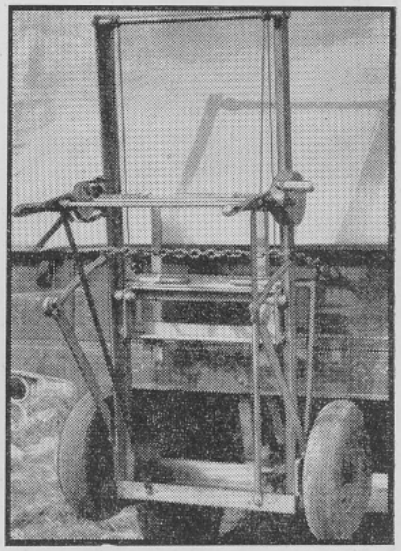
Two Mechanical Hive Loaders

IN recent years an increasing number of mechanical devices have been made to eliminate some of the heavy lifting that is necessary in beekeeping. In this article two mechanical hive loaders designed by beekeepers are described.



A convenient way of carrying the hand-operated loader on the back of a truck.

HAND-OPERATED LOADER

THE mechanical hive lifter described below by F. A. Bartrum, Apiary Instructor, Department of Agriculture, Christchurch, was devised by Mr. E. B. Diehl, Waiau, because of the difficulty in obtaining labour to assist in removing apiaries to new locations. Some beekeepers with these machines, which are now being extensively used throughout Canterbury, have found so many additional uses for them that they seldom visit an apiary without them.

To enable apiaries to be worked efficiently with this machine hives have to be arranged in such a position that access is readily available. All types of bottom boards are adaptable to the machine except those with attached 3in. x 2in. timber running lengthwise. One of the most efficient types of bottom boards and the one most adaptable to the loader is that in the illustrations with the 3in. x 2in. running crosswise.

Large Apiaries Shifted

With this machine large apiaries can be shifted by one man in a comparatively short time. A hive is lifted on to a truck by placing the front forks of the machine underneath the bottom board and the two front runners are adjusted if the ground is uneven so that the hive is lifted evenly. The hive is then wound clear of the ground and is held in position by an automatic brake while it is wheeled to the truck. When the hive has been wound up above the level of the truck deck the machine is wheeled forward and the automatic brake is released to let the hive down gently. Sliding the hive into the required position is then simple.

By the addition of two removable arms this loader can be adapted to a number of other uses in the apiary. When the arms are in use the two forks for lifting hives are folded back against the machine.

The loader is ideal for placing bee escapes in position, as it eliminates the heavy lifting in removing and replacing the honey supers. Sufficient space for a bee escape to be placed over the top of a queen excluder can be obtained by placing the two arms around the supers that require taking off and winding them up 3in. or 4in. The automatic brake is then released and the supers are lowered into position. Large apiaries can be fitted with escape boards in this way in a comparatively short time with little or no disturbance of the bees. Provided the ground is reasonably level, honey above the bee escapes can be taken off the hive with this machine and wheeled directly to the truck. Some beekeepers wheel as many as three supers of honey at once without difficulty.

