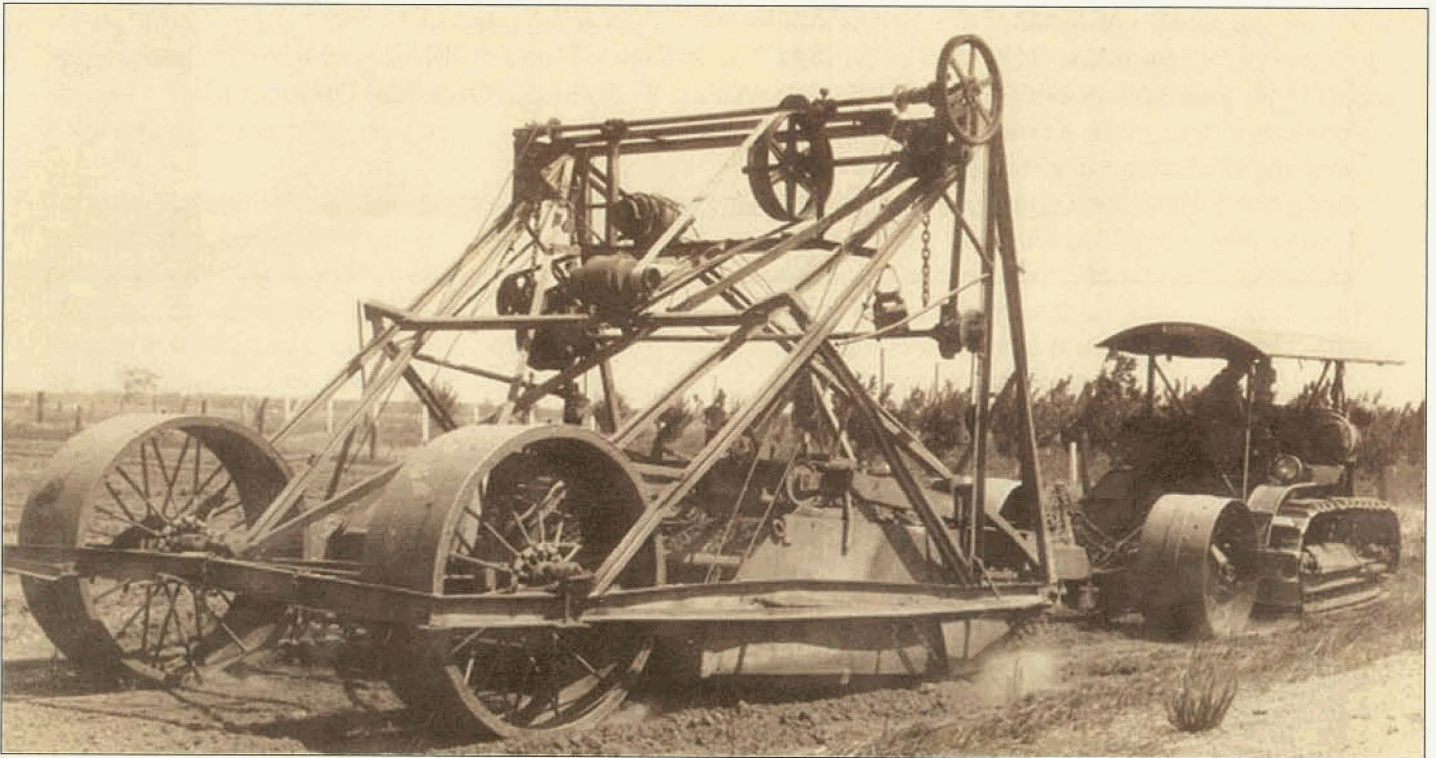




ASME International

# Celebrating the **R.G. LeTourneau** "Mountain Mover"



**Built in 1922**  
**Designated by the American Society of Mechanical Engineers**  
**as an Historic Mechanical Engineering Landmark**  
**November 29, 2004**  
**Longview, Texas**

