March 29, 1927. 1,622,574

F. W. DEADY

CRANE

Filed April 21, 1926

Fig. 1.

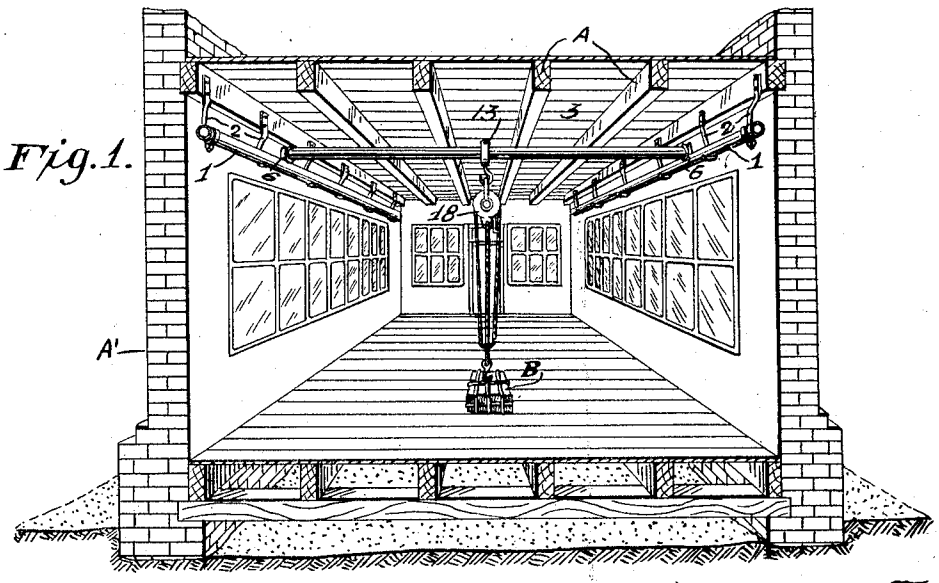


Fig. 2.

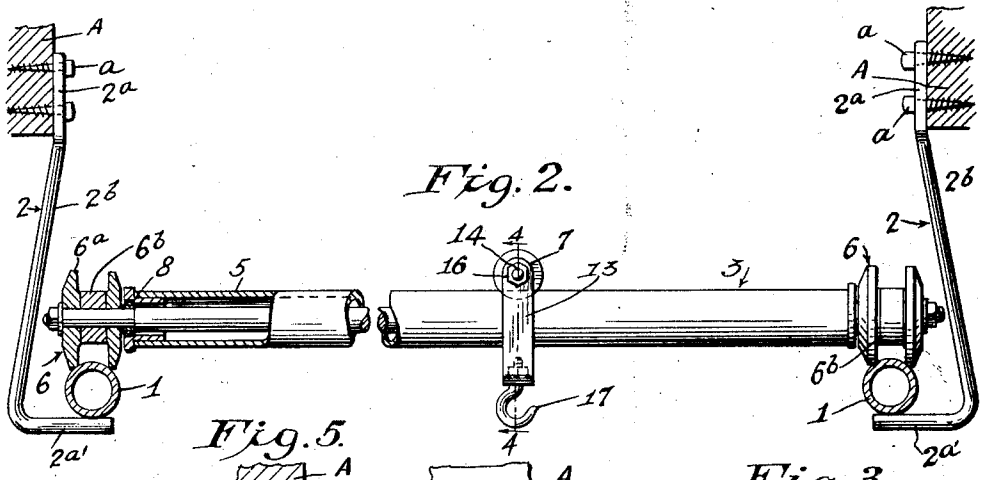


Fig. 5.

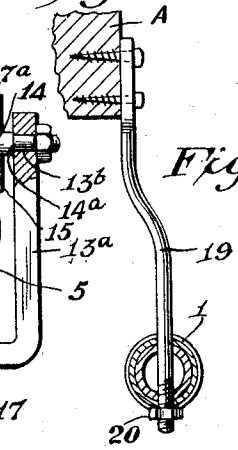


Fig. 4.

