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C. C. MARTIN

2,265,385

TROLLEY CONSTRUCTION

Filed Sept. 30, 1938

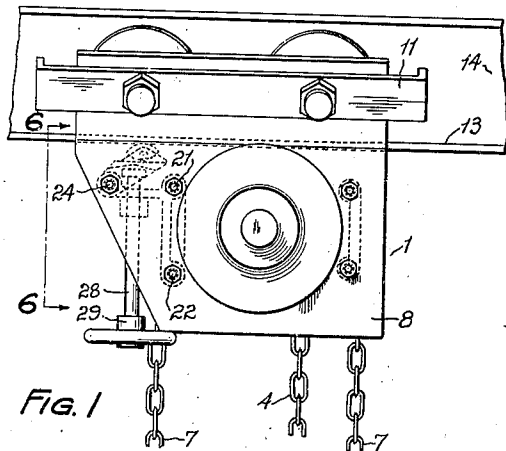


Fig. 1

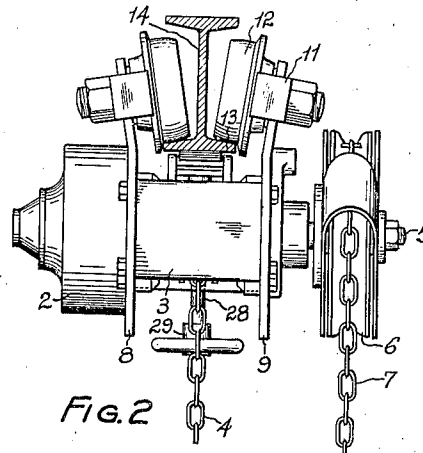


Fig. 2

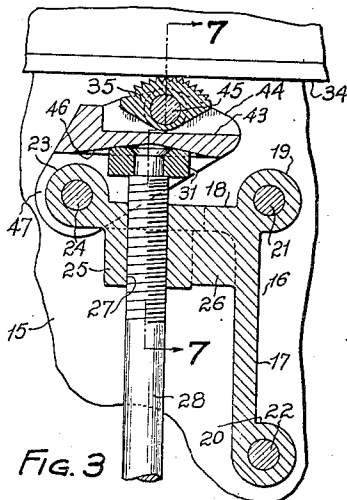


Fig. 3

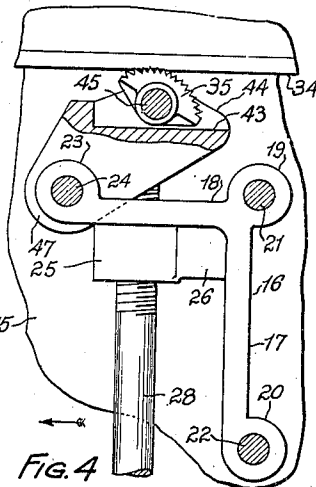


Fig. 4

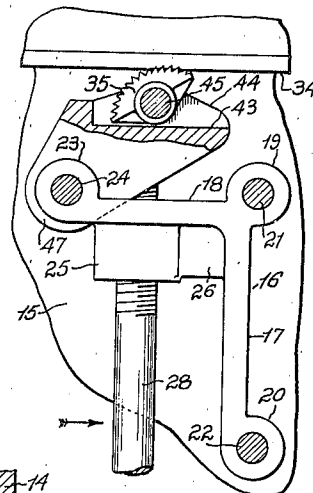


Fig. 5

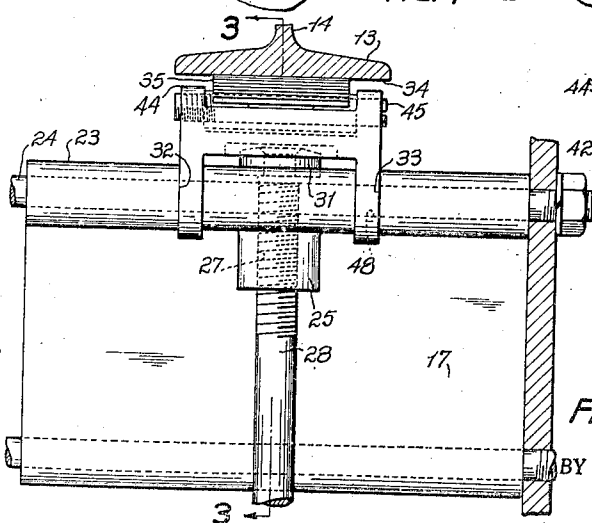


Fig. 6

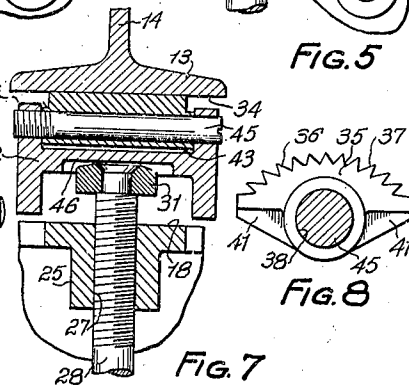


Fig. 7

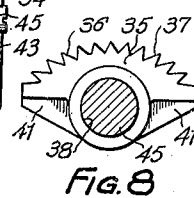


Fig. 8

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2,265,385

TROLLEY CONSTRUCTION

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9 Claims. (Cl. 105—150)

This invention, as indicated, relates to a trolley construction. More particularly it comprises an overhead trolley or hoist construction adapted to travel along a trackway and be securely positioned thereon at a selected point. It also includes an improved locking or clamping device embodied in or attached to an overhead trolley or hoist mechanism which resists displacement with an increasing degree of clamping effect as the force tending to move the same is increased. It also embodies a construction of overhead hoist which is unusually compact affording a high degree of head clearance, and at the same time is of very sturdy construction so as to withstand heavy duty service over a long period of time.

The principal object of the present invention is to provide an improved trolley or overhead hoist construction wherein the elements are compactly assembled so as to present a minimum of obstruction beneath the point of support, and at the same time to have unusual adaptability for heavy service of varying character.

Another object of the invention is to provide a compact trolley hoist unit having incorporated therein a clamping element adapted to automatically resist longitudinal displacement of the unit to a higher degree in accordance with the force applied.

Another object of the invention is to provide a clamping device adapted to be applied to overhead trolley mechanism, including hoisting and the like, wherein such clamping device will operate upon an idle surface of the trackway, and automatically engage with a greater clamping power as force is applied to dislodge the same.

