March 31, 1953 A. MARKUSEN ET AL 2,632,901

EGG WASHING MACHINE AND ROLLER THEREFOR

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Fig. 1.

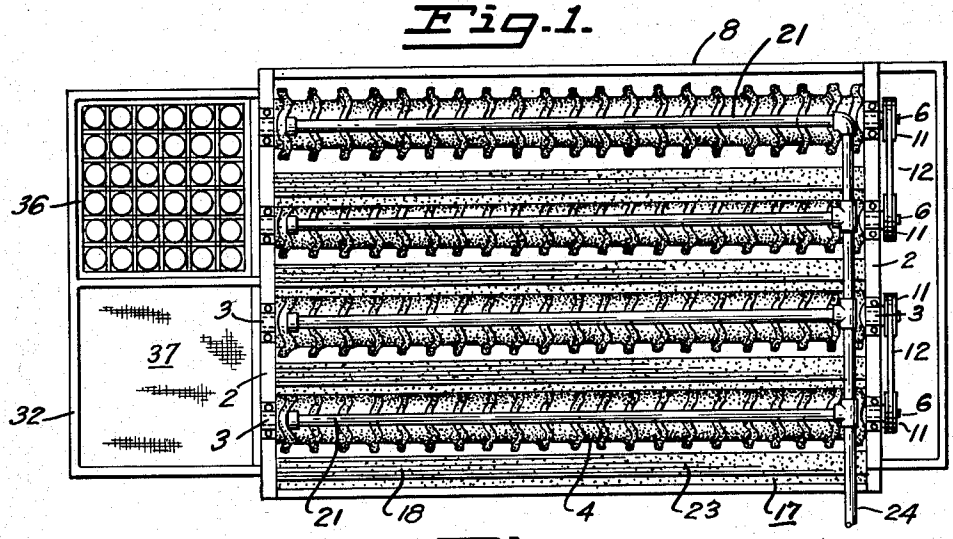


Fig. 2.

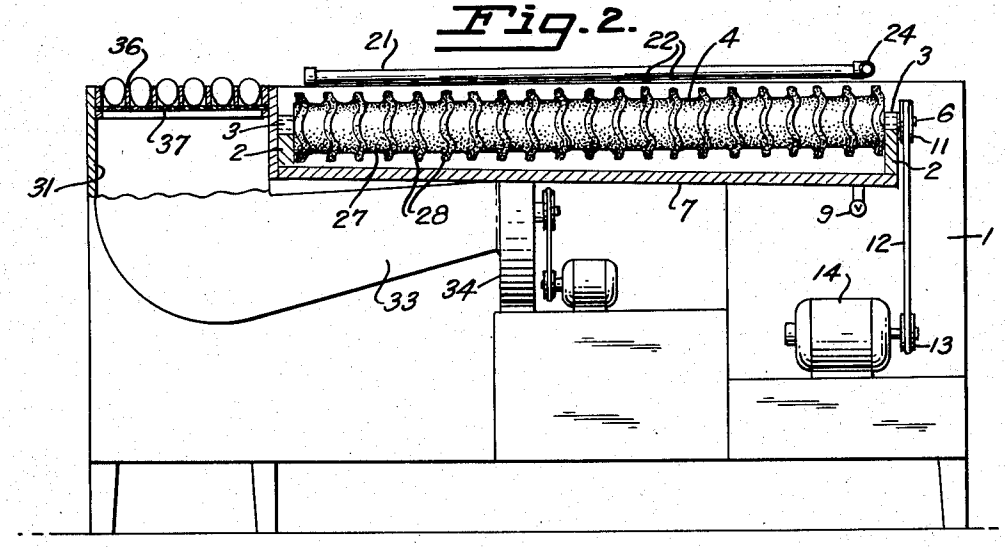
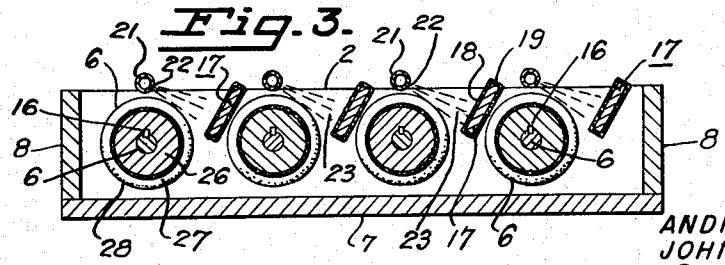


Fig. 3.



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EGG WASHING MACHINE AND ROLLER THEREFOR

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7 Claims. (Cl. 15—3.12)

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This invention relates to an egg washing machine.

The primary object of this invention is to provide an egg washing machine in which the eggs are rotated and shifted back and forth against a wiping or cleaning surface in approximately the same manner as the eggs would be turned, washed and wiped in manual operation; the machine being capable of washing and cleaning a comparatively large number of eggs in a very short time, efficiently and with minimum breakage.