# The Honor

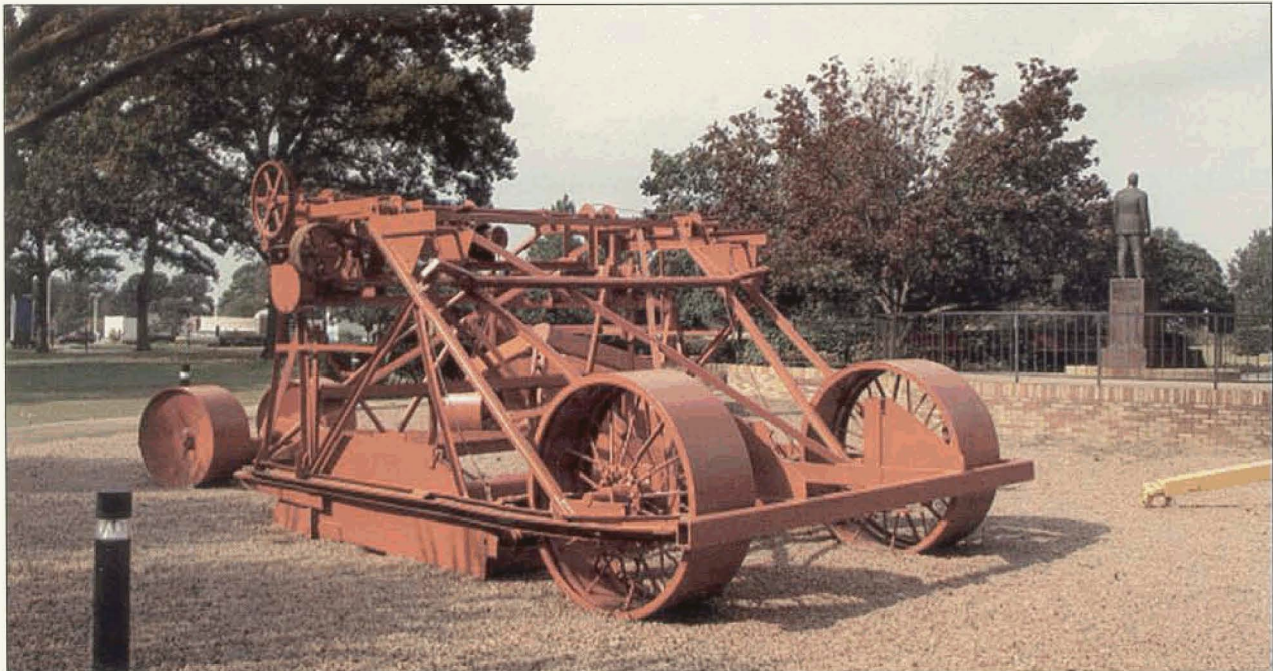
HISTORIC MECHANICAL ENGINEERING LANDMARK

THE "MOUNTAIN MOVER" EARTHMOVING SCRAPER

1922

R.G. LETOURNEAU, A PIONEER IN THE DEVELOPMENT OF LARGE, EFFICIENT EARTHMOVING EQUIPMENT, DEVELOPED THE CONCEPT OF "TELESCOPIC BUCKETS" IN HIS FIRST U.S. PATENTS FOR THE "MOUNTAIN MOVER." WORKED BY A SINGLE OPERATOR ON A TRACTOR, THIS INNOVATIVE SCRAPER MOVED FOUR TIMES AS MUCH EARTH AS CONVENTIONAL MACHINES OF THE ERA WHICH REQUIRED A TRACTOR AND TWO OPERATORS. ITS EFFICIENCY IN LEVELING FIELDS OPENED UP IDLE LAND TO FARMING. THE "MOUNTAIN MOVER" ALSO PLAYED A LEADING ROLE IN THE RAPID AND COST-EFFECTIVE CONSTRUCTION OF ROADS, HIGHWAYS, AND AIRPORTS AROUND THE WORLD IN THE DECADES FOLLOWING ITS INTRODUCTION.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS 2004



