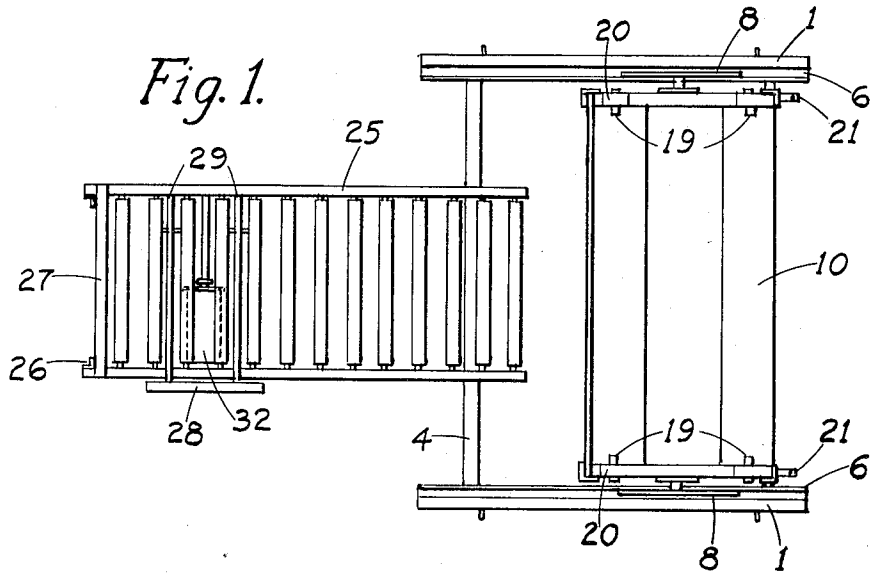
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PACKING MACHINE

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Fig. 1.



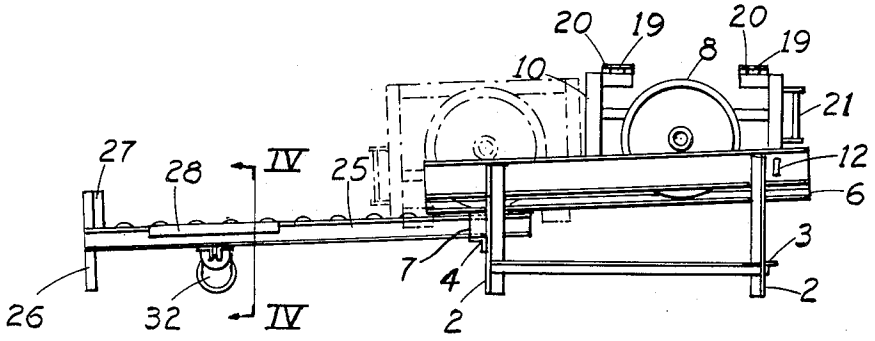


Fig. 2.

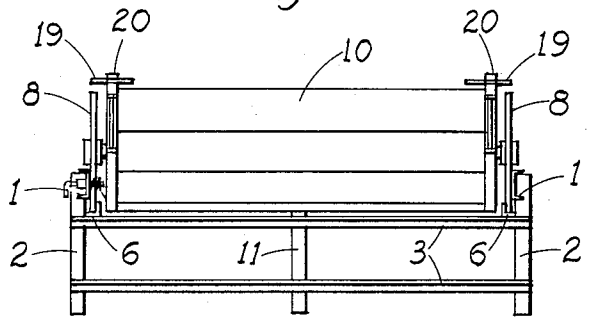
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His Attorneys

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Fig. 3.



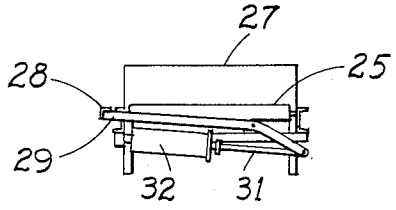


Fig. 4.

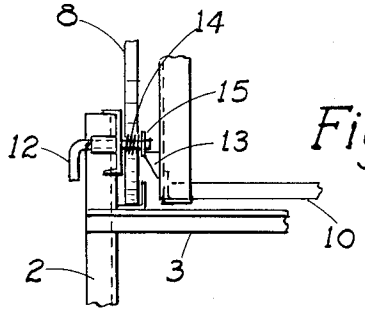


Fig. 5.

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2,726,023

PACKING MACHINE

Frank J. Moravecky, Beaver Falls, Pa.

