April 13, 1943. J. BRESLAV 2,316,667

CRANE

Filed May 19, 1942 2 Sheets-Sheet 1

Fig.1.

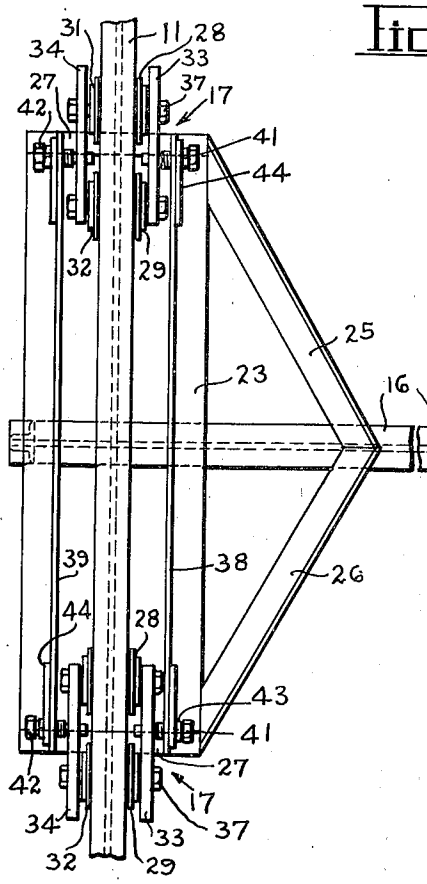


Fig.2.

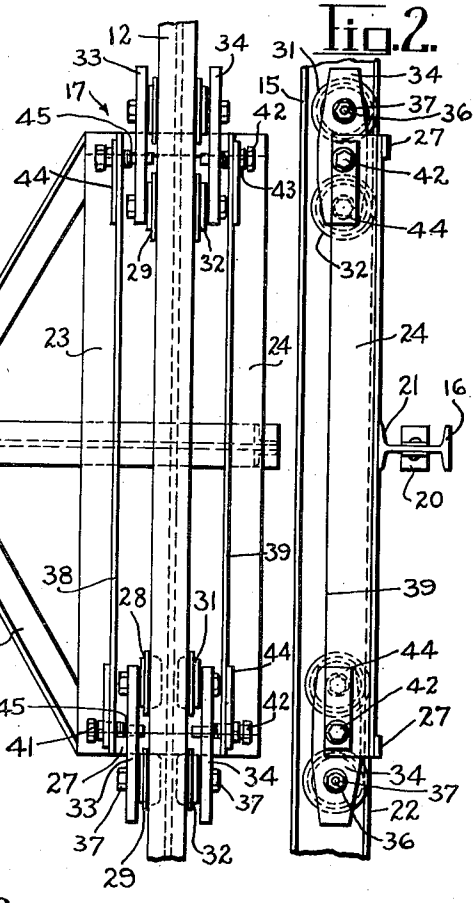
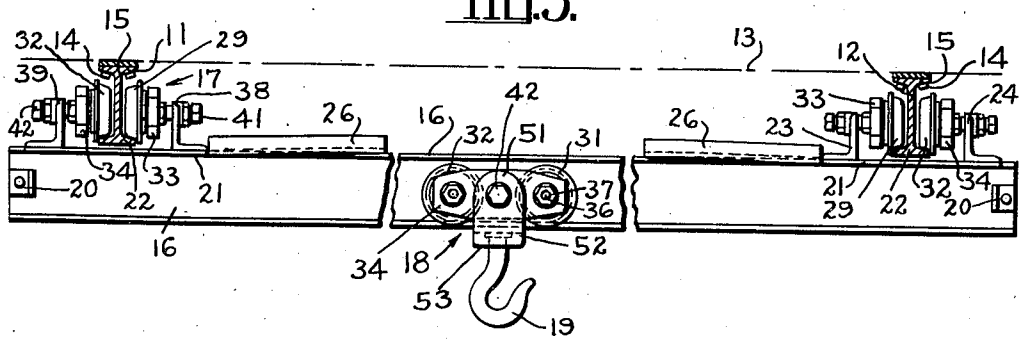


Fig.3.



INVENTOR
Jack Breslav.
BY
Walter S. Edwards
ATTORNEY

April 13, 1943. J. BRESLAV 2,316,667

CRANE

Filed May 19, 1942 2 Sheets-Sheet 2

Fig. 4.

