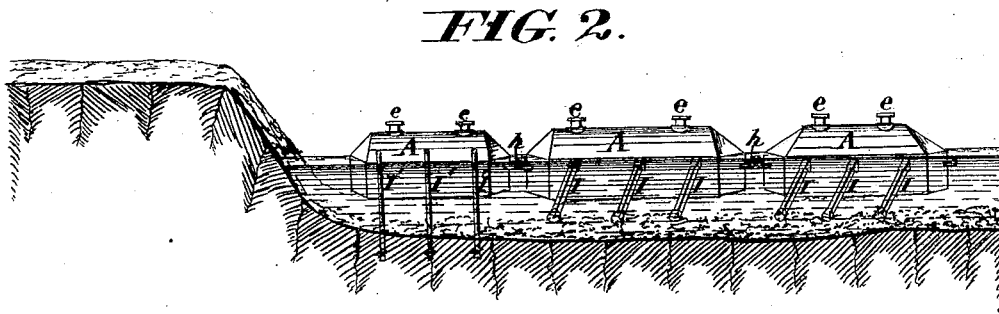
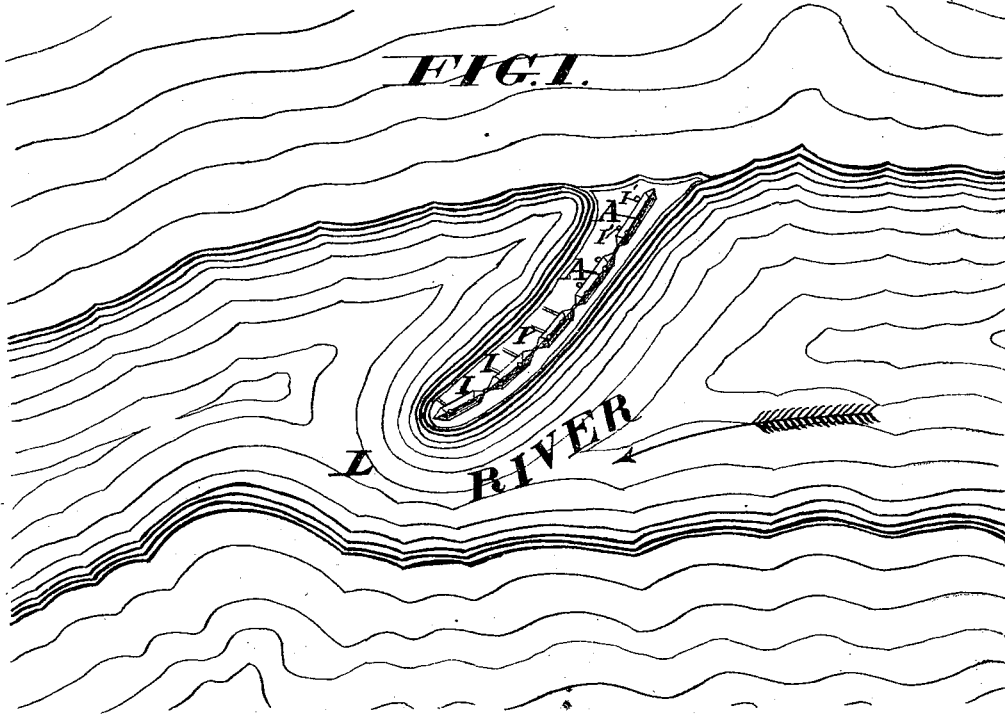


A. B. MULLETT & F. SCHUMANN.
Construction of Jetties for Improving River-Channels.

No. 159,956.

Patented Feb. 16, 1875.



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FIG. 3.

