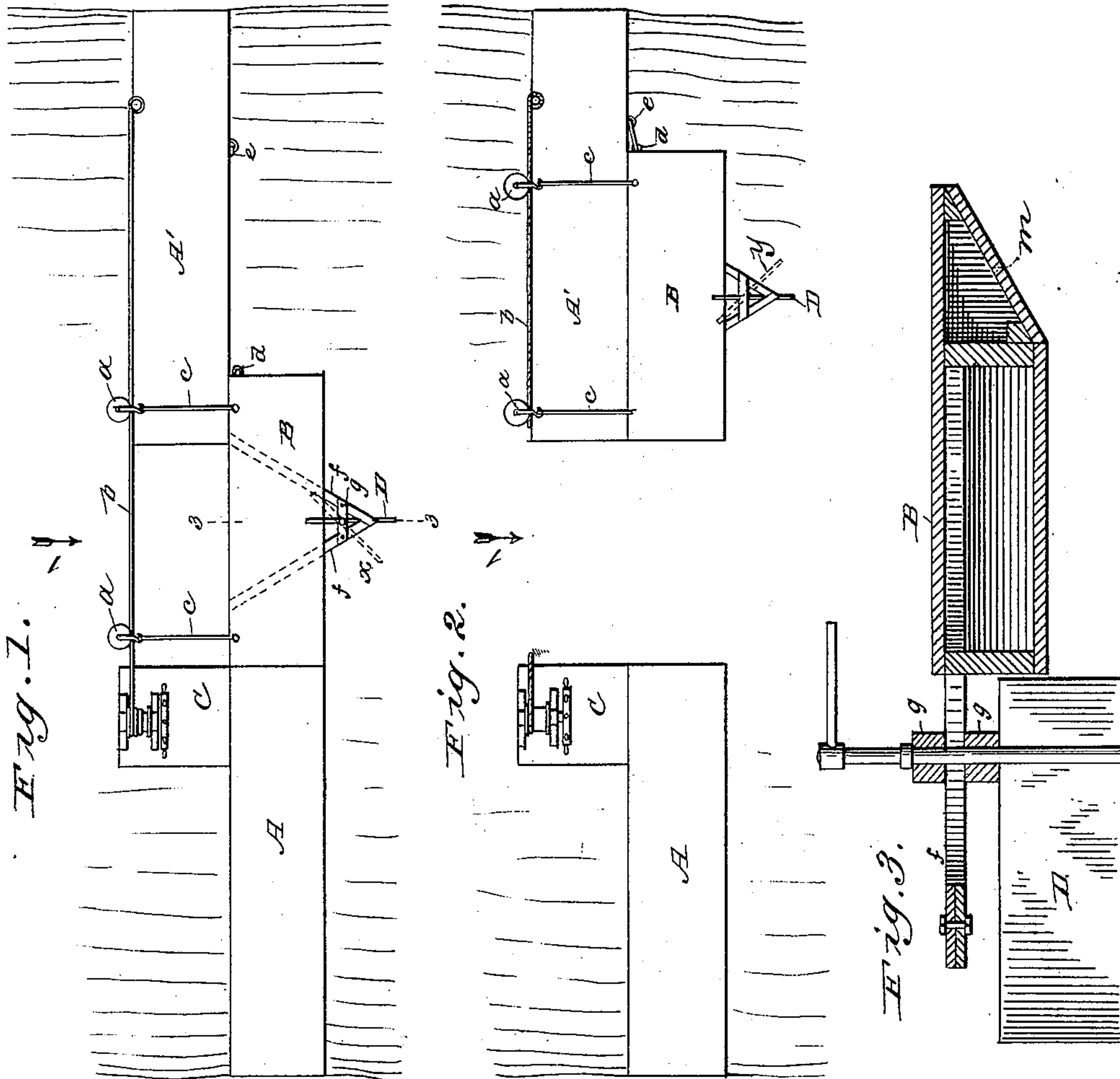


(No Model.)

S. N. STEWART.
PONTON BRIDGE.

No. 407,421.

Patented July 23, 1889.



Witnesses

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SYLVESTER N. STEWART, OF PHILADELPHIA, PENNSYLVANIA.

PONTON-BRIDGE.

SPECIFICATION forming part of Letters Patent No. 407,421, dated July 23, 1889.

