H. J. BRUNNIER.

SPRING FENDER FOR DOCKS.

APPLICATION FILED MAR. 15, 1911.

1,013,584.

Patented Jan. 2, 1912.

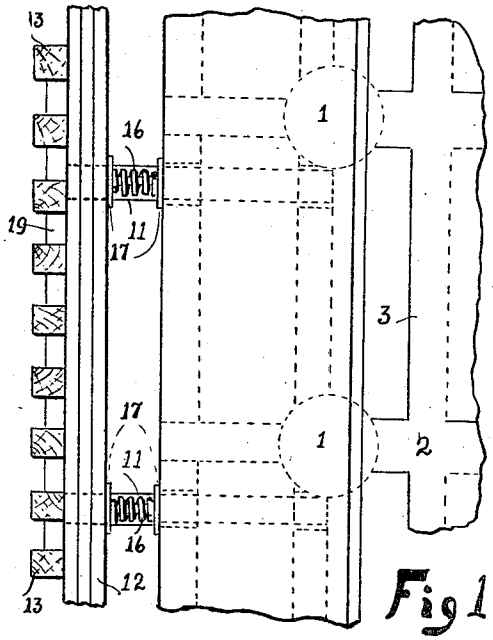

Fig 1

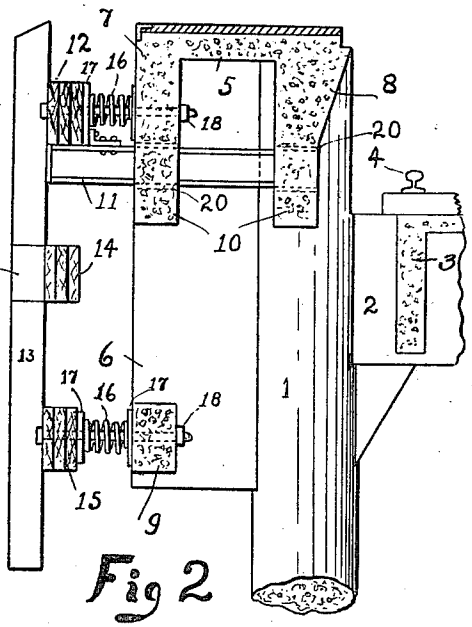

Fig 2

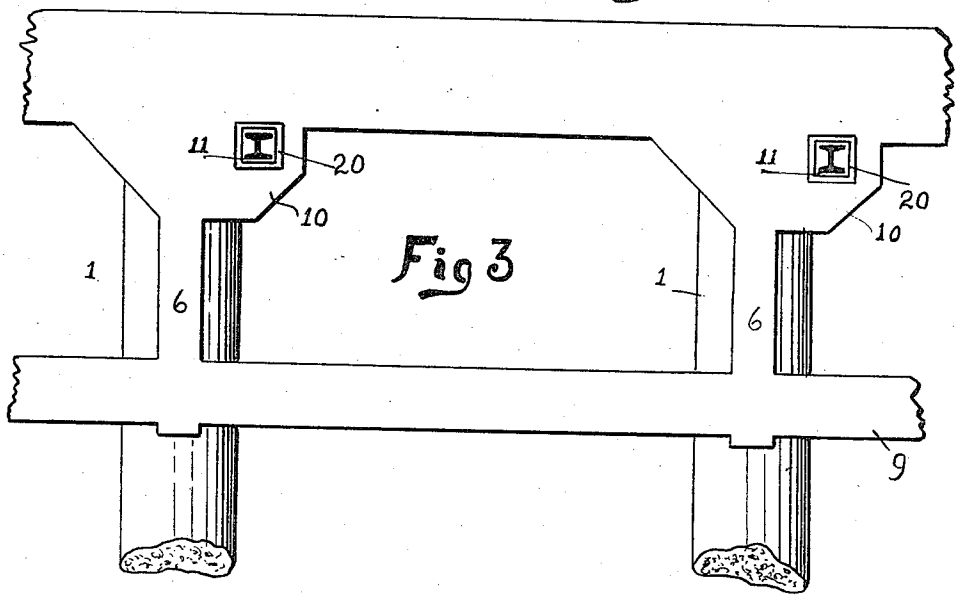

Fig 3

WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY J. BRUNNIER, OF OAKLAND, CALIFORNIA.

SPRING-FENDER FOR DOCKS.

1,013,584. Specification of Letters Patent. Patented Jan. 2, 1912.

Application filed March 15, 1911. Serial No. 614,584.

