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THE CHRISTY HAULER AND CARRIAGE

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INTRODUCTION

Problems associated with logging small piece size stands on steep terrain have led to trials of small haulers in the Pacific Northwest of the U.S.A. These haulers have ranged from very sophisticated machines with hydraulic interlock to simple mechanical drive types. A recent development is the trailer-mounted three-drum hauler built by Christy Manufacturing Inc. of Orofino, Idaho. The first machine built was sold by the Timber Supply Company of Philomath, Oregon, to the International Paper Company of Vaughn, Oregon. This particular machine was a three-drum hauler, although a two-drum option is also available for use as a gravity return system. At the time of the writer's visit, it was being used to log second growth Douglas fir stands which, up to that time, had been logged by a Koller K300 hauler.

THE HAULER

The Christy hauler is mounted on a tandem axle trailer which is easily towed by a large ute or light truck. It has an integral box steel tower that is hydraulically raised and lowered. At the base of the tower is an 80 cm diameter pad connected by a ball joint which allows for adjustment and stabilisation of the tower. The trailer is fitted with four manually operated screw levelling jacks to further stabilise the machine.

Power from the 105 hp (78 kW) engine is transmitted through a four-stage automatic transmission and hydraulically-operated clutches to the drums. The drum brakes are mechanically-operated bands. The three rear and one front guys are all self-tightening.

MANUFACTURER'S SPECIFICATIONS

Carrier Unit		: Towed tandem axle trailer
Engine	Type	: 3-53 GMC diesel
	Power	: 105 hp
Transmission		: Four speed Allison automatic
Brakes	Type	: Mechanically-operated band
	Size	: 22" diameter x 3" wide
Drum Capacity	Skyline	: 1200 ft. x 5/8 in. wire rope
	Mainrope	: 1100 ft. x 9/16 in. wire rope
	Tailrope	: 2400 ft. x 7/16 in. wire rope
Line Speeds	Skyline	: 1100 ft./min.
(mid-drum)	Mainrope	: 1300 ft./min.
Rear Guy		: 3 210 ft. x 9/16 in. wire rope (two part)
Front Guy		: 1 190 ft. x 9/16 in. wire rope
Tower		: 31 ft. 12" x 12" steel box section hydraulically raised and adjusted.

NOTE: This is a machine manufactured in the U.S.A. Therefore the specifications are in imperial measurements.

The simple design of the Christy hauler allows both ease of operation and access for maintenance. The use of hydraulically-operated clutches and mechanical brakes not only gives ease of maintenance, but also keeps the cost of the unit down. A disadvantage of this simplicity is that the brakes are not sufficient for the machine to be used as a running skyline.

Self tightening guylines have the advantage of quicker set up and ease of tensioning. Double purchase blocks on the load-bearing (rear) guylines reduce the chance of the small diameter (14 mm) ropes breaking if shock loading occurs. The unit has been designed to require only one front (snap) guy.

The operator cab is easily accessible from ground level and the door can be removed if required by simply lifting it off the hinges. Both a hand and foot throttle are standard in the well-ordered cab. Hand operated controls for the clutches and transmission, and the foot pedals for the brakes are all within easy reach of the operator.

PRODUCTION RATES

When visited, the machine was being used in clearfelling of 2 m³ tree size second growth Douglas fir. The hauling distance was around 150 metres. Although no actual production data was available as it was only the second day that the machine had been in operation, an average of three five metre long logs were being landed every 3.5 minutes. Pre-stopping by the rigging crew kept breakout and unhook times to a minimum. The logs were immediately loaded or decked by a truck-mounted heel-boom loader.

THE CHRISTY MSP (Mechanical Slack-Pulling) CARRIAGE

The Christy gravity return carriage has been used in New Zealand for some years. The basic carriage has been modified to give it mechanical slack pulling ability. In many applications slack can be pulled manually. However, when slack needs to be pulled uphill, the MSP type of carriage has distinct advantages. The Christy MSP carriage is neither complicated nor expensive and uses the tailrope as a slackpulling line. (See Fig.1).