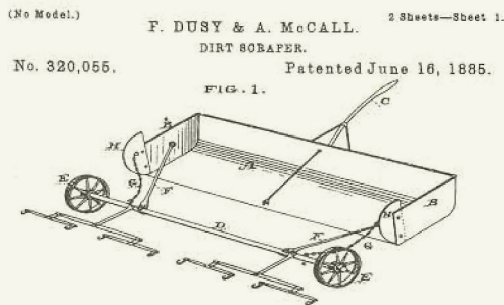
# The History

## Background

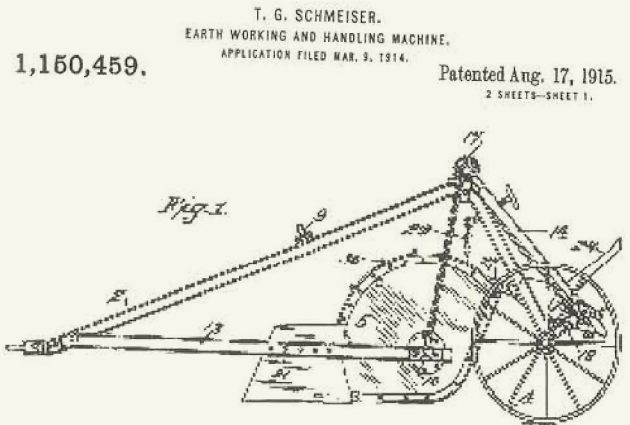
When the 1849 gold rush fever began to fade, speculators in California bought immense tracts of land for planting wheat. These landowners sought cheaper harvesting methods, so local firms (including Holt and Best) started producing combines and traction engines. Near the end of the nineteenth century, wheat production began moving to the Pacific Northwest. As wheat acreage declined, California's 1887 Wright Act encouraged the formation of irrigation districts.

Ranchers sought economical ways to level fields for irrigation, which required reasonably level land. Throughout the 1880s several types of horse-drawn scrapers were developed and patented to work the land into contours suitable for irrigated farming. These developments led to the 1883 Fresno Scraper, which was designated an A.S.M.E. Historic Mechanical Engineering Landmark in 1991.

As a non-wheeled machine, the Fresno Scraper was suited for horses - the ubiquitous power source of the nineteenth century. Circa 1900 innovations such as the Holt and Best (merged in 1925 to form Caterpillar) crawler tractors, powered by steam or gas engines, they had the potential for pulling even larger scrapers. In 1915 Theodore G. Schmeiser received U.S. Patent 1,150,459 for a wheel-mounted drag-scraper that he designed for use with tractors. Other manufacturers soon developed similar machines.



The early tractor-pulled machines required one man to operate the scraper and another for the tractor. Conventional wisdom held that the tractor itself required so much attention that its operator could not also properly operate a scraper blade.



When Robert G. LeTourneau (R.G.) started moving earth in 1919, he thought that land leveling should require only one man. He desired to work from sunrise to sundown, but scraper operator shifts ended after eight hours. In 1920, by installing a generator and electric motors R.G. was able to control the scraper blade from the tractor seat while driving the tractor. Now he could put in fourteen hour days, almost doubling his pay while leveling more acres per hour than a two-person team. A surprise benefit was that the quality of his leveling improved, since two men no longer worked against each other.

Such scrapers were rather primitive. They moved dirt with a blade shaped like a bulldozer's blade with side plates attached. No floor supported the load, so it tumbled (like a snowball) in front of the blade. The friction created by the tumbling mass of dirt limited a 23,000 pound tractor from moving more than about 6,000 pounds of dirt. R.G. decried such small loads as inefficient.

His 1922 Gondola,<sup>1</sup> the first large dirt scraper with a floor behind the cutting edge (forming a bowl) solved this problem. Its wheels supported much of the payload, so he hauled about twice as much dirt on each trip.

In addition, welding, instead of riveting, reduced the need for overlapping steel plates. This lowered the Gondola's dead weight, increasing the capacity of its load.

Unfortunately, a nearly full bowl does not load as easily as an empty one. R.G. wanted to pack a few more yards of dirt into his Gondola, but that seemed impossible. Even though it had a load-supporting floor, entering dirt still must revolve like a snowball. Loading stops when the tractor can no longer force the load to rotate on top of the incoming dirt.

