Sept. 8, 1953

O. M. TOENNIES

2,651,313

SHRINKING MACHINE

Filed March 3, 1952

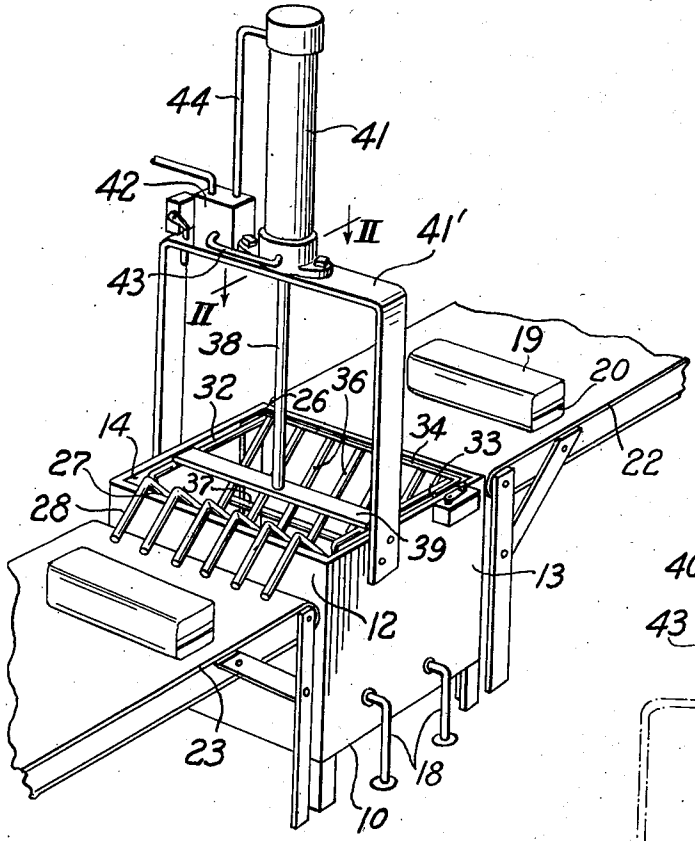


Fig. 1.

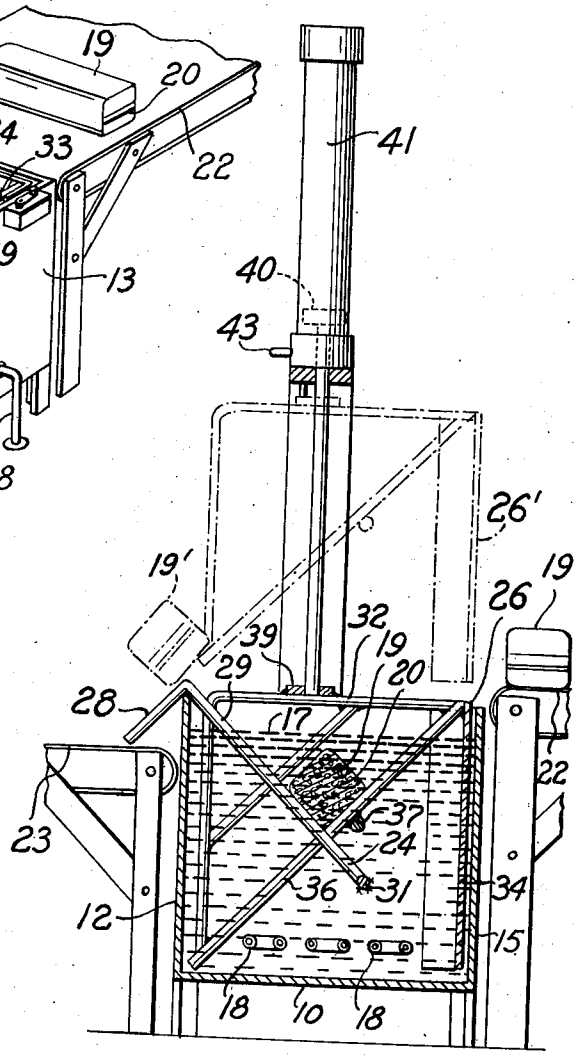


Fig. 2.

INVENTOR.
OWE M. TOENNIES
BY
Zugelter & Zugelter
Attys.

