

## PALLET BOX DUMPER

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INCREASED HANDLING EFFICIENCY has induced many fruit and vegetable growers and packers to utilize the pallet box as a container for their produce. This box is constructed with a fork truck pallet base and with straight solid sides. Many problems are associated with this method of materials handling. This report describes an apparatus for safe, efficient unloading of these pallet boxes.

The unloading machine illustrated in Fig. 1 was designed specifically for 4 x 4 x 4 ft. pallet boxes having a gross loaded weight of 2,500 lbs. This machine provides: (1) ridged support for the pallet

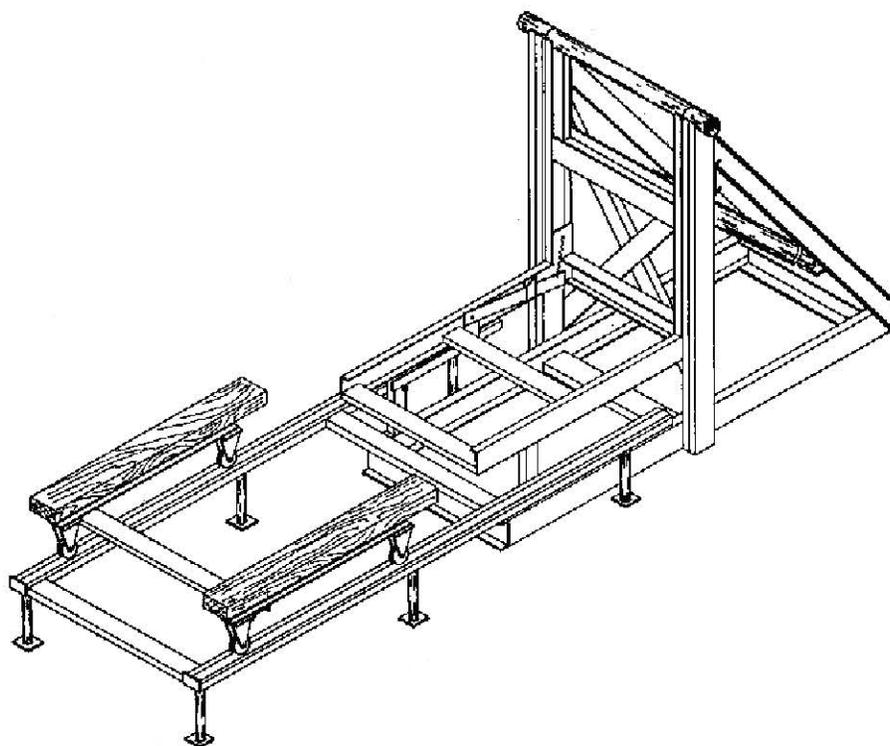


Fig. 1. Pallet box unloading machine.

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box which increases the box life; (2) mobility, since it requires no overhead hoist support; and (3) increased efficiency in that it permits removal of the empty box without assistance from the fork truck.

The sequence of operation for dumping a full box of produce by the machine is: (1) The box is raised and rotated as illustrated in Fig. 2, allowing the contents of the box to pour out. Safety catches prevent the pallet box from falling out of the dumper. (2) The dolly is rolled into position to receive the empty box. (3) The unloaded box is returned to the starting position. (4) The empty box, now resting on the dolly is rolled out of the way as illustrated in Fig. 3. (5) The fork truck places a full box on the dumping machine and then removes the empty box from the dolly.

