J. U. MUELLER.

Jetty-Shutter.

No. 226,772. Patented April 20, 1880.

Fig. 1.

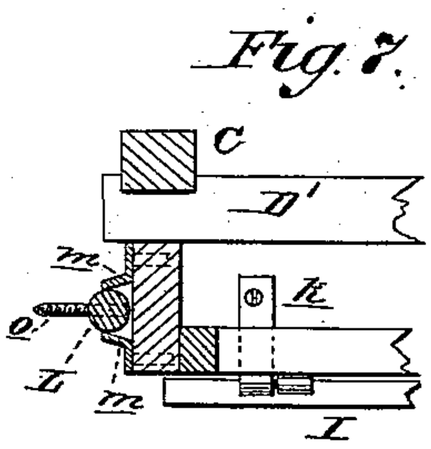

Fig. 7.

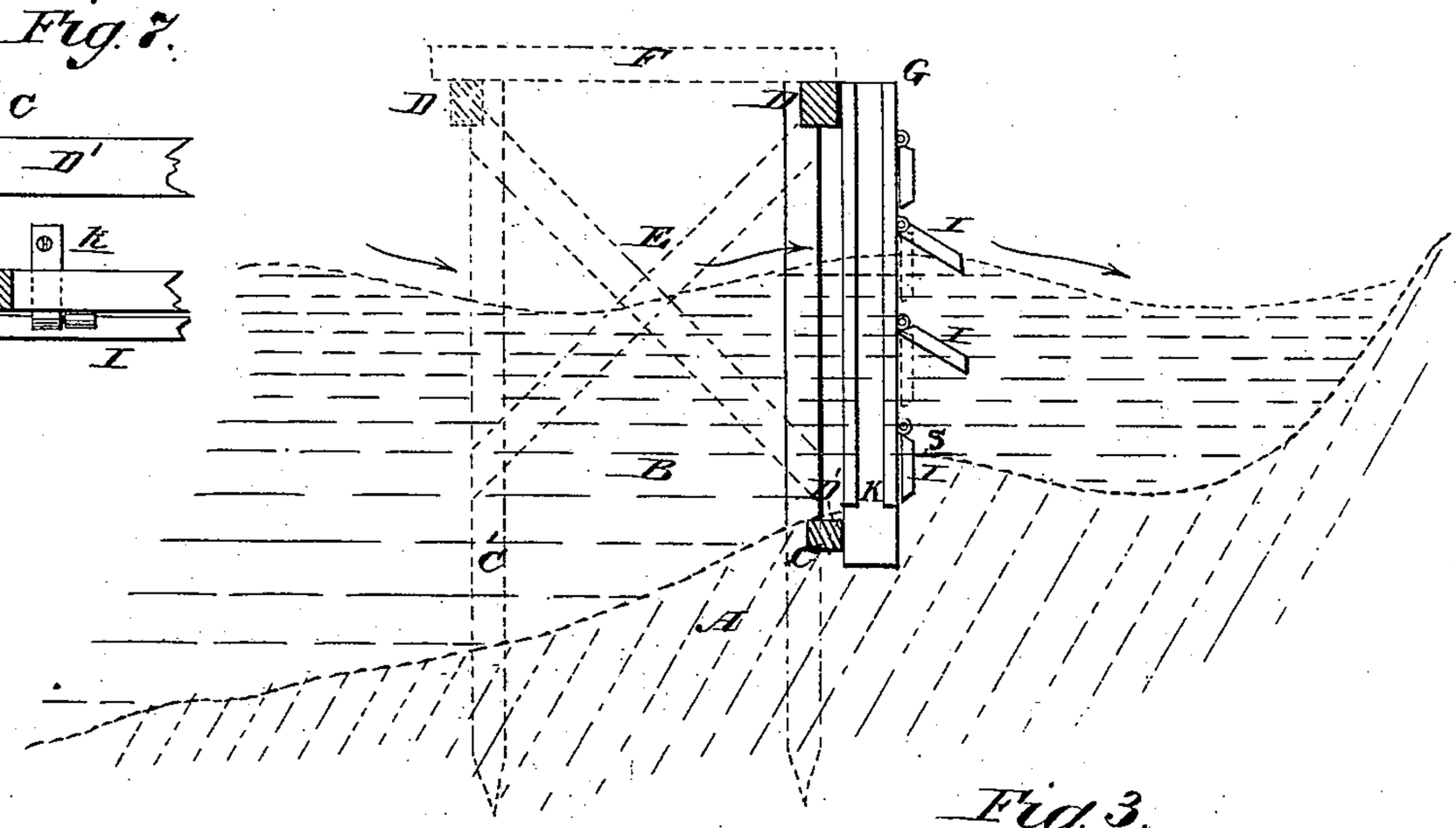

Fig. 2

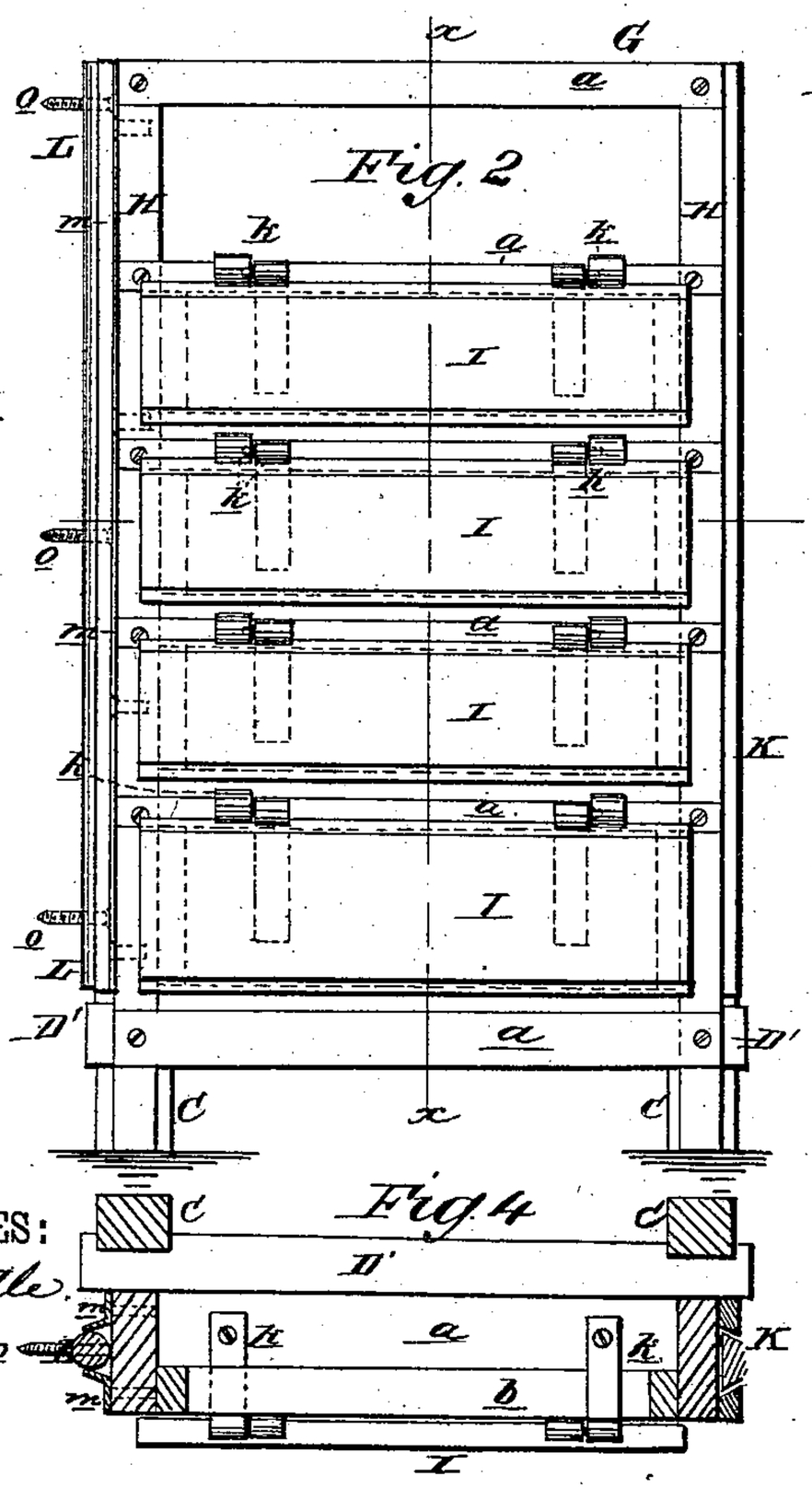

Fig. 3.

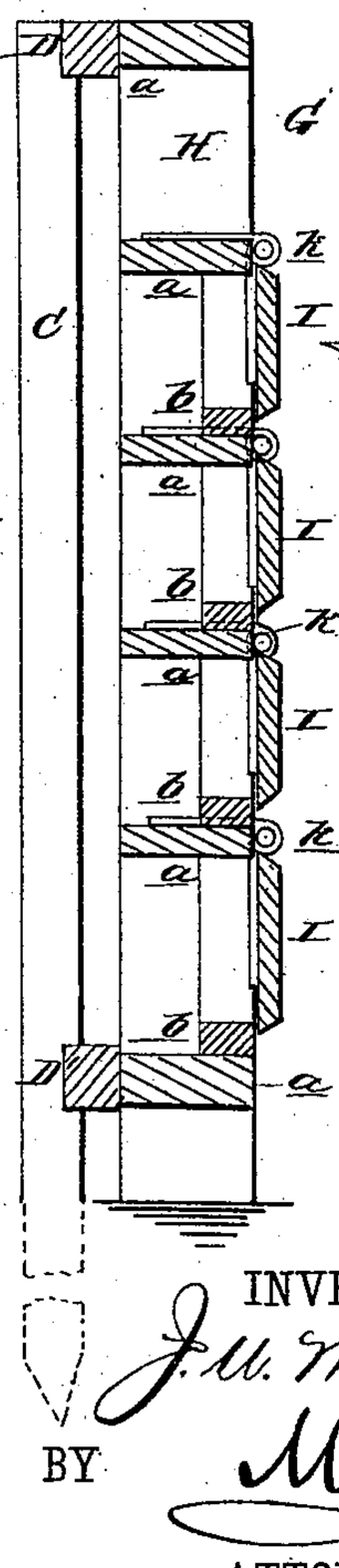

Fig. 5.