Another object of the invention is to provide a clamping device for trolleys, overhead hoists and the like, which may be readily adjusted in clamping position, and which thereafter will automatically operate to increase such clamping effect as force is applied to move the same longitudinally of its original position.

A further object of the invention is to provide a locking device for trolleys or overhead hoists and the like which incorporates few elements of structure, but which has exceptional clamping capacity, and at the same time is easy to assemble and install, and maintain under high duty service conditions.

Other and further objects of the invention will appear in the course of the following description.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed

drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but several of various forms in which the principle of the invention may be used.

In said annexed drawing—

Fig. 1 is a side elevation showing a trolley hoist mechanism having an improved clamping device as shown partly in dotted lines;

Fig. 2 is an end view of the structure shown in Fig. 1, as seen from the right hand side;

Fig. 3 is an enlarged detailed view partly in section showing the improved clamping device when first applied in clamping relation to an overhead trackway, as seen along the lines 3—3 shown in Fig. 6 looking in the direction of the arrows;

Fig. 4 is a view similar to Fig. 3 partly in section showing the improved clamping element moved to a position to resist longitudinal displacement to the left;

Fig. 5 is a view similar to Fig. 4 showing the improved clamping element moved to a position to resist longitudinal displacement to the right;

Fig. 6 is an enlarged fragmentary view partly in section taken along the lines 6—6 shown in Fig. 1 looking in the direction of the arrows;

Fig. 7 is an enlarged detailed view partly in section taken along the lines 7—7 shown in Fig. 3 looking in the direction of the arrows; and

Fig. 8 is an end view of the clamping block showing the position of the teeth thereon to provide increasing clamping action.

