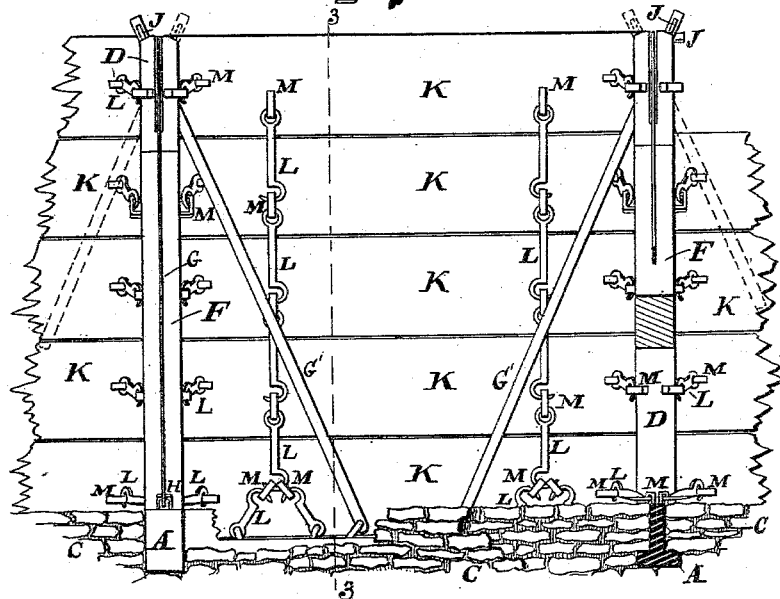


A. DEAN.  
PORTABLE BREAKWATER.

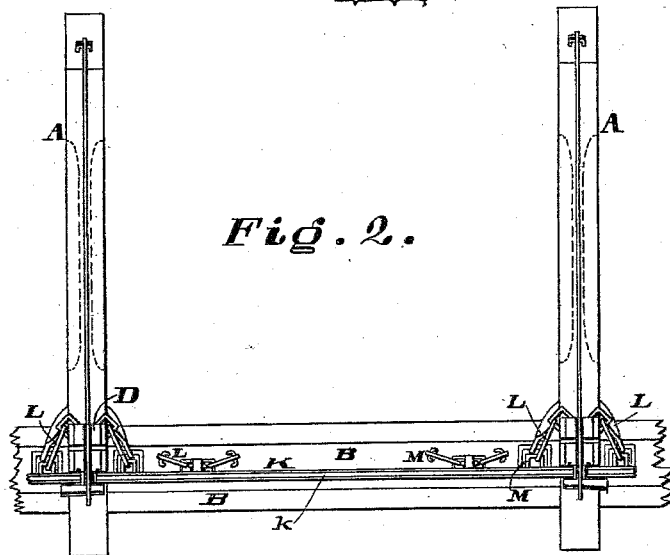
No. 303,128.

Patented Aug. 5, 1884.

*Fig. 1.*



*Fig. 2.*



Attest:

A. P. Knight  
Geo. Wheelock

Inventor

By Argus Dean  
Knight Bros. & Co.

