom afforded by the link belt will hold the dishes, trays, etc. at exactly the same position as in the conventional style of dish rack in a dish washing machine without the disadvantage of the problem of returning empty dish racks repeatedly from the outlet end of the machine to the inlet end of the machine for refilling.

Another object of my invention is to provide upwardly extending rack members on a link conveyor belt for a dish washing machine which may be disposed on present link belts without any change in the basic design of the belt.

Another object of my invention is to provide a dish washing machine belt for holding plates, trays, etc. on edge which also permits the use of conventional dish racks for dishes, silverware, etc.

Other objects of my invention will become evident from the following detailed description, taken in conjunction with the accompanying drawings, in which

Fig. 1 is a more or less diagrammatic side elevational view of my novel link conveying belt for a dish washing machine;

Fig. 2 is a fragmentary top plan view of my novel link conveying belt; and

Fig. 3 is a view taken on the line 3—3 of Fig. 2.

Referring now to the drawings, I show in Figs. 1, 2, and 3 spaced, transversely extending rods 1 linked together by apertured, arcuate shaped, comparatively soft dish carrying links 2 and end links 10. The links 2 are transversely spaced by non-metallic tubular spacing members 3 on the rods 1. L-shaped links 5 have apertures 6 for receiving and connecting the rods 1. The links 5 are disposed adjacent the ends of the rods 1 and intermediate thereof. Fastening members 7 hold the links 10 on the rods 1. Tubular metallic spacing members 8 are disposed between the end links 10 and the outer L-shaped links 5 for engaging sprockets 9. The L-shaped links 5 are all alike and they have vertically spaced apertures 11 for receiving transversely extending horizontal bars 13, one end of each bar 13 having a head 14 and the opposite end 15 thereof being threaded to receive a nut 16. Comparatively soft, tubular spacing members 17 of plastic or the like surround the bars 13 intermediate the links 5 to space the links 5 and to prevent chipping of plates and the like. The back bottom edges 18 of the L-shaped links 5 are cut away to minimize contact between a link 5 and the bottom of a dish or tray. Ordinarily

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the bottom of a dish or tray engages the comparatively soft spacing members 17 on the bottom bar 13 carried by the L-shaped links 5 and the upper portion of the dish or tray engages the next succeeding spacing members 17 on an upper bar 13.

My link conveying belt is in the form of an endless belt and takes on the appearance and form of an endless dish rack on the top side thereof. No change in the basic structure of the present link conveying belt is necessary in that the lower portion of my L-shaped links 5 is substantially the same shape and construction as the other links 2 in the belt. The horizontal support bars 13 are very strong and rigid in construction and no breakage thereof results under ordinary operating conditions. This is not true of the vertical peg type of dowel which is usually made of wood or plastic and it is easily frayed and damaged. I obtain a comparatively rigid construction by pulling up the ends of the steel bars 13 passing through the apertures 11 in the L-shaped links 5 with the links 5 firmly engaging the ends of the spacing members 17.

The comparatively soft spacing members 17 on my horizontal supporting bars 13 minimize the marking of dishes from contact with metal inasmuch as the only probable contact will be with the center L-shaped link 5, the only other contact being with the horizontal, comparatively soft tubular members 17 and the comparatively soft links 2. It will be evident that water may readily be sprayed from the bottom of the belt in that obstruction to the flow of water is minimized. The carryover of wash water to the rinse tank is likewise minimized because of the upright position of the trays, plates, and the like on the belt passing through the machine. Maximum drainage of water from the plates, trays, etc. with the use of my novel conveyor in a minimum of time greatly accelerates the time of drying of the plates, trays, etc.

In operating my novel combined conveying and dish supporting link conveying belt, it is merely necessary to place the dishes or trays in a vertical position on the belt with the bottoms thereof engaging the bottom spacing members 17 on a bottom bar 13 and the upper part of the tray or dish engaging the next succeeding top spacing members 17 on an upper support bar 13. The dishes or trays move along with the belt through the machine where they are subjected to a washing action from above and below and a rinsing action from above and below after which they are removed from the belt on an extension of it beyond the exit end of the machine. A conventional dish rack 20 as shown in Fig. 1 for small dishes or for silverware and the like may be utilized with my novel belt by merely resting the rack on the top bars 13.

It will be evident from the foregoing description that I have provided a novel conveyor belt of the link type for supporting dishes, trays, and the like on edge in a vertical position while they are subjected to the washing and rinsing action of a dish washing machine which has novel dish and tray supporting members which are rigid in construction and cause a minimum amount of damage and breakage, which will accommodate a conventional dish rack, which has a minimum exposed area of metal to contact trays or dishes or the like, and one in which all of the basic design and construction of previous link type belts may be utilized.

Various changes may be made in the specific

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embodiment of my invention without departing from the spirit thereof or from the scope of the appended claims.

What I claim is:

1. A traveling link belt comprising a series of longitudinally spaced, transversely extending rods, spaced apertured links for connecting said rods together, L-shaped links on the ends of said rods and intermediate thereof having vertically spaced apertures in the upwardly extending portions thereof, vertically spaced, horizontal supporting bars extending through the apertures in the upwardly extending portions of said L-shaped links, comparatively soft tubular spacing members disposed around said bars and between said upper portions of said links, and means for connecting said L-shaped links to said rods and bars, said horizontal bars being adapted to convey flat ware in a substantially vertical or in a flat position, the lower portion of the ware engaging the lower of said bars and the upper portion thereof engaging the upper bar of the next succeeding set of bars when vertically disposed.

2. A traveling link belt comprising a series of longitudinally spaced, transversely extending rods, laterally spaced links connecting said rods, L-shaped links having the lower leg thereof connecting said rods at the ends and at a point intermediate thereof, transversely extending, vertically spaced supporting bars spaced upwardly from said rods connecting the upper legs of said L-shaped links, and means for connecting said bars, rods, and links together, said horizontal bars being spaced longitudinally a predetermined distance whereby flat ware is carried thereby in a substantially vertical position with the lower side portion of the ware engaging the lower bar of one set of bars and the upper opposite side portion of the ware engaging the upper bar of the next succeeding set of bars, said upper bars also being adapted to carry a conventional dish rack or flat ware in a horizontal position.

3. In combination with a traveling link belt, longitudinally spaced, transversely extending rods, link members connecting said rods together, tubular spacing members on said rods for spacing said link members laterally, longitudinally and transversely spaced L-shaped links connecting said rods having a portion thereof extending upwardly substantially vertically from said belt, and transversely extending, horizontal supporting bars spaced above said link members connecting the upper portion of said L-shaped links for carrying dish racks and for supporting plates, trays, and the like in a substantially vertical position, said plates, trays, and the like having the bottom portions thereof engaging the lower portions of said horizontal supporting bars and the upper portions thereof engaging the upper portion of the immediately adjacent horizontal bar.

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"Cambridge Conveyor Belts," copyright 1941, model No. 515 on page 80.