

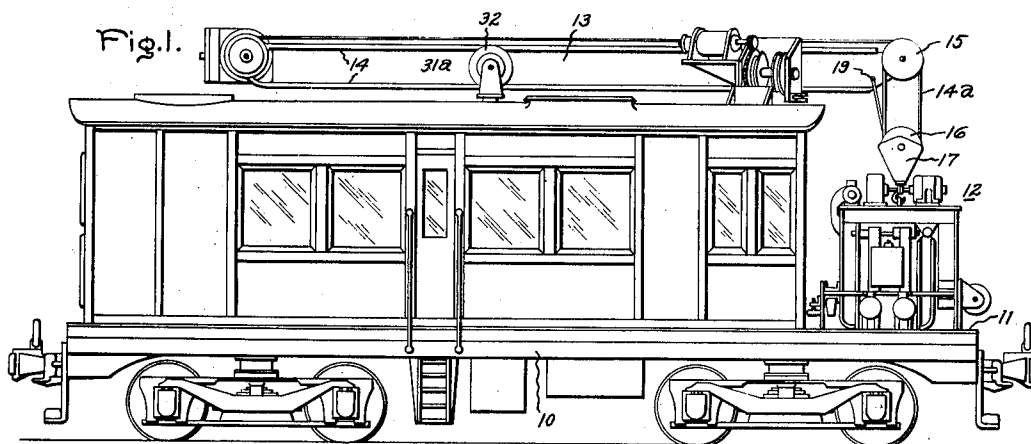
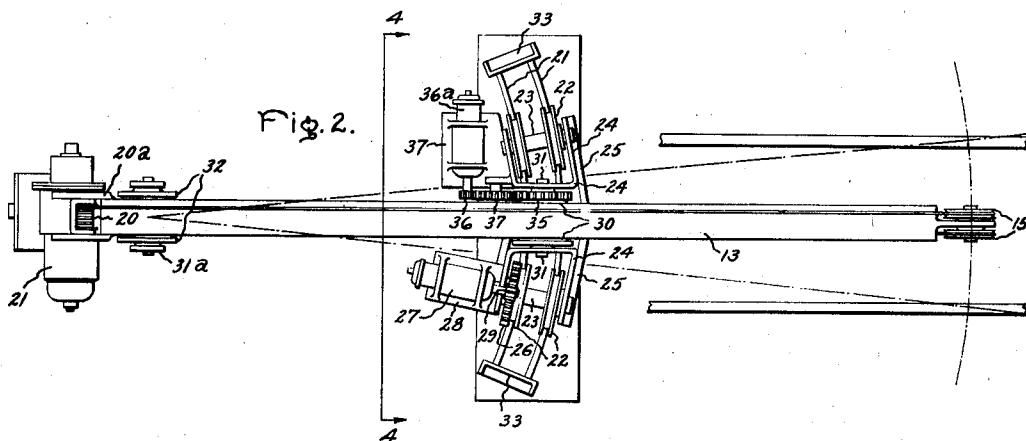
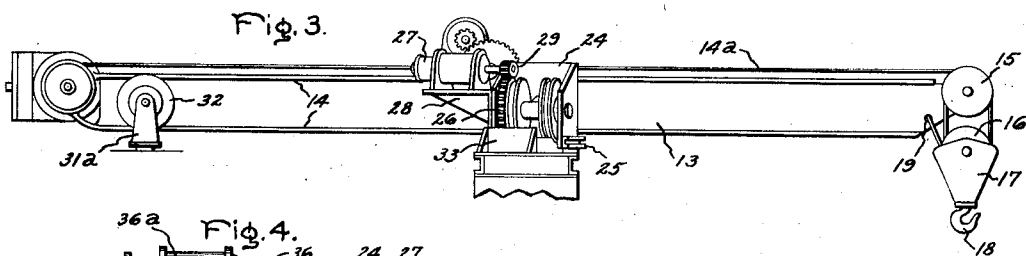
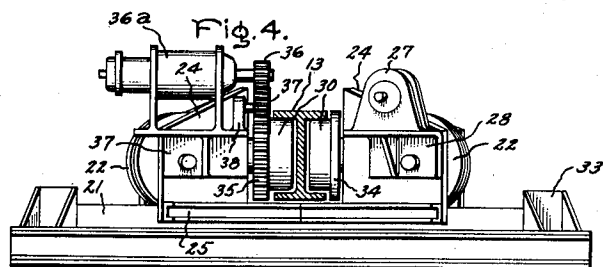
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ROTARY CRANE