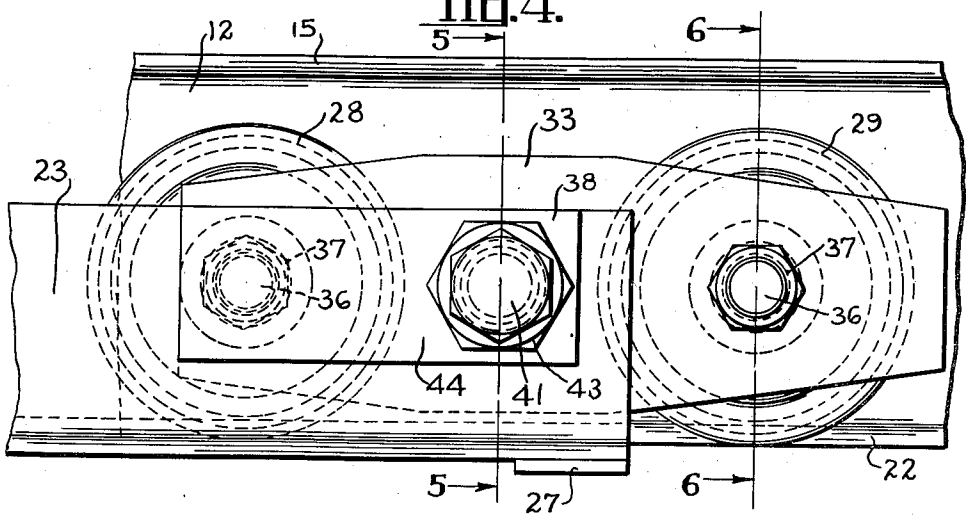


Fig. 5.

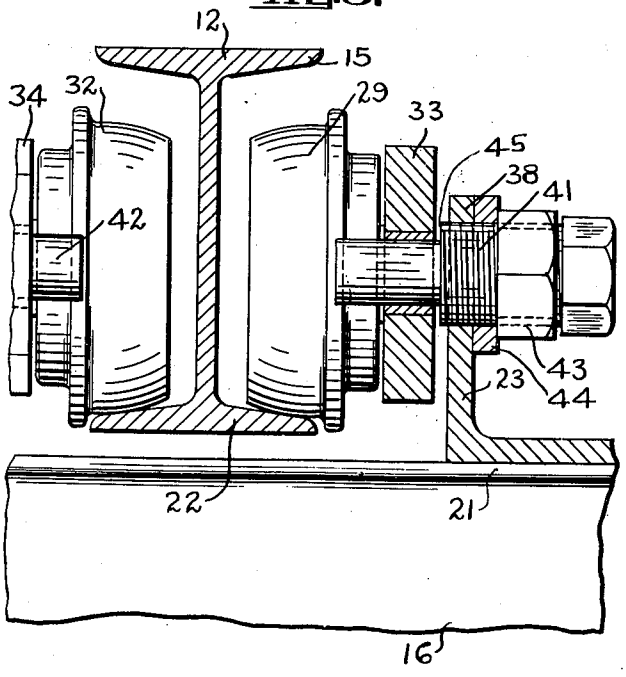
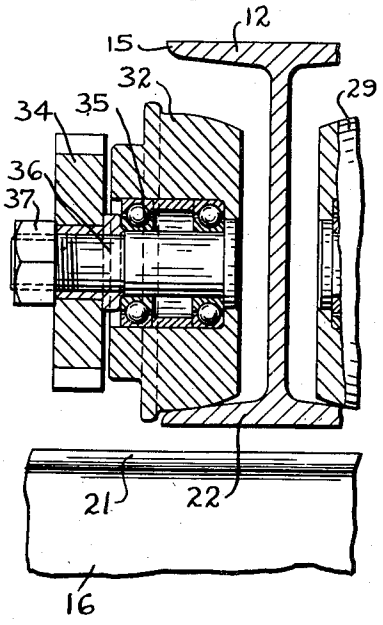


Fig. 6.



INVENTOR
Jack Breslav.
BY
Walter S. Edwards
ATTORNEY

Patented Apr. 13, 1943 2,316,667

UNITED STATES PATENT OFFICE

2,316,667

CRANE

Jack Bresiav, New Haven, Conn.

Application May 19, 1942, Serial No. 443,594

12 Claims. (Cl. 104—98)

This invention relates to cranes of the type comprising a transverse beam supported at its opposite ends by a plurality of trolleys each including a set of wheels adapted to roll along an overhead track, and especially to cranes of this type which are provided for use in factories, foundries and like buildings for moving loads from place to place.

