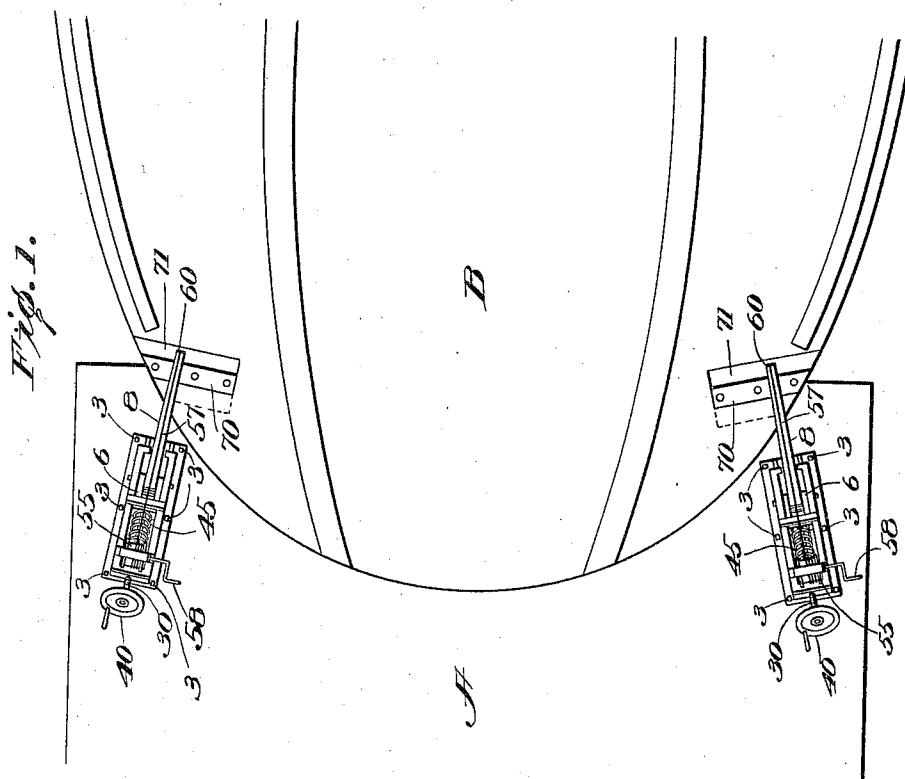


O. E. HANSEN.
MOORING DEVICE.
APPLICATION FILED NOV. 13, 1911.

1,038,746.

Patented Sept. 17, 1912.
2 SHEETS—SHEET 1.



