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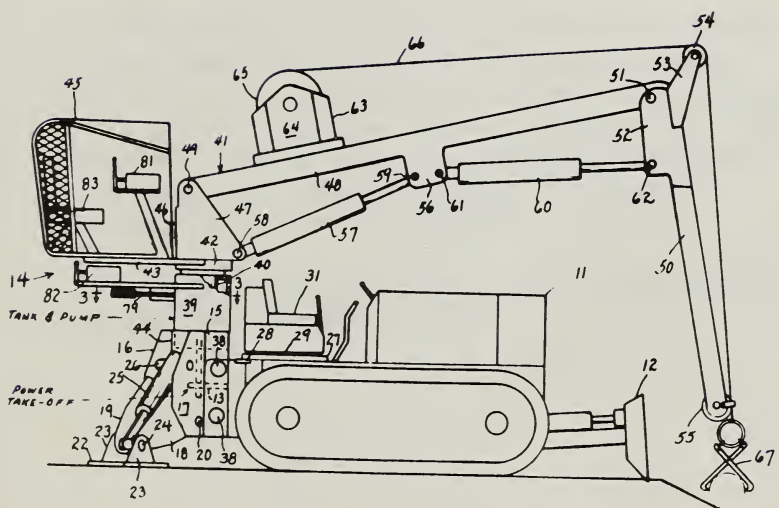
# Forest Harvesting Patents

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Northeastern Forest  
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## **Forest Harvesting Patents**

### **Introduction**

Cable logging in the Eastern United States has been the focus of recent attention. Harvesting techniques that do not have a negative effect on the environment are in short supply. Those cable systems that do reduce damage to the environment were designed for use in the Western United States and are prohibited in the east because of their size--too large, and their cost--too expensive in terms of the volume and value of the timber. There is a need to either develop smaller cable systems, or modify existing ones that can work efficiently in the steep terrains of hardwood stands. The Northeastern Forest Experiment Station has been called upon to fill this need.

The Station's Forest Harvesting Research Project in Morgantown, West Virginia, is working on timber harvesting systems for eastern forests. This work unit evaluates existing cable systems, conducts field tests and trials, applies design improvements to existing machinery, and conceptualizes new designs when existing designs are not adequate.

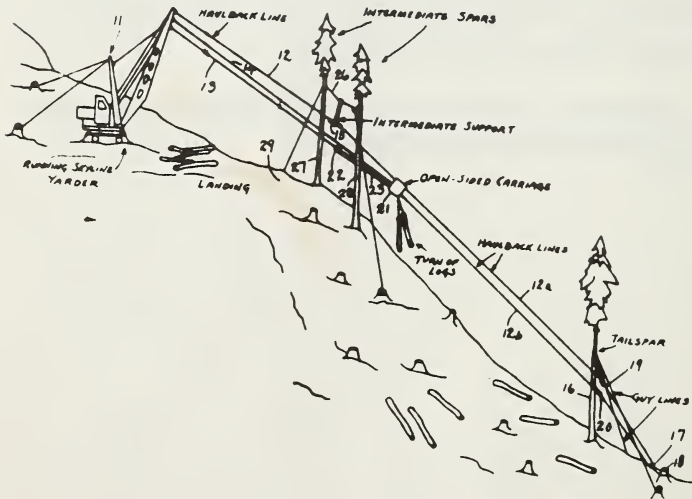
The results of the work unit's efforts--new patents--are highlighted in this brochure.

# Intermediate Support for a Skyline Logging System

Cleveland J. Biller

Patent 4,355,727 October 26, 1982

In typical skyline logging systems, a logging carriage--a wheeled device that rides back and forth on a skyline to yard logs--must make frequent stops at the hooking area and landing. The mechanical device enables the skyline to be supported above the ground at an intermediate point, or points, between two temporarily fixed end supporting towers or spar trees. A logging carriage is able to travel over this intermediate support and skyline without stopping, or without engaging the operator in the maneuver. When properly tensioned, the intermediate support provides lift and allows the carriage to travel down the skyline without hitting the ground. When the skyline is slackened, the carriage can be lowered and the chokers unhooked easily at the landing. The skyline will stay in the intermediate support when slackened, a feature most supports do not have.

