

A Mechanical Sprayer Operated by One Man

A SIMPLE and very effective mechanical spraying attachment was devised and operated in the 1948-49 season by Mr. A. J. Boyes, a fruit grower of Twyford, Hastings, who had an exceptionally clean crop and was more than satisfied with the operation of the attachment. It can be made and fitted to any crawler or portable outfit which has sufficient pump capacity to enable it to be operated by only one man, the driver. This unusual spraying attachment, which has aroused much interest among local growers and visiting growers from many other districts, is described in this article by R. K. Johnson, Horticultural Inspector, Department of Agriculture, Hastings.

MR. BOYES'S sprayer is a portable, tractor-drawn outfit. Many of similar design and construction are operated in orchards today. A strong, 2-wheeled chassis has mounted on it a 35-gallon-per-minute pump, driven by a 6-cylinder engine, complete with clutch and gearbox. The pump is directly coupled to the gearbox shaft, the gearbox being in second gear to drive the pump at the correct number of revolutions.

The engine radiator has been eliminated, the engine being water cooled by a small marine gear pump, which forces the water through a system of pipes running through the spray vat, which, when filled with spray, cools

the water being circulated through the pipes. A water supply tank has been mounted above the engine, the water being fed into the top of the engine in the normal way. The marine pump is fitted to the side of the engine and is driven by a V belt from the pulley which normally drove the fan. The fan pulley has an extra pulley fitted to it, a V belt from this driving a shaft which operates the engine governor and the agitators inside the vat, enabling them to be operated independently of the pump.

The outfit is controlled by a ratchet brake lever mounted within easy reach of the tractor driver. This lever con-

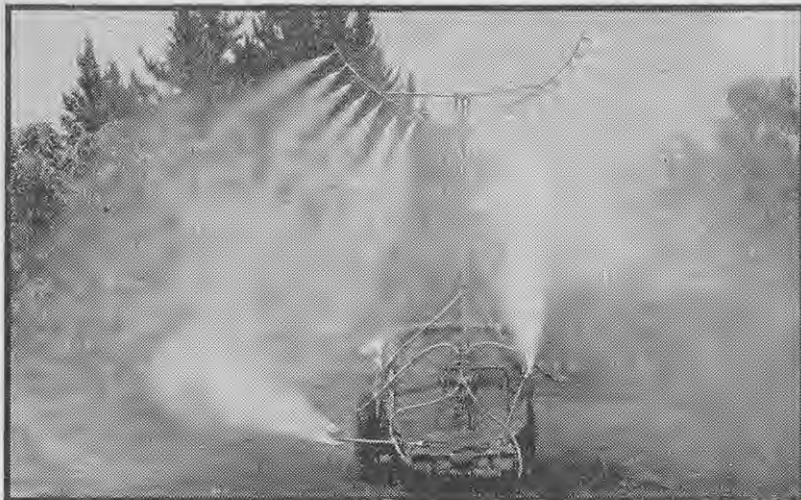
trols both the engine clutch, which puts the pump in and out of operation, and the accelerator of the spray engine. A rod from the lower end of the lever operates the clutch and the accelerator rod is fitted near the top of the lever. When the lever is pushed back it engages the clutch and the spray engine is accelerated to the required speed.

The Spraying Attachment

The mechanical spraying attachment is a simple unit mounted on the chassis at the rear of a 400-gallon vat and consists of two 8-nozzle spray brooms clamped in movable brackets, one on each side of the chassis. These movable brackets are bolted together as a unit by an adjustable iron bar, one clamp being bolted to a bar fitted off centre to a central, circular iron plate. This eccentric iron plate is chain driven off a shaft taken from the rear end of the pump. The eccentric drive to the brackets causes the spray brooms to be raised and lowered, giving a sweeping up and down action to the brooms rather similar to the normal hand-operated motion.

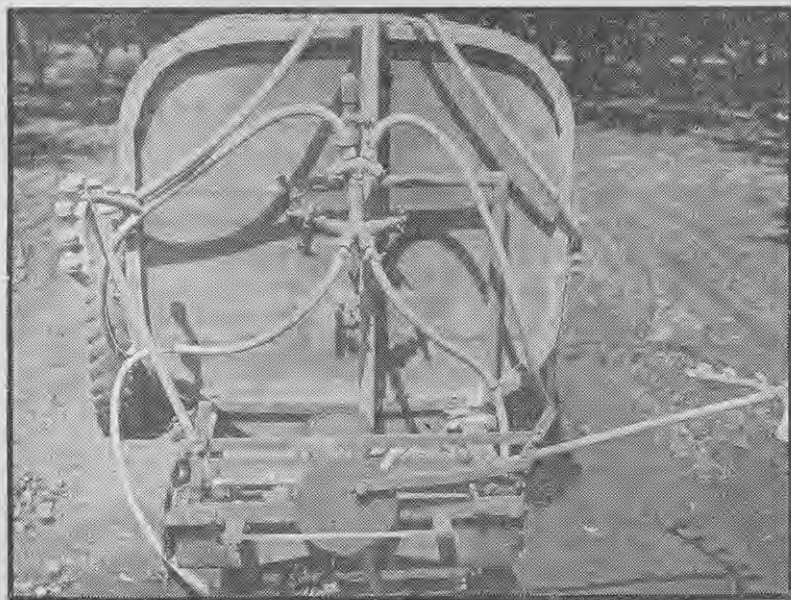
The spray brooms are set at opposite angles. When the left-hand broom is at the top of its sweep the right-hand is practically at the bottom. These brooms are ordinary hand spray brooms, having curved heads fitted to them. The curved heads have been designed to throw a wide wall of spray, practically a semi-circle, so that spray is thrown forward to the tree being approached and back to the tree just passed, ensuring a complete coverage. This spraying attachment is a very compact unit, having few movable parts to give trouble, and is mounted on the space normally required for the platform for the operators to stand on.

For the spraying of tall and spreading trees an adjustable boom is mounted up the centre and at the rear of the vat. This extension boom consists of



[R. W. Orr photo.]

The spray attachment and extension boom in operation.



[R. W. Orr photo.]

The construction of the spraying attachment and the curved broom heads.