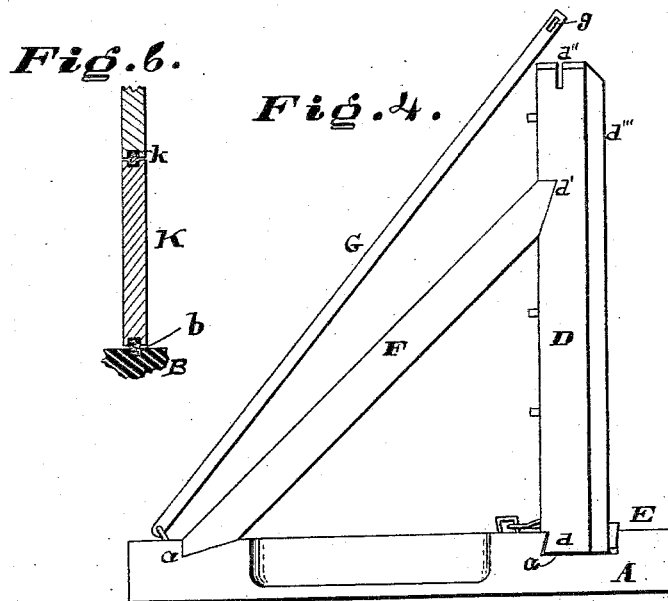
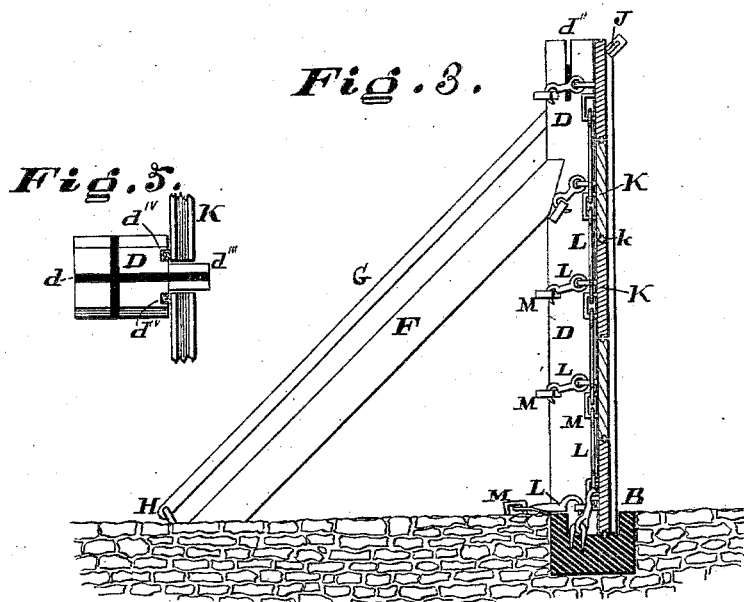
(No Model.)

2 Sheets—Sheet 2.

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Argus Dean  
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# UNITED STATES PATENT OFFICE.

ARGUS DEAN, OF OTTO, INDIANA.

## PORTABLE BREAKWATER.

SPECIFICATION forming part of Letters Patent No. 303,128, dated August 5, 1884.

Application filed March 20, 1884. (No model.)

### *To all whom it may concern:*

Be it known that I, ARGUS DEAN, of Otto, Clark county, Indiana, have invented a new and useful Portable Bulk-Head or Breakwater, of which the following is a specification.

The object of my invention is to provide a means for temporary protection of small areas against floods, and particularly areas occupied for important manufacturing and business purposes. For the above purpose I encircle such area with a system of bed-sills of some indestructible material—such as cast-iron—from which extend other sills at right angles to the line of inclosure. This system of sills, being embedded in concrete, grouting, or masonry, remains permanently in the ground, and when not in use may be covered up by pavement, gravel, or other material. Said sills are so formed as to support and anchor the temporary superstructure which constitutes my dam or breakwater proper. This superstructure consists of a series of posts or stanchions whose lower ends are securely mortised in the said bed-sills, and whose upper ends are firmly braced to the same by means of diagonal struts and tension-strips. The encircling line of sills and the standards being grooved or channeled to receive oakum or other suitable calking, a series of similarly-grooved boards being set up edgewise are firmly fastened to said stanchions and to each other by means of hooks and staples, as hereinafter particularly set forth.

In the accompanying drawings, Figure 1 is a rear elevation of a section of temporary dam or breakwater embodying my invention. Fig. 2 is a top view of the same. Fig. 3 is a vertical section on line 3 3. Fig. 4 is a side elevation of the frame-work. Fig. 5 is a top view of a stanchion and portions of two sets of boards. Fig. 6 is a vertical section of a board and of parts of another board and the supporting-sill. Fig. 7 is a cross-section of said sill, with the cap-plate which covers it after removal of the superstructure. The line tension-strips, hereinafter described, are omitted from all the above figures except Fig. 1.

A A represent two of numerous ground or bed sills or sleepers, which are so set rectangularly to the encircling line of the area to be

