

Dec. 21, 1954

C. ANSCHUTZ

2,697,410

MOORING CLAMP

Filed Jan. 13, 1953

2 Sheets-Sheet 1

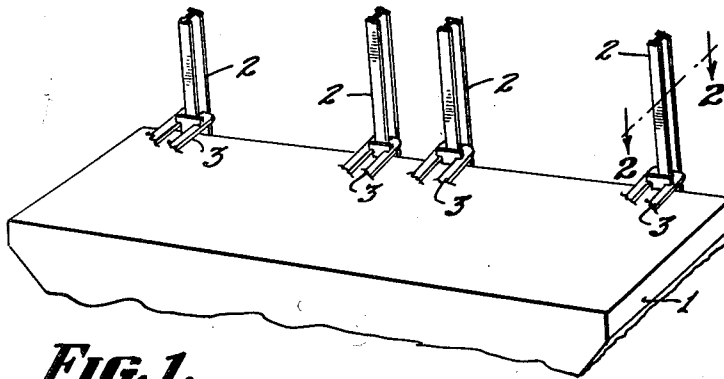


FIG. 1.

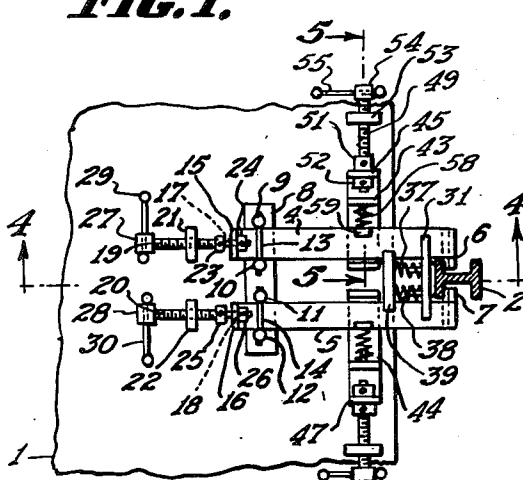


FIG. 2.

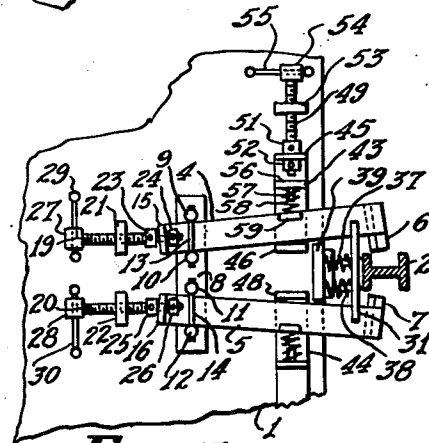


FIG. 3.

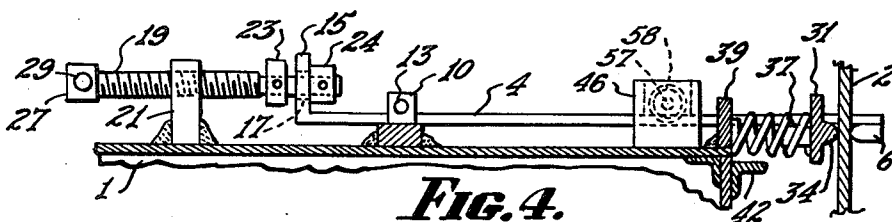


FIG. 4.

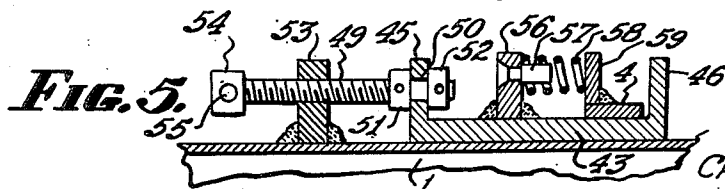


FIG. 5.

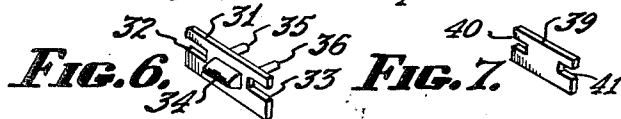
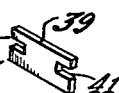


FIG. 6.

FIG. 7.