Witnesses:
J. M. Millward
M. L. Bessie

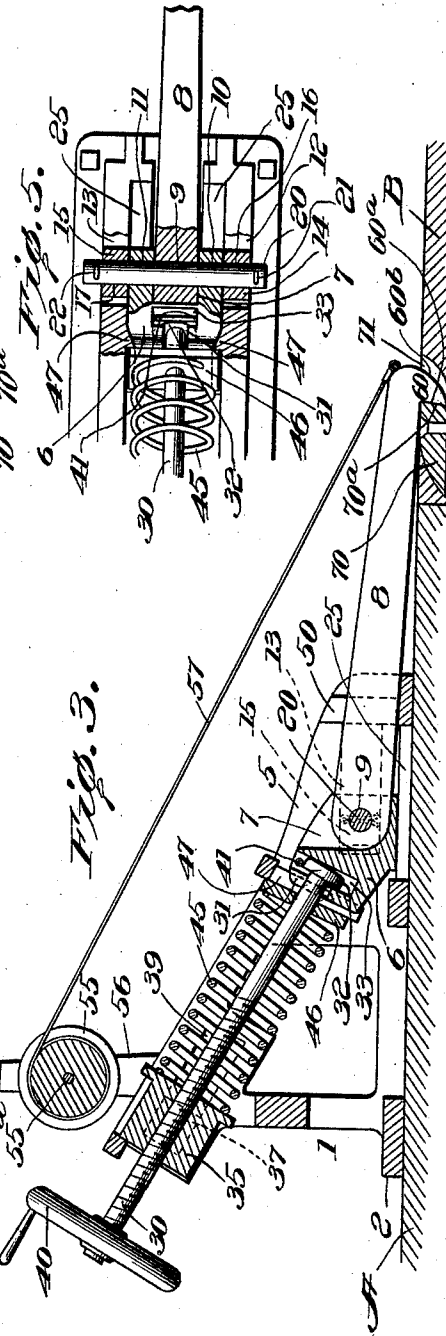
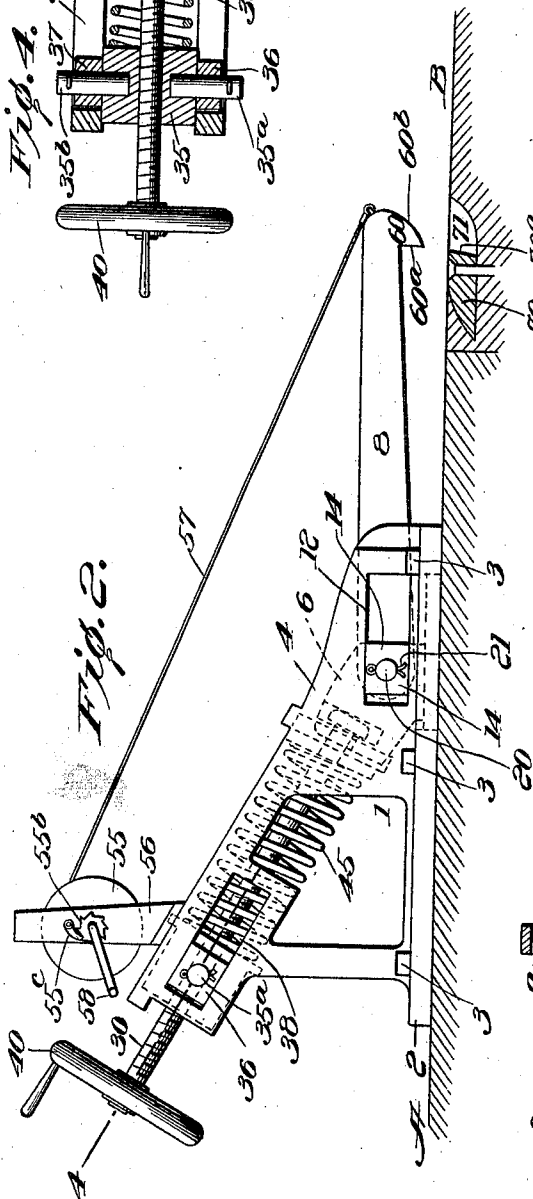
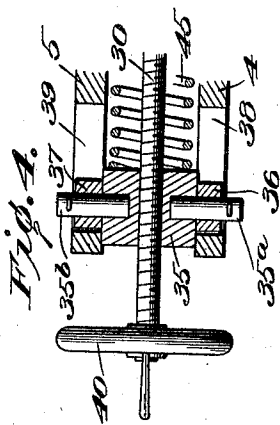
Inventor
O. E. Hansen
By *his Attorney*
Allen H. Frost

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Witnesses:
J. M. Millward
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UNITED STATES PATENT OFFICE.

OLE E. HANSEN, OF BROOKLYN, NEW YORK.

MOORING DEVICE.

1,038,746.

Specification of Letters Patent.

Patented Sept. 17, 1912.

Application filed November 13, 1911. Serial No. 660,049.

To all whom it may concern:

Be it known that I, OLE E. HANSEN, a subject of the King of Norway, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Mooring Device, of which the following is a specification.

This invention is a mooring device, particularly adapted for mooring a ferry-boat to the ferry-bridge at the innermost end of a ferry-slip.

The principal object of the invention is to provide an improved mooring device, which will be highly efficient in operation, requiring only a minimum amount of time to securely moor the boat to the bridge, so that there will be no delay in landing passengers, freight, etc.

A desirable embodiment of my invention is illustrated in the accompanying drawing, in which—

Figure 1 is a plan view illustrating how my invention may be used in securing a ferry-boat to a ferry-bridge. Fig. 2 is a side elevation of my invention with the interlocking members disengaged. Fig. 3 is a central longitudinal sectional view of my invention with the interlocking parts shown in the position they assume when the boat is moored to the bridge. Fig. 4 is a detail sectional view taken on line 4 of Fig. 2. Fig. 5 is an enlarged fragmentary plan view of certain parts of my invention.

