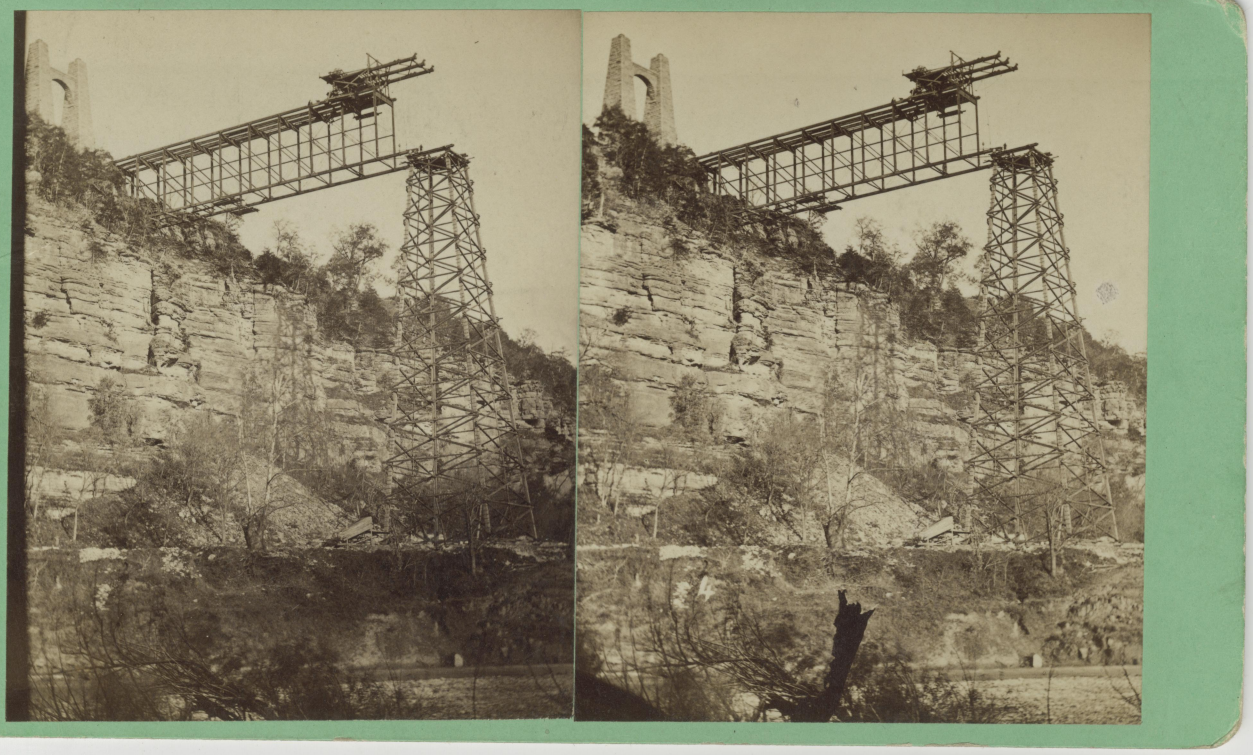

III.

in fig. 1. It will readily be seen that with these connections once made the structure could be built out panel by panel until the limit of strength of the anchorage bolts or of the top chord or the available resistance of the Roebling towers had been reached. This last was the governing factor, and the other parts were proportioned to suit. Accordingly, as the truss grew out from the face of the bluff a temporary wooden tower sprang up from the bottom of the valley to meet it, the centre of the tower being 196 ft. 10 in. from the shore end of the span. When the truss was landed on the tower, the four truss posts resting on it were raised by large jack-screws until the anchor bolts were relieved of a previously determined portion of their strain, and when this point was reached the work of carrying out the span was again commenced.

"The next flight was to the permanent pier, 178 ft. 2 in. When the span left the bluff, the iron pier was started upward from the masonry, and the two met in mid-air, the working forces on each arriving at the point of junction within two hours of each other. The weather was cold, and the span was short, owing to the compression of the lower chord and the effect of temperature; but this had been foreseen, and the huge pier, weighing 40,000 lbs., was moved on its rollers toward the span until the pin which connects the two could be put in place. This done, the truss was built out as before until the middle of the river was reached, which completed the work from the north side. * * * * * In erecting this bridge the most important points for computation were: first, the angle to be given the span at starting so as to land properly on the wooden pier, and, next, the correct elevation to be given to the truss at the wooden tower so that an exact junction could be made with the pin on the top of the permanent iron pier. These operations were both successful."

The erection was carried on with little or no interruption during an exceedingly severe winter, the men working at times when the span and pier were covered with sleet and ice. The iron piers were raised without staging of any kind. After the completion of the masonry the derrick masts used on that part of the work were turned "end for end," and one stick placed at each corner of the pier as a gin pole. The necessary tackle was placed at the head of each pole and the fall line carried to a crab on shore, so that the men at the crab being out of danger from falling bodies would be inclined to act with more coolness in case of breakage. Each pole had an independent tackle for the purpose of giving it vertical motion, and as fast as each tier was raised the poles were moved upwards to the proper position for the next tier. These poles are seen in position in view No. 2 of the accompanying plates.

No. 13. Perspective view of Bridge from north side.

No. 14. Looking through interior of Bridge.

No 4. Half of Span No 1 as it reached Wooden Pier; from River bottom opposite. No 4