Nov. 18, 1930. G. A. GRAB 1,781,754

FRAME FOR TRAVERSING HOISTS

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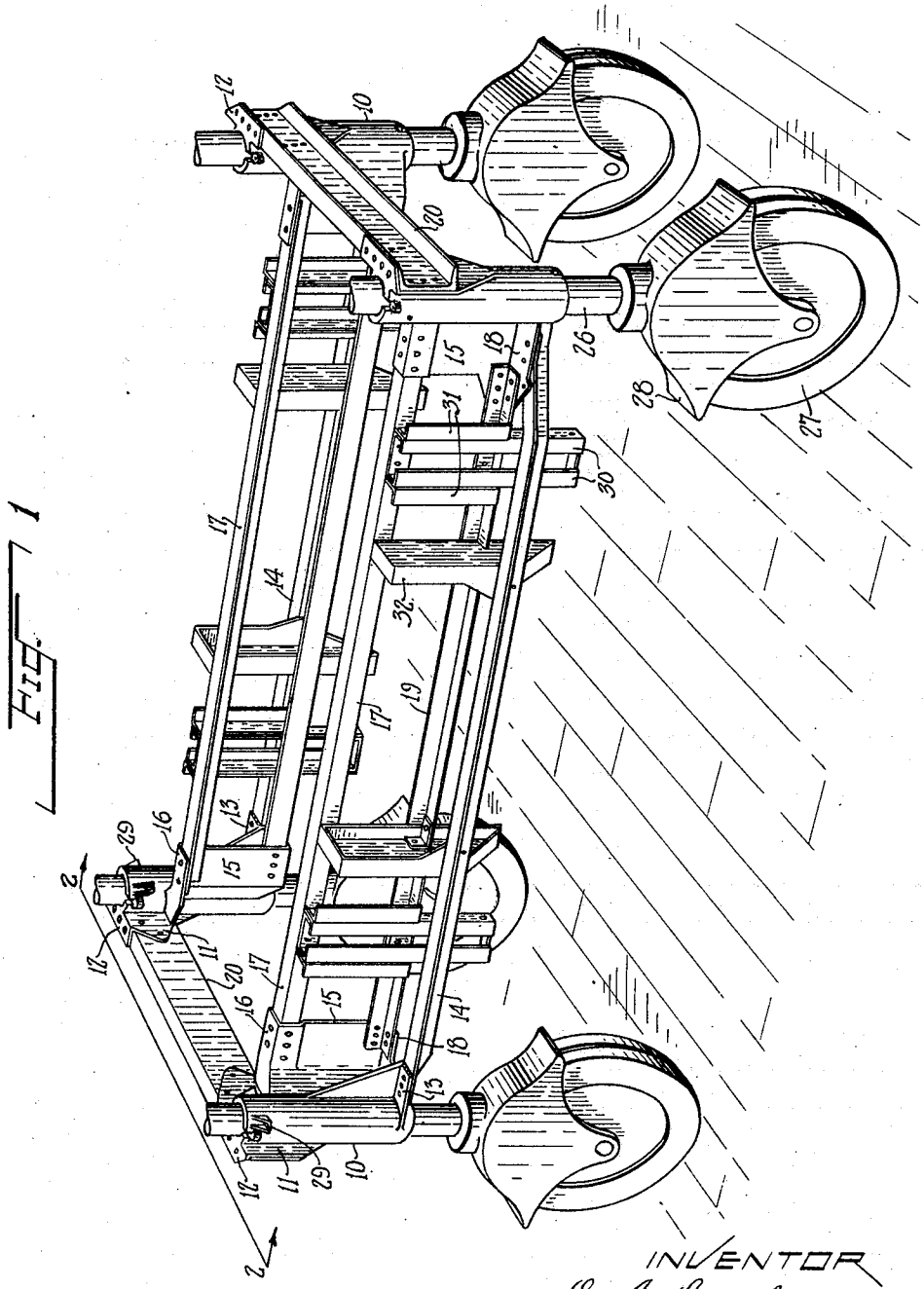