In practice I preferably employ two of my improved mooring devices for mooring a ferry-boat to a ferry bridge and locate one of said devices at each side of the ferry-bridge near the edge of the bridge against which the end of the boat abuts. As both of said mooring devices are alike the following description of one of said devices will serve for both.

The supporting frame 1 of my improved mooring device, comprises principally a base 2, which is rigidly secured to the ferry-bridge A by means of bolts 3 or otherwise, and side members 4 and 5. In the lower forward end of the frame 1, is mounted, to reciprocate substantially horizontally, a cross head 6. The cross head 6 is provided at its forward end with a recess 7 to receive the rear end of the latch arm 8 which is provided with an opening 9 adapted to register with similar openings 10 and 11 in the cross head 6 at the respective sides of the recess 7 for the purpose hereafter described.

Slidably mounted in horizontal slots 12 and 13 in the lower forward ends of the side walls 4 and 5 are the cross head sliding blocks 14 and 15, respectively, which are provided with openings 16 and 17 respectively adapted to register with the openings 9 and 10 and 11 of the latch arm 8 and cross head 6 respectively, the purpose of which will now be described.

A shaft 20 extends through the openings 16, 10, 9, 11 and 17 in the block 14, cross head 6, latch arm 8, and block 15 respectively and these parts are held together in any suitable manner, preferably by cotter pins 21 and 22 extending through the respective ends of the shaft 20 and engaging the outer faces of the blocks 14 and 15 respectively, whereby the cross head 6 is reciprocally mounted in the frame 1 as hereinbefore described and latch arm 8 is pivotally mounted in the forward end of the cross head to swing in a vertical plane. The base 2 of the frame 1 is provided with guides 25 upon which the cross head 6 slides and which sustain the weight of the cross head and thereby relieve the strain on the shaft 20 and blocks 14 and 15.

The cross head 6 and latch arm 8 are reciprocated by means of the inclined screw 30, the lower forward end of which extends through a slot 31 in the inclined rear face of the cross head and is provided with a head 32 which rests in a recess 33 in the rear portion of said cross head, while the upper rear end of said screw extends through a threaded opening 34 located centrally in the block 35 oscillatively and slidably mounted in sliding blocks 36 and 37, by means of trunnions 35^a and 35^b, at the respective sides of said block 35, which are journaled in said sliding blocks 36 and 37 respectively, which blocks are slidably mounted in the inclined slots 38 and 39 in the rear upper structure of the side members 4 and 5 of the frame 1. The rear and uppermost end of the inclined screw 30 is provided with a hand wheel 40 by means of which the screw is rotated to reciprocate the cross head 6 in order to properly adjust the latch arm 8 for the purpose hereafter described. A rod 41 extends across the recess 33 above the head 32 of shaft 30 and is secured at its ends in the cross head 6, by means of which the head 32 is prevented from rising out of the recess 33 and disengaging the cross head 6. A powerful spring 45 surrounds the screw 30 and

rests between the block 35 and the adjustable spring plate 46, through which the forward end of the screw 30 extends. The plate 46 abuts against and slides upon a pair of
 5 guide and abutment members 47, which members are located directly opposite each other on the inside of the frame members 4 and 5, respectively, in the rear of the cross head 6. Said members are inclined parallel
 10 to each other substantially at right angles to the axis of the screw 30 and parallel to the inclined rear face of the cross head 6, so that the rear face of said cross head will abut against said members when drawn rear-
 15 wardly far enough by the screw 30, thus limiting the rearward movement of the cross head. As the cross head 6 is reciprocated by the screw 30 to adjust the latch arm 8, the position of the screw changes
 20 and causes the spring plate 46 to slide upon the guides 47 to change its position to correspond to the position of the screw.