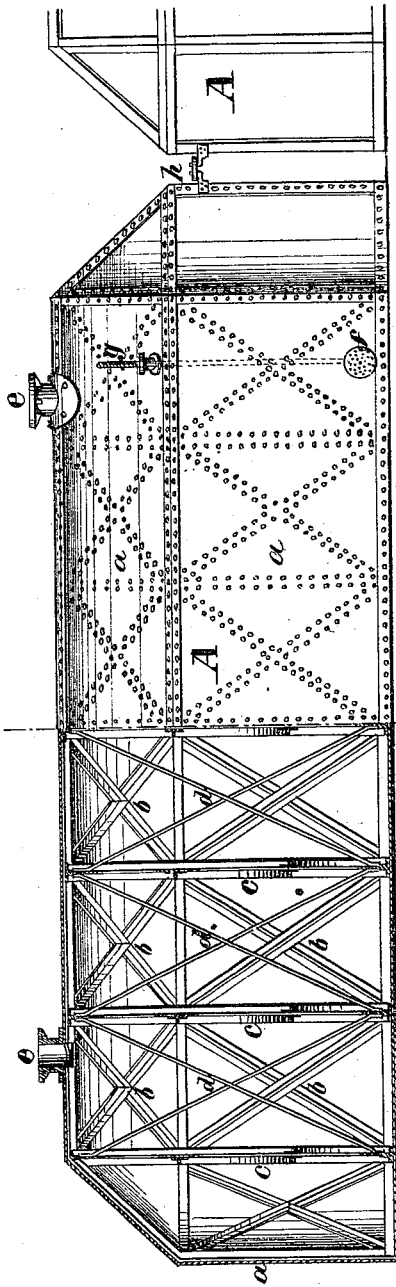
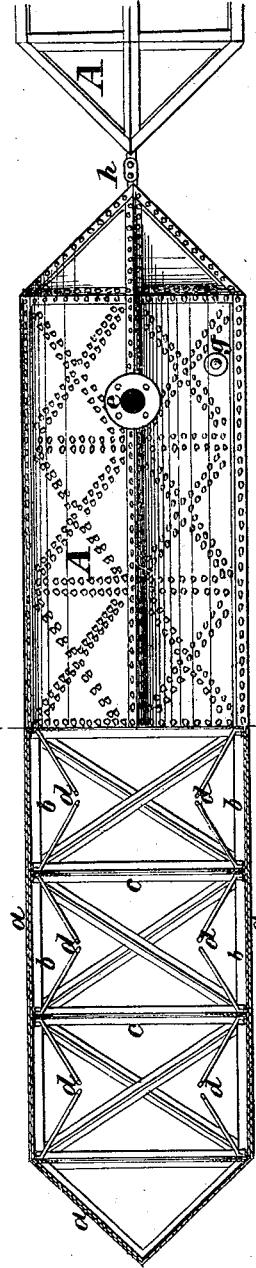


FIG. 4.



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FIG. 5.

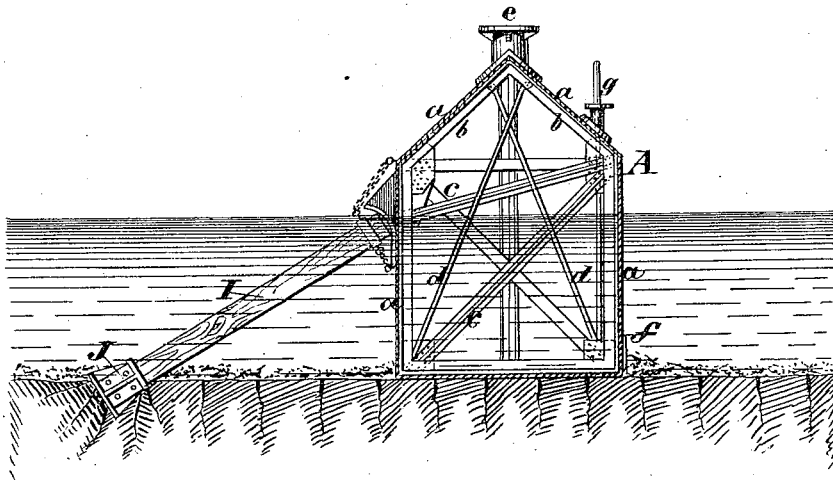
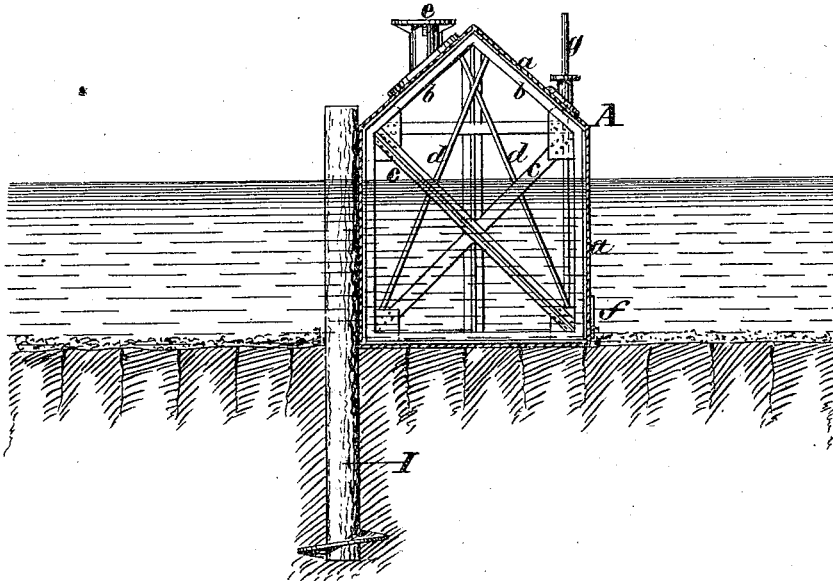


FIG. 6.