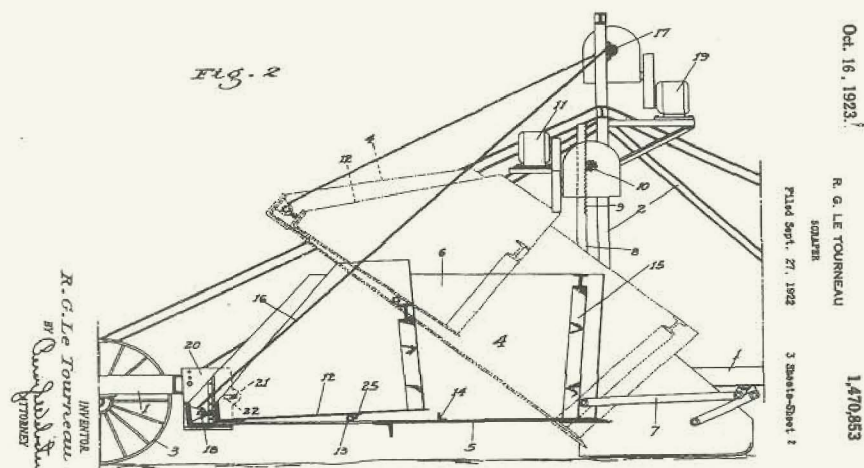
His solution was his June 1922 “Mountain Mover” with a telescoping bowl. Welding enabled an inner bowl to fit closely inside of the outer bowl. First R.G. filled the rear bowl, which was nested inside the front one. When it was full, he slid it back, leaving the front bowl empty. This telescoping design could move more dirt with the same tractive effort. He used this idea for decades. As late as the 1960s some electric-wheeled LeTourneau scrapers also were telescopic. U.S. Patent 1,470,853 “Scraper” (October 23, 1923) covers the telescoping mechanism, while Patent 1,512,614 “Scraper and Spreader” (October 21, 1924) protected the wings that prevent sheared earth from passing to the left or right of the bowl.

A Schmeiser scraper with two men pushed three cubic yards of dirt. The Mountain Mover hauled 12 cubic yards with one operator and the same tractor. R.G. kept experimenting and did not replicate this or any other scraper until 1925.

In 1926 R.G. sold the Mountain Mover to Eph Hahn. Eph’s brother (Clarence) and son (Harold) later owned it. The Hahn family occasionally modified the Mountain Mover. They replaced the original spoked front wheels and devised an automatic greasing system. They lowered its overall height to ease transport. They also disabled the telescopic mechanism because their CAT D8 could load it as a single-bucket machine. They mounted a gooseneck hitch to improve turning but during final restoration a conventional hitch was re-affixed.

In September 1974, the Mountain Mover was trucked to Longview, Texas. After restoration in 1975 it was displayed near LeTourneau University’s Margaret Estes Library. On November 30, 1989, R.G.’s 101st birthday, the R.G. LeTourneau Memorial Park (where the Mountain Mover now resides) was officially dedicated.

Although only one “Mountain Mover” ever existed, all later LeTourneau scraper designs drew upon its innovative concepts. It is the original Mountain Mover, modified over the years as explained above, that is being designated an Historic Mechanical Engineering Landmark as exemplary of the innovative and pioneering mechanical engineering concepts developed by R.G. LeTourneau.



<sup>1</sup> The 1922 Gondola was destroyed in a highway accident. The second scraper displayed at LeTourneau University is a 1927 machine. LeTourneau designed it while working for Henry Kaiser. A bill of sale for this machine from Kaiser Paving Company to Andrew Maestretti still exists. Thus, the 1922 Mountain Mover is the oldest surviving LeTourneau scraper.

#### Sources Consulted

- LeTourneau, Robert Gilmour. *Mover of Men and Mountains*. Englewood Cliffs, NJ: Prentice-Hall, 1960; paperback reprint, Chicago: Moody, 1967, 1973.
- Niemelä, John H. "A History of R.G. LeTourneau's Early Scrapers." 2004. (Available online at [www.letu.edu/historyofletourneauscrapers](http://www.letu.edu/historyofletourneauscrapers))
- The Fresno Scraper, Brochure for designation of a National Historic Engineering Landmark by The American Society of Mechanical Engineers, 1991.*

# Robert Gilmour LeTourneau (1888-1969)

R.G. LeTourneau was born in 1888 on a farm near Richford, Vermont. In 1902 his family moved to Portland, Oregon where he began an iron molder's apprenticeship at age 14. Two years later, the foundry where he worked burned down. He moved to San Francisco to continue his apprenticeship, but the 1906 earthquake hindered further progress. Tough times in the iron business met him at every turn.

After working various odd jobs, he and a partner opened a car dealership in Stockton, California around 1912. Five years later, he eloped with his 16-year old sweetheart, Evelyn Peterson. Their happy world crashed after World War I ended when their infant son, Caleb, died in the 1918 influenza epidemic and the car dealership failed.

Their financial debt seemed to defy solution. However, R.G. had become a skilled welder, mechanic, and electrician. His first job as a ranch mechanic put him in the operator's seat of a Holt 75 horsepower Caterpillar© tractor with a full-drag scraper.