The cross head 6 is of such width that it occupies substantially the entire space be-
 25 tween the frame members 4 and 5 whereby lateral movement of the cross head is prevented so that the cross head will be maintained in alinement with the screw 30. A pair of alinement and abutment members 50,
 30 for the latch arm 8 and the cross head 6 respectively, are located directly opposite each other at the forward ends of the frame members 4 and 5 respectively. The latch arm 8 enters and rests between said alinement
 35 members 50 and is thereby maintained in alinement with the latch engaging and interlocking member on the ferry-boat, to be hereinafter described, when said latch arm is swung down and is in position to engage
 40 and interlock with said latch engaging and interlocking member. The forward end of the cross head 6 abuts against the abutment members 50 when the cross head is moved forwardly far enough, by the screw 30, thus
 45 limiting the forward movement of the cross head. The latch arm 8 is raised and lowered on its pivot by means of a drum 55, journaled in bracket 56 secured on top of the rear upper structure of the frame members 4
 50 and 5, and rope 57 secured at one end to said drum and at its other end to the forward end of said latch arm. The shaft 55^a of drum 55 is provided with a crank 58 by means of which it is rotated to wind up the
 55 rope in order to raise or lower the latch arm. The drum 55 may be locked against rotation by means of a ratchet 55^b on shaft 55^a and a pawl 55^c which is adapted to engage said ratchet so that the latch arm 8 may be raised
 60 on its pivot and held in such position when desirable. The crank 58 of the drum 55 and the hand wheel 40 of the screw 30 are located in such relation to each other that they may both be rotated, respectively to
 65 raise or lower the latch arm 8 and to move

the cross head 6 either forwardly or backwardly, at the same time by one man, using one hand to rotate the crank 58 and the other hand to rotate the hand wheel 40. The forward end of the latch arm 8 is provided with a downwardly projecting engaging part 60, the rear edge 60^a of which conforms to an arc swung from the pivotal center of said latch-arm while the lower and forward edge 60^b of said part is inclined upwardly and forwardly from said rear edge and terminates at the upper edge of said member. The latch arm 8 and its engaging part 60 constitutes the latch which engages the latch engaging and interlocking member on the ferry-boat which will presently be described. Located near each end of the lower deck of the ferry-boat B and at each side of the deck is a latch engaging and interlocking member 70, which rests in alinement with the interlocking latch arm 8 of one of the mooring devices when the ferry-boat is in the slip, and is adapted to engage and interlock with the engaging part 60 of the latch arm 8 of one of said devices when the ferry-boat abuts against the bridge A at the innermost end of the slip. Each of the latch engaging and interlocking members 70 is countersunk in the deck on a level with the surface thereof so that the passengers of the boat will not stumble over it. The deck is provided with a recess 71 at the rear edge of each of the latch engaging and interlocking members 70 to receive the latch engaging part 60 of one of the mooring devices to enable the latch to engage and interlock with the member 70.

The operation of my invention is as follows: As the operation of both of my improved mooring devices in the present embodiment of my invention are the same, the following description of one of said devices will serve for the other. The cross head 6 and latch arm 8 of the device are first adjusted by means of the screw 30 so that the latch engaging part 60 will register with the recess 71 in the approaching end of the deck of the ferry-boat, to enable the rear edge of said part to engage the latch engaging and interlocking member 70 in front of said recess, when the latch arm 8 is lowered sufficiently on its pivot. When the ferry-boat enters the slip, the latch arm 8 is raised on its pivot by the crank 58, drum 55 and rope 57 sufficiently to allow the approaching end of the lower deck of the ferry-boat to pass under the latch arm. When the end of said deck has passed under said latch arm and the boat is still moving toward the bridge A, the crank 58 is rotated to unwind the rope 57 from the drum 55 and the latch arm 8 is thereby let down until the inclined edge 60^b of the engaging part 60 engages the upper surface of the latch engaging and interlocking member 70. As the ferry-boat continues to approach the bridge A the edge 60^b of

latch engaging part 60 slides on the upper surface of the latch engaging and interlocking member 70 until the boat abuts against the bridge A whereupon the part 60, which will then register with the recess 71 in the deck of the boat, will drop into said recess and the rear edge 60^a of the latch will engage and interlock with the edge 70^a of the latch engaging and interlocking member 70 at the front of said recess, thus mooring the ferry-boat to the bridge. When the ferry-boat abuts against the bridge and is moored thereto the reaction of the bridge will cause the ferry-boat to rebound away from the bridge, whereupon the cross head 6 will be drawn forwardly in the frame 1, carrying with it the screw 30 together with the oscillative block 35 and the sliding blocks 36 and 37, which sliding blocks will be drawn downwardly in the slots 38 and 39 toward the forward ends thereof, and the spring 45 will be compressed between the plate 46 and the block 35 until its compression resisting power overcomes the force of the reaction of the bridge A, whereupon the spring will expand and force the above described movable parts back to their normal mooring positions and the boat B will thereby be drawn against the bridge A and securely moored thereto. When it is desired to release the ferry-boat so that it can leave the slip, the latch arm 8 is forced forwardly by the screw 30 and hand wheel 40 until the edge 60^a of the latch engaging part 60 disengages the latch engaging and interlocking member 70, and the part 60 is then lifted out of the recess 71 by means of crank 58, drum 55 and rope 57. The ferry-boat is then free to leave the slip.

