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3,245,551

CLIMBING CRANE

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2 Sheets-Sheet 1

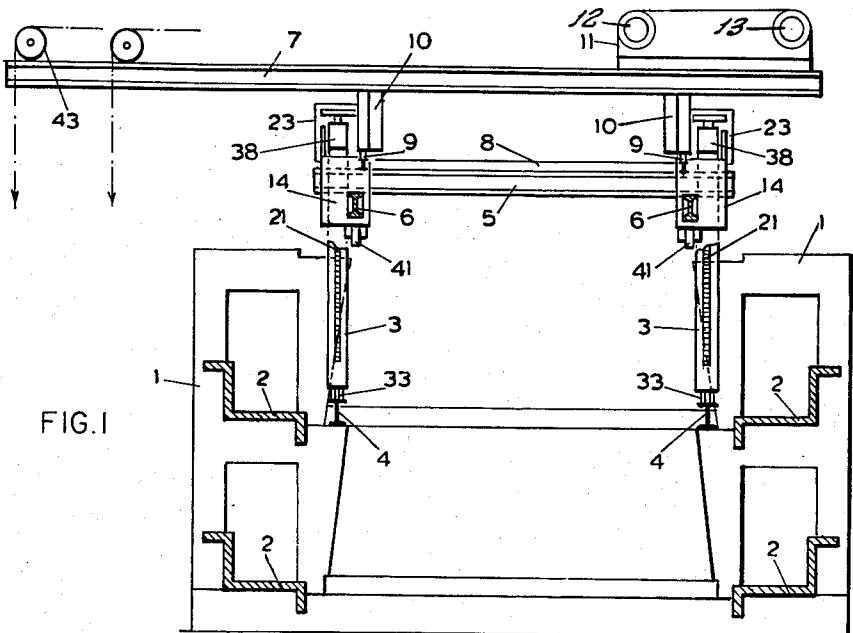
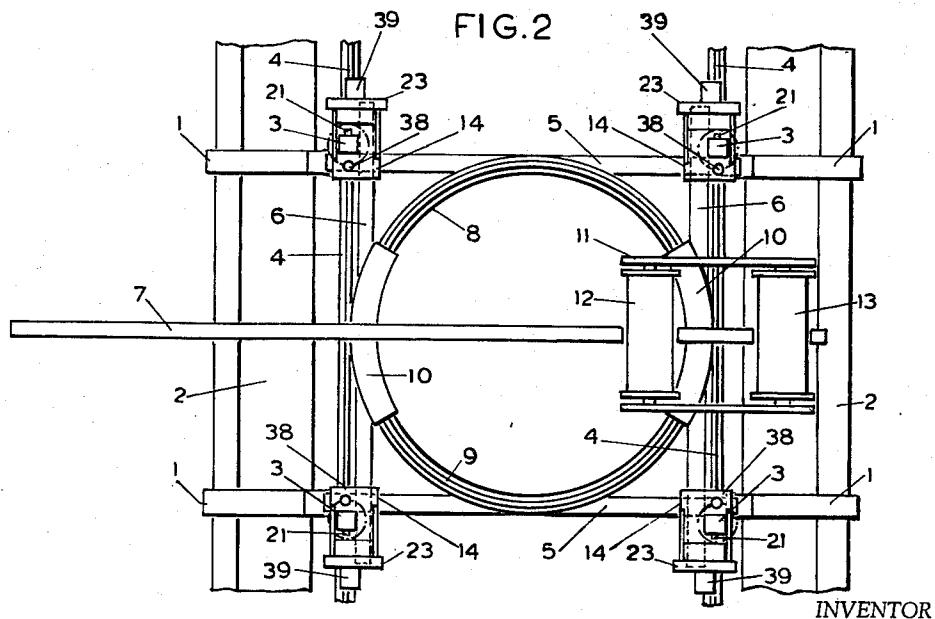