FIG. 1

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Fig. 3

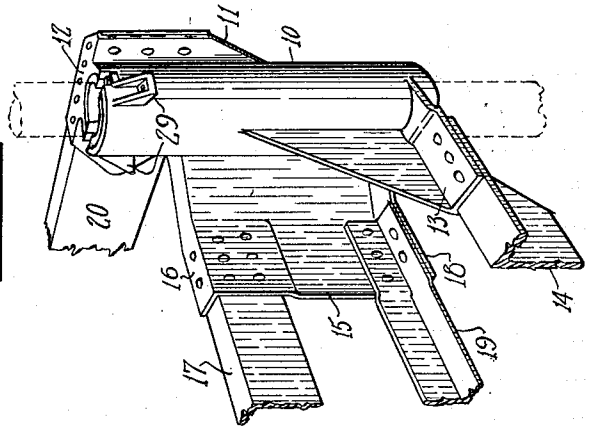


Fig. 5

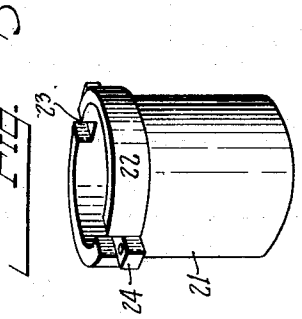


Fig. 2

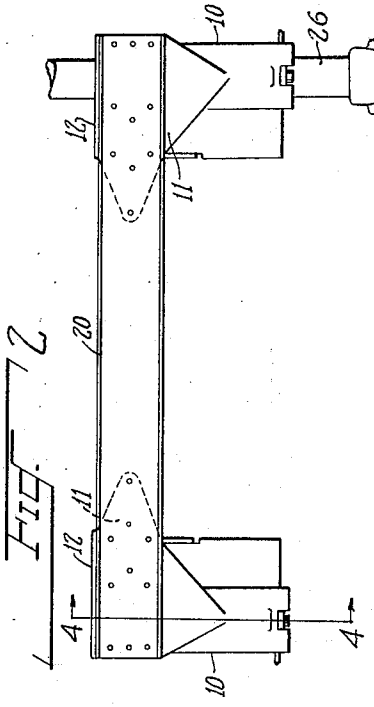
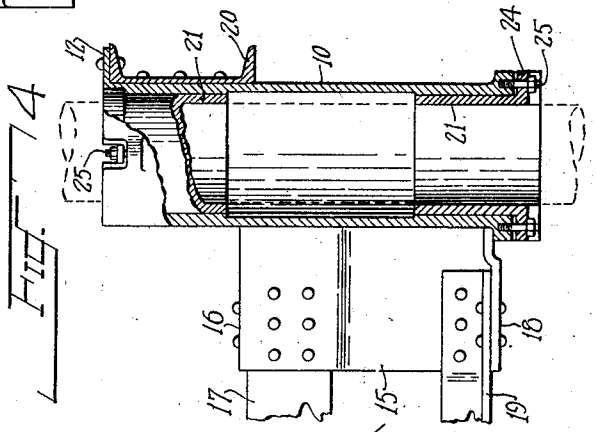


Fig. 4



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UNITED STATES PATENT OFFICE

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FRAME FOR TRAVERSING HOISTS

Application filed April 6, 1927. Serial No. 181,456.

This invention relates generally to traversing hoists, and particularly to a special form of frame for such vehicles.

The first object of this invention is to provide a frame having a one piece corner casting for the purpose of securing the utmost amount of rigidity and resistance to the tendency of such frames to spread.

The second object is to so construct these corner castings as to incorporate therein the bearings for the wheel spindles and suitable points of contact with the structural steel tie members.

The third object is to eliminate entirely all split and adjustable bearings from the wheel spindles thereby greatly reducing the weight of the frame and insuring against looseness caused by such constructions.

The fourth object is to construct a hoist frame in which solid corners are joined by relatively flexible ties.

The fifth object is to so construct the frame that the steering spindles of the wheels are directly under the frame corners.

The sixth object is to provide a special form of frame construction which will permit the use of an extremely narrow gage for the wheels, thereby reducing the tendency of the wheels to cause the side frames to spread.

The seventh object is to construct the frame so as to provide additional stiffness at those points where the spreading action is greatest.

The eighth object is to so construct the device as to make it possible to employ continuous end members thereby greatly increasing the lateral strength of the frame.

