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MEANS FOR ARRANGING ARTICLES

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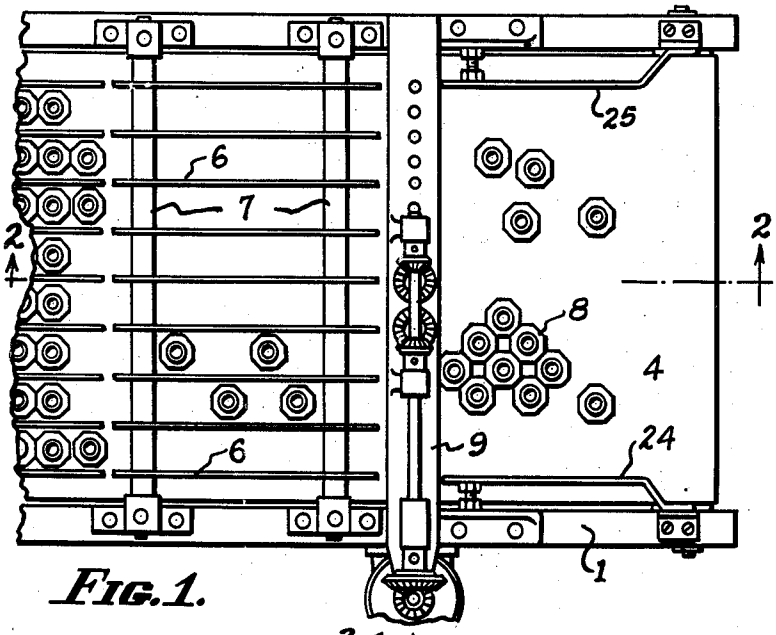


FIG. 1.

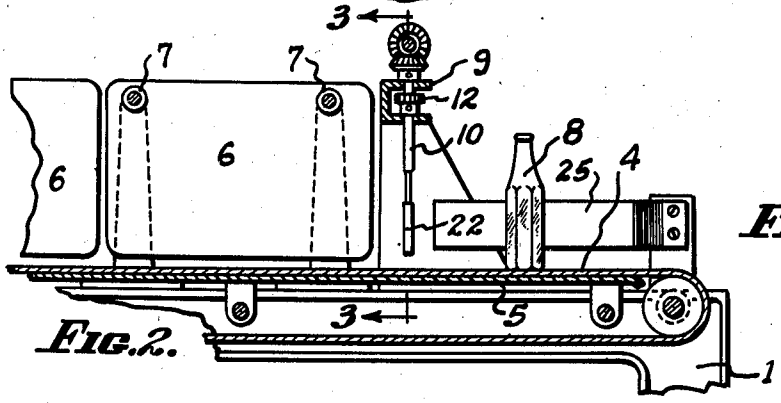


FIG. 2.

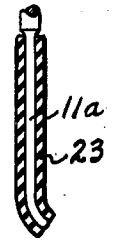


FIG. 6.

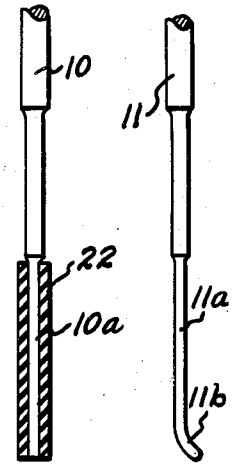


FIG. 4. FIG. 5.

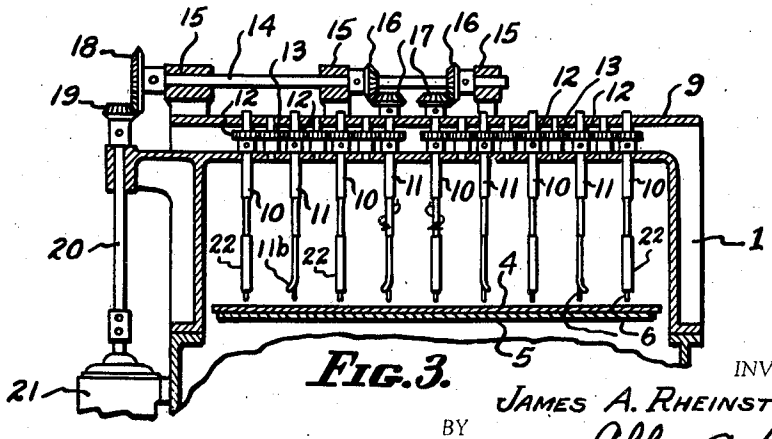


FIG. 3.