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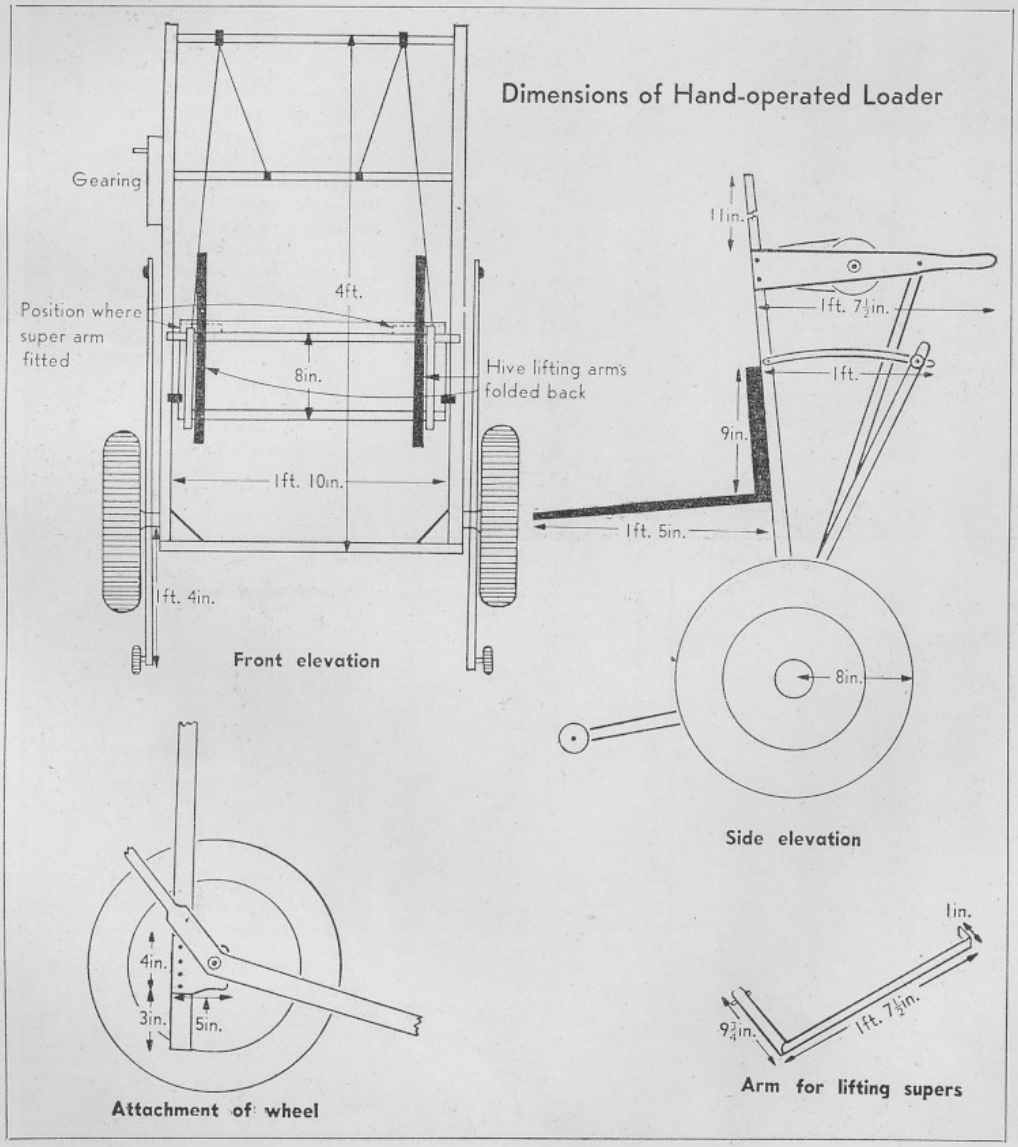
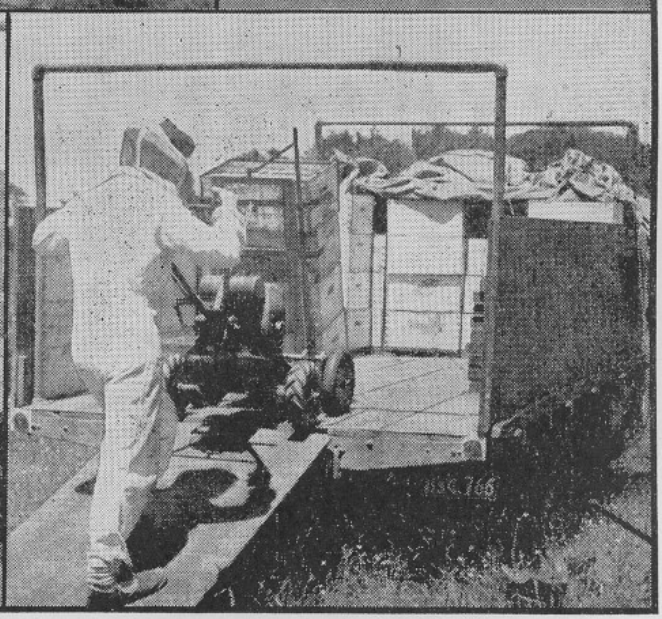


Working

Working

POWER-DRIVEN LOADER

Upper left—The loader with the control lever down. Upper right—The control lever in the raised position. Middle left—A load of four supers ready to be driven to the truck. Lower left—The tail board of a truck used as a ramp for the loader. Lower right—The loader being driven on to the truck for the supers to be unloaded.



Removal of Bottom Brood Boxes

Many beekeepers allow the bottom brood boxes to remain on hives until the combs and bees have deteriorated so much that they are of no further use, but some beekeepers with these machines have devised a system whereby the bottom brood boxes are removed each season. To enable them to do this hives are wintered down in three boxes. When the bees leave the bottom box in autumn the occupied top supers are wound up by use of the machine and the bottom box is then removed. This method ensures a constant circulation of boxes whereby all old combs may be melted down and the boxes renovated.

POWER-DRIVEN LOADER

An ordinary 1 h.p. garden tractor forms the basic equipment in the mechanical loader described below by R. Goddard, Apiary Instructor, Department of Agriculture, Tauranga. However, the tractor is fitted with a heavy duty reduction gear to the driving wheels and this enables heavy loads to be carried. The loader was designed by Mr. G. Corlett, Tauranga.

The loading attachment, shown in the illustrations opposite, is constructed of 2in. x ¾in. steel and is a manually operated fork lift fixed rigidly to the tractor by means of a 9in. steel pin at the bottom and a bolted stay at the top. The front wheels of the attachment are offset 6in. from the front axle. When the control handle is raised the front axle revolves a quarter turn and the wheels go down and back, bringing the centre of the load over the wheels and at the same time lifting the load sufficiently to clear the ground by about 6in.

