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METHOD OF ERECTING BRIDGE STRUCTURES

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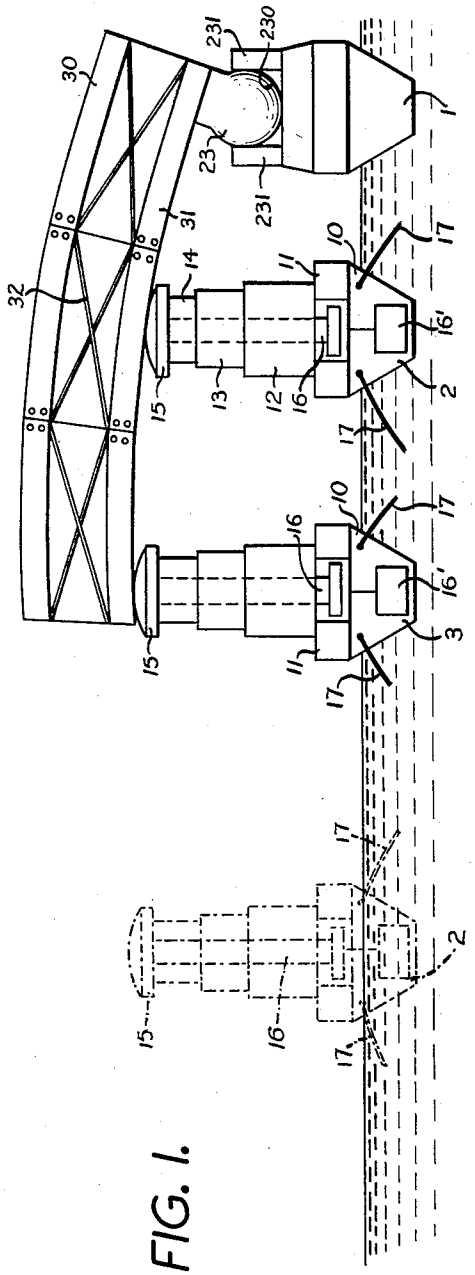


FIG. 1.

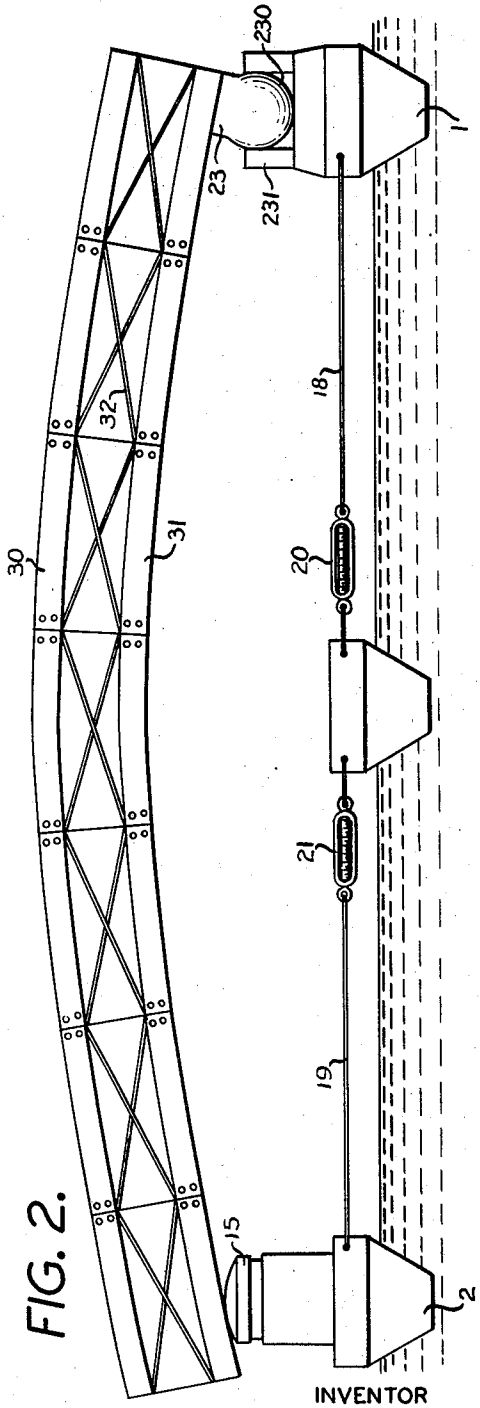


FIG. 2.

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METHOD OF ERECTING BRIDGE STRUCTURES

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2 Claims. (Cl. 29—428)

This invention relates to a method of erecting an arch-type bridge or similar structure.