Application filed March 15, 1889. Serial No. 303,461. (No model.)

To all whom it may concern:

Be it known that I, SYLVESTER N. STEWART, of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Ponton-Bridges, of which the following is a specification.

This invention has relation more particularly to the draws of ponton-bridges, the main object being to provide a draw which may be opened and closed by the power of the current.

The nature of the invention can best be explained and understood by reference to the accompanying drawings, in which—

Figure 1 is a plan of a ponton-bridge embodying my improvements, with the draw closed. Fig. 2 is a like view of the same with the draw open. Fig. 3 is a transverse vertical section of the draw-scow on line 3 3, Fig. 1.

The parts in Figs. 1 and 2 are for the most part represented diagrammatically. The ponton-bridge is supposed to extend from shore to shore of a stream, the direction of whose current is indicated by arrows 1. The bridge in this instance is supposed to be composed of three scows, of which A A' are the floating causeways or main portion of the bridge, and B is the draw which bridges the opening between the parts A A' of the structures. The scows A A' are placed in echelon, scow A as compared with A' being downstream a distance about equal to the width of the draw-scow B. The draw-scow when the draw is closed abuts against and is in line with the scow A and laps scow A' a sufficient distance to form a continuing roadway.

The draw B has sheaves or grooved pulleys *a*, which run on a steel cable *b*, stretched along the upstream side of the portion A', and extending across the draw-opening to a small scow C, fastened to the portion A, to which scow C said cable is made fast. The cable can be stretched taut by windlass on scow C, and can be secured in position by any suitable means known in the engineering art. Pulleys *a* are connected to draw B by wire ropes *c*. The draw is thus made capable of movement in a direction to open and close the draw-opening at pleasure. To effect this movement easily and comparatively expeditiously, I avail myself of the power of the current; and to this end I provide the draw-scow

on its downstream side (preferably) with a vertical rudder D, supported in a suitable rudder-frame and provided with a tiller-wheel or other means for governing it. This rudder-frame can be conveniently made of timbers *f*, put together in V form, with top and bottom cross-braces *g*, usually about eight inches by eight inches in cross-section, so as to afford a good bearing for the rudder-post which passes through them.

When the draw is closed and it is desired to open it, all that is needed is to put the rudder from its amidship position to the position represented by dotted lines *x*, Fig. 1. In this latter position the current striking against the rudder will move the draw B to the position shown in Fig. 2. When it is desired to again close the draw, the rudder is brought to the position represented by dotted lines *y*, Fig. 2. When the draw is open, it can be secured by hooks and eyes *d e*, or other suitable fastenings, to the portions A' of the bridge, so that the cable *b* may be slackened and allowed to drop into the water a sufficient depth not to impede the passage. After the vessel has passed through the draw the cable can again be tightened. Hooks and eyes or other fastenings similar to those already described are also in practice provided for more certainly assuring the draw in its closed position.

In order to diminish the current-pressure against the draw-scow, which, as shown, moves with its sides to the current, I build it with a long rake or bow on its upstream side, as indicated more clearly at *m*, Fig. 3. This feature is applicable to any ponton which is to be placed crosswise of the current.

Manifestly the causeways A A', instead of being placed in echelon, as shown, may be placed in line. In this case the draw B would be made of a length sufficient to lap past both causeways far enough to form a continuous roadway when in its closed position. It is also manifest that the main portion of the bridge, as well as the draw itself, can be made each of a number of connected pontons or scows.

Having described my invention, what I claim herein as new and of my own invention is as follows:

1. A ponton-draw provided upon its side with a rudder arranged and adapted to operate substantially in the manner described.

2. The combination, with the floating cause-
5 ways or main portions of the bridge, having a draw-opening between them, of a floating draw adapted to span the opening and movable to and from the same, and a rudder or
10 rudders on the draw whereby the current-power is caused to move the draw, substantially in the manner hereinbefore set forth.

3. The combination of the floating cause-ways or main portions of the bridge, the draw,

the draw supporting and guiding cable, and the fastenings whereby the draw when opened 15 can be secured to the main portions of the bridge while the cable is slackened, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set 20 my hand this 13th day of March, 1889.

SYLVESTER N. STEWART.

Witnesses:

EWELL A. DICK,

WILL E. AUGHINBAUGH.