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UNITED STATES PATENT OFFICE.

ALFRED B. MULLETT AND FRANZ SCHUMANN, OF WASHINGTON, D. C.

IMPROVEMENT IN THE CONSTRUCTION OF JETTIES FOR IMPROVING RIVER-CHANNELS.

Specification forming part of Letters Patent No. **159,956**, dated February 16, 1875; application filed January 5, 1875.

To all whom it may concern:

Be it known that we, ALFRED B. MULLETT and FRANZ SCHUMANN, both of Washington, in the District of Columbia, have invented a new and useful Improvement in the Construction of Jetties for Deepening the Channels of Rivers and for other purposes, of which the following is a specification:

Our invention consists in a mode of constructing permanent bars or jetties, for the purpose of forming or deepening channels in running water, by the use of buoyant caissons, any necessary number of which are floated to the place where the jetty is to be formed, and are sunk in suitable position by the admission of water by means of valves, and supported against the action of the current by piles or struts. A permanent bar or jetty is thus produced by obstructing the flow of water, and by eddies causing the deposit of sand and silt. After this is accomplished the caissons may be removed by pumping out the water, and thus causing flotation.

In the accompanying drawing, Figure 1 is a plan view of a river, showing a jetty constructed according to our invention. Fig. 2 represents a transverse section of a portion of the river-bed, showing a rear elevation of the jetty. Fig. 3 is an elevation of one of the caissons, partly in section. Fig. 4 is a plan of one of the caissons, partly in section. Fig. 5 is a transverse section of one of the caissons, showing one of the supporting struts or braces in elevation. Fig. 6 is a partial transverse section, showing, as a modification, a vertical pile as a substitute for the oblique strut for retaining the caisson in position.

A represents the external shell or casing of an air-tight structure, preferably made of sheet-iron, attached to a suitable frame-work, *b*, which is strengthened and sustained by means of braces *c* and ties *d*, in any suitable manner, the whole forming a caisson, such as shown at A in Figs. 1 and 2, adapted to resist the external pressure of water when sunk to any necessary depth. The caissons A are each provided with two or more man-holes, *e*, and with one or more valves, *f*, which are employed to admit water at bottom, and may be operated from above by means of rods *g*. *h h* represent hooks and links, or other suitable at-

tachments, for connecting together any desirable number of the caissons A. I, in Figs. 1, 2, and 5, represent oblique struts, each formed with a suitable foot, J, to afford it a bearing in the bottom of the river, and resting at top against an abutment, K, attached to a caisson.

In Fig. 6, I' may represent a pile, of any suitable construction, which may be substituted for the oblique strut I.

In applying our invention any desirable number of the buoyant caissons A are floated to the point in a river, or other water-course, where it is desired to construct a jetty, or a bar, for any purpose. Said caissons, being coupled together, are sunk in the required position by opening the valves *f*, so as to admit water to the interior.

Where it is rendered necessary from the structure of the bottom, or the force of the current, they are sustained in position by means of oblique struts I, or piles I', or their equivalent.

If the invention is to be used for deepening the channel of a river, as in the illustration shown in Fig. 1, it will now appear that the obstruction to the flow of the water produced by the jetty will cause the lodgment of sand or silt, and will result in the formation of a permanent bar across such a portion of the water-course as the jetty may be applied to, the entire flow of water being restricted to the narrow channel marked L in Fig. 1. The rapidity of the current thus produced will effectually prevent the formation of a bar in such channel L, and will cause a rapid and complete destruction and removal of any existing there. When the channel has thus been determined, and a permanent bar has been produced at the place where the jetty is constructed, the caissons may be removed by pumping out the water through one of the man-holes *e*, while air is admitted through the other, until sufficient flotation is produced to raise the caisson out of its bed. It is then floated off to any other place where it may be required.

Our invention is not limited to the construction of jetties for the production of artificial bars in order to deepen the channels of rivers, as above explained, but may be applied in any suitable place where the construction

of either a permanent or temporary jetty is required.

We claim as new, and of our invention—
The process and apparatus herein described for forming bars or jetties in rivers and other running water by the submersion of connected buoyant caissons A, constructed as specified,

and sustained by struts or supports I I', all as herein described.

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Witnesses:

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