Application March 2, 1955, Serial No. 491,744

9 Claims. (Cl. 226—2)

This invention relates to machines used in packing articles in boxes, and more particularly heavy articles that are difficult to handle.

There are many cases where it is necessary to pack a heavy object in a shipping box and where it is desirable to have a fairly close fit between the article and the box. The box may be a wooden box or crate, or a paperboard carton. There is no particular problem when the article does not weigh very much, but if it is a heavy object it may be difficult to lower it into a snug-fitting packing box, especially if the article has to be supported from its sides or ends as it is inserted into the box. For example, bathtubs are difficult to pack. If they are lowered by hooks, the boxes have to be large enough to accommodate the hooks and to allow them to be disconnected from the tubs. This means a tub will not fit well in its packing box, so fillers have to be used to take up the space. On the other hand, if the box is lowered over the tub, it then is necessary to invert them in order to fasten the box cover in place. Turning the box over with the tub in it requires considerable effort, and the tub is apt to be damaged in the process.

It is among the objects of this invention to provide a packing machine which is simple in construction and operation, which allows a heavy article to be fitted snugly in a packing box, which permits the article and box to be turned over as a unit with only a little effort, and in which the box and the article therein can be inverted without jarring them.

In accordance with this invention, a pair of wheels are mounted on a pair of laterally spaced tracks near one end of the tracks. A cradle is suspended between the wheels, to which it is rigidly connected. The cradle is open at the top and at the side adjacent the nearest end of the tracks. It is adapted to receive and support an article that is to be packed in a box. After the article has been placed in the cradle, the box is dropped down over it. The cradle and wheels then are rotated to roll the wheels toward the opposite end of the tracks and to simultaneously invert the cradle so that it will deposit the loaded box on a support that is located at that end of the tracks. The cradle then can be rolled back to the other end of the tracks and the top of the box can be fastened in place. The support may be provided with means for tilting up one end of the loaded box so that the box will be removed from the support and will stand on end beside it.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which

Fig. 1 is a plan view of my machine;

Fig. 2 is a side view thereof;

Fig. 3 is an end view;

Fig. 4 is a vertical section taken on the line IV—IV of Fig. 1; and

Fig. 5 is an enlarged detail showing the cradle-holding latch.

Referring to the drawings, a frame is formed from a pair of spaced parallel channels 1 which are supported by the upper parts of two pairs of legs 2. The rear legs are

connected by a pair of cross bars 3, while the front legs are connected by a single cross bar 4. Extending across the inner faces of the legs at each side of the machine is an angle bar 6, the rear end of which is mounted on the upper rear cross bar and the front end of which is supported by a short post 7 mounted on the front cross bar. The two angle bars form a pair of parallel tracks having upstanding inner flanges. A pair of wheels 8 are mounted on the tracks beside their flanges.

Suspended between the wheels is a cradle 10, the ends of which are rigidly connected to the wheels. The cradle normally is located near the rear end of the tracks, and its top and the side nearest the back of the frame are open. The back of the cradle is prevented from tilting downward by means of a vertical post 11 secured to the rear cross bars 3. The cradle normally is prevented from rotating in the opposite direction by means of a releasable latch. As shown in Fig. 5, this latch preferably consists of a horizontal rod 12 that is slidably mounted in the rear end of one of the side channels, and a downwardly tapered lug 13 secured to the adjacent end of the cradle. The rod is urged toward the cradle by means of an encircling coil spring 14 compressed between the channel and a pin 15 extending through the rod near its inner end. The outer end of the rod is bent downward to form a handle.

The particular cradle shown in the drawings is of a size to receive a bathtub, but it should be understood that it can be designed for accommodating other heavy articles without departing from the scope of this invention. Assuming that a bathtub has been set in the cradle, a packing box is slipped down over the tub. The box can be made to fit the tub snugly because no room has to be provided for tub-handling equipment. If the box is a wire bound crate, one side of the cover will be fastened to the rest of the crate by wires and can extend out through the open side of the cradle. As soon as the crate is in place, retaining bars 19, which are slidable lengthwise of the cradle in sleeves 20 secured to the tops of its ends, are pushed in so that they will overlap the upper surface of the crate at its opposite ends. The latch rod then is pulled back away from the lug and the cradle is rotated toward the front of the tracks. This is done by grasping handles 21 projecting from the back of the cradle at its opposite ends and swinging them upward and forward. Since the cradle is rigidly connected to the wheels, the wheels will be rolled along the tracks toward the front of the frame. This movement can be aided by inclining the tracks downward toward the front. The retaining bars will prevent the crate from falling out of the inverted cradle.