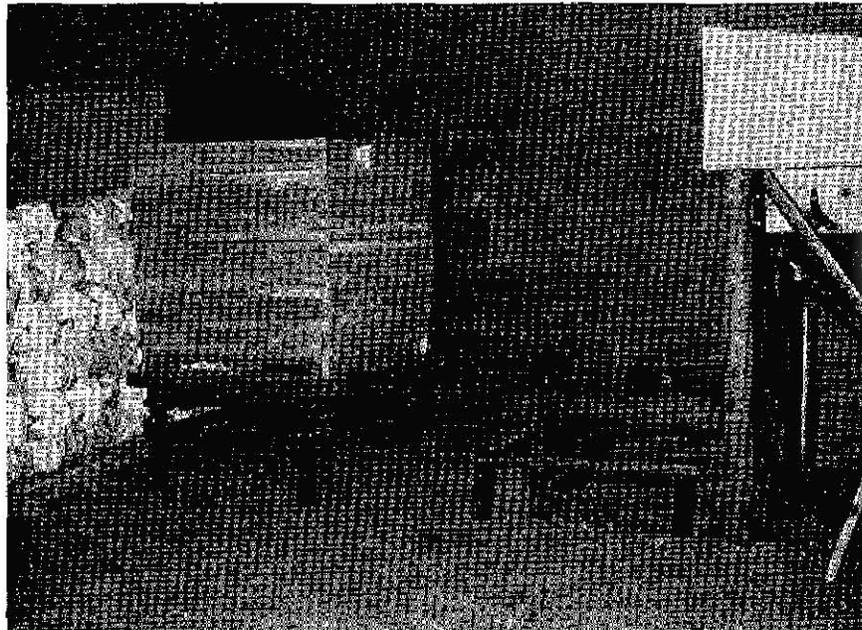


Fig. 2. Pallet box dumper ready to receive loaded pallet box.

The motive power for this machine is usually either an internal combustion engine or an electric motor-driven hydraulic pump unit which furnishes oil under pressure to the hydraulic cylinder (Fig. 1). The rate at which the boxes of produce can be unloaded depends upon the horsepower of the motor or engine. When a hydraulic system of average efficiency is used, the time required for the box to be lifted and rotated 135 degrees is given in the table on page 45.

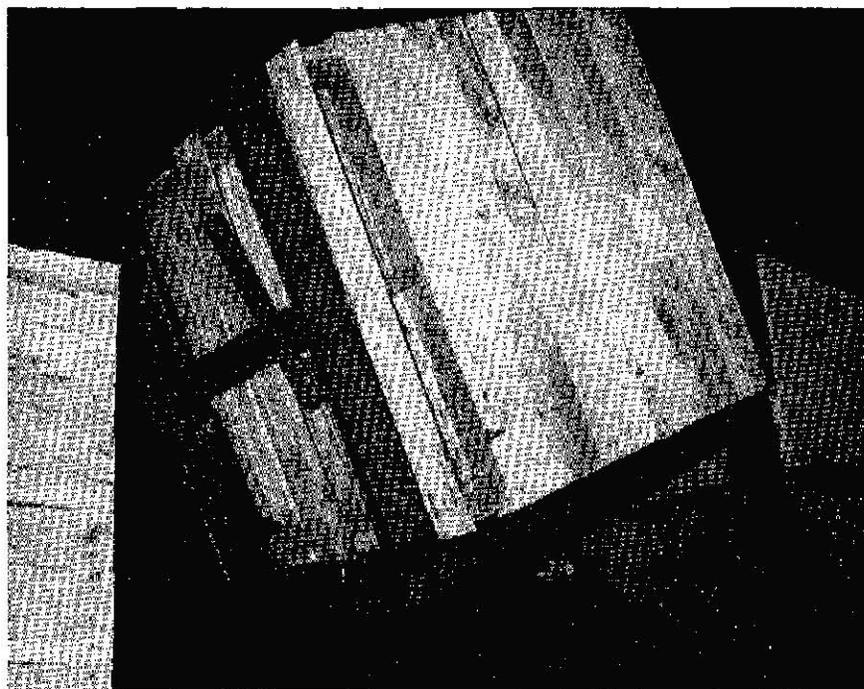


Fig. 3. Pallet box being unloaded.

Horsepower	Approximate time to unload in seconds
1	60
2	30
3	20
5	12

The pallet box dumper described above has been efficiently and satisfactorily used during the past season to unload over 2,000 boxes of produce. Copies of plans for the pallet box unloader are available from the Agricultural Engineering Department, Michigan State University, East Lansing, Michigan.

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