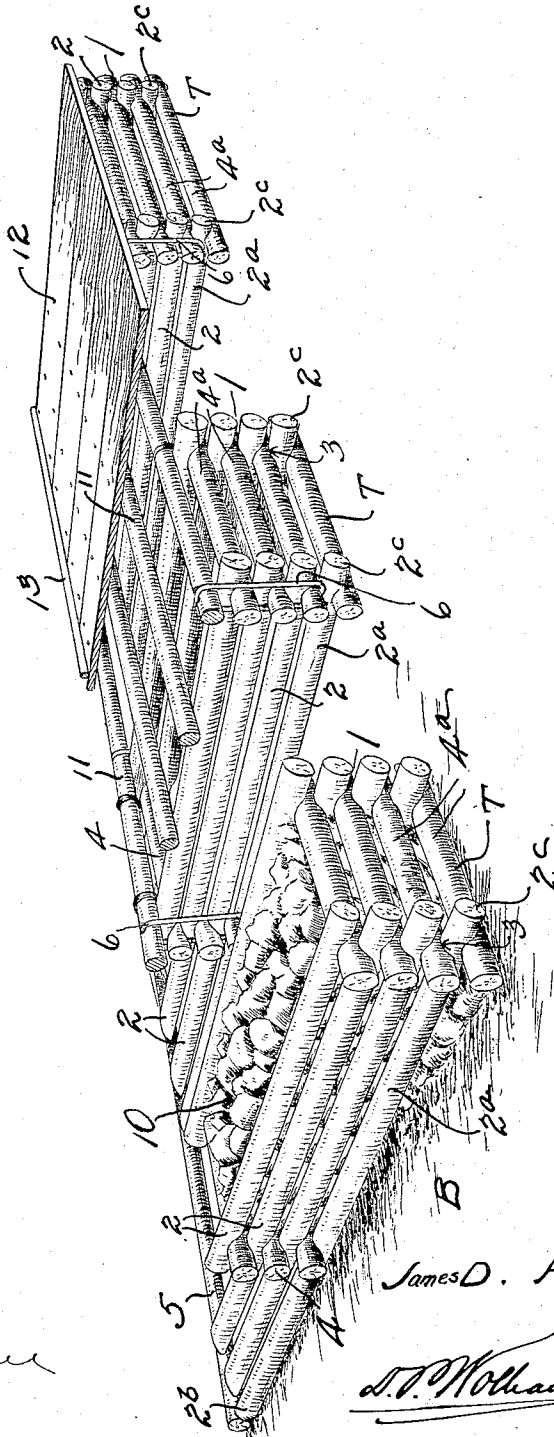


1,215,537.

Patented Feb. 13, 1917.
 2 SHEETS—SHEET 1.

FIG. 1.



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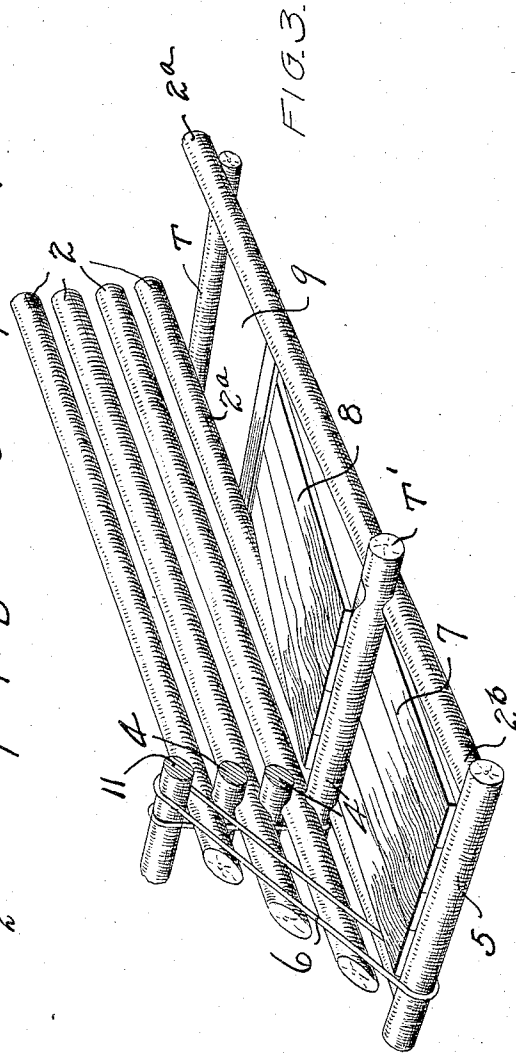
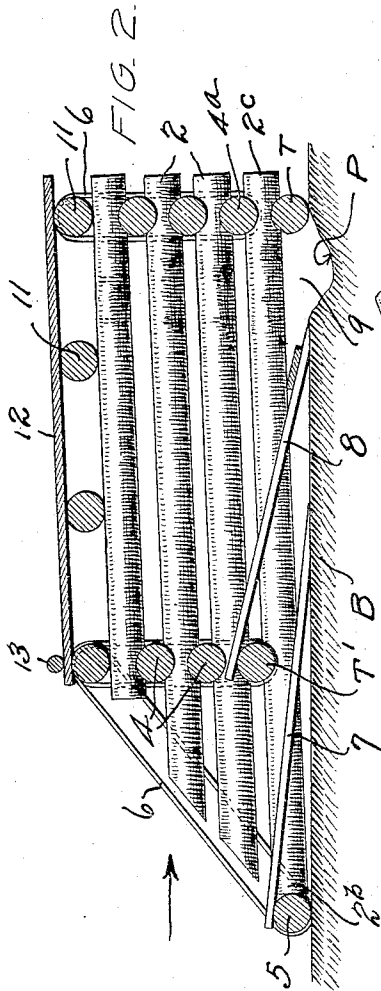
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 BRIDGE CONSTRUCTION.
 APPLICATION FILED FEB. 6, 1915.