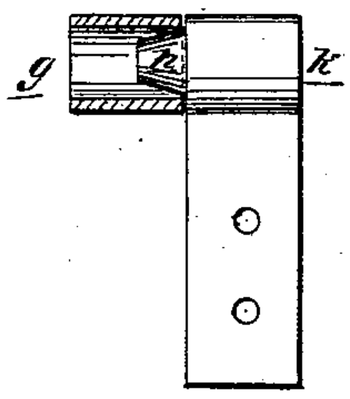

Fig. 6.

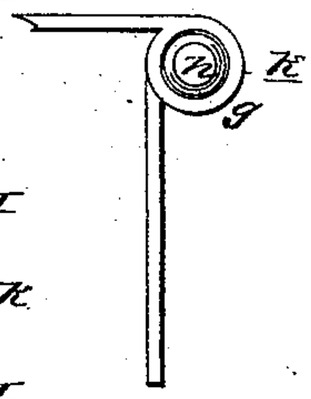

Fig. 4

WITNESSES:

F. McArdle.

C. Sedgwick

INVENTOR:

J. U. Mueller

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN U. MUELLER, OF DETROIT, MICHIGAN.

JETTY-SHUTTER.

SPECIFICATION forming part of Letters Patent No. 226,772, dated April 20, 1880.

Application filed January 8, 1880.

To all whom it may concern:

Be it known that I, JOHN U. MUELLER, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Jetty-Shutters, of which the following is a specification.