I do not limit myself to the exact construction herein shown and described as it is obvious that variations and modifications thereof may be made without departing from the spirit of the invention.

While I have shown the mooring device on the bridge A and the latch engaging and interlocking member on the ferry boat and have described the invention accordingly, I could if desirable reverse this arrangement by mounting the device on the boat and placing the latch engaging and interlocking member on the bridge.

I claim:

1. A mooring device comprising a latch, a latch engaging and interlocking member adapted to engage and interlock with said latch and an adjusting screw for adjusting said latch to register with said latch engaging and interlocking member.

2. A mooring device comprising a frame, a cross head adjustably mounted in said frame, a latch arm operatively mounted in said cross head, an engaging part on the forward end of said latch arm, a latch engaging and interlocking member adapted to

engage and interlock with said part, and an adjusting screw rotatably mounted in said cross head and operatively mounted in said frame for adjusting said cross head to cause said part to register with said latch engaging and interlocking member.

3. A mooring device comprising a latch, a latch engaging and interlocking member adapted to engage and interlock with said latch, and a spring adapted to resist and overcome the reaction of the bridge and the rebound of the boat and to draw the ferry-boat to said bridge when said reaction and rebound are overcome.

4. A mooring device comprising a frame, a cross head adjustably mounted in said frame, a latch arm operatively mounted in said cross head, an engaging part on the forward end of said latch arm, a latch engaging and interlocking member adapted to engage and interlock with said part, a block slidably mounted in the rear part of said frame, an adjusting screw rotatably mounted at one end in said cross head and operatively mounted at its other end in said block for adjusting said cross head to cause said part to register with said latch engaging and interlocking member, a spring mounted in said frame in the path of movement of said block adapted to resist and overcome the forward movement of said block caused by the reaction of the bridge and the rebound of the boat and to draw the boat to the bridge when said forward movement of the block is overcome.

5. A mooring device comprising a frame, a cross head adjustably mounted in said frame, a latch arm operatively mounted in said cross head, an engaging part on the forward end of said latch arm, a latch engaging and interlocking member adapted to be engaged by and to interlock with said part, a block slidably mounted in the rear part of said frame, an adjusting screw rotatably mounted at its forward end in said cross head and operatively mounted at its rear end in said block for adjusting said part to register with said latch engaging and interlocking member, a spring resisting plate mounted in said frame forwardly of said block, a spring mounted in said frame resting between said plate and said block adapted to resist and overcome the forward movement of said block caused by the reaction of the bridge and the rebound of the boat and to draw the boat to the bridge when said forward movement of the block is overcome.

6. A mooring device comprising a frame, a cross head adjustably mounted in the lower forward part of said frame, a latch arm operatively mounted in said cross head, an engaging part on the forward end of said latch arm, a latch engaging and interlocking member adapted to be engaged by and to

interlock with said part, a block slidably mounted in the rear upper part of said frame, an inclined adjusting screw mounted at its forward end in said cross head and
5 operatively mounted at its other end in said block for adjusting said cross head to cause said part to register with said latch engaging and interlocking member, a spring resisting plate, through which said screw
10 extends, movably mounted in said frame forwardly of said block and rearwardly of said cross head to be moved up and down by said screw, to correspond with the position of the screw, as the position of the screw changes,
15 when moved forwardly or backwardly to ad-

just said cross head and engaging part, a spring surrounding said screw and resting between said plate and said block adapted to resist and overcome the forward movement of said block caused by the reaction of
20 the bridge and the rebound of the boat, and to draw the boat to the bridge when said forward movement of the block is overcome.

In testimony whereof I have signed my name to this specification in the presence of
25 two subscribing witnesses.

OLE E. HANSEN.

Witnesses:

WILLIAM WHEATLEY,
CHARLES BERGEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."