1,215,537.

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 2 SHEETS—SHEET 2.



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BRIDGE CONSTRUCTION.

1,215,537.

Specification of Letters Patent.

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Application filed February 6, 1915. Serial No. 6,619.

To all whom it may concern:

Be it known that I, JAMES D. HYATT, a citizen of the United States, residing at Wadesboro, in the county of Anson and State of North Carolina, have invented certain new and useful Improvements in Bridge Construction, of which the following is a specification.

This invention relates to the general subject of bridges, and more particularly to bridges of that type which are especially adapted for use in small streams.

In many instances roads and highways cross the beds of small shallow streams and the like which are normally dry or have very little running water, thereby making it possible for the same to be easily forded by automobiles and other vehicles, but during certain seasons of the year, these streams carry a greater volume of water, frequently rising from three to five feet above the usual water mark, thereby rendering the fording not only inconvenient and in some cases impossible, but also very dangerous. That is to say, in most streams there are freshets each year in which the water attains considerable height, and all bridges have to be constructed with reference to the high water mark, thereby being expensive and always subject to being washed away when made of frame material. Therefore, to provide for such conditions as sometimes exist in streams of this character, it is desirable to have a bridge which is not only capable of taking care of the usual traffic, but is very stable and inexpensive.

Accordingly, the present invention has in view a novel and substantial bridge construction of special utility in connection with streams, creeks, and the like, which are subject to sudden rise and normal freshets, usually due to heavy rains and melting of snow and ice in the spring. In other words, the present invention contemplates the provision of a simple and practical bridge which is so constructed that it cannot be carried away by floating on the surface of the water, or by sliding along the bed of the stream.

Another object of the invention is to provide a construction in which the rising water will have a tendency to hold the bridge in place, and which is also designed so that rafts, floating logs and timber will slide over the floor of the bridge instead of jam-

ming against the piers, and not dislodge the bridge from its anchorage.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the improved bridge construction with a part of the bridge floor removed to show the crib-piers in detail.

Fig. 2 is a transverse section of one of the crib-piers.

Fig. 3 is a perspective view of one of the crib-piers with some of the side timbers removed to show the baffle floor construction.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

In carrying out the invention, any suitable material may be used for construction purposes. That is to say, where iron or steel is desirable or readily obtained, the same may be utilized to build the present bridge construction, though in most cases, timbers or logs may be advantageously used.

By reference to Fig. 1 it will be observed that the present bridge comprises a plurality of spaced piers designated in their entirety by the reference 1, and which are preferably of oblong form and arranged in parallel relation transversely of the stream bed B. Each pier is preferably a crib of open cage-like formation to offer less resistance to the running water, and is composed of a plurality of side timbers 2 which are of graduated length at their upstream end so that the lowermost timber 2^a provides an extended bearing or base for the crib. The said side timbers 2 are preferably notched as at 3, near their ends to receive the up and down stream cross timbers 4—4^a, respectively, thereby providing an interlock which materially strengthens each pier unit. In connection with the lowermost side timbers 2^a, it will be observed from the several figures of the drawings, that the upstream end 2^b abuts with one side of the up-stream bed-sill 5 in such a manner that the end of the side

timber is substantially flush with the said up-stream bed-sill, while the down stream-ends 2^c of the timbers 2^a are raised or elevated by being supported on the top of the lowermost timber T' of the down-stream cross timbers 4^a. It will thus be apparent that the down-stream end of the crib-pier 2 is higher than the up-stream side.

