No. 745,192. PATENTED NOV. 24, 1903.

H. KAMPMANN.

FLOATING BRIDGE.

APPLICATION FILED MAR. 9, 1903.

NO MODEL.

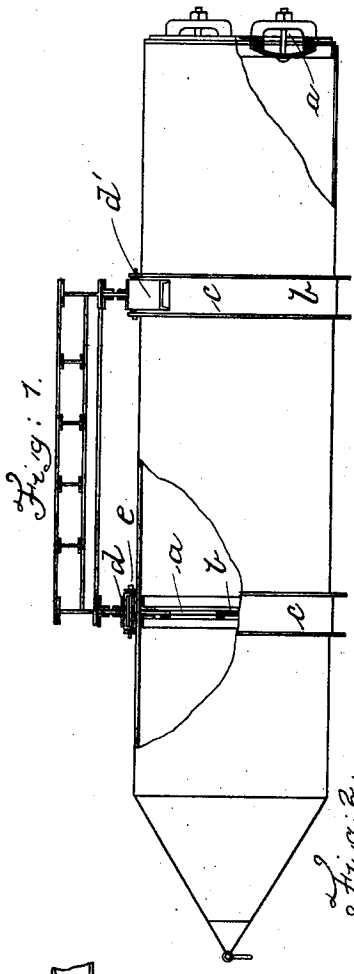


Fig. 1.

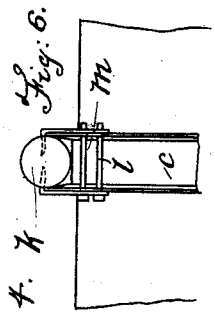


Fig. 6.

Fig. 4.

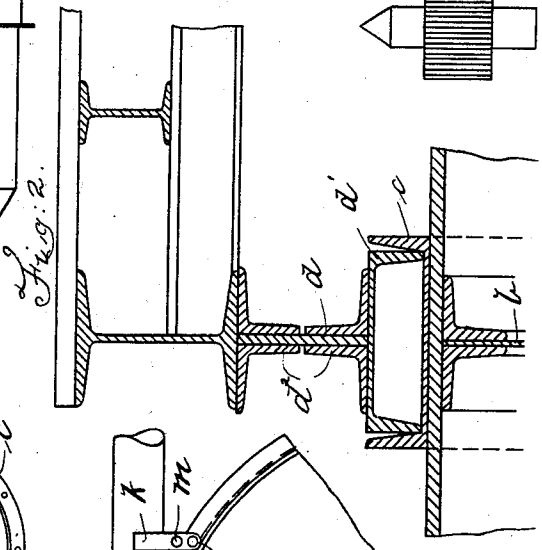


Fig. 2.

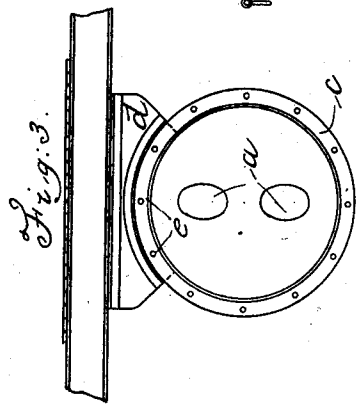


Fig. 3.

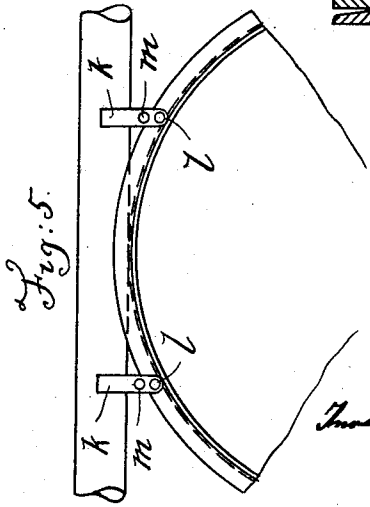


Fig. 5.

Witnesses:
1. Geo. Hurwitz
2. Geo. Hoffman.

Inventor: H. Kampmann
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No. 745,192. Patented November 24, 1903.

UNITED STATES PATENT OFFICE.

HERMANN KAMPMANN, OF KREIS ESSEN, GERMANY.

FLOATING BRIDGE.

SPECIFICATION forming part of Letters Patent No. 745,192, dated November 24, 1903.

Application filed March 9, 1903. Serial No. 147,024. (No model.)

To all whom it may concern:

Be it known that I, HERMANN KAMPMANN, a citizen of the German Empire, and a resident of Kupferdreh, Kreis Essen, Germany, have invented certain new and useful Improvements in Floating Bridges, of which the following is a specification.

