F. J. GILMAN.

TRANSPORTER RAIL.

APPLICATION FILED MAR. 1, 1909.

979,469. Patented Dec. 27, 1910.

2 SHEETS—SHEET 1.

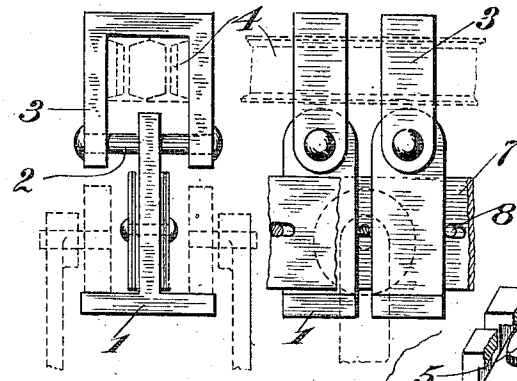

Fig. 1

Fig. 2

Witnesses:

L. A. Gauvin

E. Toupin

FREDERICK JOSEPH GILMAN

Inventor,

By Marion & Marion

Attorneys

F. J. GILMAN.

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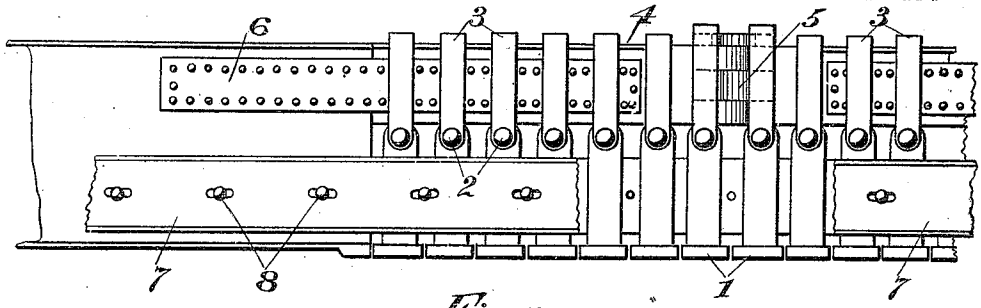

Fig. 5

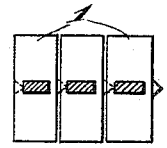

Fig. 6

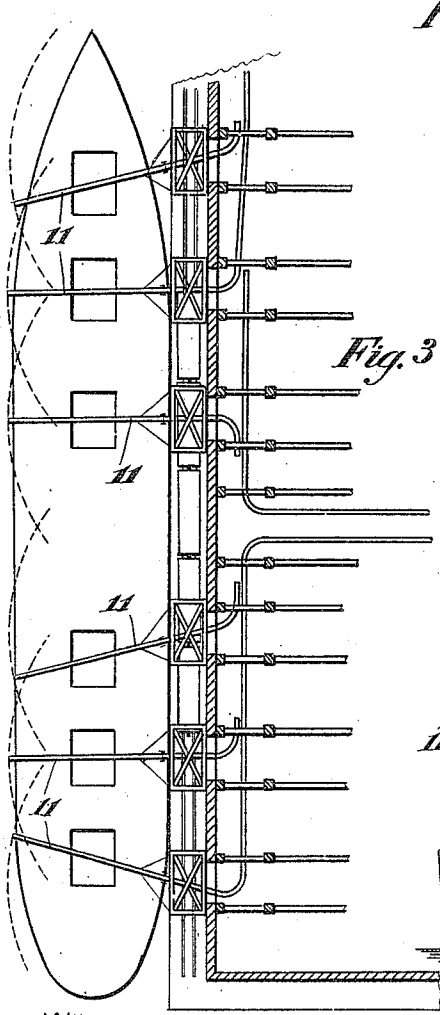

Fig. 3

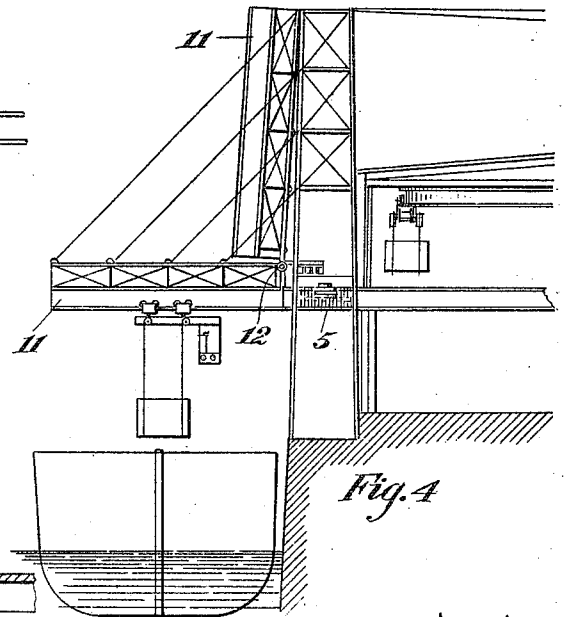

Fig. 4

Witnesses:

L. A. Gaurin

E. Toupin

FREDERICK JOSEPH GILMAN Inventor,

By Marion & Marion

Attorneys

UNITED STATES PATENT OFFICE.