As is clearly shown in the drawing, the overhead hoist unit 1 comprises a compact planetary hoist mechanism 2 having a drum 3 to actuate the main hoist chain 4, upon operation of the drive mechanism through the shaft 5, wheel 6, and operating chain 7. The hoist mechanism 2 is provided with plates 8, 9, at opposite sides, such plates being bent at a slight upward angle at adjacent ends and each being apertured to receive bearings 11 for a trolley wheel 12 adapted to travel on the upper face of the lower flange 13 of an I-beam 14.

Intermediate the plates 8, 9, the clamping unit 15 is provided, said unit comprising a supporting member 16 in the form of a casting presenting two plate-like sections 17, 18, at right angles to each other, and having integral extensions 19, 20, suitably apertured to receive securing bolts 21, 22, whereby the structure may be firmly secured intermediate the plates 8, 9, in spaced relation to the under surface of the I-beam 14.

The horizontal plate-like section 18 of the sup-

porting member 16 is formed at its free edge with an integral extension 23 suitably apertured to receive a bolt 24. The spaced plates 8, 9, are suitably apertured to receive the bolts 21, 22 and 24, the heads and nuts on said bolts being firmly engaged against the outer surfaces of said respective plates. The plate-like section 18 is provided centrally of its under side with a boss 25 preferably connected by means of a web 26 with the adjacent portions at the inner corner of the supporting member 16. The boss is provided with a screw-threaded aperture 27 extending completely through the plate, such aperture receiving the threaded shank of the adjusting member 28 upon the lower end of which a hand wheel 29 is provided. At the upper end of the adjusting member 28 a terminal head 31 is rigidly secured, said head having a beveled upper surface designed to bear against a concave surface provided on a pivot block presently to be described.

The horizontal plate-like section 18 is provided at its free edge with two slots 32, 33, such slots intersecting the extension 23.

The active contacting member for engaging the under surface 34 of the trackway provided by the I-beam 14 comprises a cam block 35, preferably formed of a suitable quality of steel, and as shown more particularly in Fig. 8, provided with teeth 36 on the left hand side directed at a left hand angle, and teeth 37 on the right hand side directed at a right hand angle, said teeth being progressively a greater distance from the pivot of the cam block so as to provide cam action against the adjacent surface of the trackway. The cam block is provided centrally of its lower portion with a pivot opening 38 extending completely through the same and having spacing extensions 39 at each of its ends. It may be provided centrally on its under side with re-enforcing ribs 41 to firmly support the outermost teeth of the upper surface. The cam block is supported by a supporting member 42, preferably in the form of casting, having a flat upper surface 43 with upwardly extending portions of the side wall 44 apertured to receive the pivot pin 45 of the cam block. The under face 46 of the supporting member is preferably of slightly concave contour centrally to provide a bearing surface against which the beveled surface of the terminal head 31 of the adjusting member 28 engages. The lower portions of the side wall 44 are of somewhat triangular shape and have rearwardly projecting portions 47 which are formed with apertures 48 to receive the bolt 24 which serves as a pivot pin for the supporting member 42, which may be termed a pivot block.

It will be noted that the cam block 35, as is clearly shown in Fig. 3, may be forced upwardly into engagement with the under surface 34 of the trackway, and will normally move the trolley until the point of contact with such surface is the shortest radius of the cam block. Thereafter if a force is applied tending to move the trolley unit in a direction toward the left, as shown in Fig. 4, the cam block will turn on its pivot with its teeth engaging the metal of the under surface of the trackway, and interlocking therewith with increasing force as the movement progresses until all further movement is resisted by such cam action. Should the trolley be moved in the opposite direction, or toward the right as shown in Fig. 5, the teeth on the right hand portion of the cam block will engage with the middle of the trackway with increasing clamping action, and will firmly lock the trolley against further

movement toward the right. Thus, any tendency toward displacement of the trolley in either direction will be resisted by the cam block with an increasing degree of clamping action, so that it is practically impossible to shift the trolley mechanism in either direction beyond the slight rocking movement required to increase the clamping action in either direction upon the application of a force tending to move the trolley longitudinally.