One of the objects of this invention is to provide a crane of the above type in which the tendency for the trolley wheels to bind on the tracks is substantially obviated.

Another object is to provide a crane wherein parts of the trolleys are adapted to move relatively to other parts thereof to compensate for unevenness in the tracks and/or slight discrepancies in the levels, and in the parallel mounting of the spaced apart tracks.

Still another object is to provide a crane structure whereby the spacing of the load carrying beam supported by the trolleys from the ceiling will be a minimum amount and limited only by the height of the beam and of the tracks suspended from the ceiling.

A further object of this invention is to provide a trolley structure for cranes of the above type having oppositely facing wheels and means to adjust these wheels transversely in respect to a track upon which they run to compensate for different widths of tracks without removing the wheels from their supporting structure.

A still further object of this invention is to provide a crane structure of generally improved construction, whereby the same will be substantially simple, durable and inexpensive in construction, as well as convenient, practical, serviceable and efficient in its use.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts, and in the details of construction to be hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed may be made within the scope of the claims without departing from the spirit of the invention.

A preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a broken top plan view of a crane embodying the features and principles of this invention;

Figure 2 is a side view of the same;

Figure 3 is an end view of the same;

Figure 4 is an enlarged side view of the trolley structure used in the crane shown in Figure 1;

Figure 5 is a broken cross-sectional view of the trolley structure shown in and taken on the line 5—5 of Figure 4; and

Figure 6 is another broken cross-sectional view taken on the line 6—6 of Figure 4.

Referring now to the drawings wherein like reference numerals designate like parts throughout the several views, a pair of tracks 11 and 12, herein shown in the form of I beams, are adapted to be secured to the ceiling 13 of a building by bolts 14 passed upwardly through their upper flanges 15 and into the ceiling 13. The tracks may extend the length, or width, of the room in which they are installed and are disposed in spaced apart and in substantially parallel relationship. The crane proper includes a load carrying beam 16, also herein shown in the form of an I beam, which, in this instance, is carried by a plurality of trolleys 17 to be moved along the tracks 11 and 12. The beam 16, in turn, supports the load to be transported along the tracks 11 and 12, which load is suspended from a trolley 18, similar in form to the crane trolleys 17, and which is adapted to be moved along the beam 16. The load may be raised or lowered by any of the usual forms of hoists (not shown) connected to a hook 19 (see Figure 3) depending from this trolley 18. Angle iron stops 20 are provided at each end of the beam 16 to prevent the trolley 18 riding off the ends of the same. While the tracks 11 and 12 are herein shown in the form of I beams it will be understood that any form of elongated bar having an upper surface of sufficient width to permit oppositely facing wheels to run along the opposite edges thereof could constitute a track.

In the form of crane shown, the load carrying beam 16 is supported with its upper flange 21 closely adjacent to the lower flange 22 of the beam constituting the tracks 11 and 12, by the four trolleys 17. Two of the trolleys 17 are spaced apart lengthwise of each of the tracks 11 and 12 and are secured together by side members 23 and 24, herein shown in the form of angle irons and disposed one at either side of the tracks 11 and 12. The members 23 and 24 are preferably secured to the beam 16, for instance by welding them to the upper flange 21 of the beam 16, and with the beam disposed intermediate the ends of the members 23 and 24 and the spaced apart trolleys 17. Brace members 25 and 26, angularly extending from the

ends of the inner members 23 to the beam 16 are provided, and secured to the members 23 and the beam 16 preferably by welding. To prevent them from spreading the corresponding ends of the members 23 and 24 may be secured together by a cross-bar 27.

The trolleys 17 and 18 each comprises two pair of opposed wheels 28, 29 and 31, 32, disposed in pairs on opposite sides of the tracks 11 and 12 and the beam 16 respectively, the wheels of each pair being spaced apart lengthwise of the respective track, or beam, and journaled in supporting plates 33 and 34 respectively. Preferably each wheel is journaled by means of ball bearings 35 upon a stud 36 secured to the respective plate 33 or 34 by a nut 37 as indicated in Figure 6. The wheels may be of the flanged type with tapering crowned peripheries to adapt them to ride on the tapering upper faces of the lower flange 22 of the I beam-shaped tracks 11 and 12.