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2 Sheets-Sheet 2

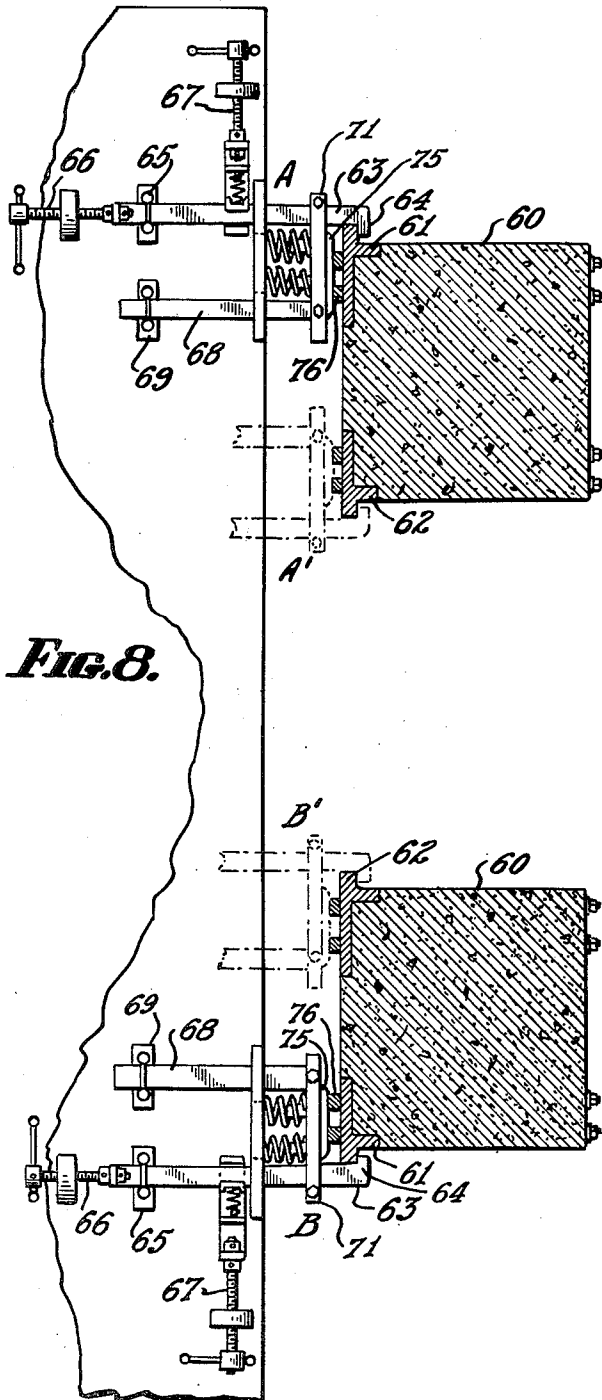


FIG. 8.

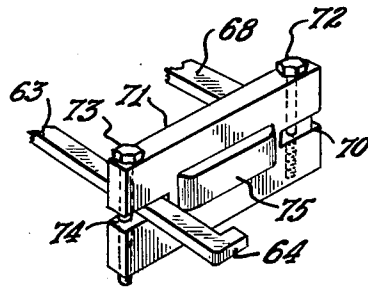


FIG. 9.

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2,697,410

MOORING CLAMP

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Application January 13, 1953, Serial No. 331,048

6 Claims. (Cl. 114—231)

This is a continuation-in-part of my co-pending application, Serial No. 26,197, filed May 10, 1948, and entitled Barge Unloading Device, now Patent 2,628,727, dated February 17, 1953.

In my copending application I have taught a device for unloading river barges and the like wherein the unloading or hopper barge is anchored to piers having upstanding guide members along which the barge may move with changes in the water level of the body of water in which the barge is floating. In order to anchor the barge and yet permit it to slide along the upstanding guide members, clamping means are provided on the barge to slidably attach it to the guide members. The present invention relates to the clamping means for securing the unloading barge to the guide members.

It is a principal object of my invention to provide clamping means particularly adapted to slidably clamp or anchor an unloading or hopper barge to upstanding guide members so that the barge may move vertically with the rise and fall of the body of water in which it is floating.

It is a further object of my invention to provide anchoring means for a barge or like vessel which will securely anchor the barge to a pier or other mooring means and will eliminate the conventional mooring lines which have to be adjusted with each rise or fall in the water level of the body of water in which the barge is floating.

It is a further object of my invention to provide clamping means of the character described which may be readily adjusted both longitudinally and laterally and easily clamped to the guide means on the pier.