The features of the herein invention include: a roller adjacent a wiping board or surface with grooves and ribs arranged on its periphery in substantially parallel curves so as to rotate and shift the eggs back and forth upon and against the wiping surface, both the wiping surface and the rollers being covered with a suitable padding;

Another feature of the invention is the provision of selective operation either by providing a trough under the rollers with cleaning fluid in the trough to be soaked up by the absorbent pads on the rollers and applied to the eggs, or at will the device may be used with a spray directed upon the eggs from above for washing the same;

Another feature of the invention is to utilize this spray device for the additional function of preventing the accidental carrying of the eggs over the top of the rollers;

Another feature is the provision of a drying duct which is covered by an absorbent covering through which the drying air can reach the eggs upon trays at one end of the machine in such a manner that any collection of moisture at the tips of the eggs is absorbed by this covering and suitably dried or evaporated by the drying air flow.

We are aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claims; hence we do not limit our invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do we confine ourselves to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

With the foregoing and other objects in view, which will be made manifest in the following

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detailed description, reference is had to the accompanying drawings for the illustrative embodiment of the invention, wherein:

Fig. 1 is a top plan view of a machine constructed in accordance with our invention.

Fig. 2 is a side view partly in section of said machine.

Fig. 3 is a cross sectional view of the washing machine.

The invention generally includes a frame or stand 1 on which are provided a pair of spaced transverse brackets 2. On the brackets 2 are a plurality of spaced bearings 3, at each end corresponding to the number of rollers to be used on the particular machine. A plurality of rollers 4, having central shafts 6 therein, the ends of which are journalled in the bearings 3 at the opposite ends thereof. It is preferable that a bottom trough be provided between the brackets 2 and under the rollers 4 for holding water or in case of the spraying of the machine, to properly collect and drain the cleaning fluid from the machine. For this purpose a suitable bottom 7 is provided between the brackets and the side walls 8 so as to form a trough extending under the rollers, with the bottom 7 preferably inclined toward one end and furnished with a suitable drainage outlet 9.

At one end of each roller shaft 6 is a drive pulley 11 which pulleys are connected by suitable belts 12 to the drive pulley 13 of an electric motor 14 for rotating all the rollers in synchronism. As shown in the sectional view Fig. 3, the rollers are connected to the respective shafts 6 by keys 16, or in any other suitable manner.

Adjacent to each roller 4 and slightly spaced from the upwardly moving side thereof, is a board 17 which is held on the end bracket 2 in an inclined position outwardly and away from the upwardly moving side of the adjacent roller 4, so that it presents an inclined wiping or washing surface 18. Suitable padding or absorbent covering 19 is secured around the board 17. It is to be noted that the bottoms of the board 17 do not extend to the bottom 7 of the trough so that the space between the rollers wherein the fluid is contained, is not partitioned off or separated but it allows the continuous movement and simultaneous draining of the fluid in the entire trough.

The top space between the boards 17 is completely open. Above the top of each roller and parallel with the same and spaced therefrom, is a spray pipe 21 with nozzle orifices 22 formed

on the same and directed generally tangentially to the adjacent roller 4 and upon the surface 18 of the board 17. Generally the spray is directed downwardly into the spacing 23 between the roller and the board 17 so as to wash the eggs, in addition furnishing the washing and wiping fluid upon the absorbent covering of the roller and of the board. All the pipes 21 are connected to a main pipe 24 which suitably supports them in spaced relation and which in itself is in turn suitably supported above the machine or on the frame of the machine in any manner not shown.

The preferred embodiment of the roller 4 includes a core 26 which may be either carved from wood, or molded, or suitably constructed with alternate channels 27 and ribs 28 generally parallel with one another and arranged circumferentially of the respective rollers 4. The shapes of the ribs 28 determines the shapes of the channels 27. The spacing between the ribs 28 is such that the channel 27 is wide enough to accommodate an egg therebetween for rolling the egg in the channel. The ribs are suitably curved generally in the shape of a double S, namely, each rib 28 is bent or curved axially with respect to the roller at least twice in opposite directions so that the egg rolling in the channel 27 is shifted by the channel and by the adjacent ribs 28 back and forth. Inasmuch as the eggs are placed between the upwardly moving side of roller 4 and the adjacent inclined surface 18 of the board 19, the eggs are rolled and wiped upon said surface 18 and are properly washed and rubbed and wiped on all sides and ends thereof by these adjacent padded surfaces. The eggs are placed upon the respective washing surfaces 18 by hand and by gravity they tend to remain close to the space 23 between each roller and the adjacent surface 18. If some of the eggs are accidentally carried upwardly by the roller, then the top conduit 21 performs a secondary function, namely, as an abutment to prevent the egg going over to the downward moving side of the roller. The egg abutting against the pipe 21 will fall back toward the space 23 adjacent the upwardly moving side of the roller 4.