The plates 33 and 34 are pivoted to the upstanding flanges 38 and 39 of the trolley supporting members 23 and 24, respectively, on trunnions 41 and 42, disposed substantially midway between the studs 36 and extending inwardly through the respective plates 33 and 34 from the members 23 and 24. The studs 36 and the trunnions 41 or 42 are preferably disposed in alignment lengthwise of the plates 33 or 34. The trunnions 41 and 42 are screw-threaded through the members 23 and 24 respectively for adjustment transversely therethrough and are locked in position by a lock nut 43. A reinforcing plate 44 may be provided and welded to the flanges 38 and 39 at the point where the trunnions pass through the members 23 and 24 if considered advisable.

The plates 33 and 34, pivoted on the trunnions 41 and 42, are also floatingly slidable thereon transversely in respect to the tracks 11 or 12 whereby each wheel of each pair of wheels and each pair of wheels of each trolley is free to follow unevennesses in the respective track upon which they roll and without the other wheel or corresponding pair of wheels being effected. A shoulder 45 is provided on each of the trunnions 41 and 42 in position to be engaged by the respective plates 33 and 34 to limit their sliding movement thereon and thus insure that the wheels do not ride off of the tracks 11 and 12. This transverse slidable mounting for each pair of wheels of each trolley also permits lateral twisting of the crane in respect to the tracks 11 and 12 without causing the wheels to bind thereon. In effect each pair of wheels, of the plurality of the same, independently floats in respect to the others due to the above described mounting, and slight discrepancies in the mounting of the tracks 11 and 12 such as to make them slightly out of parallelism or to be slightly out of level will be compensated for, whereby greater ease and smoothness in the operation of the crane will be obtained.

The trolley 18, by which the load is suspended from and is movable along the beam 16, is constructed similarly to the trolleys 17. In this form of trolley, the wheels 28, 29 and 31, 32 are journaled in the side plates 33 and 34, and the respective plates 33 and 34 are pivoted and slidable on the trunnions 41 and 42. In this instance, the trunnions 41 and 42 are screw-threaded through side members 51 of a U-shaped bracket 52, to the cross-bar 53 of which the hoist supporting hook 19 is suitably secured.

Due to the adjustability of the trunnions 41 and 42 in the side members 23 and 24 or in the side members 51, the opposing wheels 28, 31 or 29, 32, may be adapted to properly run on tracks of different widths without binding nor being too loose thereon, and without removing them from their supporting structure. Slight differences in the spacing of the tracks from each other may also be compensated for by adjustment of the trunnions 41 and 42 in the side members 23 and 24 or 51.

In both instances the trolleys 17 and 18 constituted by the wheels 28, 29 and 31, 32, the plates 33 and 34, and the side members 23, 24, or 51, are disposed substantially in their entirety above the surface upon which the wheels ride or, as herein shown within the height dimension of the I beams forming the tracks 11 and 12, or the beam 16, whereby the beam 16, or the load, may be disposed at a minimum distance from the ceiling to provide a maximum of head room below the beam 16 and thus allow for the transportation of relatively high loads. In view of the construction above described whereby substantially no part of the structure extends below the upper surface of the tracks 11 and 12, the load carrying beam 16 may be less in height than heretofore used and be disposed up close to the tracks whereby the entire crane structure will take up only a minimum amount of space in the height of the room in which it is installed. This construction also permits the trolleys 17 on one track to be spaced apart only a minimum amount lengthwise thereof as no part extends an appreciable amount down therefrom to interfere with or be engaged by any load carried by the trolley 18 on the beam 16.

The axial adjustment of the trunnions 41 and 42 above referred to permits adjustment of the opposing wheels of a trolley to compensate for different widths of tracks, or slight differences in the spacing of the tracks, whereby a trolley or crane may be fitted to existing tracks in the field in a simple manner and for efficient operation without removing any of their parts.

It will be understood that the invention above described may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the claims rather than to the foregoing description to indicate the scope of the invention.

Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent, is:

1. In a crane, the combination with two laterally spaced overhead tracks in the form of I beams having upper and lower flanges, of a beam, and trolleys supporting said beam closely adjacent to and under the lower flanges of said tracks, each of said trolleys including oppositely disposed pairs of wheels adapted to roll on the upper face of the lower flange of each track, a plate to which the wheels of each pair are journaled, side members secured to said beam and disposed one on either side of each track, and a trunnion extending from each member through each plate and upon which the respective plate is mounted for pivotal and lateral sliding movement in respect to the track.