Patented Sept. 8, 1953

2,651,313

UNITED STATES PATENT OFFICE

2,651,313

SHRINKING MACHINE

Owe M. Toennies, Cincinnati, Ohio, assignor to The E. Kahn's Sons Company, Cincinnati, Ohio, a corporation of Ohio

Application March 3, 1952, Serial No. 274,639

5 Claims. (Cl. 134—133)

1

This invention relates to a machine for shrinking around a package a wrapper which is shrinkable on contact with a liquid. More particularly this invention relates to a shrinking machine having a bath of said liquid in which a package can be suspended and to means for discharging the package from the bath.

An object of this invention is to provide a rack for a shrinking machine which supports the package in a fluid bath and which rack can be raised to discharge the package from the bath.

A further object of this invention is to provide an arrangement of relatively movable sloping racks in a tank which racks cross to form a V-shaped support for the package while submerged as when the movable rack is in a lowered position, the movable rack when raised, sliding the package upwardly on the other rack and discharging it over a side of the tank.

The above and other objects and features of the invention will in part be apparent and will in part be obvious from the following detailed description, and the drawing, in which:

Figure 1 is a perspective view showing a shrinking machine constructed in accordance with an embodiment of this invention; and

Fig. 2 is a view in section taken on line II—II of Fig. 1.

In the following detailed description, and the drawing, like reference characters indicate like parts.

As shown in the drawing, the shrinking machine includes an open tank having a bottom 10 and side walls 12, 13, 14 and 15. The tank is constructed to hold a liquid such as water. In operation the water is maintained at a suitable level as indicated at 17. The water is heated to an elevated temperature by steam coils 18 or the like. The particular temperature to which the water is heated is that temperature which will shrink a wrapper 19 which is shrinkable in hot water, for a meat package 20 when the package is submerged in the water as shown in Fig. 2.

The machine is especially designed for shrinking a wrapper around a package of meat but may be used for shrinking a wrapper around other products. The wrapper is formed of appropriate sheet material which is substantially air and water tight. The meat is placed in the wrapper and the wrapper is evacuated and sealed before the package reaches the shrinking machine. In the machine, the package is suspended in hot water for a sufficient time that the wrapper is shrunk tightly around the meat.

2

The package is fed into the tank by an appropriate feed conveyor 22 and is conveyed away from the tank by a discharge conveyor 23.

While the package is in the tank, it is supported by a pair of racks 24 and 26. As will be explained in greater detail hereinafter, rack 24 is a stationary rack, while rack 26 is movable and may be raised from the position shown in full lines in Fig. 2 to the position indicated in dot-dash lines at 26'. When the movable rack is in the tank, the stationary and movable racks cross to form a V as indicated most clearly in Fig. 2.

The stationary rack 24 includes a plurality of L-shaped bars 27 which hang over the top of tank wall 12. As shown in Fig. 2, one arm 28 of each bar 27 hangs outside the tank. Bars 28 form a skid for package 20 when it is discharged from the tank. The other arm 29 of each L-shaped bar slopes downwardly at an angle, as shown. The lower ends of arms 29 are joined to a cross bar 31 as by welding. The ends of cross bar 31 may be welded to walls 13 and 14 of the tank to anchor the stationary rack in the tank.

The movable rack includes end frames 32 and 33, which are joined together by a cross member 34, and a plurality of rack bars 36. Cross member 34 is secured at its opposite ends to the end frames 32 and 33. Bars 36 slope downwardly at an angle and are disposed alongside the respective bars 29, the two sets of bars forming a V. The upper ends of the inclined bars 36 are attached to the cross member 34, and the bars 36 are joined together and held rigidly in position by a cross bar 37. Cross bar 37 may be welded to the inclined bars to maintain the inclined bars in spaced parallelism. The inclined bars 36 of the movable rack and the arms 29 of the bars of the stationary rack cross and are spaced from each other when the movable rack is lowered.

As shown, the bars of the racks are inclined to each other at an angle of approximately 90 degrees, each rack being inclined at an angle of approximately 45 degrees to the vertical. The lower ends of the bars of the stationary rack are firmly held in place in the tank. The lower ends of the bars of the movable rack project between the bars of the stationary rack and are free so that the lower part of the movable rack can be raised through the stationary rack as the movable rack is raised to the position indicated at 26' in Fig. 2.