Fast Loading and Stacking

The machine is used mainly for loading supers of honey, but it can also be used with equal success in the shifting of hives or the carrying of empty combs in supers. During the latter part of the honey season the bees are somewhat vicious when the hives are worked and robbing may become a nuisance. At this time of year most beekeepers endeavour to carry out apiary work with all possible speed and to leave the apiary before the bees become unduly troublesome. With this machine the operator loaded and stacked 40 heavy supers of honey scattered throughout the yard on to the truck in 12 minutes.

The honey is taken off the hives in the ordinary way and the supers are stacked four high on wooden platforms placed at intervals throughout the yard. On these platforms a drip tray is placed to prevent honey leaking over the floor of the truck. Usually all honey ready for extraction is taken off the hives before loading begins, and if robbing is prevalent, gauze screens are placed over each stack of supers.

Method of Loading

As the truck sides are 3ft. high, the supers can be loaded in piles of four. The tail-board, which is easily removable, is used as a ramp for running the tractor on to the floor of the truck and it is admirably suited to this purpose. When the operator is ready to load the supers of honey the tractor is started and driven into position as shown in the illustration opposite, and the loading attachment, which resembles the ordinary honey house bogie, is pushed under the pile of supers. The operator raises the control handle, and the load is lifted clear of the ground. A ½in. rod hinged at the back of the appliance springs forward and catches the two top supers and this prevents the load falling forward no matter how uneven the ground. The tractor is driven to the truck and up the ramp, and the four supers are deposited in their correct position with no further handling required.

With this machine all the extremely heavy work involved in carrying supers of honey from the hive to the truck, lifting them to the decking, and restacking them is eliminated. The machine helps to make the task of removing honey from the hives more pleasant, as no undue strain is placed on the beekeeper. Breakages of new combs heavy with honey do not occur as in manual loading, where supers are often dropped heavily to the floor of the truck.

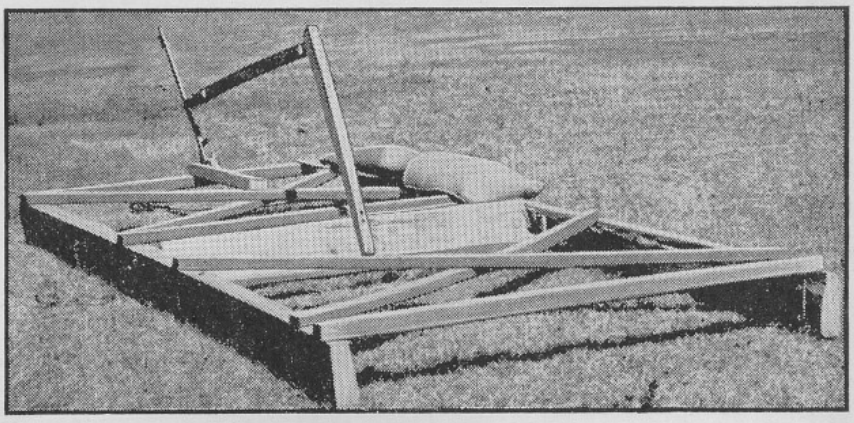
Easy Mowing of Grass

The problem of keeping grass under control in an out apiary has always caused beekeepers concern, but a sickle-bar mower can be fitted to the tractor and all the grass mowed close to ground level. It takes about 5 minutes to remove the lifting apparatus.

The tractor is easily steered even when carrying a heavy load, as all the weight is carried over the two front wheels. Lifting the handles of the machine causes the tractor wheels to leave the ground and enables quick manoeuvrability.

A Leveller for Irrigated Areas

IRRIGATORS who have contemplated assembling a machine capable of efficiently taking the humps and hollows out of irrigated areas will find the machine illustrated is very useful, particularly on areas where levelling will allow more efficient use of a minimum of available water, permitting a greater spread and less back-breaking work with shovels. Additionally this machine can level to a state suitable for border diking, provided a minimum of dumping is required.



THE initial cost is low—on present values about £60. The over-all measurement of the leveller is 20ft. x 8ft.; the ironshod runners are 20ft. x 14in. x 4½in.; the grading beam centred between the runners measures 7ft. x 11in. x 2½in., and to it is attached a steel blade which is 4in. x ½in. and which extends 1in. beyond the beam as the levelling medium. The crossed support beams are 4in. x 2in. and the two end spacers are 6in. x 2in. To overcome any strain on the depth-control levers two movable plates, which can be tightened once the position of the blade is set, are set in behind the grading beam, one on each side.

This machine, which can be pulled by any tractor of 26 or more rated drawbar horsepower, has certain faults owing to its rigidity. As it is inclined to ride obstacles like strikeouts, to increase its efficiency high strikeouts could be ploughed out; conversely finishes could be ploughed in. Further, it is inclined to ride on one side or the other, which is the reason for the bags of earth on the frame of the leveller illustrated.

As constructed this leveller has no cutting blade and is inclined to drag the material forward as it goes. However, if the steel blade were angled forward it would give this cutting edge and would possibly overcome the tendency to ride. A further improvement would be an articulated type of leveller to overcome the heavy drag on turning. As three seasons' work with it has already been done and land has been prepared for border diking, there is no doubt a machine modelled o nthese lines could play an effective part in the more efficient utilisation of water.

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