The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to an apparatus for handling goods in case lots.

A further object of the invention is to provide an apparatus adapted to be used particularly in warehouses for turning a plurality of cases containing foods which require periodic turning, such as evaporated milk.

Referring to the drawings:

Fig. 1 is a perspective view of a plurality of cases stacked on a pallet.

Fig. 2 is a perspective view of a plurality of cases stacked on a pallet with a second pallet on top of the uppermost cases.

Fig. 3 is a perspective view of a loaded pallet, showing the securing means applied for holding the upper and lower pallets together.

Fig. 4 is a perspective view of a loaded pallet raised from its supporting surface and encircled by a pair of slings.

Fig. 5 is a perspective view of a loaded pallet in tilted position.

Fig. 6 is a vertical sectional view of a loaded pallet.

Fig. 7 is a top view partly broken away of a loaded pallet.

In the storage of evaporated milk it has been found that the milk will lose its flavor unless it is subjected to periodic turning, the reason being that the solid matter, which comprises 24 percent of the milk, the other 76 percent being water, settles to the bottom of the container unless the container is turned periodically. The usual practice followed in warehouses is to manually turn separately each individual case containing the containers of milk. This is not only a costly procedure due to the fact that it is necessary to employ a considerable force of men to handle the cases, but it involves a great deal of time, particularly when a large quantity of cases are being stored.

Referring to Fig. 1, in practicing the present invention a plurality of cases 1 packed with food such as containers of evaporated milk which must be turned periodically, are stacked upon a pallet 2 of the type customarily used in warehouses. After the desired number of cases which are to be turned are stacked on the pallet 2, a second pallet 3, as shown in Fig. 2, is placed on top of the uppermost cases. Elongated plates 4, usually four in number, having their ends preferably formed with prong-like elements 5 are inserted into the open ends of the pallets 2 and 3. In order that the pallets may be tied or drawn together, rods 6, provided with threaded ends 7 are passed through the prong ends of the plates and nuts 8 attached thereto. Referring to Fig. 3, it will thus be seen that by tightening upon the nuts the pallets will be drawn together so as to firmly hold the cases between the pallets whereby the pallet load may be readily handled. In some instances it may be found desirable to use a clamp instead of the rods for holding the pallets together.

When it is desired to invert or turn a pallet load, as shown in Fig. 3, any suitable means such as the lift truck 12 provided with fork-lifting elements 14 may be used for taking the pallet load from its supporting surface 15, as shown in Fig. 4. After the load is raised by means of the lift truck, endless flexible cables 16 forming slings which are suspended overhead by means of pulleys 18 from a hoist or crane 19, are placed around the entire pallet load, as shown in Fig. 4. The load is then suspended by means of the slings in movable relation relative to pulleys 18. The hoist or crane is preferably provided with wheels or rollers so that it may be moved from place to place. It may be desirable in some instances to insert the loaded pallet into the slings by means of the lift truck.

The slings are preferably positioned between the plates 4 which extend outwardly from the pallets. By positioning the slings between the plates, the plates tend to act as guides for the slings and at the same time prevent the slings from slipping off the pallet load. When the pallet load is suspended by the slings, the hoist or crane 19 raises the loaded pallet about two feet from the floor. The pallet load is then tilted, preferably by inserting the load supporting fork of a lift truck under the load's end short of a vertical plane which passes through the center of gravity of the load, as shown in Fig. 5, although any other suitable means may be used for tilting the pallet load. The load is tilted until it passes the position where its side is horizontal to the floor. After passing this position the load will slip by gravity in the slings until it is in an inverted position from that in which it was originally picked up. It will thus be observed that the pallet 2 on which the cases were originally stacked will now be the top pallet while the pallet 3 will be the bottom pallet. By this operation the cases have been turned 180° and as a result the food containers in the case have been inverted.

While I have shown and described a simple and preferred form of carrying my invention into practice, it is to be understood that various
changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the appended claims.

Inventor:

A system for simultaneously inverting a plurality of containers, comprising an upper pallet, a lower pallet, means for connecting said upper and lower pallets together and for assembling said pallets and containers into a composite unit, means for encircling said assembled upper and lower pallets, overhead support means for suspending said encircling means in movable relation relative to said support means, and means for lifting said assembled pallets and containers, said last-named means being insertible under said lower pallet and terminating short of a vertical plane which passes through the center of gravity of the composite unit.

An apparatus for simultaneously inverting a plurality of containers, comprising an upper pallet, a lower pallet, means for connecting said upper and lower pallets together and for assembling said pallets and containers into a composite unit, means for encircling said assembled upper and lower pallets, overhead support means for suspending said encircling means in movable relation relative to said support means, and means for lifting said assembled pallets and containers, said last-named means being insertible under said lower pallet and terminating short of a vertical plane which passes through the center of gravity of the composite unit.

An apparatus for inverting an article, comprising in combination an upper and lower pallet between which said article is adapted to be placed, means for connecting said upper and lower pallets together and for assembling said pallets and said article into a composite unit, means for encircling and raising said pallets when they are connected together, overhead support means for suspending said encircling means in movable relation relative to said support means, and means for lifting said assembled pallets and article, said last-named means being insertible under said lower pallet and terminating short of a vertical plane which passes through the center of gravity of the composite unit.

A system for simultaneously inverting a plurality of containers, comprising an upper pallet, a lower pallet, means for connecting said upper and lower pallets together and for assembling said pallets and containers into a composite unit, means for encircling said assembled upper and lower pallets, vertically reciprocable overhead support means for suspending said encircling means in movable relation relative to said support means, and a vertically reciprocable lift-truck load-support for tilting said assembled pallets and containers, said lift-truck load-support being insertible under said lower pallet and terminating short of a vertical plane which passes through the center of gravity of the composite unit.

In an apparatus for inverting an article, an upper pallet, a lower pallet, adapted to support said article, and means for connecting said pallets and said article together to form a composite unit, said means comprising elongated removable members insertible through and having ends protruding beyond said pallets and means for joining the protruding ends of elongated member inserted through the upper pallet to the protruding ends of an elongated member inserted through the lower pallet.

In an apparatus for simultaneously inverting a plurality of containers, an upper pallet, a lower pallet, on which said containers may be placed, means for connecting said upper and lower pallets together, said means comprising a plurality of spaced elongated removable members adapted to be inserted through said upper and lower pallets and having ends protruding beyond said pallets and means for connecting a removable member inserted in the upper pallet to a removable member inserted in the lower pallet, and encircling means surrounding said connected upper and lower pallets intermediate the protruding ends of said elongated removable members, said protruding ends serving as guides for said encircling means.

An apparatus for simultaneously inverting a plurality of containers, an upper pallet, a lower pallet, on which said containers may be placed, means for connecting said upper and lower pallets together, said means comprising a plurality of spaced elongated removable members adapted to be inserted through said upper and lower pallets and having ends protruding beyond said pallets and means connecting a removable member inserted in the upper pallet to a removable member inserted in the lower pallet, encircling means surrounding said connected upper and lower pallets intermediate the protruding ends of said elongated members, and means for tiltably suspending said encircling means, said protruding ends serving as guides for said encircling means.

Hugh D. Smith.

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The following references are of record in the file of this patent:

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Certificate of Correction


HUGH D. SMITH

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows: Column 1, line 18, for “pellet” read pallet; column 4, line 12, claim 5, before “elongated” insert the word an; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 31st day of August, A. D. 1948.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.