The invention pertains particularly to relatively long arches which are difficult to erect by conventional methods. The conventional practice is to fabricate the arch on the job. Each end of the arch is constructed as an individual, self-supporting structure, and when the two ends are sufficiently long they meet in the center where they are joined together and the arch is thereby completed. This practice is perfectly feasible in connection with arches of relatively short span but it is not feasible in connection with relatively long arches, for example, arches which are over half a mile in length.

The principal object of this invention is the provision of a method of constructing and erecting relatively long arch structures, such as an arch bridge extending upwards of half a mile between its two piers or supports.

Another important object of this invention involves the application of prefabrication methods to the construction of arch-type bridges.

Another object of the invention is provision of a method by which an arch bridge is constructed on floats.

Still another object is to construct the bridge skeleton framework on barges and then float the framework to the bridge site and erect it.

Other and further objects and advantages of the invention will become apparent from the drawings, wherein:

Fig. 1 illustrates an early stage in the construction of the framework on barges or elevator floats.

Fig. 2 illustrates the last stage in the construction of the framework on barges.

The elevator floats **2** and **3** comprise essentially a barge **10** having a deck **11**. Rising from the deck are a plurality of rectangular telescoping frames **12, 13, 14**. The top frame may be covered by a platform **15**. The several frames are preferably fabricated of steel or aluminum but the platform and barge may be of steel or wood or wood clad in steel. A suitable hydraulic or mechanical elevating device **16** having a pump or motor **16'** is installed in the barge and serves to elevate and retract the platform **15** to any desired height. When the platform is fully retracted all the frames telescope substantally to the level of deck **11**. A plurality of cables **17** are provided for anchoring the barge in a selected location.

Fig. 1 shows an arched framework being constructed on a fixed barge or float **1** and two elevator floats **2** and **3**. The framework comprises upper and lower girders **30** and **31** joined by cross braces **32**. Affixed near the right end of the framework is a bearing bar **23** having a cylindrical bearing surface at **230**. The bearing bar is pivoted in plates **231** fixed upon the deck of barge **1**. The platform **15** of float **2** is elevated to the desired height to tilt the framework to the desired position. The floats or barges are anchored in fixed positions in the waterway. When the section of framework shown in Figure 1 is completed the platform **15** of barge **3** is raised to lift the framework sufficiently to clear barge **2**.

Barge **2** can now be shifted around barge **3**, and the framework construction continued to the new position of barge **2**, which is shown in dotted lines in Figure 1. The platform **15** of barge **2** is then raised to clear barge **13**, and the sequence of operations continued until the framework is long enough.

Fig. 2 shows the completed skeleton framework pivotally mounted at one end on barge **1** and at the other on elevator float **2**. Barge **1** need not be a fixed platform barge; it may also be an elevator float provided with means for sealing the surface **230**.

Fig. 2 also shows a barge **4** tied by cables **18** and **19** to barges **1** and **2**, to facilitate transportation to the bridge site, where it is erected on the usual piers. When the framework is fixed at each end upon the barges **1** and **2**, tightening the cables can serve to flex the framework to maintain or to shorten its length. The cables are provided with turnbuckles **20** and **21**.

Platform **15** of barge **2** in Figure 2 may be provided with a recess serving to seat and hold any means attached to the left end of the framework, since means may be a duplicate of the bar **23** and the bearing surface **230**.

Changes are obvious to persons skilled in the art without departing from the spirit of the invention as defined by the appended claims.

Having thus described my invention, I claim:

1. A method of constructing an arched bridge having an elongated framework, comprising erecting an end section of said framework on support means provided on each of a minimum of three barges disposed in a waterway laterally of the framework, but spaced longitudinally of the framework in alignment with each other, raising the third barge support means to pivot the framework on the first barge support means and to clear the second barge support means, shifting said second barge to a position beyond the third barge but still in alignment with the first and third barges, extending the framework from the third barge support means to the second barge support means, and repeating the sequence of operations until the framework is of predetermined length.

2. A method of constructing an arched bridge having an elongated framework, comprising erecting an end section of said framework on support means provided on each of a minimum of three barges disposed in a waterway laterally of the framework, but spaced longitudinally of the framework in alignment with each other, raising the third barge support means to pivot the framework on the first barge support means and to clear the second barge support means, shifting said second barge to a position beyond the third barge but still in alignment with the first and third barges, extending the framework from the third barge support means to the second barge support means, and repeating the sequence of operations until the framework is of predetermined length, and then transporting the completed framework on the first and last barges in line via said waterway to a bridge site for installation.

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