The top of the space above the rollers being entirely exposed, the eggs can be easily placed in and removed from the channels 27 and the operation can always be observed to ascertain when the eggs are sufficiently clean for removal. The padding or cover on the rollers 4 closely conforms to the contour of the channels 27 and the ribs 28 of the rollers 4.

At an end of the machine is provided a duct 31, the outlet frame 32, of which is substantially rectangular and is adapted to support thereon two processing trays of the usual type, each containing 36 eggs. This duct 31 is connected by its curved elbow 33 to a suitable blower 34 which blows heated air out through the duct 31 and against the eggs in the processing trays 36. At the point of support of the trays is provided an absorbent covering 37. This may be made of any light material which allows the air to blow therethrough such as muslin or cotton, or the like. Washed eggs then placed upon such processing trays are usually placed with their smaller ends pointing down and moisture collects at said ends, which if not wiped off may cause rotting or other defects in the eggs later on. The absorbent flexible covering or muslin 37 is blown by the air against the bottoms of the eggs and is capable of conforming to their irregular shapes so as to touch the bottoms of all the eggs in a processing tray and blot the moisture from the same, which moisture is then quickly dried out by the hot air blown through the duct 31. The duct and the tray supports are mounted on the same frame as the washing apparatus providing a compact unit where the operator can easily place the eggs into the rollers and remove the same after they are washed and cleaned to place them in the processing trays for the drying operation.

The machine is highly efficient and it gives great selectivity as to the manner of operation. It can be used as a washer wherein the fluid is maintained in the trough 7 and is absorbed and carried upwardly by the respective rollers, or the top spray may be employed either in combination with the fluid in the trough or without it for performing the washing operation. The eggs are gently rotated and shifted against the washing or rubbing surface of the adjacent boards and are prevented from being carried over the rollers so that the complex rotary and shifting motion of the eggs accomplishes complete washing, wiping and rubbing of the eggs thereby saving a great deal of damage and loss now occasioned by the manual washing of the eggs by egg producers.

We claim:

1. In an egg washing machine, the combination with a washing and wiping surface, of a roller, the upward moving side thereof being adjacent to said surface, a plurality of generally circumferential and parallel spaced ribs along the periphery of said roller, each of said ribs being curved in a multiple curved shape, the curve being offset axially with respect to said roller alternately in opposite directions for shifting the eggs back and forth along said surface during the rotation of said roller.

2. In an egg washing machine, the combination with a washing and wiping surface, of a roller, the upward moving side thereof being adjacent to said surface, a plurality of generally circumferential and parallel spaced ribs along the periphery of said roller, each of said ribs being curved in a multiple curved shape, the curve being offset axially with respect to said roller alternately in opposite directions for shifting the eggs back and forth along said surface during the rotation of said roller, said roller being padded.

3. In an egg washing machine, the combination with a washing and wiping surface, of a roller, the upward moving side thereof being adjacent to said surface, a plurality of generally circumferential and parallel spaced ribs along the periphery of said roller, each of said ribs being curved in a multiple curved shape, the curve being offset axially with respect to said roller alternately in opposite directions for shifting the eggs back and forth along said surface during the rotation of said rollers, and absorbent covering on said surface and on said roller.

4. In an egg washing machine, the combination with a washing and wiping surface, of a roller, the upward moving side thereof being adjacent to said surface, a plurality of generally circumferential and parallel spaced ribs along the periphery of said roller, each of said ribs being curved in a multiple curved shape, the curve being offset axially with respect to said roller alternately in opposite directions for shifting the eggs back and forth along said surface during the rotation of said roller, and absorbent covering

on said surface and on said roller, and means for applying fluid to said absorbent covering.

5. A roller for an egg washing machine of the character described, comprising a substantially cylindrical body, a series of substantially parallel ridges protruding from said body circumferentially, each ridge being curved, the curve being offset axially in opposite directions with respect to said body for shifting eggs therebetween back and forth as the roller is rotated.

6. A roller for an egg washing machine of the character described, comprising a substantially cylindrical body, a series of substantially parallel ridges protruding from said body circumferentially, each ridge being curved, the curve being offset axially in opposite directions with respect to said body for shifting the eggs therebetween back and forth as the roller is rotated, the spacing between the adjacent ridges conforming to the size of the eggs to be accommodated therebetween for rolling said eggs against any adjacent surface.

7. A roller for an egg washing machine of the character described, comprising a substantially cylindrical body, a series of substantially parallel ridges protruding from said body circumferentially, each ridge being curved, the curve being offset axially in opposite directions with respect to said body for shifting the eggs therebetween back and forth as the roller is rotated, and a padding covering said roller and conforming to the shape of said ridges and the channels therebetween.

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