It will be noted that the cam block and its supporting member are easily removable from the apparatus by merely withdrawing the bolt 24 and sliding the pivot block 42 toward the left, as shown in Fig. 3.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. An apparatus of the character described having in combination a hoist unit, a trolley support for said unit adapted to travel on an overhead trackway, clamping means associated with said support and unit, means for engaging said clamping means in centered relation with said trackway, said clamping means comprising means providing double cam areas to automatically produce rolling progressive contact and clamping action upon the movement of said trolley in either direction when the clamping means is in clamping position.

2. An apparatus of the character described having in combination a hoist unit, a trolley support for said unit adapted to travel on an overhead trackway, clamping means directly engaging a surface of the overhead trackway associated with said support and unit, means for engaging said clamping means in centered relation with said trackway, said clamping means comprising double cam means to automatically produce rolling progressive contact and clamping action upon the movement of said trolley in either direction when the clamping means is in clamping position.

3. In a trolley-hoist structure traveling on an overhead trackway, a clamping device for engaging one surface of said trackway, said clamping device comprising a rocker mounted on the hoist structure providing a double toothed cam on its contact surface with outwardly directed teeth adjacent its respective ends responsive automatically to longitudinal movement of said trolley-hoist structure for increasing the clamping effect of said clamping device when the clamping means is in clamping position.

4. In a trolley-hoist structure traveling on an overhead trackway, a clamping device for engaging one surface of said trackway, said clamping device comprising a rocker mounted on the hoist structure providing a double toothed cam on its contact surface with outwardly directed teeth adjacent its respective ends with cam elements automatically responsive to movement in either direction of said trolley-hoist structure for increasing the clamping effect of said clamping device when the clamping means is in clamping position.

5. In a trolley-hoist structure traveling on an overhead trackway, a clamping device for engaging one surface of said trackway comprising a movable supporting plate, a rocker mounted on the hoist structure and movable into contact

with the trackway providing a double toothed cam on its contact surface with outwardly directed teeth adjacent its respective ends pivotally mounted thereon, and means for moving said plate toward said trackway and centrally positioning said cam block.

6. In a trolley-hoist structure traveling on an overhead trackway, a clamping device for engaging one surface of said trackway comprising a hinged supporting plate, a cam block movable into contact with the trackway pivotally mounted thereon, and a movable abutment for moving said plate toward said trackway and centrally positioning said cam block.

7. In a trolley-hoist structure traveling on an overhead trackway, a clamping device for engaging one surface of said trackway comprising a hinged supporting plate, a cam block pivotally mounted thereon, and a movable abutment carried on a screw-threaded stem threadedly engaging a part of the hoist structure for moving said plate toward said trackway and centrally positioning said cam block.

8. A trackway in the form of an I-beam providing a pair of flanges at its lower edge, a trolley-hoist unit having wheels adapted to travel on the upper faces of said flanges and carrying

a hoist mechanism beneath said trackway, clamping mechanism supported on said hoist unit beneath the lower surface of said trackway, having a member adapted to be forced into centralized locking engagement therewith, said clamping mechanism means having double cam areas adapted to automatically produce rolling progressive contact and clamping action upon movement of said trolley-hoist unit longitudinally in either direction when the clamping means is in clamping position.

9. A trackway in the form of an I-beam providing a pair of flanges at its lower edge, a trolley-hoist having wheels adapted to travel on the upper faces of said flanges and carrying a hoist mechanism beneath said trackway, clamping mechanism supported on said hoist unit beneath the lower surface of said trackway and having a cam block adapted to be forced into locking engagement with the under surface of said trackway, said cam block being pivoted so as to engage said trackway upon a short radius of support initially and with increasing clamping effect upon a longer radius in response to horizontal movement of said trolley-hoist unit longitudinally in either direction.

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