Headquarters Machinery Development Committee

Report No. 30

Tractor Mounted Sledge for the Extraction of Thinnings from the forest

Origin

The extraction of thinnings frequently calls for some means of mechanical transport from the rackside to the nearest lorry point or conversion depot. The thinnings being small and spread over a wide area the size of loads that can be assembled in the racks is small. Usually the logs are piled in heaps of ½ - 1 Ton at the rackside and the next operation is to gather a number of these heaps together to form a worthwhile load. Various forms of Sulky, trailer and direct tractor drag are in use for this purpose but sledges are widely used abroad and an experiment was undertaken to test this method in British forests.

Description

A sledge was built by Roadless Traction Ltd., of Hounslow to the specification of the Forestry Commission. This sledge was built to mount on the hydraulic linkage of a Fordson half track tractor. It consists of a flat plate with chamfered leading and side edges and carries a swinging bolster. (See Photograph 1). The load is secured to the bolster by a clamping chain and tightener.

Observations

1. Field trials have shown that the maximum load that can be conveniently carried is 2 Tons when used with the Fordson half track but when used with a wheeled Fordson the load is limited to 1 Ton by wheelspin even when using wheel strakes.

2. Loads greater than 1 Ton when using the wheeled tractor also resulted in a tendency for the front wheels to lift though this did not happen on the half track with loads up to 2 Tons. A 2 Ton load being hauled by the half track is seen at Photograph 2.

3. Loading of the sledge has to be done entirely by hand but owing to the low position of the bolster there is no difficulty with the smaller thinnings.

Unloading is very easy as in most cases it is only necessary to unfasten the clamping chain and move off abruptly to leave the load behind on the floor.

4. With the sledge mounted on the hydraulic linkage it can be lifted when unloaded allowing the tractor to manoeuvre far more easily than with a Sulky or trailer.

5. It was noted that the flat bottom of the sledge did very little damage to racks and rides.

6. No opportunity has arisen to test this prototype in conditions of snow and ice, but in view of the general use made of sledges on the Continent in these conditions there is no reason to doubt its suitability.

7. Dynamometer trials showed that with a payload of 2 Tons the drawbar pull required to haul the sledge on dry sandy soil was 3,500 lbs. This compares unfavourably with a wheeled trailer which requires a pull of about 1,000 lbs. under similar conditions.

8. The cost of the sledge in prototype form was £98 but in production it would be appreciably less. Even at this figure the price is less than that of a wheeled trailer or sulky of similar payload capacity.

Conclusions

The light mounted sledge covered by this report has the advantage of low capital cost and it is useful for extraction on small

areas in conjunction with agricultural tractors.

For larger operations the high drawbar pull required per payload ton and the limited payload capacity make it uneconomic.

R. G. SHAW
Machinery Research Officer
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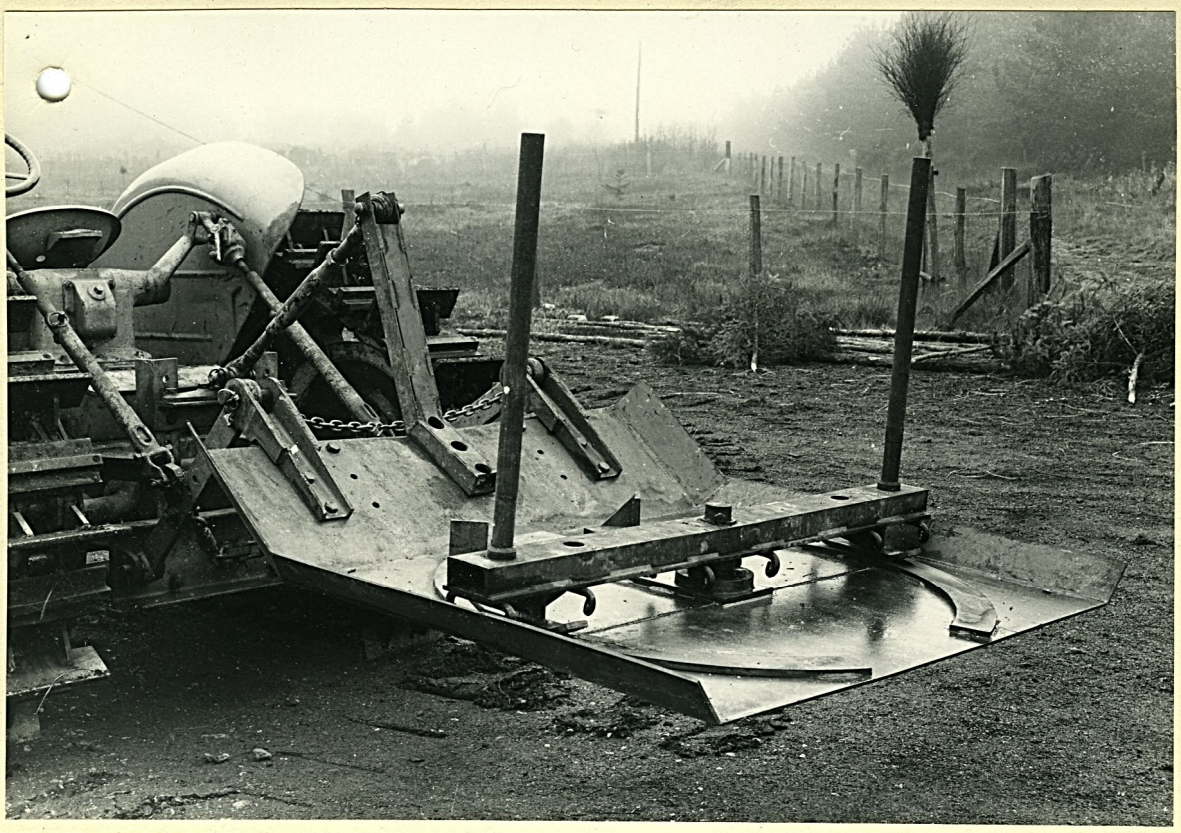

PHOTOGRAPH 1. Showing the sledge (in raised position) mounted on the hydraulic lifting gear of a Fordson Major with Roadless half track equipment.

PHOTOGRAPH 2. Showing the sledge carrying a 2 ton load on a forest ride.