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MEANS FOR ARRANGING ARTICLES

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8 Claims. (Cl. 198—30)

In a number of circumstances, it is desired to arrange (in files between guide members) articles which have been placed haphazardly on a moving conveyor. This occurs, by way of example, in machinery for washing or sterilizing cans or bottles. The mere provision of the conveyor and interspaced vanes above it is not sufficient, since the containers tend to lock together ahead of the vanes and in many instances will not enter between the vanes. An especially difficult problem arises in the handling of cans, bottles or the like, which instead of being cylindrical in cross section, are polygonal in cross section, e. g., hexagonal or octagonal bottles.

The general objects of my invention may be summarized as the provision of an inexpensive but positive and effective means to be used in connection with the combination of a conveyor (for moving the articles) and vanes (between which the articles are to be arranged in files), which means will prevent the locking and jamming of the articles against each other and against the ends of the vanes. The more restricted objects of my invention will be set forth hereinafter or will be apparent to one skilled in the art upon reading this specification; and I accomplish these objects by that certain construction and arrangement of parts of which the following is a full, clear and exact description of an exemplary embodiment.

For a better understanding of the ensuing disclosure, reference is now made to the drawing wherein:

Fig. 1 is a plan view of a portion of a container washer embodying my invention.

Fig. 2 is a section therethrough taken along the lines 2—2 of Fig. 1.

Fig. 3 is a sectional view thereof, taken along the lines 3—3 of Fig. 2.

Fig. 4 is a view of one form of the deflector members.

Fig. 5 is a view of another form of the deflector members.

Fig. 6 is a partial view of the form of deflector member shown in Fig. 5 together with a resilient sleeve therefor.

Briefly, in the practice of my invention, I provide in the combination of a conveyor and vanes overlying a part of the conveyor, a means in front of at least some of said vanes, so located as to be contacted by articles moving on said conveyor before said articles reach said vanes, which means has a deflecting action upon the articles approaching the vanes. In the preferred form of my invention, these means comprise rotary members, preferably sheathed in a substance having a relatively high coefficient of friction, and acting to impart a sidewise movement to articles approaching them upon the conveyor. Also in connection with such members or alone, I may employ other moving members which have a jogging action upon the articles to be arranged, whereby to break up jams which occur ahead of the vanes.

The mechanism employed for the purpose indicated is simple and inexpensive. It consists, in the embodiment which will be described, in a bridge extending transversely of the conveyor and located approximately over the ends of the vanes. In this bridge there are journaled a plurality of vertical shafts, each shaft lying in front of the forward end of a vane. A common drive for the several vertical shafts is provided in the bridge. This may take the form conveniently of a longitudinal and horizontal shaft with beveled gear driving connections to the vertical shafts.

In the several figures, 1 designates the frame of the machine, and 4 the conveyor, which, as shown, is of the belt type moving on suitable sheaves and supported in its upper run by a supporting means 5. 6 indicates the vanes held above the conveyor by suitable supporting means. A detailed description of the conveyor, the vanes, and their mounting means is not necessary since these do not form limitations upon my invention. The containers or articles to be arranged are indicated at 8.

Across the machines, above the conveyor 4, I erect a suitable bridge or supporting means 9, high enough to clear the tops of the various containers 8 which are to be handled on the machine. As shown in this embodiment, the bridge 9 is of U shaped cross section and a plurality of vertical shafts 10 and 11 are journaled in both arms of the U. These shafts will be described more in detail hereinafter. Arrangement is made to drive the several shafts preferably although not necessarily, in two series, each moving toward the center line of the conveyor, as respects the approaching containers, from the nearest side of the conveyor. To this end, in the embodiment shown, pinions 12 are attached to the vertical shafts and lie within the U of the bridge. Intermediate pinions 13 are also journaled in the U and mesh with the pinions 12 so as to connect the shafts together at least in groups.