These, and other objects, will become more apparent from the specification following as illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of the frame showing the supporting wheels and their spindles. Figure 2 is an end elevation of the hoist frame having a portion broken away. Figure 3 is a large perspective view of one of the corner brackets. Figure 4 is a vertical section through the corner bracket and spindle bearings taken along the line 4—4 in Figure 2. Figure 5 is a perspective view of one of the spindle bearings.

Similar numbers of reference refer to similar parts throughout the several views.

Referring in detail to the drawings, the frame itself consists of four cast corner members each of which consists of a cylindrical portion 10 having a flat vertical flange 11 formed on one side of its upper portion, said flat flange having an outwardly turned horizontal flange 12 at the top thereof and the lower portion having an angular flange 13 to whose under side is attached a longitudinal tie 14. From the cylindrical member 10 also projects a vertical member 15 whose upper side 16 is inturned for the attachment of the angular longitudinal tie 17 and whose lower portion 18 is outturned for the attachment of the angle iron 19. The only difference between the four corner members is that they are right and left and those at the rear of the frame have no flange 13 but fasten directly to the under side of the member 18.

The frame is tied together laterally by the cross members 20 whose upper edges come in contact with the flange 12 of the member 11 and are riveted thereto, as well as directly against the flat face of the member 11.

Turning again to the corner members it will be seen that each cylinder 10 is provided with an upper and lower spindle bearing 21 having a flanged end 22 provided with diametrically opposed notches 23 from which project the lateral lugs 24 which receive the fastening bolts 25. The spindles 26 of the wheels 27 are indicated to show their relation to the corner members and bearings and special guards 28 are provided for the wheels to keep dirt out of the bearings themselves. The spindles 26 are slidably mounted in the bearings 21 and are provided with springs (not shown) to absorb road shocks.

Two of the members 10 are provided with the lateral projecting lugs 29 required by the modified form of spring connection, due to the fact that two of the wheels are used as drivers and all four are used for steering.

The members 14 and 19 are horizontally opposed, except that one is upturned and one is downturned, and the member 17 is directly above the member 19, except that the member 19 is outturned and the member 17 is in-

turned with relation to the hoist frame. Angular guides 30 are vertically positioned and secured to the ties 17 and 19 and on the inner side of the tie 14 and serve to carry the load lifting mechanism. The guides 30 have secured on their outer upper ends the angular members 31 whose function is more fully set forth in a copending application, Serial Number 171,748.

Vertical brackets 32 are also secured between the members 14, 17 and 19 for the purpose of supporting the operating mechanism of the hoist.

It can be easily seen by inspection of the drawings that a frame having extreme corner rigidity is thus provided by making what is normally a weak joint in hoist frames a cast element and uniting these corners together with relatively flexible structural tie members thereby securing great strength for a given weight.

Again, it will be noticed that the bearings 21 are solid—in other words are not adjustable, which greatly simplifies the construction of the hoist, reduces its weight and the number of parts which can become loose and out of adjustment. This is on account of the fact that by providing ample bearing for the spindles 26 adjustment at these points is not necessary and the complications of construction are thus avoided.

Again, it will be seen that the spindles 26 and the wheels 27 are directly under the corner members, which results in a correspondingly narrow gage for the wheels and a resulting decrease in the tendency of the hoist to spread its legs and drop the load which is commonly the case when heavy loads are rapidly transported over rough roadways.

I am aware that many different types of traversing hoist frames have been constructed in the past; I have therefore restricted myself to such forms and modifications thereof as fall fairly within the appended claims.

I claim:

1. A spindle housing for traversing hoist frames consisting of an upright cast tubular member having an angle plate formed along the top of one side thereof, and having a projection formed on the opposite side thereof having a pair of vertically spaced, horizontal bolting faces formed thereon, said projection extending at a right angle to the angle plate.

2. In a wheeled truck body for a heavy-duty straddle hoist vehicle in which the great weight carried tends to spread the wheels apart and in which great clearance is required to permit the vehicle to pass longitudinally over and straddle the load to be elevated and carried; four elongated, hollow cylinder, corner members having integral extensions, one extending laterally of the body and another extending longitudinally thereof, a plurality of spaced, twist resisting side members rigidly connecting the longitudinal extensions at each side, and twist-resisting lateral members joining the lateral extensions at front and back of the body to form an open rectangular frame in plan, said lateral members having their lowest portion at a higher level than the lowest margin of the side or transverse members, and each lateral member having a flat side by which the lateral member is secured to the lateral extension of each of the end corner members to form with the two corner members a lateral arch.