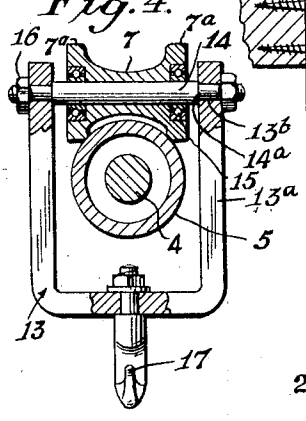


Fig. 6.

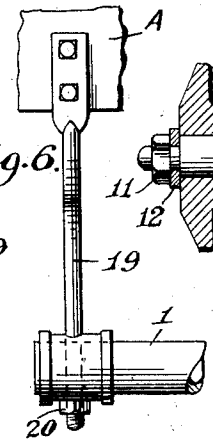
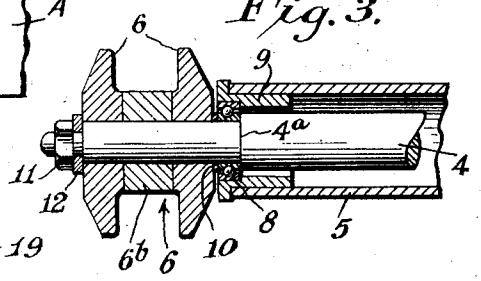


Fig. 3.



Inventor
Frederick W. Deady
By Geo. B. Potts
Ass. Attorney

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UNITED STATES PATENT OFFICE.

FREDERICK W. DEADY, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AUGUSTUS J. GATES, OF CLEVELAND, OHIO.

CRANE.

Application filed April 21, 1926. Serial No. 103,463.

This invention relates to an apparatus for handling relatively heavy bodies or articles, more particularly to a crane of the traveling type.

One object of the invention is to provide apparatus of this type that is relatively simple to manufacture and assemble and consists of relatively few parts, whereby its cost is relatively low.

Another object of the invention is to construct apparatus of this type from structural elements and materials of standard form, whereby manufacture is facilitated and materially cheapened and relatively simple manufacturing and assembly equipment is required.

Another object of the invention is to construct an improved traveling crane which may be readily assembled in a building structure.

A further object is to provide a relatively simple traveling crane capable of lifting and carrying relatively heavy loads in a ready manner.

Other objects of the invention will be apparent to those skilled in the art to which my invention relates from the following description taken in connection with the accompanying drawings, wherein

Figure 1 is a perspective view of a building having a crane embodying the invention installed therein.

Fig. 2 is a transverse sectional view of the crane, with parts broken away.

Fig. 3 is a fragmentary view of a portion of Fig. 2, enlarged.

Fig. 4 is a section on the line 4—4 of Fig. 2.

Figs. 5 and 6 are detail views.

1, 1, indicate tracks disposed in parallel spaced relation and supported by suitable brackets 2 depending from the ceiling or girders A of a structure A'. The tracks may extend over any desired area and preferably comprise relatively large pipes or tubing connected at their ends in any suitable manner to form continuous tracks throughout the desired area in the building or structure A'. The brackets 2 preferably comprise sections of bar material each having a foot 2^a at one end and a laterally extending arm $2^{a'}$ at its other end, the foot 2^a being secured to the adjacent girder A by screws *a* above the track and the arm $2^{a'}$ being arranged to lie under and support the adjacent track 1; the portion 2^b of the bracket between the foot 2^a and arm $2^{a'}$ being inclined to the vertical so that the weight of the tracks is carried below and substantially in the plane of the foot 2^a. This arrangement also permits the brackets to clear the opposite ends of the carriage (indicated as an entirety at 3) which is movable along the tracks 1, 1. By extending the arms $2^{a'}$ horizontally, it permits the tracks 1 to be adjusted relative to each other to insure proper running engagement therewith of the rolls (to be later referred to) on which the carriage runs.