FREDERICK JOSEPH GILMAN, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR OF ONE-FOURTH TO HUGH ANDREW ALLAN, OF MONTREAL, CANADA.

TRANSPORTER-RAIL.

979,469. Specification of Letters Patent. **Patented Dec. 27, 1910.**

Application filed March 1, 1909. Serial No. 480,759.

To all whom it may concern:

Be it known that I, FREDERICK JOSEPH GILMAN, a subject of the King of Great Britain, residing at 338 St. Catherine street, west, Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Transporter-Rails; and I do hereby declare that the following is 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.

The invention to be hereinafter described relates to transporters and particularly to the rails of such transporters as are especially adapted for loading and unloading bulk cargo from ships' holds.

At the present time, to my knowledge there is no known means or construction whereby the outer end of the transporter rail may be moved laterally so that it may be adjusted accurately over the center of a hatchway. Furthermore, there is no known construction whereby two or more holds of any vessel whatsoever, may be simultaneously loaded or unloaded. The nearest approach to this feature is found in the use of a plurality of non-adjustable transporter rails so placed as to be positioned directly over the centers of hatchways of a certain ship. This will enable the simultaneous unloading of all of the holds of that particular ship or of a sister ship. It must be remembered, however, that the hatchways of any other ship will be differently placed and that consequently, these non-adjustable transporter rails will not overlie the hatchways of other ships in the same manner. The most general method of loading or unloading a vessel at present is to use a single non-adjustable rail which projects from the wharf outwardly above the berth of the vessel. The vessel will move to such position that one of its hatchways is directly beneath the rail and the unloading will be begun. When it is desired to unload through another hatchway, the vessel must move to such position as will place the desired hatchway beneath the transporter rail.

According to the present invention, it will be possible to adjust the transporter rail so that it may overlie the hatchway of any ship whatever. By using a plurality of such adjustable rails it will be possible to operate simultaneously to unload all of the holds of any desired vessel, through all of the various hatchways thereof.

In order to enable one skilled in the art to which the invention relates, to the more readily understand the construction, operation and use of the same, reference should be had to the accompanying drawings forming part of the present application.

Throughout the several views of the drawings, like reference characters designate the same parts.

In the drawings: Figure 1 is a detail side and end elevation of the flexible portion of the rail; Fig. 2 is a perspective of the flexible rail, showing its method of support, Fig. 3 is a plan view of the invention in operation; Fig. 4 is a side elevation of the same; Fig. 5 is a side elevation, partly broken away and showing the connection between the suspension beam and the rigid rail sections; and Fig. 6 is a detail plan view showing the connection between the successive T blocks.

The main object of the present invention is to provide a flexible transporter rail which may be swung or adjusted to a great many different positions for loading or unloading ships' cargo and for other purposes.

To this end the invention comprises a flexible rail section consisting of a plurality of separate T shaped blocks 1, the stem of each T being perforated to slidably receive a pin 2 passed through the ends of a link 3 which depends from a suspension beam 4 connected at its opposite ends to the rigid sections of the transporter rail. This suspension beam comprises two sections connected by a powerful vertical hinge 5 adapted to withstand the great strains incident upon the suspension of very heavy loads. The two sections of the suspension beam 4 must, of course, be very strongly connected at their outer ends to the rigid rail sections. This connection is made by pairs of very strong metal plates 6 which are strongly riveted to the sections of the suspension beam and to the adjacent rigid section of the transporter rail. These plates are, or may be, placed on both of the opposite faces of the suspension beam section and the adjacent rigid transporter rail section.

In order to give a strong reliable supporting connection, the plates 6 should extend almost the full distance from the vertical hinge 5 to the end of the suspension beam section and an equal distance along the ad-

jacent rigid transporter rail section. The hinge joint 5 will, of course, make an angle instead of a curve whenever the suspension beam section is swung on its vertical hinge 5. An angle, even of a very small degree, is very objectionable in rails of this kind. It obstructs the free travel of the trolley wheels thereon, sometimes resulting in an absolute block or a complete derailment. This objection is overcome by the free connection between the pins 2 and the stems of the T blocks 1.