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ROTARY CRANE

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8 Claims. (Cl. 212—55)

My invention relates to cranes and more particularly to portable rotary cranes.

It is an object of my invention to provide a simple and efficient rotary crane which is arranged for maximum convenience and flexibility in the operation thereof.

Further objects and advantages of my invention will become apparent as the following description proceeds and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of my invention reference may be had to the accompanying drawing in which Fig. 1 is a side elevational view of an embodiment of my invention, Fig. 2 is a plan view of my crane, Fig. 3 is a side view of the crane shown in Fig. 1 and Fig. 4 is a view, partly in section, of the crane shown in Fig. 1 taken along the line 4—4 of Fig. 2.

The illustrated embodiment of my invention includes a lifting beam pivotally supported on the roof of a railway car which is adapted to be used in connection with apparatus for welding the rails in the track of a railway system. A hoisting sheave is connected at one end of the lifting beam and an electric hoist is attached to the opposite end. The lifting beam is designed to reciprocate lengthwise so that, in the embodiment illustrated, the welder may be carried from a platform on the car to the outboard position and vice versa. The beam is arranged to swing around a pivot so that the welder can be used on either rail. Such an arrangement occupies a minimum of space since by placing the crane on the roof of the car substantially the entire car may be utilized for living quarters or storage space or both as well as to carry the crane. A further advantage lies in the fact that a crane embodying my invention takes up a minimum of head room.

Referring to the drawing I have shown a railway car 10 provided with a platform 11 at one end thereof for the support of a welder 12. The welder forms no part of my present invention but is shown, described and claimed in my co-pending application Serial No. 237,713, filed October 29, 1938, and assigned to the same assignee as the present application. The lifting beam 13 of the crane, illustrated as an I-beam having flanges 14, is shown on the roof of the car 10, the roof thus providing a platform for the support of the crane.

Hoisting tackle is provided at the outer end of the lifting beam 13. A suitable cable 14a is

rove around hoisting sheaves 15 at the end of the lifting beam 13, and load sheaves 16 rotatably supported in a running block 17. The running block 17 carries a hook 18 for engagement with the work to be lifted. One end of the cable 14a is attached to the lifting beam as indicated at 19. The other end of the cable 14a is wound around a drum 20 at the opposite end of the lifting beam 13, the drum being rotatably journaled in a support 20a on beam 13 and rotated in any suitable manner. I have shown an electric motor 21 for this purpose. The cable 14a may be of any suitable material such as rope, flexible wire or a chain, for example. It is obvious that rotation of the drum in one direction will cause the running block to be raised while rotation of the drum in the opposite direction will cause the running block 17 to be lowered.

In order to swing or rotate the lifting beam, I have provided the following apparatus. Curved tracks 21 are attached to the roof at one end of the car 10. Pairs of flanged wheels 22 adapted to engage the tracks 21 are carried on axles 23 which are suitably journaled in the arms of substantially U-shaped brackets 24 on each side of the beam 13. The U-shaped brackets 24 are held in fixed spaced relationship by means of angle irons 25 which are suitably joined at the center as by welding, for example. The axle 23 and accordingly the wheels 22 may be rotated in any suitable manner. In the arrangement illustrated I have shown one of the flanges of one of the wheels 22 replaced by a gear 26. If desired, a separate gear may be placed on one of the axles 23. An electric motor 27 supported on a bracket 28 which is secured to one arm of one of the U-shaped brackets 24 drives the gear 26 through a pinion 29 carried by the motor shaft. Rollers 30 are carried by axles 31 which are suitably journaled in the base section of the U-shaped brackets 24. The rollers 30, one on each side of the web of the lifting beam 13 engage the under side of the upper flange 14 of the I-beam.