The carriage 3 comprises a pair of concentrically arranged, relatively rotatable members 4, 5, the inner member (4) consisting of a shaft having secured at its opposite ends grooved rolls or wheels 6, 6, engaging the tracks 1 and guided thereby and the outer member (5) consisting of a section of tubing or pipe (preferably a single section thereof) extending throughout the length of the shaft 4 between the inner flanges or end walls of the rolls 6 and serving as a track or guide for a roller 7, whereby the latter may be moved transversely relative to the direction of movement of the carriage 3, to any desired position between the tracks 1. 8 indicates suitable anti-friction bearings disposed between the relatively rotatable members 4, 5, preferably at the opposite ends of the latter. The mounting for each bearing 8 is provided by reducing the outer portions of the shaft 4 to form a shoulder 4^a against which the inner race of the bearing 8 seats and fitting into each end of the member 5 a flanged collar 9 formed on its interior wall with an annular groove to receive the outer race of the bearing. The rolls or wheels 6 are mounted on the reduced portions of the shaft 4 and preferably secured thereto in any desired manner, whereby both rolls may turn together to avoid danger of one roll creeping on its track 1 relative to the other roll. By interposing a washer 10 between the inner end of each roll 6 and the inner race of the adjacent bearing 8 and tightening the nut 11, threaded on the free end of the shaft 4, the roll 6 and inner bearing race will be clamped between the nut 11 (or a washer 12 interposed between the nut 11 and roll 6) and the shoulder 4^a, so that the inner race is fixed in position and the roll 6 is secured to the shaft 4.

13 indicates a U-element having its legs 13^a disposed at opposite sides of and in spaced relation to the track 5 and connected at their free ends to the opposite ends of a shaft 14 on which the roller 7 is loosely mounted, anti-friction bearings 15 being preferably provided between the shaft and roller. The free ends of the shafts 14 are preferably reduced to form shoulders 14^a and the reduced ends extend through openings 13^b in the legs 13^a and are threaded to take clamping nuts 16, whereby the legs 13^a are secured to or against the shoulders 14^a. The bottom of the U-element 13 supports a hook 17 or other connecting device, preferably disposed in a plane cutting the axis of the track 5 (see Fig. 4).

18 indicates a hoist of suitable construction connected in a well known manner to the hook 17, as shown in Fig. 1.

The hoist 18 may be of any desired construction, whereby loads B of any size or weight may be readily lifted.

The piping 1 and 5 forming the tracks for the carriage 3 and hoist supporting element 13 respectively, and the shaft 4 may be formed from standard stock material, and the brackets 2 and U-element 13 may also be readily shaped from standardized bar sections. The ends of the tracks 1 may be supported by brackets or hangers 19 the lower ends of which project through aligned openings in the piping and carry on their threaded free ends nuts 20 on which the piping rests, (see Figs. 5 and 6); the nuts thereby forming adjustable supports for the tracks 1.

The rolls or wheels 6 are preferably of sectional character, each comprising end members or flanges 6^a, which roll on and engage the piping 1 along lines at opposite sides of a vertical plane cutting the axis of the piping, and a spacer 6^b between them, the latter permitting the end members to be adjusted relative to each other, whereby they may be adapted to piping of different diameters, when desired; adjustment being effected by the removal of one spacer and the substitution of another of the desired thickness.

It will be seen that each roller or wheel 6, when formed as just described, has line engagement with its supporting cylindrical track on opposite sides of a vertical plane cutting the track centrally and longitudinally. This is distinctly advantageous, as it has been found that the wheels are much less likely to climb up and run off the rails—as when a force to move the carriage 3 is applied near one end of such carriage and hence tends to turn it on its supporting rails—than when the wheels are of concave shape or curved to approximately fit the tracks 1.