2. In a crane, the combination with a track having oppositely extending flanges, of spaced apart frame members, a trolley having oppositely disposed pairs of wheels adapted to roll on the upper face of the flanges of the track, the

wheels of each pair being spaced apart lengthwise of said track, a plate to which the wheels of each pair are journaled, the plates with the wheels supported thereby being disposed between said frame members, and a trunnion extending from each frame member and upon which an adjacent plate is mounted for pivotal and lateral sliding movement in respect to the track.

3. In a crane, the combination of an elongated track having oppositely extending flange portions, of a trolley including a pair of wheels adapted to ride on each of said flange portions, the axes of the wheels of each pair being spaced apart lengthwise of the track, a plate to which the wheels of each pair are journaled, and common means to pivotally support each plate intermediate the axes of the wheels journaled thereon and to support each plate for transverse sliding movement relatively to the track.

4. In a crane, the combination of an elongated track having an upper surface, of spaced apart frame members a trolley including a pair of wheels adapted to ride on opposite edges of the upper surface of the track, the axes of the wheels of each pair being spaced apart lengthwise of the track, a plate to which the wheels of each pair are journaled, a plate being adjacent each frame member and a trunnion extending from each frame member to pivotally support the adjacent plate with the wheels and upon which the plate supported thereby is transversely slidable relatively to the track.

5. In a crane, the combination of elements in accordance with claim 4 and in which each of the trunnions has a shoulder engageable by the plate supported thereon to limit the transverse movement thereof.

6. In a crane, the combination of elements in accordance with claim 4 and in which each of the trunnions have a shoulder engageable by the plate supported thereon to limit the transverse movement thereof, said trunnions being adjustable to vary the position of the shoulder thereon and thus vary the amount of transverse movement of the plate thereon.

7. In a trolley, transversely spaced apart and oppositely facing pairs of wheels, a plate to which each pair of wheels is journaled in lengthwise spaced apart relation along the plate, a trunnion upon which each plate is pivotally mounted and for axial sliding movement thereon, and connected side bars through which said trunnions extend.

8. In a trolley transversely spaced apart and oppositely facing pairs of wheels, a plate to which each pair of wheels is journaled in lengthwise spaced apart relation along the plate, a trunnion upon which each plate is pivotally mounted and for axial sliding movement thereon, and connected side bars through which said trunnions extend, and in which they are axially adjustable.

9. In a trolley transversely spaced apart and oppositely facing pairs of wheels, a plate to which each pair of wheels is journaled in lengthwise spaced apart relation along the plate, a trunnion upon which each plate is pivotally mounted and for axial sliding movement thereon, and connected side bars through which said trunnions extend, each trunnion having a shoulder engageable by the plate to limit its sliding movement thereon and being axially adjustable in said side bars to vary the position of the said shoulder.

10. In combination with an elongated track having oppositely extended upper face portions, oppositely facing wheels adapted to ride one upon the upper face of each portion, a plate disposed wholly above each of said portions and to which a wheel is journaled, a trunnion upon which each plate is pivotally mounted and for sliding movement axially therealong, and connected side bars through which said trunnions extend and by which they are supported, each of said trunnions being axially adjustable in the bar through which it extends to permit axial spreading apart of the wheels to compensate for different track widths.

11. In combination with an elongated track having oppositely extended flange portions, oppositely facing pairs of wheels adapted to ride one pair upon the upper face of each flange portion and having their axes spaced apart lengthwise of said track, a plate disposed wholly above each of said flange portions and to which a pair of wheels is journaled, a trunnion upon which each plate is pivotally mounted and for sliding movement axially therealong, the axes of said trunnions being in alignment with the axes of said wheels lengthwise of said track, and connected side bars through which said trunnions extend and are supported, each trunnion having a shoulder engageable by the plate to limit its sliding movement thereon and being axially adjustable in said side bars to vary the position of the said shoulder, and to permit axial spreading apart of the wheels to compensate for different track widths.

12. In a crane, the combination of two laterally spaced apart overhead tracks, a load carrying beam, and trolley mechanism for supporting said beam on said tracks, said mechanism including two sets of oppositely disposed pairs of wheels, each set being adapted to roll on one of the tracks, spaced apart frame members between which each set of the two pairs of wheels are disposed, said frame members being connected to said beam to support it, a plate to which the wheels of each pair are journaled, one plate being disposed adjacent each frame member, a trunnion extending from each frame member and through each plate, each plate being pivotally and axially slidable on the respective trunnion, and means to axially adjust the trunnion toward and away from the adjacent track to simultaneously adjust the position of the wheels of a pair in respect to the track.

JACK BRESLAV.