FIG. 1



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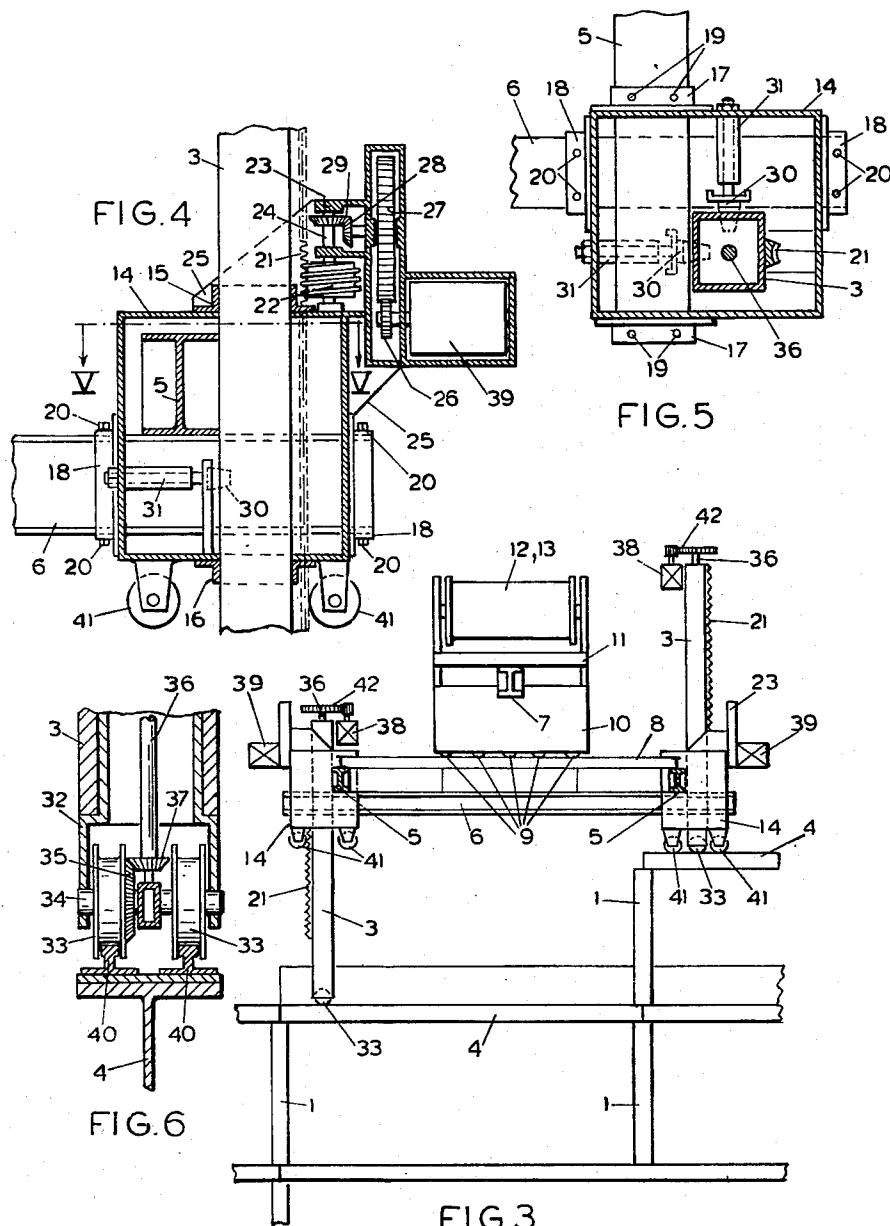
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CLIMBING CRANE

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4 Claims. (Cl. 212—64)

This invention relates to a hoisting crane, the frame of which is provided with legs in the corners and a circular track is supported on the platform of the crane on which the jib is supported for swinging movement.

The invention has for its object to provide a crane adapted to be used as a hoisting apparatus when erecting a building and to travel on a track supported at the building.

According to the invention the legs of the platform which each are provided with one or more travelling wheels are mounted for vertical adjustment at the corners of the platform carrying the circular track for the jib, said legs being adapted to be locked in their adjusted position and at least two supporting rollers being mounted at the under side of the platform at each corner thereof on opposite sides of the leg. With said arrangement the platform carrying the circular track for the crane jib may be lowered in accordance with the height to which the load is to be elevated, so that the active length of the legs and their buckling length is reduced. The supporting rollers at the under side of the platform may take over the load on the respective corner of the platform by moving the platform with said rollers onto the track of a higher storey of the building and thereafter the legs belonging to said supporting rollers may be raised. When the platform has travelled further on said higher track the same operation may be repeated for the corners at the opposite side of the platform, so that the crane reaches a higher storey.

The invention will be further described with reference to the accompanying drawings showing an embodiment of the hoisting crane according to the invention. In the drawings:

FIG. 1 is an elevation and FIG. 2 is a plan view of the crane travelling on tracks supported on transverse walls of a building in the state of erection.

FIG. 3 is an elevation of the crane as viewed in a direction at right angles to the elevation shown in FIG. 1 and the legs at one side of the platform being raised to the track of a higher storey.

FIG. 4 is a sectional elevation on a large scale of a rectangular casing for interconnecting the crossing beams in a corner of the platform.