To all whom it may concern:

Be it known that I, HENRY J. BRUNNIER, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented a new and useful Spring-Fender for Docks, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a fender for docks and its object is to provide a fender which will have sufficient resiliency to prevent injury to vessels without the use of piling driven in the bottom.

It will be understood by those skilled in the art that while piling forms a very efficient fender to prevent injury to vessels that in waters infested with teredo and limnoria that the piles are very quickly destroyed. The reason for this lies in the fact that the continual bending of the pile opens its fibers and the strength thereof decreases as the teredo and other insects eat the wood. This invention, therefore, seeks to obviate these defects by providing a support for the fender line which will not be affected by the teredo and which will be permanent.

In the drawings in which the same numeral of reference is applied to the same portion throughout the several views, Figure 1 is a plan view of a dock having this fender applied thereto. Fig. 2 is a vertical sectional view of the dock and fender, and Fig. 3 shows the dock with the fender line removed therefrom.

It will be understood that while concrete or stone docks may be readily constructed that they are very liable to cause injury to the hulls of vessels striking them, this injury even going so far as to be liable to open the seams of the ship, should it strike the dock on a heavy swell.

The numeral 1 represents the stone or concrete piers of which there may be such a number as may be necessary. On one side the piers have stringers 2 connected therewith and supported thereby. These stringers 2 are connected by means of suitable longitudinal stringers 3 on which the track 4 is supported.

The dock shown is intended to receive cargo on the level of the floor of a freight car, but it will be obvious that this feature forms no part of the invention.

On the top of the pier 1 there is supported a floor 5, suitable deep girders 7 and 8 running lengthwise of the dock the latter connecting the several piers 1. Each pier is provided with an overhanging girder wall 6 a longitudinal girder 9 connecting the several piers. Each girder 7 and 8 has a bracket portion 10 at the side of the wall 6 and pier 1 for the purpose of slidably supporting H beams 11, there being one at each pier. These H beams are of such size and strength as is necessary to withstand lateral or vertical shocks, but they are freely slidable in their supporting brackets.

Supported on the outer ends of the beams 11 is a girder 12, usually made of several heavy timbers secured together. This girder serves to support the fenders 13 which extend from the top of the dock down low enough to insure against the guard rails of boats being caught thereunder. To give the fenders the necessary strength they have other girders 14 and 15 secured thereto.

In order to give the fender line the necessary resilient action very heavy springs 16 are interposed between the girders 12, 15 and the solid girders 7 and 9. Wear plates 17 are placed at the ends of the springs, and to prevent the fender line from moving too far away from the solid dock, bolts 18 are passed through the girders and springs, said bolts serving to hold the springs in place.

It will be noted that the movable support for the fender line is above the water, and since the fenders do not reach down low enough to be attacked by the teredo they will last indefinitely, since the wear thereon is very little as compared with the rapid destruction of piling.

Another advantage of this form of fender is that it is easily repaired without interfering with the use of the dock as is necessary where piles are to be driven.

Chocks 19 prevent the fenders from being pushed over sidewise, and a wear casting 20 incases each beam 11 to prevent the beam from injuring the fixed structure.

While the above description applies specifically to a stone or concrete dock, it will be obvious that the fender may equally well be applied to any dock whether stone or not.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States, is as follows:—

1. In a dock, a fixed dock structure, slid-

able beams supported transversely of the dock and projecting therefrom, a girder supported on the projecting ends of said beams, fenders supported by said girder, and springs interposed between the girder and fixed dock structure to give the fenders a resilient action, substantially as described.

2. In a dock, a fixed dock structure, slidable beams supported thereby and projecting therefrom, a girder supported by the projecting ends of said beams, fenders secured to said girder, a second girder to which said fenders are secured, and means to give the fenders a resilient effect, substanstantially as described.

3. In a dock, a fixed dock structure, slidable beams supported thereby and projecting therefrom, a girder supported by the projecting ends of said beams, fenders secured to said girder, a second girder to which said fenders are secured, and springs interposed between each girder and the fixed dock structure, substantially as described.

4. In a dock, a fixed dock structure, slidable beams supported thereby and projecting therefrom, a girder supported by the projecting ends of said beams, fenders secured to said girder, a second girder to which said fenders are secured, springs interposed between the girders and fixed structure, and means to prevent the springs from being displaced and the fenders from moving too far out, substantially as described.

In testimony whereof I have hereunto set my hand this 17 day of February, A. D. 1911, in the presence of the two subscribed witnesses.

HENRY J. BRUNNIER.

Witnesses:
C. P. GRIFFIN,
L. H. ANDERSON.