As illustrated in the drawing the lifting beam 13 is adapted to swing about a pivoted substantially U-shaped member 31a which is located intermediate the ends of the car. Rollers 32 similar to rollers 30 are suitably rotatably supported from each arm of the member 31a on each side of the lifting beam 13 and engage the under side of the upper flange 14. This arrangement permits the lifting beam to ride on the rollers during its reciprocable movement thereby minimizing friction and guiding the beam. Fur-

ther, the support 20a for the hoist at the end of the beam serves as a stop and will cooperate with the rollers 32 to limit the movement of the beam as the beam travels toward the outboard position. Inasmuch as the rollers 32 are located between the flanges 14 of the beam and close to the web thereof, the pivoted member 31 also serves to prevent tipping of the lifting beam 13. While I prefer to accomplish the above enumerated functions with the pivoted member and rollers shown and described, other arrangements serving the same purposes may be used if desired. For example, a longitudinal slot may be cut through the web of the beam and a bar or rod extended therethrough perpendicular to the beam. The entire beam could then be moved laterally along the rod instead of pivotally, the rod and slot also cooperating to prevent tipping of the beam and to limit and guide the longitudinal movement thereof. With this arrangement, straight tracks would be satisfactory in place of the curved tracks 21. As a further alternative, member 31 and rollers 32 could be used in the form shown in the drawing but member 31 could be made to reciprocate in a direction crosswise of the beam. In this arrangement a tongue on the bottom of member 31 engaging an undercut groove on the car roof might be utilized.

It will be apparent that as the electric motor 27 is operated, rotation will be transmitted through the gears 29 and 26 to the wheels 22. This force, transmitted through the wheels 30 to the lifting beam 13, tends to push the lifting beam in a direction depending upon the direction of rotation of the motor. Inasmuch as the pivoted member 31 is shown in the drawing as fixed against translatory motion, the lifting beam will swing about the member 31 as a pivot point. Stops 33 are provided at the ends of the tracks 21 to limit the rotational movement of the crane.

In order to reciprocate the lifting beam 13 I have provided means to drive the rollers 30. As will be seen best from Fig. 4 one of the rollers 30 is provided with a flange 34. The roller 30 on the opposite side of the lifting beam 13, instead of having a flange, is provided with a gear 35. If desired, both rollers 30 may be flanged and a separate gear may be attached to one of the axles 31. An electric motor 36a carried on a bracket 37 which is supported from one of the U-shaped brackets 24 drives the gear 35 through a pinion 36 and an idler gear 37 which is carried on a bracket 38. Since the rollers 30 engage the upper flange 14 of the lifting beam 13, it will be apparent that the lifting beam will be moved lengthwise of the car according to the direction of rotation of electric motor 36. Any suitable motor control may be used and suitable controls will be apparent to those skilled in the art.

It will be apparent that if desired, I may place the crane embodying my invention upon a turntable, or a platform movable or rotatable with respect to its support. For example, I may place my crane on a turntable located on the roof of a railway car. With such an arrangement, by rotating the turntable the lifting beam may be made available for reciprocation in any desired direction and, in addition, will be capable of a limited rotary or lateral movement, depending upon the type of guide member provided, for each position of the turntable or platform.

While for purposes of illustration I have described my invention in connection with welding apparatus, it is obvious that my invention is applicable wherever a reciprocable and pivotal or

laterally movable lifting beam is advantageous. For example, instead of supporting my crane upon the roof of a railway car my invention could be set up on any platform or in the form of a pillar type crane. I do not desire my invention to be limited to the particular construction shown and described and I intend in the appended claims to cover all modifications within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A portable crane comprising a platform, a lifting beam on said platform, a track on said platform, a wheel associated with said beam and engaging said track, means for driving said wheel and moving said beam laterally of said platform, a roller engaging said beam, and means for driving said roller and moving said beam lengthwise of said platform.