These and other objects of my invention which will appear hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by those constructions and arrangements of parts of which I shall now describe certain exemplary embodiments.

Reference is now made to the accompanying drawings forming a part of this specification, and wherein:

Figure 1 is a perspective view illustrating in somewhat diagrammatic fashion the manner in which a plurality of the clamping devices are employed to secure a barge to the upstanding guide members of a pier.

Figure 2 is a plan view of a clamping device in closed position with its jaws engaging the opposite sides of a guide member.

Figure 3 is a partial plan view similar to Figure 2 showing the clamping device in the open position.

Figure 4 is an elevational view taken along the line 4—4 of Figure 2.

Figure 5 is a sectional view in elevation taken along the line 5—5 of Figure 2, and showing details of the adjustment screws for the clamping arms or jaws.

Figure 6 is a perspective view showing one of the parts of the clamping device.

Figure 7 is also a perspective view illustrating another part of the clamping device.

Figure 8 is a partial plan view of a modified pair of clamping devices for engaging a single edge of a guide member.

Figure 9 is a partial perspective view of the clamping arm sub-assembly of the modified clamping device.

For a general understanding of the operation of my invention, reference is made to Figure 1 of the drawings, wherein reference numeral 1 indicates an unloading barge or other vessel anchored to the upstanding guide members 2 by means of clamping devices 3. The guide members 2 are vertically disposed and angular in cross-section,

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being preferably of I or T shape so that they may be readily engaged about opposite side edges by the jaws or clamping arms of the clamping devices. While in the drawings I have shown the guide means as being I shaped in cross-section, it will be understood that other configuration may be employed without departing from the spirit of my invention.

The function of the clamping devices 3 is to secure the barge to the guide means for sliding engagement therewith, the barge being securely attached to the guide means against both longitudinal and lateral movement and yet free to move vertically along the guide means as the elevation of the barge is changed.

Referring now to Figure 2, the clamping devices 3 each comprises a pair of clamping arms or jaws 4 and 5 having inwardly extending projections 6 and 7 which engage about the opposite edges of the guide means 2. The opposite ends of the clamping arms rest on a fixed support 8 secured to the barge, the arms being positioned between spaced pairs of guide pins 9, 10 and 11, 12 extending upwardly from the support 8. Rods 13 and 14 extend between the pairs of guide pins, passing over the clamping arms 4 and 5, in the manner illustrated. The ends of the clamping arms extending between the pins terminate in upturned flanges 15 and 16 having openings 17 and 18 therein through which pass the ends of threaded shafts 19 and 20 held intermediate their ends by the internally threaded lugs 21 and 22 welded or otherwise held in fixed position on the deck of the barge or other supporting surface. Pairs of collars 23, 24 and 25, 26 are carried on the ends of the threaded shafts 19 and 20, the collars of each pair lying on opposite sides of the upturned flanges 15 and 16 so as to connect the ends of the threaded shafts to the flanges. The openings 17 and 18 in the flanges are larger than the circumference of the threaded shafts, and the collars of each pair are spaced from each other by a distance greater than the thickness of the flanges so as to permit some pivoting movement of the clamping arms relative to the pins 9, 10, and 11, 12. The opposite ends of the threaded shafts 19 and 20 are provided with heads 27 and 28 and lever arms 29 and 30 are slidable therethrough so that the threaded shafts may be turned in their lugs. By turning the shafts, the clamping arms may be moved axially and hence tightened or loosened relative to the guide means 2, as will be apparent.

Cooperating with the clamping arms 4 and 5 is a movable plate 31 held between the clamping arms and movable therealong. The plate 31 is shown in detail in Figure 6, and comprises a substantially rectangular plate of a size sufficient to extend between the clamping arms even when they are in the extended or outwardly pivoted position, as illustrated in Figure 3. The plate 31 has horizontally disposed slots 32 and 33 for engagement with the clamping arms. One face of the plate is provided with a rounded projection 34 and the other face with a pair of spaced studs 35 and 36. The plate is fitted on the clamping arms with the rounded projection 34 outermost. Coil springs 37 and 38 (Figure 2) pass around the studs 35 and 36 and are pressed between the plate 31 and a lug 39 fixed between the clamping arms 4 and 5 substantially as shown in Figures 2, 3 and 4 of the drawings. The lug 39, as seen in Figure 7, is rectangular in shape and has horizontally extending slots 40 and 41 for the reception of the clamping arms 4 and 5. The lug 39 in addition to providing a support for the springs 37 and 38, also serves to maintain the clamping arms in proper horizontal alignment. An abutment 42 placed as shown in Figure 4 may be provided to prevent the inner ends of the springs 37 and 38 from slipping out of contact with the lug 39.