My invention relates to improvements in floating or pontoon bridges where the pontoons are made turnable and easily removable, the object of the said improvements being to overcome certain disadvantages connected with the systems hitherto in use and to allow an easy exchange of pontoons. One of the said disadvantages is the necessity of bringing any pontoons that may need repairing ashore, thus interrupting communication and rendering the cost of repair disproportionately high. By making use of my invention these difficulties are avoided, a greater durability is secured to the pontoons, and the latter can be better attended to. I attain these objects by the construction and arrangements illustrated in the accompanying drawings, in which—

Figure 1 is a length view of a pontoon and a cross view of the roadway carried by the same with portions of the pontoon removed to show the construction inside; Fig. 2, a cross-section, on a larger scale, showing more particularly the arrangement on the top; Fig. 3, a rear view of the pontoon; Fig. 4, a top view of the bridge with arrangement for opening the same to allow the passage of vessels, and Figs. 5 and 6 the arrangement of my improvements where the construction carried by the pontoon is made of timber.

Each pontoon (a tubular cylinder) is divided by partitions or bulkheads *b*, provided with manholes *a*, into several water-tight compartments and is surrounded on the outside by a couple or more steel hoops *c*, firmly attached, and with flanges provided with eyes, the number of the hoops being dependent on the size of the bridge. Over each hoop there is a saddle *d*, the vertical sides being fastened to the hoop by bolts *e*, while the top carries the bridge. This saddle *d* comprises the vertical shank and the lower portion *d'*, fitted within the flanges of the hoop *c*, and the reinforcing-plates or angle-irons d^2, all as seen clearly in Fig. 2. The roadway is supported upon the vertical shank and the upper angle-irons, as seen clearly in said Fig. 2. On disburdening the pontoon on top, which may be done by screw-jacks resting on friction-rollers and set in below the length-joists of the bridge or by any other suitable means, and retracting the bolt it can be turned round and will allow a close inspection or repair or new coating of the portion not in the water. The hoop, as sliding-track, should be kept greasy.

If a pontoon has become irreparable and unfit for use, it may be exchanged for a new one by removing the connecting-bolt *e*, filling the inside of the vessel with water, so that it will get loose from the roadway of the bridge, and put another suitably-ballasted pontoon in its place. After pumping the ballast-water out of the new vessel and setting the bolt *e* in its proper place the bridge can be used again. This way of exchanging or setting in pontoons is of special importance for bridges for which there is not much time for their construction—for instance, military bridges. By keeping such pontoons in readiness a bridge can be built within a comparatively short time by taking the pontoons and a quantity of timber, the hoops of the pontoon forming the support of the roadway. Moreover, there is no risk of hurting the pontoon by rolling it to the place where it is to be put to use.

The manholes are provided in the vertical rear portion and in the partitions in such way that one manhole is always above the water-level, and thus at all times accessible. The purpose of providing the said holes in the perpendicular downstream or rear end of the pontoon instead of in the sides is the easy access in cases of high water, an advantage missing in the old constructions, because the sides are lying in the stream, while the stern is in the quiet water, and therefore better suited for going on board.

It being impracticable to mount the winding-engine for the opening of the bridge on any of the turnable pontoons, there has been provided on one side of the roadway a projecture *h*, on which the machine is built, the cable or chain for drawing a portion of the

bridge aside to allow the passage of vessels running from the engine to the fore end of one of the pontoons after passing a roller attached to an anchor *i* in the ground. On the other side of the roadway there is another projecture with another windlass, all like the former, to afford protection against the pressure of the wind. The winding-engine being planted on suitable foundation, it affords the bridge warden a better survey over the bridge. Besides, the turnability is considerably facilitated, because the point where the power has to set in is nearer to the point of gravity of the bridge.

If wood is applied for the structure to be carried by the pontoons, the main joist, which in Figs. 5 and 6 on the drawings is a round timber, rests immediately upon the bands or hoops *c* and is held in its position by flat iron cramps *k*, four for each band, which are fastened to the latter by means of bolts *l*, while the bent-in points are driven into the timber. Between the latter and the pontoon a screw-bolt *m* connects the cramp-irons about in their middle with each other, pressing them together and preventing an accidental getting loose.

What I claim as my invention, and desire to protect by Letters Patent, is—

1. A floating bridge supported by closed pontoons which are arranged turnable round their longitudinal axis so that each pontoon can be turned round to allow an inspection of all parts and particularly those which had been under water and to permit further an easy exchange of pontoons—all without interruption in the use of the bridge, substantially as set forth hereinabove.

2. A turnable pontoon, divided by partitions into several water-tight compartments, said partitions having manholes, the said holes being not, however, in the sides of the vessel, but in the rear end, substantially as above described.

3. A turnable pontoon comprising a tubular section, a flanged hoop surrounding the same, a saddle supported within the flanges of said hoop, and means detachably securing said saddle to the hoop to permit of its being turned upon the tubular section.

4. A turnable pontoon comprising a tubular section, a flanged hoop surrounding the same, a saddle supported within the flanges of said hoop, means detachably securing said saddle to the hoop to permit of its being turned upon the tubular section, and a support for a roadway carried by said saddle.

5. A turnable pontoon comprising a tubular section, a flanged hoop surrounding the same, a saddle supported within the flanges of said hoop, means detachably securing said saddle to the hoop to permit of its being turned upon the tubular section, a support for a roadway carried by said saddle, and a cable or chain attached to said section.

In witness whereof I have hereunto signed my name in the presence of two witnesses.

HERMANN KAMPMANN.

Witnesses:
WILLIAM ESSENWEIN,
PETER LIEBER.