2. A portable crane comprising a platform, a lifting beam on said platform, a pivoted guide for said beam on said platform, means to swing said beam laterally about said guide as a pivot point, said means including a track on said platform, a wheel engaging said track and means to drive said wheel, and means to reciprocate said beam lengthwise of said platform including a roller engaging said beam and means to drive said roller.

3. A portable crane comprising a railway platform, a lifting beam on said platform, a pivoted member on said platform associated with said beam, a track on said platform, a bracket located on each side of said beam, a wheel journaled in each of said brackets and engaging said track, means to rotate said wheels for swinging said beam laterally about said member as a pivot point, a roller journaled in each of said brackets and engaging said beam and means to rotate said roller for reciprocating said beam lengthwise of said platform.

4. Apparatus suitable for use with a rail welder comprising a railway car, a lifting beam on the roof of said car, hoisting tackle at one end of said beam, a hoist at the other end of said beam, a cable extending between said tackle and said hoist, a pivoted member on said car, a roller rotatably supported on said pivoted member in engagement with said beam for guiding the lengthwise movement of said beam and for preventing tipping of said beam with respect to said roof, a curved track on said roof of said car, a bracket located on each side of said beam, a flanged wheel associated with each of said brackets and engaging said track, a second roller journaled in each of said brackets and engaging said flange on said lifting beam, a driven gear associated with one of said flanged wheels, means to drive said driven gear for swinging said beam laterally about said pivoted member as a pivot point, a second driven gear associated with said second roller and means to drive said second driven gear for moving said beam lengthwise of said car.

5. Apparatus suitable for use with a rail welder comprising a railway car, a lifting beam on the roof of said car, hoisting tackle at one end of said beam, a hoist at the other end of said beam, a cable extending between said tackle and said hoist, a pivoted substantially U-shaped member on said car, said beam being arranged between the arms of said member, a roller rotatably supported on each arm of said member in engagement with said beam for guiding the lengthwise movement of said beam and for preventing tipping of said beam with respect to said roof, a

- curved track on said car, a bracket located on each side of said beam, a flanged wheel journaled in each of said brackets and engaging said curved track, a second roller journaled in each of said brackets and engaging said lifting beam on opposite sides of said beam, means maintaining said brackets in fixed spaced relationship, a driven gear associated with one of said flanged wheels, means to drive said driven gear for swinging said beam laterally about said U-shaped pivoted member, a second driven gear associated with said second roller and means to drive said second driven gear for moving said beam lengthwise of said car.
6. A portable crane comprising a platform, a lifting beam supported on said platform, a laterally projecting portion on said lifting beam, a pivoted guide for said beam located on said platform, means for swinging said beam about said guide as a pivot point, means to reciprocate said beam lengthwise of said platform, said last-mentioned means and said pivoted guide cooperating with said portion for preventing said beam from tilting with respect to said platform.
7. A portable crane comprising a platform, a lifting beam supported on said platform, a laterally projecting, longitudinally extending portion on said beam, a pivoted guide for said beam,

said guide including a member, a roller journaled on said member, said roller engaging the upper surface of said portion whereby said member and said roller cooperate with said portion to permit longitudinal and pivotal movement of said beam but prevent tilting of said beam with respect to said platform, means for swinging said beam about said guide as a pivot point, and means to reciprocate said beam lengthwise of said platform.

8. A portable crane comprising a platform, a lifting beam supported on said platform, a laterally projecting longitudinally extending portion on said beam, a pivoted guide for said beam supported on said platform, said guide including a bracket, a roller journaled on said bracket, said roller engaging the upper surface of said portion to permit longitudinal and pivotal movement of said beam but prevent tilting of said beam with respect to said platform, means to swing said beam laterally about said guide as a pivot point, said means including a track on said platform, a wheel engaging said track and means to drive said wheel, and means to reciprocate said beam lengthwise of said platform including a roller engaging said beam and means to drive said roller.

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