When the cradle has been rotated 180°, it is directly over a support which engages the bottom of the crate. The support, preferably, is an inclined roller conveyor 25 that is narrower than the cradle and that has its inner end supported by the front cross bar 4 of the frame. The opposite end of the conveyor is supported by legs 26. The height of the conveyor is such that it will take the weight of the crate and its contents, so the retaining bars 19 can easily be pulled outward from beneath the crate. The cradle then can be rolled back up the tracks to its original position at the back of the frame. As the cradle reaches upright position, the tapered lug 13 slides down across the inner end of the latch rod and pushes it back until the rod can spring in over the top of the lug to hold the cradle upright.

Now that the loaded crate is right-side-up on the conveyor, the cover can be swung over the top of the crate and fastened in place to complete packing of the tub. The crate is rolled down the conveyor and against a stop 27 at its lower end. To remove the loaded crate from the conveyor, means is provided for tipping the crate up onto one end on the floor beside the conveyor. This can be done by means of an elevating bar 28 extending along the op-

posite side of the conveyor and fastened to the ends of a pair of parallel arms 29. The arms extend down between the rollers and are pivotally mounted near the opposite side of the conveyor, where their ends are connected to a piston rod 31 between them that extends back into a fluid pressure cylinder 32. When the rod is pulled into the cylinder, the arms are swung on their pivot to raise the elevating bar which lifts the adjoining end of the crate. The opposite end portion of the crate rocks on the side of the conveyor until the crate touches the floor at the side of the conveyor. In the meantime, another tub and crate can be placed in the cradle, ready to be rolled over onto the conveyor.

It will be seen that this packing machine is a great labor saver. In addition, the tub fits well in the crate and is not damaged when the crate is turned over, because there is no jolting or banging of the tub.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A machine for packing an article in a box, comprising a pair of laterally spaced tracks, a support at one end of the tracks, a wheel mounted on each track near its opposite end, and a cradle suspended by and between the wheels and rigidly connected thereto, the cradle being open at the top and at the side farthest from said support and adapted to hold an article in an open bottom box, and the cradle and wheels being adapted to be rotated to roll said wheels toward said support and simultaneously invert the cradle over it in order to deposit the loaded box on the support.

2. A packing machine according to claim 1, including a manually releasable latch for normally holding the cradle with its open side up.

3. A packing machine according to claim 1, in which said tracks are inclined downward toward said support.

4. A packing machine according to claim 1, including handles attached to the ends of the cradle at said open side for effecting said rotation.

5. A packing machine according to claim 1, including

means associated with said support for tilting the box up onto one end beside the support after the cradle has been rolled back toward the opposite end of the tracks.

6. A machine for packing an article in a box, comprising a pair of laterally spaced tracks, a support at one end of the tracks, a wheel mounted on each track near its opposite end, a cradle suspended by and between the wheels and rigidly connected thereto, the cradle being open at the top and at the side farthest from said support and adapted to hold an article in an open bottom box, and the cradle being adapted to be rotated to roll said wheels toward said support and simultaneously invert the cradle over it in order to deposit the box on the support, and retaining members carried by the upper part of the cradle for overlying the box therein to hold it in place while the cradle is being inverted, said members being retractable to leave the loaded box on said support when the cradle is rolled back toward the opposite end of the tracks.

7. A packing machine according to claim 6, in which said support is narrower than the cradle.

8. A machine for packing an article in a box, comprising a pair of laterally spaced tracks, a central support at one end of the tracks and extending away from them, a wheel mounted on each track near its opposite end, a cradle suspended by and between the wheels and rigidly connected thereto, the cradle being open at the top and at the side farthest from said support and adapted to hold an article in an open bottom box, the cradle and wheels being adapted to be rotated to roll said wheels toward said support and simultaneously invert the cradle over it in order to deposit the loaded box on the support, retaining members carried by the upper part of the cradle for overlying the box therein to hold it in place while the cradle is being inverted, said members being retractable to leave the loaded box on said support when the cradle is rolled back away from it, lifting means disposed near one side of the support normally below its upper surface, and means for elevating said lifting means to raise one end of the loaded box above said support, whereby to tilt the loaded box up on end beside the support.

9. A packing machine according to claim 8, in which said support is an inclined roller conveyor.

No references cited.