The springs 37 and 38 serve to urge the movable plate 31 toward the projections 6 and 7 and thus act to clamp the side edges of the guide means between the plate 31 and the projections 6 and 7. The clamping pressure is increased or decreased by moving the clamping arms axially, the threaded shafts 19 and 20 being turned for this purpose. The edges of the projections 6 and 7 are preferably rounded, as is the edge of projection 34, and while the clamping action of the projection is sufficient to secure the barge to the guide means, it will not be so

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great as to prevent sliding movement along the guide means as the barge is moved vertically by changes in the water level.

The clamping arms are opened and closed for engagement about the guide means by means of threaded shaft and spring elements positioned normal to the clamping arms and adapted to engage the clamping arms intermediate their ends. Referring to Figures 3 and 5, the clamping arms are contacted intermediate the lug 39 and the pins 9, 10 and 11, 12 by the sliding bars 43 and 44 underlying the clamping arms and having upturned flanges 45, 46, and 47, 48 on their ends. Referring to the bar 43 one end of a threaded shaft 49 passes through an opening 50 in the flange 45 and is connected thereto by means of collars 51 and 52. In this instance, the opening 50 is not oversize and the collars 51 and 52 are in contact with the sides of the flange. The threaded shaft is supported in and is turned by means of screw head 54 and lever arm 55.

As best seen in Figure 5, the sliding bar 43 supports a lug 56 carrying stud 57 fixed thereon, and a compression spring 58 is fitted about the stud 57 and extends between the lug 56 and an abutment 59 fixed to the clamping arm 4. The spring 58 thus normally urges the clamping arm 4 into contact with the flange 46 and acts to absorb shocks. Movement of the bar will thus cause the clamping arm to be opened and closed about the guide member.

It will be understood that the sliding bar 44 for the arm 5 is provided with like threaded shaft and spring elements.

In Figure 3 the clamping arms are shown in the opened position, the arms having been drawn apart by the sliding bars 43 and 44 which move away from each other, being drawn by their respective shaft elements. To close the arms, the sliding bars are moved toward each other to assume the position shown in Figure 2.

The clamping devices just described are preferably fixed directly to the deck of the barge. The clamping arms are held against possible vertical movement relative to the vessel by means of the rods 13 and 14 and the lug 39. The springs on the sliding bars 43 and 44 together with the springs 37 and 38 acting on plate 31, serve to prevent horizontal twisting and sliding movement of the barge relative to the guide means and also impart resiliency to the device to relieve excessive strain on the parts and also to absorb shock.

Referring now to Figures 8 and 9 of the drawings, I have illustrated therein a modified form of clamping device for use with piers having vertically disposed guide members at opposite edges thereof. Thus, as seen in Figure 8, the piers 60 may have pairs of guide members 61 and 62 at the opposite side edges thereof for engagement by the clamping devices A, A' and B, B'. With this arrangement, one of the clamping devices is provided for engagement with each side edge of the pier, the clamping devices being arranged in oppositely directed cooperating pairs such as the pairs A, A' and B, B'. However, it will be understood that where the circumstances permit, a single clamping device may be employed at each pier, there being, for example, the oppositely directed pair of clamping arms A and B each engaging the outermost guide member of the adjacent pier.

In these devices there is a clamping arm 63 having an upturned projection 64 for contact with the guide member 61. The clamping arm is supported on the unloading barge in the same manner and by the same means as described in connection with Figures 2 through 5, and comprise generally supporting and pivoting means 65 adjustment means 66, and lateral adjustment means 67. In this embodiment, however, the second arm 68 is supported rearwardly solely by means of the supporting and pivoting means 69, the arm being freely slidable axially with respect to the supporting means 69.

The forward end of the arm 68 terminates at pressure plate 71 and is pinned in the slot 70 of the pressure plate by means of a pin 72. A pin 73 extends through the slot 74 supporting arm 63 so as to permit sliding movement of the arm and yet prevent the arm from becoming disengaged from the slot. The plate 71 carries a projection 75 on its front face adapted to slide along the face of the guide rail contacted by the device; and preferably the guide rail will be provided with rails 76 for contact by the projection 75 to facilitate the sliding movement.

