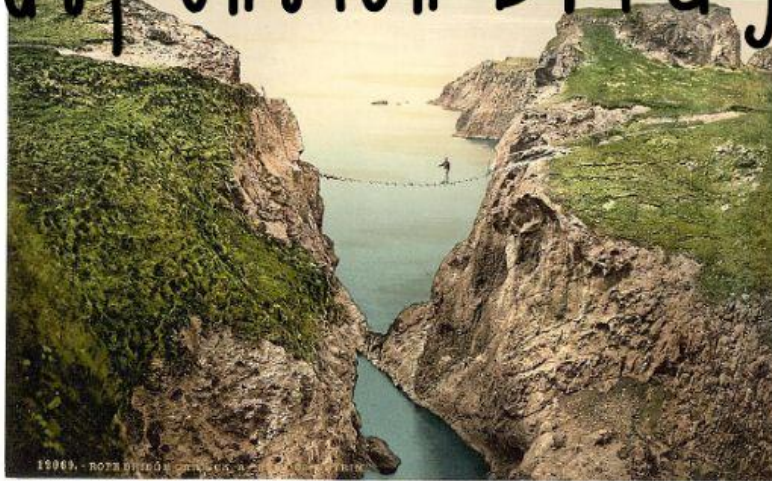


# Suspension Bridges

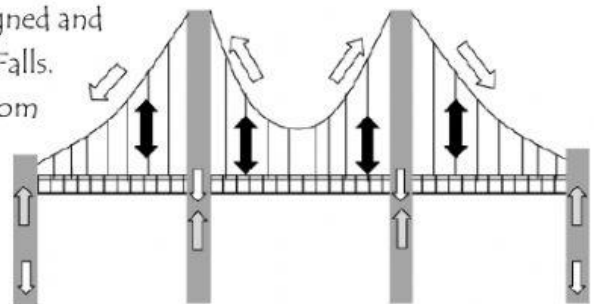


Have you ever seen a bridge made of rope? Maybe you have seen one in a movie or at an amusement park? A rope bridge might make you think of Tarzan or your dream tree house, but this type of bridge is actually thousands of years old and is the inspiration behind modern day suspension bridges. In order to cross a river or canyon, people fastened a rope or cable to a tree on one side to a tree on the other side. Early cables were created from twisting vines together.

Think about what you've learned about beam bridges. Why wouldn't a beam bridge always work for crossing a river or canyon? Remember that the forces in a beam bridge need to be distributed into its girders or piers. If you wanted to build a beam bridge across the Grand Canyon, there would be support at each end, but none in the center. Building this type of bridge would have disastrous consequences. What could help distribute the forces acting on the bridge without the need of so many piers?

While many engineers attempted to solve this problem, a civil engineer by the name of John Roebling thought he had it solved. Roebling had developed a method of spinning wire to create extremely strong cables. Using these cables, Roebling designed and built several suspension bridges, including one at Niagara Falls. After these successes, Roebling wanted to build a bridge from Brooklyn to Manhattan in New York. His design was accepted.

A worksite accident cost him his life, but his son, Washington and Washington's wife, Emily, continued the project. The Brooklyn Bridge opened May 24, 1883.



While the towers take most of the compression, the cables help send the tension to the abutments.

## Fun Fact

The fear of crossing bridges is called  
**gephrophobia**