In order to assure a perfect and gradual curve of the entire flexible section, spring plates 7 have been provided. These plates extend longitudinally throughout the entire length of both sides of the flexible portion of the transporter rail. These spring plates are connected by pins 8 which pass through between the successive blocks of the flexible sections. In this way the plates on opposite sides of the flexible sections will bend similarly and together in a gradual curve taking with them the blocks 1. In order to further insure a perfectly continuous and even curve, the blocks may be provided with interlocking tongues and grooves, the tongue of one block fitting freely into the groove of the next succeeding block, as shown in plan in Fig. 6.

On the inside of the curve there will be a tendency, of course, for the blocks to crowd or jam. The blocks will be sufficiently spaced, however, to prevent this under all conditions. The pin and slot connection of the plates 7 allows ample longitudinal movement of them relatively to one another whenever the flexible section is swung on its hinge.

One end of the flexible section is supported simply by its connection with a rigid section of the transporter rail. The opposite or movable end of the flexible section is supported by a strong hook 9 fixedly secured thereto. This hook is adapted to travel in contact with the top edge of an arcuate girder 10 which may be built into a tower or any other structure adapted to sustain the strains incurred by the heavy loads carried on the transporter rail. The arc of the girder is formed, of course, with the hinge 5 as a center.

In loading and unloading ships' cargoes it is essential to have an arm which may be swung vertically upward and so held, in order that it may not interfere with the ship's rigging as the vessel approaches the wharf. When the vessel has been tied up the arm may be dropped into operative position over the center of one of the hatchways. For this purpose a rigid transporter rail section 11 is provided having a horizontal hinge joint 12 connecting it either direct to the base of the hook 9 or to an intermediate rigid section which, in turn, is connected to the movable end of the flexible section. Or a block 13 may be connected to the section 11 and this block may be pivoted to the hook 9.

When the movable end of the flexible section has been swung to the desired position, some means must be provided, of course, for holding it in such adjusted position. For this purpose, chains or like devices 14 may be secured to opposite sides of the rigid rail section and adapted to engage or catch about hooks 15 on the girder 10 or other convenient structure. It will be necessary to use but one of these chains at a time, of course, because the flexible section will be drawn against the resistance of the plate 7 on the inside of the curve and this plate will tend to force the flexible section back to its original position, against the pull of the chain 14.

Most vessels have a number of separate hatchways for the simultaneous discharge or loading of several kinds of cargo. The present method of unloading by overhead transporters allows of discharge of cargo by one hatchway at a time only. The reason for this is that the transporter beams are not adjustable. With the adjustable transporter beam of the present invention it is possible to simultaneously unload through any number of hatchways. This is clearly shown in Fig. 3 where a diagrammatic plan view of the whole apparatus is clearly given. In this view a large freighter is shown with six hatchways. Over each of these hatchways is shown in full lines and in operative position the pivoted rigid rail section of the transporter. The arc of adjustment for each of these sections is indicated by dotted lines. It is clear from this figure that a plurality of transporters having flexible rail sections of this kind may be used to simultaneously unload through all of the hatchways of practically any ship which may be moored at the wharf where the transporters are placed. These various adjustable transporter rails lead, of course, to one or another branch of a complete system of overhead transporter railway by which the various kinds of cargo may be moved from point to point and placed where desired. Like all other overhead transporter or trolley systems, the various main lines and branches may be provided with numerous switches. Where an ordinary switch will necessitate a sharp angle or require too much room by a less abrupt angle, a flexible rail section may be very conveniently made into a switch, thus substituting a gradual and continuous curve for a sharp abrupt angle.

It is clear that changes may be made in the construction, arrangement and disposition of the several parts of the invention without in any way departing from the

field and scope of the same and it is meant to include all such within this application wherein only a preferred form has been disclosed.

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

1. A flexible rail section comprising a plurality of blocks, a suspension beam, and means for suspending the blocks from said beam.

2. A flexible rail section comprising a plurality of blocks, a suspension beam, and means for suspending the blocks from said beam, said means being adapted to allow slight independent lateral movement of the separate blocks.

3. A flexible rail section comprising a plurality of blocks, a suspension beam, means for suspending said blocks from said suspension beam, and means for forming said blocks into a continuous curve.

4. A flexible rail section comprising a plurality of blocks, a suspension beam provided with a hinge joint, and means for suspending said blocks from said suspension beam.

5. A flexible rail section comprising a plurality of blocks, a suspension beam provided with a hinge joint, means for suspending said blocks from said beam, and means for forming said blocks into a continuous curve.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

FREDERICK JOSEPH GILMAN.

Witnesses:
R. T. Crane,
Chas. F. Dickerson.