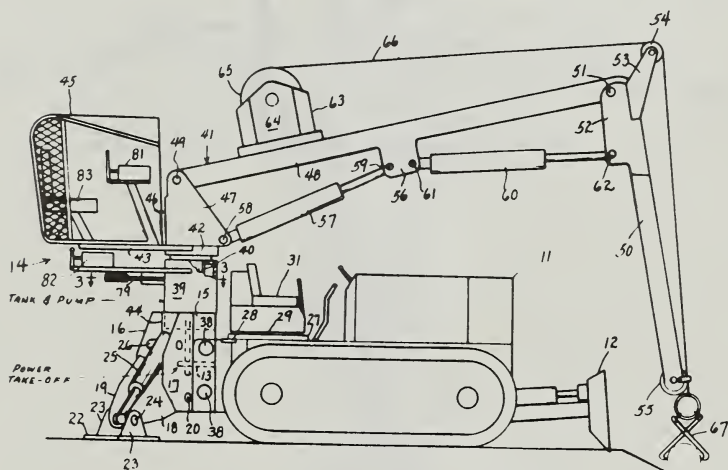


## Log Handling Machine (Appalachian Thinner)

Cleveland J. Biller; Benjamin C. Thorner

Patent 4,373,853 February 15, 1983

The log handling machine is an attachment for a bulldozer or similar vehicle. This apparatus features a bracket assembly arranged to be detachably mounted on the rear of a vehicle. The attachment looks like a hydraulic knuckleboom loader with a hydraulic winch mounted on the main boom. The attachment can rotate 360 degrees. A cable runs through sheaves on the boom; a set of tongs are secured at the end of the cable. The tongs are hooked to the tree and the tree is pulled to the landing. The power take-off shaft operates a pump, which helps supply the operating power.

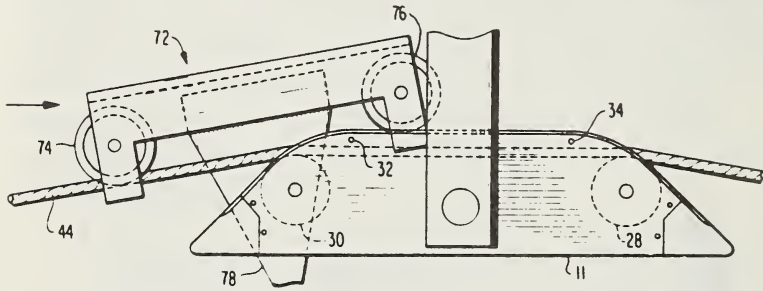


## Intermediate Cable Support

Cleveland J. Biller; David D. Johnson

Patent 4,387,812 June 14, 1983

The intermediate support is used to hold the skyline up and off the ground, allowing more area to be harvested at each set. The intermediate skyline support permits the cable to pass freely through the intermediate support while positively retaining the cable on the support. The logging carriage is then able to pass freely over the intermediate support, without hitting the ground at that location.

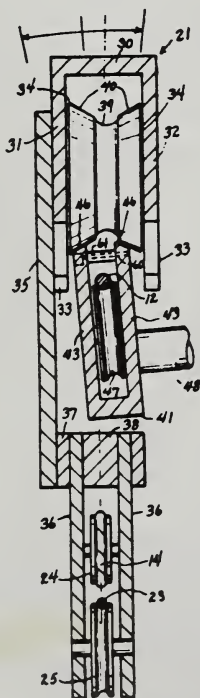




## Carriage for Cable Logging System

Cleveland J. Biller; David D. Johnson  
Patent 4,440,305 April 3, 1984

Since the intermediate support assembly and carriage for the cable logging system work interdependently, the design of the two corresponds. Therefore, the carriage has inwardly tapered pulleys which ride on beveled side plates. The side plates form a ramp-like upwardly facing channel and are part of the intermediate support. When crossing the intermediate support, the carriage can be lifted from the cable to ride on the beveled side plates. To maintain stability during passage over the intermediate support system, the carriage has an extra feature built in—its tapered pulleys tilt laterally; this allows the carriage to swing when going over the support, while remaining on the support.



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