125 feet, and the depth was 23 feet from the centre of the top chord to the centre of the bottom chord; yet all the iron posts, the truss rods, the diagonal tension rods, and the leaning end columns, were not together equal to a quarter of an inch in thickness of iron, if spread out as a plate, over the whole side, and half of that thickness was cast-iron; still no portion of the iron was subjected to a greater working strain than 4 tons to the square inch. Under ordinary circumstances a working strain of 3 tons to the square inch was the utmost that existed. He contrasted with that design some plate girder bridges, erected three years ago, on the Boston and Worcester Railway. They were 87 feet span and 7 feet 6 inches deep. The plates were 6 feet 3 inches wide and 7 feet 6 inches high. At every vertical joint there was a pair of butt straps, 8 inches wide, double riveted on each side of the web, and over these a pair of angle irons, 3 inches by 6 inches. Midway between the vertical joints, there were two angle irons, 6 inches by 3 inches, the longer sides being turned over at right angles, to form a knee by which they were riveted to the top and bottom chords. Mr Philbrick, the engineer, adopted that form of stiffening the webs of girder bridges, because, as he said, he had found that in England and in France, the T irons used for stiffening had begun to split in some cases. He had only called attention to the butt straps and angle irons used by Mr. Philbrick, because these, spread out as plates over the side of the web, were alone equal to one-quarter of an inch in thickness, while in the Murphy-Whipple Bridge the whole of the members forming the web amounted to less than a quarter of an inch.

He might add, that none of the bridges shown in the drawings had broken down, and he had never heard that they had exhibited any signs of weakness. They were considered in America, and he believed them to be, very strong, and good bridges. If they had any peculiar merit, it might be in the fact that they were not overloaded with ballast. The trusses were deeper, and, therefore, there was not so much iron put into the sides as might be expected to keep the strains down.

In Bollman's Bridge the test load was 1½ ton per lineal foot, for a single line. In America the assumed load was arrived at, by supposing that there was on the bridge a train of loaded goods wagons, with two engines, and a snow-plough weighing about 15 tons; and, in addition, when the bridge had a floor, that this was covered with snow, equal to a weight of 30 lbs. per square foot of floor; and that a side