

(No Model.)

A. M. ELLIOTT.
Breakwater and Pier.

No. 230,537.

Patented July 27, 1880.

Fig 1

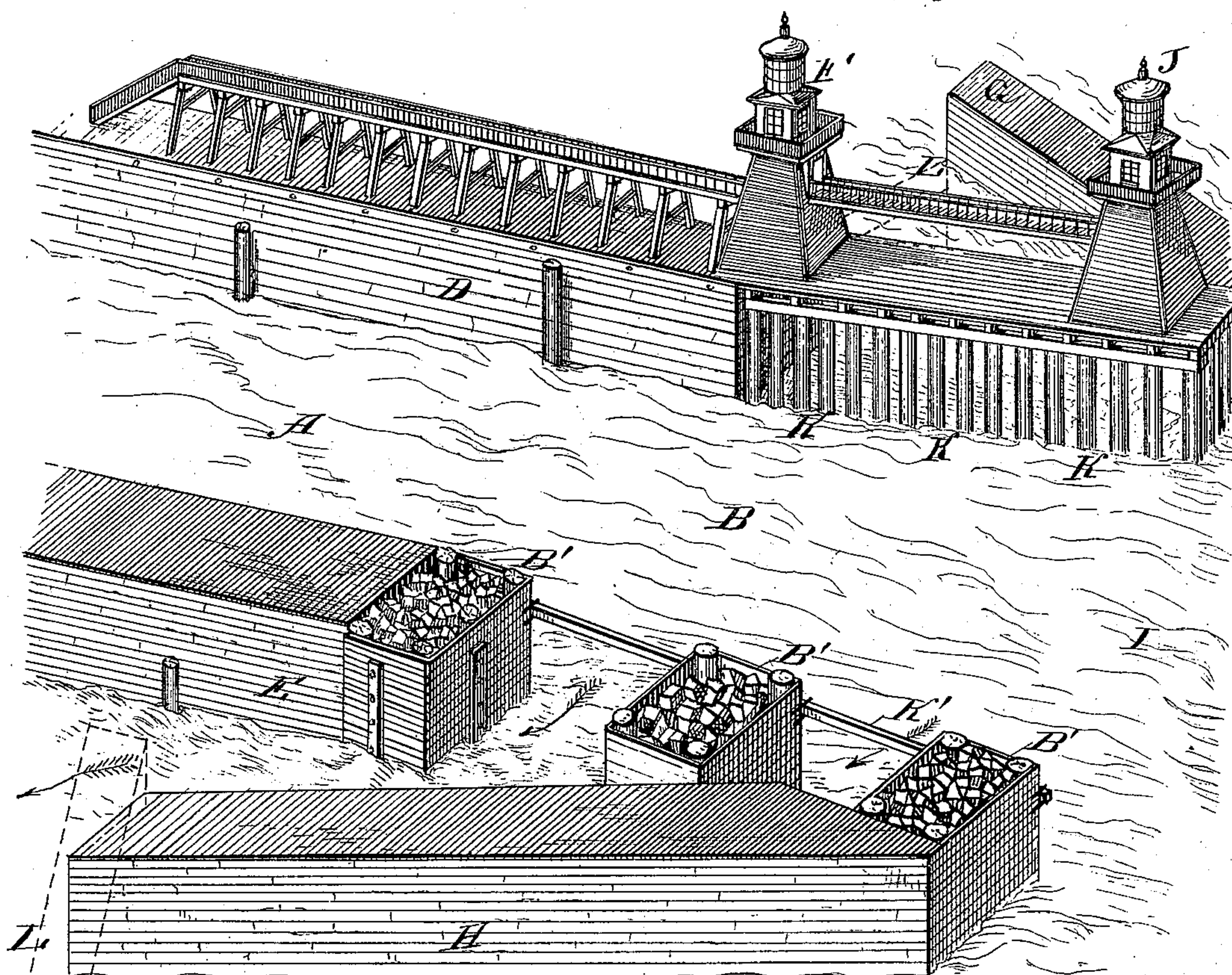
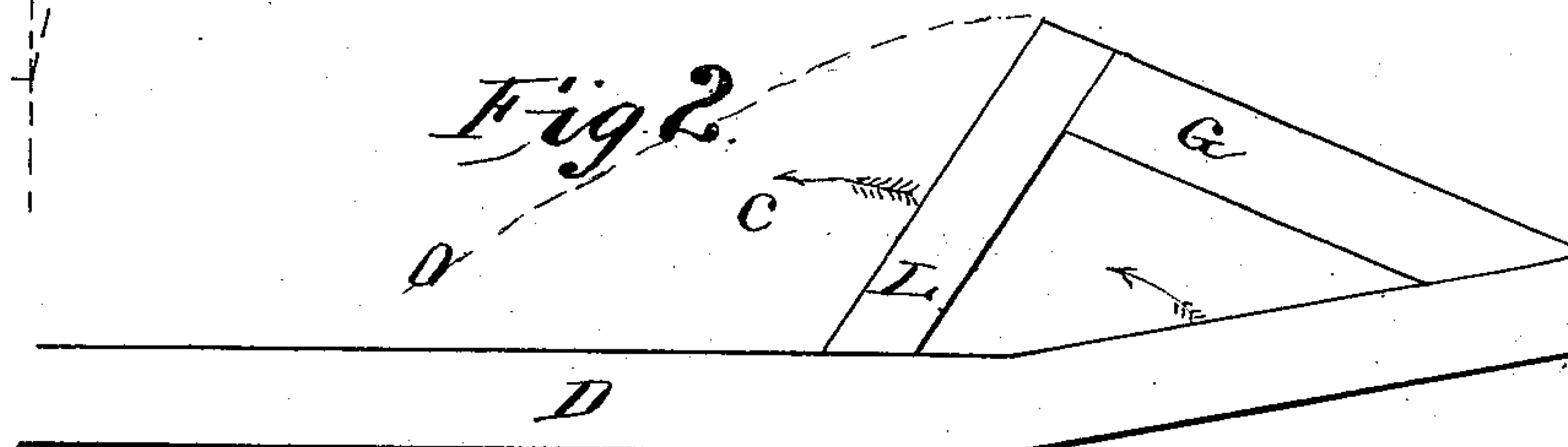