inclosed as for their front ends to extend a little in front of said line and for the main body of the said sills to be on the inner or rear side of said line. Between the sills A A, and coincident with the inclosing-line, are sills B, which are either firmly united to or built in with said sills A A. The said sills A A B are of any indestructible material, preferably of cast-iron, and are so embedded in a bed of grouting, concrete, or masonry, C, as for their upper surfaces to stand either flush with or a little below the level of the ground or pavement-surface, as the case may be, and so that, except when in use, the said foundation A A B may cause no impediment to transit, and may yet be readily accessible in case of emergency. Each cross-sill A has (in alignment with the line-sills B) a dovetail or undercut mortise, *a*, for the correspondingly-shaped tenon-foot *d* of stanchion D, and for a tightening wedge or key, E. The upper ends of the stanchions are braced against pressure from without by struts F of timber, which are jogged, as shown at *a'* and *d'*, into the cross-sill and stanchion respectively. These struts effectually support the upper parts against the inward pressure of the water. A strip, bar, or rod, G, whose lower end is secured by staple H to the cross-sill, occupies by its upper portion a slot, *d''*, in the head of the stanchion, and receives a key or cotter, J, in a slot, *g*, in that portion of it which projects in front of the stanchion. This key, being driven tightly in, operates to put the tie or strip G to the stretch, and by so doing to hold the strut-sills and stanchion firmly to one another. Similarly-secured oblique ties G' prevent any lateral swerve of the stanchions D and hold them firmly down to the bed-sills. Of this frame-work of my wall or dam the stanchions D have forwardly-extending tongues *d'''*, and parallel with said tongues grooves *d'''*. The line-sill may have a similar groove, *b*. These grooves are for the reception of oakum or other calking material.

To the above-described frame-work is affixed a series of breasting or breast boards or planks, K, having grooves *k* in their edges for reception of oakum or other suitable calking material. These boards K are drawn and held forcibly and firmly down, calked edge upon calked

edge, and against the similarly-calked top of the line-sill and faces of the stanchions, by means of a system of hooks, L, and staples M.

After removal of the portable superstructure the hooks and containing-troughs of the line-sills are protected by suitable cap-plates, N, which, with the tops of the sills, may be left flush with the ground or pavement-surface, or a little below it.

The above-described construction of portable breakwater may be varied in non-essential particulars. For example, the face of the breasting may be formed with a straight batter inward from the base upward, instead of with a strictly vertical face, as here shown. This construction of a portable bulk-head or breakwater is not intended to supersede levees where levees are proper, but for the protection of small areas, towns, and cities against floods where property is valuable for manufacturing or business purposes, and where levees would be an incumbrance.

The foundation can be made of either stone or cast-iron, and laid down with top flush with the surface of the ground, and can remain permanently, having some covering, when necessary, to protect it from wear and tear when not in use.

As the foundation will always be ready, the superstructure can be put up in a few minutes, and then the planks can be put up, one course at a time, as the rise by floods may demand, and the whole can be taken down with the same facility. No skilled labor will be required, as any able-bodied man with ordinary sense and judgment can do the work. When not in use, the whole, except the foundation, can be stored in permanent houses built for the purpose, and would be practically indestructible.

Any sewers or water-sheds should be made to discharge outside of such inclosed areas when possible, otherwise the sewage and rain-water will have to be pumped out. This can be done by attaching pumps to the engines already in use within the inclosed boundaries. Where common levees would be practicable

which would have to be crossed by streets, the passages could be left open down to the common level, and when necessary they could be closed by this device as a temporary bulk-head. My idea is to have no mortises or anything that could not be taken apart or put together without any other tool than a hammer. There will be no screws, nuts, or bolts that would be liable to be mislaid and to get out of order by rust or in any other way. Everything pertaining to the fastening is on the inside and instantly available, so that if by accident any of the parts should get out of order, the persons in charge will not have to go under the water to find it.

I am aware that temporary coffer-dams having side frames and braces detachably secured to permanent bottom and calked seams are old.

I claim as new and of my invention—

1. A portable bulk-head or breakwater in which a series of breast-boards having opposing calked grooves are drawn and held to one another and to a similarly-calked vertical or nearly vertical frame by means of hooks and staples, substantially as set forth.

2. In a portable bulk-head or breakwater, the combination of a permanent sunken foundation having means, substantially as described, for the attachment of a series of portable stanchions for support of a series of grooved and calked breast-boards, which are drawn and held to one another and to similarly-calked surfaces of said foundation and stanchions by means of hooks and staples, substantially as set forth.

3. In combination with a mortised foundation, and with a series of breast-boards, the frame consisting of tenoned and slotted stanchions D, jogged struts F, and the tie rods or strips G, substantially as set forth.

In testimony of which invention I hereunto set my hand.

ARGUS DEAN.

Attest:

SUSAN B. HAMILTON,  
HENRY TUCKER.