In 1920 he became a self-employed land-leveling contractor who kept finding ways for one man and one tractor to move more and more dirt. As his earthmoving business grew, R.G.'s innovative machines completed many projects, such as the road to Hoover Dam.

Growth of manufacturing operations allowed LeTourneau to cease contracting. Between 1935 and 1946, he built factories in Peoria, Illinois; Toccoa, Georgia; Vicksburg, Mississippi; Rydalmere, Australia; and Longview, Texas. He built more than 50 percent of all scrapers and bulldozer blades for the war effort in World War II. In 1946 he and Evelyn founded LeTourneau Technical Institute which is now known as LeTourneau University. In 1953 he sold

three plants and kept the Longview and Vicksburg factories. Today, LeTourneau, Inc., a subsidiary of Rowan Companies, Inc. continues making large diesel-electric powered equipment such as the world's largest Front End Loader, the L-2350, and the world's largest off-shore drilling platforms.

Despite his transition from hourly employee to global businessman, R.G. retained a hands-on connection with his factory and construction work. He continued to identify with the working man, but found the need to broaden his professional associations. In 1941 he joined the American Society of Mechanical Engineers and in 1946 was elected to fellow grade. In 1961 he received the Machine Design Award, bestowed annually by ASME's Design Engineering Division. His inventions resulted in some 300 patents.

R.G. was deeply committed to his Christian faith and that faith inspired him in his life's work. You may read more about his life in his autobiography, *Mover of Men and Mountains*.



## About the Author

Dr. John H. Niemelä is a professor and chairman of New Testament and Exegesis at Chafer Theological Seminary in Orange, California.

Reading R.G. LeTourneau's autobiography, *Mover of Men and Mountains*, in 1972 inspired him to learn more about the life, ministry and machines of R.G. LeTourneau.

Dr. Niemelä's many years of in-depth research into LeTourneau's California years and into the early years of the earthmoving industry in California have given him the knowledge and understanding needed to write the nomination form and this brochure for the Mountain Mover's designation as an Historic Mechanical Engineering Landmark.

## R.G. LeTourneau Museum

The R.G. LeTourneau Museum contains photos, memorabilia, diagrams and scale models showcasing the man, his machines and his ministry. Located on the third floor of the R.G. LeTourneau Memorial Student Center at LeTourneau University's main campus in Longview, Texas, the museum is open to the public at no charge Monday through Friday 8 a.m. to 5 p.m. Group tours are available upon request.

R.G. and Evelyn LeTourneau are buried on the LeTourneau University campus near a memorial statue of R.G. LeTourneau and three examples of the large equipment he designed, including the Mountain Mover. For more information, call the LeTourneau University library at (903) 233-3264.

## Acknowledgments

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LeTourneau, Inc.

HOLT CAT

# The History and Heritage Program of ASME

The History and Heritage Landmarks Program of ASME (the American Society of Mechanical Engineers) began in 1971. To implement and achieve its goals, ASME formed a History and Heritage Committee initially composed of mechanical engineers, historians of technology and the curator (now emeritus) of mechanical engineering at the Smithsonian Institution, Washington, D.C. The History and Heritage Committee provides a public service by examining, noting, recording and acknowledging mechanical engineering achievements of particular significance. This committee is part of ASME's Council on Public Affairs and Board on Public Information. For further information, please contact Public Information at ASME International, Three Park Avenue, New York, NY 10016-5990, 1-212-591-7740.

## Designation

Since the History and Heritage Program began in 1971, 230 landmarks have been designated as historic mechanical engineering landmarks, heritage collections or heritage sites. Each represents a progressive step in the evolution of mechanical engineering and its significance to society in general. Site designations note an event or development of clear historic importance to mechanical engineers. Collections mark the contributions of a number of objects with special significance to the historical development of mechanical engineering.

The Landmarks Program illuminates our technological heritage and encourages the preservation of the physical remains of historically important works. It provides an annotated roster for engineers, students, educators, historians and travelers. It helps establish persistent reminders of where we have been and where we are going along the divergent paths of discovery.

The 120,000-member ASME is a worldwide engineering society focused on technical, educational and research issues. ASME conducts one of the world's largest publishing operations, holds some 30 technical conferences and 200 professional development courses each year, and sets many industrial and manufacturing standards.

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