Figure 1 is a reduced vertical section, showing the shutters in position. Fig. 2 is a front elevation of a shutter. Fig. 3 is a vertical sectional side elevation on line *x x*, Fig. 2. Fig. 4 is a plan of a shutter provided with a side tongue and groove. Fig. 5 is a plan, partly in section, of a slat-hinge. Fig. 6 is a side elevation of a slat-hinge. Fig. 7 is a plan of a section of a shutter provided with a revolving side hinge.

Similar letters of reference indicate corresponding parts.

This invention relates to the construction of jetties along ocean, lake, and river shores for the protection of the shore itself, and for the filling in of ground between old shore-line and the usual line of breakers in shoal water.

The invention consists of one or more rows of piles driven some distance apart somewhat back from the line of breakers and on the line of the intended improvement, said piles being securely connected some distance above water-level with longitudinal beams, and further stiffened and secured by braces and ties, while fastened to the inner longitudinal beams are the shutters, which are intended to form a settling-basin for the mud, sand, clay, gravel, &c., driven by the waves toward the shore, all as hereinafter set forth.

The slats of the shutters are so arranged that they open for the waves to pass through and close against the receding waves, so that the water shall deposit between the shutters and the shore its heavier suspended particles.

In the drawings, A represents the ocean or lake bottom; B, the water; C C, the shutter-supporting piles driven into the bottom; C′ C′, the outer line of piles; D D′, the longitudinal beams; E E, the braces stiffening the structure, and F the cross-ties.

G is a shutter attached to the front or inner longitudinal beams, and extending from above the water-line into the bottom A. The shutter G is constructed of two uprights, H H, and several cross-beams, *a a*, stiffened by braces *b b*.

On the cross-beams *a a* are hung the slats I I, in such a manner that when in their normal position they close against the face of the shutter, covering the openings between the cross-beams *a a*.

The slats I I are attached to the cross-beams *a a* by the hinges *k k*, which are simple straps with eyes *g g*, through which a bolt or pin, *h*, passes, or they may be attached by any other convenient device.

If the slats be made of wood, the depending parts of the hinges may be made of sufficient weight to correct the floating tendency of the slats; but ordinarily the slats are made of metal or of wood strengthened by metal bands.

On one edge of the shutter G a vertical groove, K, may be formed, to receive a corresponding vertical tongue of another shutter, as shown in Fig. 4, and by means of these corresponding shutters can be connected, so as to form a settling-basin with straight outer line of any desired dimensions; or when it is desired to fix the shutters at angles to each other, or in curves, one edge of each shutter is provided with a hinge consisting of a round rod, L, held vertically between the angular straps *m m*, so as to partially revolve between them, as shown in Figs. 2 and 7, and by means of bolts or screws *o* passing transversely through said rods K the shutters may be adjustably connected with each other.

In order to prevent the under-washing of the piles or shutters, fascines or mattresses may be dropped about them for their protection. As the deposit collects inshore of the shutters it will close first the lower slat, as shown at *s*, Fig. 1, and then the next higher one, and so on consecutively, one after another, and the firmer closing of the slats may be assured or assisted by dropping concrete, sand-bags, fascines, &c., in front of them from time to time. When the area between the shutters and the shore shall be filled up with sedimentary deposit the said deposit may be drawn up and piled toward the shore, so that further deposit can be made through the agency of the shutters.

These shutters can be advantageously used for the correction of rivers and their outlets.

The shutters are constructed with each slat independent of the other, for the convenience of removal of obstructions and of repair, and so

that the waves or water may continue to flow through the upper slats of the shutters when the lower slat is closed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A method of protecting and filling in the shore of a river, lake, or ocean by the action of the waves (loaded with sediment) toward the shore, that consists in arranging hinged shutters or valves opening in the direction of the shore along the intended line of demarkation between the water and land intended to be reclaimed, as set forth.

2. A jetty-shutter made, substantially as herein described, of uprights H H, cross-bearers *a a*, braces *b b*, hinged slats I I, and revolving side hinge, L, arranged and operating substantially as herein set forth.

JOHN ULRICH MÜELLER.

Witnesses:
SAMUEL D. CRAIG,
ALBERT W. BRADFORD.