The roller 7 may be of sectional construction, but preferably is formed of a single member shaped or cut-away intermediate its ends to form end flanges 7^a, 7^a, which engage the track or guide along lines at opposite sides of a vertical plane cutting the axis of the guide, as clearly shown in Fig. 4, so that the pipe or member 5 serves as a suitable track for the roller 7.

In the operation of the hoist 18, the tracks permit the travel of the carriage 3 in a direction longitudinally thereof whereas the track 5 permits travel of the supporting member 13 transversely, so that loads at any position within the area below the tracks 1, may be engaged and lifted and transported to any other position within said area and lowered.

From the foregoing description it will be seen that my construction is relatively simple and consists of few parts, most of which may be formed from standard sections of materials, whereby manufacture and assembly is readily effected and relatively simple equipment is required therefor. It will also be noted that the carriage 3 comprises a single device supported at its opposite ends on the spaced tracks 1 and that it consists of inner and outer relatively movable members, the former being circular in shape so that it may be free to rotate within the outer member without affecting its function in forming and serving as a track for the roller 7 to permit travel of the supporting member 13 endwise thereof. In the preferred form of construction the inner member 4 and rolls 6 turn as a unit relative to the outer member or track 5, the latter being under normal conditions held stationary due to friction between it and the roller 7, especially when the latter is carrying a load, as shown in Fig. 1. However, if desired, the rolls 6 may be loose on the shaft 4.

The brackets or hangers 19 serve to rigidly support the tracks 1, 1, so that they are held against longitudinal movement and lateral movement, one relative to the other, and in parallel relationship, so that the carriage 3 will at all times move in a direction longitudinally of the tracks and be maintained at right angles thereto. If desired, additional devices may be employed to support the tracks 1 in parallel relation and to prevent relative movement between them.

To those skilled in the art to which my invention relates many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope thereof. My disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

What I claim is:

1. In an overhead crane, a carriage serving as a support for a load, consisting of a pair of concentrically arranged, relatively

rotatable members and rolls at opposite ends of the members that travel on the stationary tracks for the carriage.

2. In an overhead crane, a carriage consisting of a shaft, rolls supported at the opposite ends of the shaft adapted to travel on the stationary tracks for the carriage and a tubular member serving as a support for a load, concentrically supported by the shaft and free to rotate relative thereto.

3. In an overhead crane a carriage consisting of a shaft with reduced ends, rolls adapted to travel on the stationary tracks of the carriage supported on the shaft, a concentrically arranged tubular member surrounding the shaft and serving as a track for a transversely movable hoist, antifriction bearings between the shaft and tubular member permitting them to have relative rotative movements.

4. A carriage for an overhead crane such as described in claim 1 in which the rolls for engaging the stationary tracks consist of separate flanges and spacers between the flanges whereby the rolls may be adjusted as to width to suit the tracks.

5. As an article of manufacture, a carriage for an overhead crane comprising a shaft, rolls at the ends of the shaft adapted to engage with the stationary tracks for the carriage, a concentrically arranged member surrounding the shaft and spaced therefrom to form a relatively large cylindrical track, the shaft and the cylindrical member being relatively rotatable, and a supporting trolley hoist supported by the carriage consisting of a U-shaped hanger that straddles the cylindrical member of the carriage and a roll located between the upper ends of the U-shaped hanger adapted to engage with and travel upon the said cylindrical member.

6. A carriage for a crane such as described in claim 2 in which the rolls are supported upon and at the ends of the shaft, the shaft having bearings near its opposite ends in the referred to tubular member.

7. In an overhead crane, a carriage consisting of a pair of concentrically arranged, relatively rotatable members, and wheels at the opposite ends of the carriage constructed with end members spaced apart and arranged each to have line engagement with a cylindrical track on which the carriage is supported for travel.

In testimony whereof, I have hereunto subscribed my name.

FREDERICK W. DEADY.