For the purpose of holding the timbers of the crib in assembled relation and strengthening and reinforcing the pier construction, each of the timber units may be bolted or otherwise secured together at their crossing points, or they may be held together by means of suitable stay wires or binding cables 6.

With further reference to the crib-piers 2, it will be observed particularly from Figs. 2 and 3 that the same are provided with special baffle-floor sections 7 and 8 arranged in spaced, substantially overlapping relation. That is to say, between the lowermost side timbers 2^a, and the up-stream bed-sill 5 and the lowermost one of the upstream cross timbers T', there is provided the baffle floor 7, while adjacent this floor section at the bottom of the crib there is also provided the floor 8, leaving an open portion 9 at the downstream end of the crib. In this connection, especially by reference to Fig. 1, it will be observed that each crib-pier or pen is adapted to receive a suitable anchoring filling 10, which is preferably of rock or stone, or when desired cement or concrete may be used with the same effect. This anchoring filling 10 rests upon the floor sections 7 and 8 of the crib, thereby weighting the crib down to the stream bed B and also fills the previously formed pocket P in the stream bed through the opening 9, thereby providing a positive engagement for each pier with the bed of the stream and more firmly anchoring each crib pier in place. By reason of the rock or anchoring filling 10 being directly embedded in the stream bed through the opening 9 in the bottom of the crib, at the down-stream end of the latter, the embedded engagement has the advantage of being protected from the force of running water by the baffle floor sections of the crib which rest upon the stream bed. That is to say, the baffle floors protect the anchoring engagement in such a manner that it is not so likely to have the earth bed undermined therefrom, and in case the same should become loosened and washed away, if the bridge were resting on alluvial soil, the remaining rock filling within the crib would fall through the opening and still present an engagement with the stream bed. Furthermore, in event of the upstream end of the pier becoming raised by the freshet current, the engagement of the anchoring material with the stream bed will serve as a

positive anchor to prevent slipping of the pier while the filling resting on the floored portion of the crib will tend to maintain the upstream end of the crib in its normal position.

The transversely arranged piers 2 are connected by a plurality of floor timbers or stringers 11 which may be secured to the timbers of the cribs by means of the tie wires or cables, or equivalent fastenings 6 previously mentioned. Upon the floor timbers or stringers 11 there is arranged a suitable traffic floor 12, which because of the difference in height of the upstream and down-stream ends of the crib piers is inclined laterally to correspond with the differential elevation of the opposite ends of the crib piers just mentioned. Thus, the bridge floor 12 has its upstream side lower than its down-stream side, thereby tending to decrease the upward pressure of water at stages when the surface of the water has reached the underside of the floor of the bridge, and furthermore in times of moderate freshets affording a less obstructed flow of water through the open section of the bridge. This arrangement not only diminishes the buoyancy of the bridge as a whole, but also reduces danger from rafts, floating logs and the like, since the same can more easily pass over the floor of the bridge and not jam against the edges of the floor 12 or the supporting abutments or piers submerged in the stream. The upstream side of the bridge is preferably provided with a guard or safety stringer 13 as shown.

From the foregoing, it is thought that the many features of advantages of the invention in its special application will be readily apparent without further description, and it will of course be understood that minor details of construction may be resorted to without departing from the spirit of the invention or scope of the appended claims.

I claim:

1. A bridge of the class described comprising a plurality of crib piers, said piers each including a plurality of interlocked timber elements having their upstream ends lower than their downstream ends, a baffle floor closing the upstream portion of the bottom of the cribs, leaving the downstream portion open, an anchor filling within said cribs and resting on the baffle floor portion and also engaging with the stream bed through the open portion, stringers for connecting the crib piers, and a bridge floor having its upstream side lower than its downstream side arranged on said stringers.

2. A bridge of the class described including a plurality of crib piers each comprising a plurality of interlocked timber elements, baffle floors arranged in spaced overlapping relation in the bottom of the upstream end

of the crib leaving the down-stream end open, and a traffic floor supported on said crib piers.

3. A bridge of the class described including a plurality of crib piers each comprising side trunks of graduated lengths, upstream and down-stream cross timbers interlocked with said side timbers, the lowermost down-stream cross timber supporting the down-stream end of the lowermost side timbers to set the latter at an incline and render the downstream end of the crib higher than the upstream side, an upstream bed-sill flushly abutting the upstream end of the lowermost side timbers, baffle floors partially covering the bottom of the crib, and a traffic floor supported on said crib piers.

4. A bridge of the class described including a plurality of piers having their upstream ends lower than their downstream ends, and each having baffle floors arranged in the bottom thereof in spaced overlapping relation at the upstream end of the pier leaving the downstream end open, means for connecting said piers, and a traffic floor having its upstream edge lower than its downstream edge.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JAMES DAVID HYATT.

Witnesses:

W. K. BOGGAN,
T. L. CAUDLE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."