



Photo by
Amoskeag Co. DANIEL D. HAYES

THE HAYES EXTENSION HOOK & LADDER TRUCK AND FIRE ESCAPE

By Chief David Traiforos (Retired)

Daniel D. Hayes has the distinction of being the inventor of the truck named after him. He was a native of New York City and did duty as an active fireman in Engine 2 and Engine 42 and was the first engineer appointed in the Volunteer Fire Department of New York. He was, therefore, an experienced fireman before Fate directed his steps to the Golden West California. More than that, he was a machinist, with an original turn of mind. After eight years of voluntary and patriotic service with the Volunteer Fire Department Hayes severed his connection with that department and went to work for the celebrated Amoskeag Company of Manchester, N.H.

His talents soon marked him out for special recognition by the Amoskeag Company where he was placed in charge of the five steam fire engines of the Amoskeag patent. In 1866, the Amoskeag Company received an order for five steam-powered fire pumpers from the San Francisco Board of Supervisors. Hayes, was selected to deliver the steam pumpers and to train San Francisco firefighters in the operation and maintenance of the equipment. This training period lasted several months, and when Hayes was ready to return to New Hampshire, the San Francisco Fire Department offered him the position of Superintendent of Steamers. In December of 1866, he accepted the position and began a 14-year career with the S.F.F.D.



Hayes and his fellow big-city firefighters were faced with a particular challenge: some of the most damaging fires experienced in American cities in the mid-1800's were in multi-story buildings. For many years inventors had tried to develop a hook and ladder truck that would effectively reach the upper levels of contemporary buildings, but initial attempts at aerial ladder trucks were often disastrous. Too heavy or too unstable, these horsedrawn trucks were either unable to reach fires in a timely manner or did not function well at the scene of a fire. In several cases, these early models cost the lives of firefighters who scaled their unsafe ladders. Then, in 1868, Hayes developed a truck with an aerial ladder that could extend as much as 85 feet in height.

Four to six men could fully raise the telescopic ladder in less than 40 seconds by turning a crank. The aerial was mounted on a turntable, so the ladder could be swung around to the desired direction. Hayes had designed, and then built himself, the first practical and safe horsedrawn aerial ladder truck. The truck was named after its inventor: the Hayes Extension Hook and Ladder Truck and Fire Escape.



The local fire department was a popular entry in any civic parade, and the San Francisco Fire Department brought out a full contingent of equipment, including the Hayes Aerial, for July 4th, 1871 celebrations. During the parade, a fire alarm was sounded from Box 17. According to one version of the story, Hayes saw this as the opportunity to prove the worth of his aerial hook and ladder truck. He jumped into the driver's seat, raced the horses to the burning multi-story building, and proceeded to operate the aerial ladder with great proficiency. So effective and dramatic was his display that the department was finally convinced that the Hayes aerial hook and ladder could serve the S.F.F.D. well. A

less dramatic, but probably more accurate, account claims that a new S.F.F.D. fire chief decided to use the Hayes truck simply because it was already out of the station to be in the parade. This fire chief found the innovative aerial hook and ladder very useful in fighting the blaze and was willing to allow it into regular service.

Using local manufactures, Hayes produced trucks for sale to the S.F.F.D. and other West Coast fire departments. But demand increased as word of the practicality and reliability of Hayes' aerial ladder truck design spread across the U.S. In 1884, Hayes sold his patent to the New York-based LaFrance Company (soon to become American [La-France](#)). A number of sizes were developed to meet the distinctive needs of various cities' fire departments; models ranged from a "first class" truck with an 85 foot extension ladder to the small "fourth class" truck featuring a 40 or 45 foot extension ladder. Hayes also continued to build trucks in his own shop in Oakland. By the early years of the 20th century, when new advancements in technology made the original Hayes aerial design obsolete, more than 20 Hayes-design trucks had been sold.

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The overhead wires greatly interfered with the process of raising the ladder of the Hayes truck, and to meet this a "ground extension" was devised so that the ladder could be raised from the sidewalk. But to render this arrangement perfectly effective Mr. Hayes' inventive genius was called into requisition. He invented and patented a simple, but highly useful, lever by which the ground extension can be elevated from the sidewalk, and the ladder of the Hayes truck raised despite the presence of the overhead wires.


From that time the Hayes truck became famous. It was reported that there were about 290 Hayes trucks in service in the United States. Brooklyn had eighteen, Philadelphia fourteen and the fire departments of all the important cities were equipped with this ingenious invention of Mr. Hayes.

This aerial ladder invention by Hayes revolutionized the use of ladders at fires. The Hayes ladder could be quickly raised to windows of burning buildings to rescue victims. The Hayes ladder would soon become an important piece of fire apparatus in major cities across the United States, including Hayes' native New York City. The San Francisco Fire Department continued to use the Hayes-designed aerial ladder until the late 1950s.

The reputation of the Hayes Truck and its inventor was not confined to this country. Superintendent Eyre Massey Shaw, founder and first captain of the Metropolitan Fire Brigade (now the London Fire Brigade), saw the Hayes Truck and was so struck with its usefulness and effectiveness that he bought one for the brigade back in London.

Daniel Hayes would move on from San Francisco and return to the eastern United States where he would become a representative for the LaFrance Company of Elmira, N.Y., the builders of the LaFrance fire engine.

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Sources:

The Museum of the City of San Francisco
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