FIG. 5 is a horizontal section of the casing taken on line V—V of FIG. 4.

FIG. 6 is a sectional elevation on enlarged scale of the lower end of one of the legs of the platform.

The crane by means of legs is supported on tracks 4 of I-shaped section, said tracks being supported on transverse walls 1 of a building having longitudinal beams 2. The legs 3 carry a platform consisting of pairs of beams 5, 6 of I-shaped section. On the platform 5, 6 a circular track 8 is mounted on which the horizontal jib 7 of the crane is supported for swinging movement by means of rollers 9 mounted at curved feet 10. At the rear end of the jib 7 a winch 11 is mounted and is provided with e.g. two drums 12, 13 for hoisting a load and for moving a crab 43 on the jib.

The crossing beams 5, 6 at each corner of the platform are interconnected by a casing 14, in which the leg 3 is guided at the upper wall at 15 and at the lower wall at 16.

2

Each beam 5 and 6 completely extends through the casing 14 and the beams are supported and secured at the vertical walls of the casing by means of bolts 19, 20 in a frame 17 and 18 respectively provided at the walls of the casing. For vertically adjusting the legs 3 a toothed rack 21 is provided at each leg, said rack meshing with a worm 22 journaled with its shaft 24 in a gear box 23 secured to the sides of the casing 14 by means of cheeks 25. The gear box 23 also contains an electromotor 39 adapted to drive the wormshaft 24 through the intermediary of a pair of toothed wheels 26, 27 and a pair of bevel gear wheels 28, 29.

The leg 3 is locked in its position to the casing 14 by two locking bolts 30 acting in two perpendicular directions and which may be constituted by screw bolts screwed in a sleeve.

A rotatable sleeve 32 extends into the lower end of each leg 3 and an axle 34 carrying two travelling wheels is rotatably supported in said sleeve, one of said wheels having a toothed meshing with a bevel pinion 37 secured on a shaft 36. The shaft 36 extends upwards through the leg 3 and at its end projecting out of the leg is coupled to an electromotor 38 by a toothed gearing 42. The track 4 is provided with rails 40 on which the wheels 33 run, so that the crane will travel when the motor 38 operates.

In the position shown in FIG. 3 the right pair of legs 3 is raised and the platform 5, 6 by rollers 41 mounted at the under side of the casings 14 is supported on the track 4 of a higher storey. If now the crane is travelled further to the right in FIG. 3 first the right roller 41 belonging to the leg 3 not yet raised comes on the track 4 of the higher storey, whereafter also said leg can be raised in order to move the whole crane on said track 4. The platform 5, 6 carrying the jib 7 of the crane can now be raised by sliding the legs 3 out of the platform. During said operation the legs 3 should be moved synchronously and to this end circuits controlled by a water level may be provided for the electromotors 39.

The provision of the above described casings 14 for interconnecting the beams 5, 6 of the platform with the legs 3 guided therein enables a simple assembling and disassembling of the platform.

By rotating the sleeves 32 at the lower end of the legs 3 through an angle of 90° it is rendered possible to change the direction of travelling of the crane at a corner of the building without changing the direction of the platform. The rotation of the sleeve 32 may be facilitated by raising the leg a little for relieving the wheels 33.

It is to be noted that the invention is not limited to the embodiment described above as within the scope of the invention various modifications will be possible. Thus instead of vertical displacing the legs by a mechanical gear they may also be displaced by hydraulic means. The lock bolts 30 may also be controlled hydraulically. Instead of having the crane travelled by electromotors 38 it may also manually be displaced. The travelling of the crab 43 may also be obtained by hydraulic means.

What I claim is:

1. A climbing construction crane, comprising a substantially rectangular platform for support of a hoist mechanism and rotating jib, legs at the corners of said platform each provided at the bottom with at least one travelling wheel, means mounting said legs for independent vertical adjustment, and at least two supporting rollers mounted at the under side of the platform at each corner on opposite sides of the corresponding leg.

2. A crane as claimed in claim 1, wherein is further provided a casing at each corner of the platform, said supporting rollers being mounted on said casing, the corre-

sponding leg being guided in the casing for vertical movement and said platform having beams crossing each other at the corners which extend through opposite walls of the corresponding casing and are secured to said walls.

3. A crane as claimed in claim 1, wherein said travelling wheel for each leg is journalled on sleeve mounted in the lower end of the leg, said sleeve being rotatable with respect to the leg.

4. A crane as claimed in claim 1, wherein is further provided means for locking said legs in their adjusted positions.

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