I have shown a longitudinal shaft 14 journaled in bearing brackets 15 on the bridge and connected by means of beveled gears 16 to beveled gears 17 fixed upon one shaft at least of each group. The shaft 14 is in turn connected by

beveled gears 18 and 19 to a vertical shaft 20 which is coupled to a motor 21, or alternatively to the main drive of the machine.

As shown in Fig. 4, the shafts 10 have a reduced portion 10*a*, lying in the path of the body portions of the containers 8. This reduced portion may be covered with a sleeve 22 of a substance having a relatively high coefficient of friction. A good material to use is rubber tubing.

The shafts 11 have their reduced portions 11*a*, bent over slightly at their lower ends. These portions may likewise be covered with a sleeve as shown at 23 in Fig. 6.

In the operation of my device, I normally cause the vertical shafts to revolve at a relatively low speed, say, four times per second; but the speed may be widely varied. The containers 8 are placed haphazardly upon the conveyor 4, and approach the vanes 6. They are usually confined between side guide members 24 and 25 in substantial alignment with the outer vanes. The rotating shafts at the ends of the vanes push the containers to one side, if the containers do not approach the vanes in alignment with the spaces therebetween. Thus locking and jamming is prevented. The bent ends of the shaft 11 where they are used, jog the containers, actually pushing them backwardly a slight distance on the conveyor 4 and releasing jams which occur ahead of the vanes. The displacement pressure of the shafts 11 is exerted on the containers near their bases, so that there is no tendency to upset the containers on the conveyor. The shafts 10, of course, contact the containers throughout the greater part of the length of their body portions.

Modifications may be made in my invention without departing from the spirit thereof.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a device for arranging articles in files, in combination with a conveyor for moving the articles and a vane, overlying said conveyor for defining files into which the articles are to be arranged, a rotating driven element located in front of said vane and adapted to contact said articles during their movement on said conveyor, said element comprising a vertical shaft having a deflecting action upon said articles, and having an offset portion which upon rotation exerts a jogging action on said articles.

2. In combination with a conveyor and a plurality of vanes, a bridge located over said conveyor and a plurality of vertical shafts journaled in connection with said bridge, said shafts lying in front of individual vanes, and means for driving said shafts, said last mentioned means comprising a driving interconnection between said shafts and means for applying power to one of said shafts.

3. In combination with a conveyor and a plurality of vanes arranged normal to the plane of said conveyor, a plurality of spindles also arranged normal to said conveyor and lying in front of respective vanes and means for driving said spindles all in the same direction.

4. In combination with a conveyor and vanes lying normal to the plane of said conveyor, a plurality of spindles rotatably supported normal to the plane of said conveyor and lying in front of respective vanes, means for driving said spindles, certain of said spindles bearing frictional contacting members.

5. In combination with a conveyor and vanes lying normal to the plane of said conveyor, a plurality of spindles rotatably supported normal to the plane of said conveyor and lying in front of respective vanes, means for driving said spindles, certain of said spindles bearing frictional contacting members, and certain others of said spindles having offset portions, whereby to exert a jogging action upon articles moving over said conveyor.

6. Apparatus as claimed in claim 5 wherein the spindles having offset portions alternate with the other spindles.

7. In a device for arranging articles in files, in combination with a conveyor for moving the articles and vanes, in connection with the conveyor, for defining files into which the articles are to be arranged, rotary driven elements located in front of said vanes and adapted to contact said articles during their movement on said conveyor, said elements comprising vertical shafts having a deflecting action upon said articles, said vertical shafts having offset portions which upon rotation exert a jogging action on said articles.

8. In combination with a conveyor and vanes lying normal to the plane of said conveyor, a plurality of spindles rotatably supported normal to the plane of said conveyor and lying in front of respective vanes, means for driving said spindles, certain of said spindles bearing frictional contacting members, and all others of said spindles having offset portions, whereby to exert a jogging action upon articles moving over said conveyor.

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