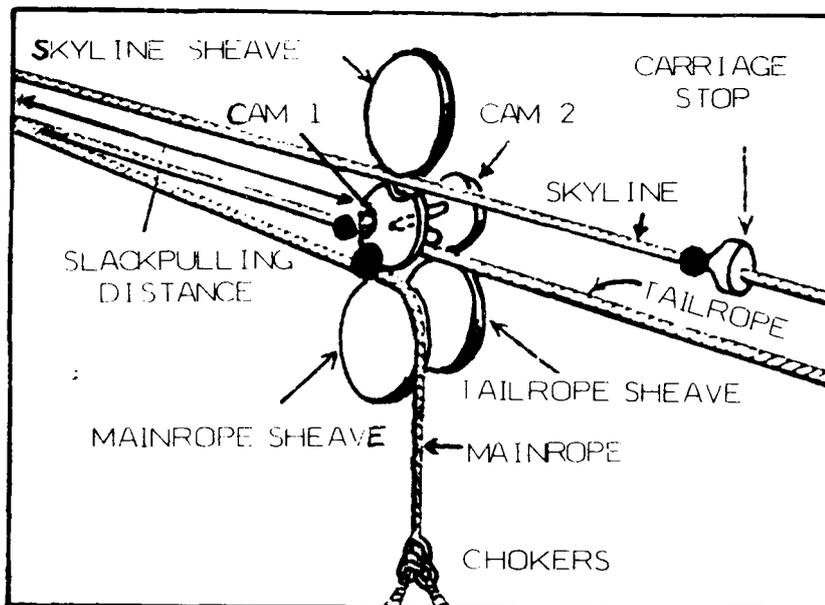


FIG. 1 - View from inside the framework of a Christy carriage modified for mechanical slackpulling.

The stopper principle has been retained to utilise the clamping facilities as found in the gravity return carriage. A tailrope sheave has been added to allow the tailrope to pass through the carriage. The tailrope is attached to the mainrope by a shay swivel. (See Fig. 2). The distance between the carriage and the shay swivel determines the amount of slack that can be pulled. This distance is limited by the fact that if the slack-pulling distance is too great, lines tend to wrap.

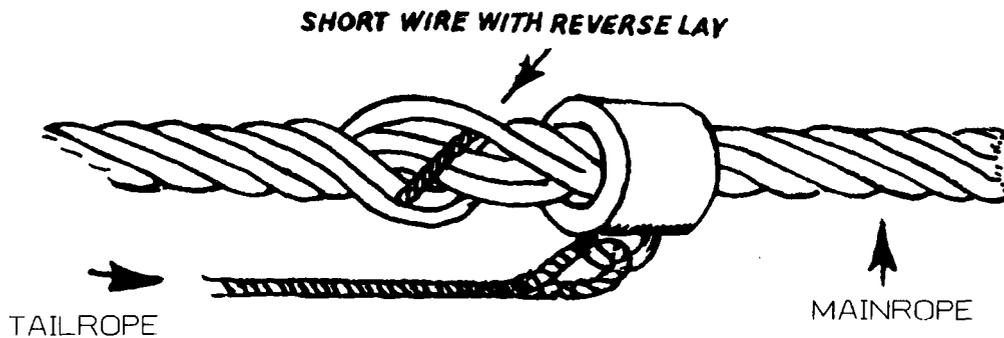


FIG. 2 - Shay swivel in place

The tailrope is used to pull the carriage out until it engages the stopper, locking the carriage in place on the skyline, and releasing the mainrope and tailrope clamps. Continued pull on the tailrope pulls the mainrope through the carriage. The resulting slack can be used for lateral hauling. During inhaul the mainrope is pulled through the carriage pulling the tailrope with it until the clamps are engaged. At the same time, the skyline clamp is disengaged. The carriage with load can then be hauled to the landing.

As with the gravity return carriage, the MSP carriage is available with an open-sided skyline sheave for multi-span logging, dispelling the myth common amongst loggers that elaborate haulers and special carriages are required for this type of logging. In fact, most carriages can be easily adapted.

DISCUSSION

Light, low cost, easily-maintained haulers are the type required by New Zealand loggers. The Christy hauler is ideally suited to handle thinnings and yet has sufficient capacity to handle small piece size clearfellings. The trailer unit offers mobility without the cost of a self-propelled unit.

This type of unit, when used in conjunction with the Christy carriages, would allow the application of systems as yet unused in New Zealand. Such flexibility is the key to successful logging. Too often in New Zealand one system introduced with a specific machine is used in all situations, regardless of the requirements of the job. The versatility of the Christy MSP carriage, and others like it, helps to overcome the financial constraints otherwise associated with buying more gear to widen the range of systems being used.

NOTE: Although the brand name Christy appears throughout this report, in many cases it only serves to distinguish a particular piece of equipment from others designed to perform the same function. In no way is it intended to imply that Christy equipment is the ideal choice for every application.

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