When package 19 is advanced to the tank 10 by conveyor 22 and is deposited in the tank, it is

supported in the V formed between the stationary and movable racks as indicated in Fig. 2. When the package has remained in the tank for a sufficient time, movable rack 26 is raised to raise the package along the arms 29 of the bars of the stationary rack to the position indicated at 19' from which the package falls by gravity down along arms 28 onto discharge conveyor 23. As the movable rack is raised, the V between the stationary and movable racks rises until when the movable rack is fully raised, the lower ends of the inclined bars 36 are above the stationary rack so that the package can slide from the inclined bars onto arms 28 of the stationary rack and thence onto the discharge conveyor. The movable rack is raised and lowered by means of a piston rod 38. The piston rod 38 is attached at its lower end to a cross bar 39. Cross bar 39 in turn is attached to the end frames 32 and 33 of the movable rack.

The upper end of piston rod 38 carries a piston 40 which is received inside a pneumatic cylinder 41. As shown, cylinder 41 is supported above the tank on a frame 41'. Air under pressure can be fed into either end of a cylinder 41 as desired, through a four-way valve 42. When a package is to be discharged from the tank, compressed air is fed into the lower end of cylinder 41 through a pressure line 43. Then, when the movable rack has been raised and the package has been discharged, the air pressure in the lower end of cylinder 41 is released and air is permitted to enter the top of cylinder 41 through a line 44 to permit the movable rack to return into the tank to the position shown in full lines in Fig. 2.

The machine illustrated in the drawing and described above is subject to structural modification without departing from the spirit and scope of the appended claims.

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

1. A machine for shrinking a wrapper which is shrinkable in a liquid around a package, said machine comprising an open-topped tank containing a liquid in which said wrapper is shrinkable, a movable rack having an openwork platform mounted for vertical reciprocation in the tank, said platform sloping downwardly from a location adjacent one wall of the tank toward the opposite wall when in the tank, the lower edge of said platform being slightly above said opposite wall when raised, and a stationary rack having an openwork platform extending from said opposite wall downwardly toward said first mentioned wall, said platforms crossing inside the tank when the movable rack is lowered to form a support for the package below the liquid level, the package being propelled upwardly on the stationary rack and discharged over said opposite wall when the movable rack is raised.

2. A machine in accordance with claim 1 characterized by the fact that each rack is inclined at an angle of approximately 45 degrees to the vertical and at approximately 90 degrees to the other rack to form a V-shaped trough therebetween for supporting the package when the movable rack is in the tank.

3. A machine in accordance with claim 1 characterized by the fact that the movable rack and the stationary rack each comprise a plurality of spaced parallel bars, that a cross bar is attached to the lower ends of the bars of the stationary rack, that the ends of the cross bar are attached to the walls of the tank to hold the stationary rack in place therein, and that the lower ends of the bars of the movable rack project between the bars of the stationary rack and are free so that the lower end of the movable rack can be raised through the stationary rack.

4. A machine for shrinking a wrapper which is shrinkable in a liquid around a package, said machine comprising an open-topped tank containing a liquid in which said wrapper is shrinkable, a movable rack mounted for vertical reciprocation in the tank, said movable rack comprising a plurality of spaced downwardly sloping bars, and a stationary rack, said stationary rack comprising a plurality of bars sloping downwardly into the tank, the slope of said bars being opposite to the slope of the bars of the movable rack and forming a V, the apex of which moves along the stationary bars when the other bars move vertically, said apex coinciding with the top of one wall when the movable rack is in its package discharging position, said bars being adapted to support the package in the V thereof below the liquid level when the movable rack is in a lowered position, the movable rack sliding the package upwardly on the stationary rack bars to discharge the package over said opposite wall when the movable rack is raised.

5. A machine for shrinking a wrapper which is shrinkable in a liquid around a package, said machine comprising an open-topped tank containing a liquid in which said wrapper is shrinkable, a movable rack mounted for vertical reciprocation in the tank, said movable rack comprising a plurality of spaced downwardly sloping bars, and a stationary rack, said stationary rack comprising a plurality of L-shaped bars, each L-shaped bar hanging over said opposite wall with the apex above said opposite wall, one arm of each L-shaped bar extending downwardly from the apex toward said first mentioned wall, the other arm of each L-shaped bar extending downwardly from the apex outside the tank, said bars being adapted to support the package in the tank with the package below the liquid level when the movable rack is in a lowered position, the movable rack sliding the package upwardly on the stationary rack bars to discharge the package over said opposite wall when the movable rack is raised.

OWE M. TOENNIES.

No references cited.