3. The device of claim 2 in which the lateral members are structural steel channels, a web of which forms the flat side.

4. The device of claim 2 in which the lateral members have two outwardly extending horizontal flanges at front and rear and have at least one integral vertical flange secured to the lateral extensions of the corner pieces.

5. The device of claim 2 in which the longitudinal side members are vertically spaced structural steel members.

6. The device of claim 2 in which the longitudinal side members are vertically spaced structural steel members, each having one vertical flange and one horizontal flange.

7. The device of claim 2 in which the four corner members are cast metal and the other members are structural steel rolled shapes.

8. The device of claim 2 in which each corner has a solid, non-adjustable but replaceable spindle bearing telescoping in its lower end.

9. The device of claim 2 in which each corner has a solid, non-adjustable spindle bearing reinforcing its upper end.

10. The device of claim 2 in which each corner has a solid, non-adjustable spindle bearing at its lower end and its upper end.

11. The device of claim 2 in which the lateral extension of each corner member has a flat vertical face to receive the web or flange of a structural steel member, and an outwardly extending horizontal flange to engage the top surface of the horizontal flange of said steel member.

12. A corner piece for a heavy duty straddle hoist having a longitudinal extension consisting of a vertical web to engage the vertical web of an upper angle iron and a lower angle iron, an upper horizontal flange to engage and overlie the horizontal flange of the upper angle iron, and a lower horizontal flange to engage and underlie the horizontal flange of the lower angle iron, one of the horizontal flanges of the extension extending inward from the web and the other extending outward from the web.

13. The device of claim 2 in which the longitudinal members are three in number at each side, each being an angle iron, two of these angle irons having their vertical flanges substantially alined with their horizontal flanges extending in opposite directions and

the third angle iron being parallel to the other two and having its horizontal flange substantially alined with the horizontal flange of one of the other two angle irons.

14. A corner member for a heavy duty straddle hoist consisting of an elongated vertical hollow cylinder forming a spindle bearing, a lateral integral extension having a plane vertical face, an integral longitudinal extension having a vertical web, an inwardly directed horizontal flange, and an outwardly directed horizontal flange.

15. A corner member as in claim 14 having in addition a further integral extension having a horizontal flange substantially alined with one of the horizontal flanges extending from the vertical web, and means for strengthening said additional horizontal flange against twisting movement.

16. A wheeled vehicle frame, consisting of four corner members, a twist resisting member rigidly joining two of said corner members to form a front arch, a twist resisting member rigidly joining the other two corner members to form a rear arch, and longitudinal side frame members joining said arches, each consisting of a plurality of laterally spaced rolled steel members.

17. The device of claim 16 in which each side frame member consists of three angle irons.

18. A wheeled vehicle frame consisting of a front and a rear arch, and a plurality of angle bars at each side, each angle bar being secured to each end of each arch by both of the flanges of each angle bar.

19. The device of claim 18 in which the angle bars at each side have their vertical flanges alined and have their horizontal flanges directed in opposite directions to approximate the effect of a Z bar.

20. The device of claim 18 including a third angle bar at each side spaced from each of the other two side angle bars.

21. A side frame section for a straddle hoist vehicle consisting of an upper angle iron having a vertical flange, a lower angle iron having its vertical flange substantially alined with said flange and having its horizontal flange extending in opposite direction from the flange of the upper angle iron, a third angle iron having its horizontal flange substantially alined with the horizontal flange of the lower angle iron, and a plurality of spacing means securing together the three angle irons.

22. A frame for traversing hoists consisting of four cast corner spindle housings, two parallel transverse end ties secured across the upper portion of the front pair and the rear pair thereof, an upper longitudinal tie joining the upper portions of each two longitudinally alined corner members, also longitudinal ties uniting said corner members directly below said first mentioned longitudinal ties, and a third pair of longitudinal ties between said corner members lying in a horizontal plane with the second mentioned longitudinal ties, the third longitudinal ties forming L-shaped sides for said hoist frame.

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