The operation of the device just described is quite

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similar to that of the device described in connection with Figure 2 excepting that the clamping pressure is provided entirely by the arm 63, the arm 68 being freely movable with the plate and acting to align and guide the plate.

Modifications may be made in my invention without departing from the spirit of it; and it will be understood that the clamping devices will find uses other than in anchoring barges to a pier.

Having, however, described my invention in certain exemplary embodiments, what I desire to secure and protect by Letters Patent is:

1. In a clamping device for slidably and resiliently mooring a barge to a vertically extending guide rail, a pair of arms extending outwardly from the barge, said arms being mounted adjacent their inner ends for both axial and pivotal movement in a horizontal plane, one at least of said arms comprising a clamping arm having an inwardly directed projection on its outer end for engagement about an edge of the guide rail, a clamping plate supported on said arms and movable relative to at least said clamping arm, spring means contacting said clamping plate for urging it outwardly toward the outer end of said clamping arm, and additional spring means contacting said clamping arm intermediate its ends for urging it toward the edge of the guide rail, whereby the guide rail may be slidably engaged between the clamping plate and the projection on the clamping arm, and the device resiliently maintained against both longitudinal and lateral shock.

2. In a clamping device for slidably and resiliently mooring a barge to a vertically extending guide rail, a pair of arms extending outwardly from the barge, the said arms being mounted adjacent their inner ends for both axial and pivotal movement in a horizontal plane, at least one of said arms comprising a clamping arm having an inwardly directed projection on its outer end for engagement about an edge of the guide rail, screw means for axially adjusting said clamping arm, a clamping plate supported on said arms and movable relative to at least said clamping arm, said clamping plate having slots extending inwardly from the opposite side edges thereof in which said arms are received, spring means contacting said clamping plate for urging it outwardly toward the outer end of said clamping arm, and additional spring means contacting said clamping arm intermediate its ends for urging the clamping arm toward the edge of the guide rail, whereby said guide rail will be slidably engaged by the clamping device and the device resiliently maintained against both longitudinal and lateral shock.

3. In a clamping device for slidably and resiliently mooring a barge to a vertically extending guide rail, a pair of arms extending outwardly from the barge, said arms being mounted adjacent their inner ends for both axial and pivotal movement in a horizontal plane, one at least of said arms comprising a clamping arm having an inwardly directed projection on its outer end for engagement about an edge of the guide rail, screw means for axially adjusting said clamping arm, a clamping plate supported on said arm and movable relative to at least said clamping arm, said clamping plate having slots extending inwardly from the opposite side edges thereof in which said arms are received, spring means contacting said clamping plate for urging it outwardly toward the outer end of said clamping arm, additional spring means contacting the clamping arm intermediate its ends for urging the clamping arm toward the edge of the guide rail, and adjustable means for pivotally moving the clamping arm against the tension of said last named spring means, whereby to open and close said clamping arm about the edge of the guide rail, thereby providing a device which will slidably engage the guide rail and will resiliently maintain the barge against both longitudinal and lateral shock.

4. The structure claimed in claim 3 wherein said clamping plate includes a rounded projection for contact with the face of the guide rail.

5. The device claimed in claim 4 wherein the other of said arms terminates adjacent said clamping plate and is pivotally connected thereto.

6. The device claimed in claim 3 wherein the other of said arms is a clamping arm having an inwardly directed projection on its outer end for engagement about the opposite edge of the guide rail, wherein screw means are provided for axially adjusting said last named arm,

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wherein additional spring means are provided for contacting said last named arm intermediate its ends to bias it toward the opposite edge of the guide rail, and wherein adjustable means are provided for pivotally moving said last named arm against the tension of said last named additional spring means.

Number
712,215
843,458
1,002,987
1,308,859
2,359,106
2,448,817

5

References Cited in the file of this patent

UNITED STATES PATENTS

10

Number	Name	Date
306,574	Bonzano	Oct. 14, 1884

6

Name	Date
Titcomb	Oct. 28, 1902
Hoos	Feb. 5, 1907
Harney	Sept. 12, 1911
Norris	July 8, 1919
Hayes	Sept. 26, 1944
McArthur	Sept. 7, 1948