Fig 2



WITNESSES
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ANTHONY M. ELLIOTT, OF KENOSHA, WISCONSIN.

BREAKWATER AND PIER.

SPECIFICATION forming part of Letters Patent No. 230,537, dated July 27, 1880.

Application filed May 28, 1880. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY M. ELLIOTT, a citizen of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented certain new and useful Improvements in Breakwaters and Piers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The object of my invention is to provide improvements in the construction of piers or breakwaters, for the more perfect protection of lake and ocean harbors and the channels leading to them from the effects of a rough sea, and whereby the water is prevented from being blown into the channel or harbor by seaward winds.

My invention relates more especially to improvements upon a somewhat similar device of my invention, for which Letters Patent No. 176,941 were granted to me May 2, 1876.

My present invention consists more particularly in providing a submerged cribbing or pier in connection with the breakwater and channel to prevent sand from washing in and obstructing the free passage of vessels.

My invention consists, further, in the manner of widening the mouth of channel or guideway, and in the construction of such guideway upon a rocky bottom, where piles cannot be driven, all of which is further explained by reference to the accompanying drawings, in which like parts are represented by the same reference-letters.

Figure 1 is a perspective of my invention. Fig. 2 is a top view of the same.

A is the channel to the harbor. B is the mouth of the harbor. D is the right pier. E is the left pier. F is a light-house. G is the right breakwater. H is the left breakwater. I is the mouth of the breakwater. J is a light-house upon the outward end of the breakwater, which, in conjunction with light-house F, affords range-lights for approaching vessels. K

are piles, which are driven in a continuous

line from the end of pier D to the outer end of breakwater G.

K' are long bars, which run lengthwise from the end of pier E to the outer end of breakwater H. The bars K' are secured to the cribs B' B' B', which support them. Where the bottom is soft I prefer piles, as shown at K; but for rocky bottom I substitute cribs and bars.

The bars K' and the piles K both afford guides to vessels in entering the mouth of the channel B. LL are submerged cribs, the office of which is to prevent sand from entering the channel B. They extend from the respective piers D and E to the rear ends of the breakwaters G and H. They are of sufficient height only to prevent the sand from being washed between the pier and breakwaters, while they are sufficiently below the surface of the water to permit the waves which enter the mouth I to roll over them.

In my previous invention, as shown in said Letters Patent, the front or outward end of the piers G and H were nearly in line with the respective piers D and E. Thus the mouth of the entrance was not much wider than the channel. By the improvement the outward ends of the piers G and H are much farther apart than the piers. Thus the mouth of the entrance is greatly widened, whereby it becomes much easier and less dangerous for vessels entering the channel.

As set forth in my said previous patent, it has been observed that when the wind is blowing toward the shore the water is elevated above its natural height in all unsheltered places, and that the waves subside and drop to a common level where shelter is provided.

The piers G and H provide shelter to the spaces CC, described by and included between the dotted lines OO and the channel A. When the waves are driven in through the mouth I they drop to the right and left, as indicated by the arrows, and flow over the cribs LL into the spaces CC. So, also, when the wind is blowing from the left the waves entering the mouth pass out upon the right into the sheltered space, and when they enter from the right they pass out likewise in the opposite direction, thus effectually preventing the high waves from entering the channel.

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

1. The combination and arrangement of the
5 piers or breakwaters G and H and D and E,
respectively, with the submerged cribs L L,
as adapted to prevent sand from entering the
channel, substantially as set forth.

2. The combination and arrangement of the
10 pier E, submerged crib L, pier or breakwater

H, and guideway K', constructed of bars or
stringers supported upon cribs B' B' B', sub-
stantially as and for the purpose specified.

In testimony whereof I affix my signature
in presence of two witnesses.

ANTHONY M. ELLIOTT.

Witnesses:

SAMUEL Y. BRANDE,
HERBERT W. THIERS.