Aug. 10, 1954 A. W. SKINNER 2,685,843

HOISTING TYPE BODY SUPPORT

Filed Nov. 3, 1951

FIG. 2

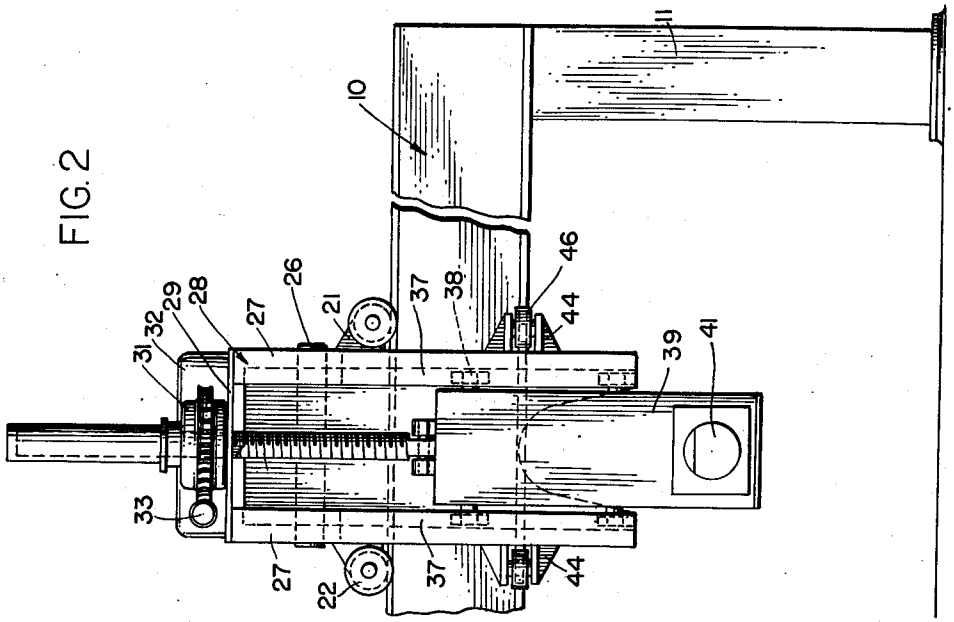
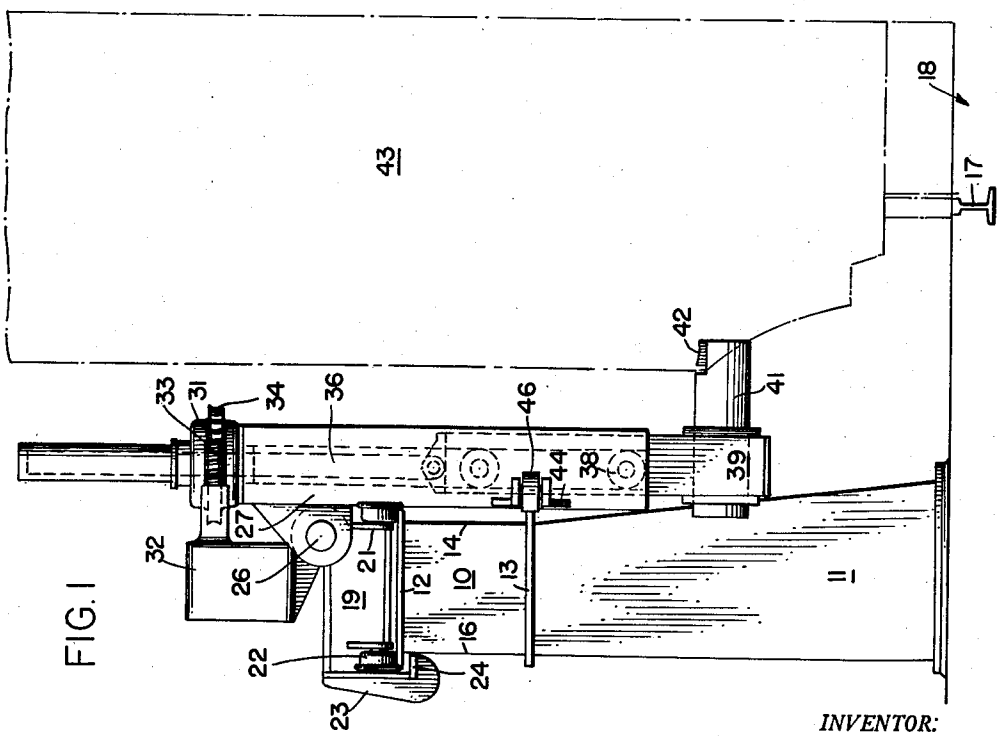


FIG. 1



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Patented Aug. 10, 1954 2,685,843

UNITED STATES PATENT OFFICE

2,685,843

HOISTING TYPE BODY SUPPORT

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Application November 3, 1951, Serial No. 254,774

5 Claims. (Cl. 104—32)

1

My invention has reference to apparatus for positioning and supporting railway vehicle bodies in such manner as to permit convenient servicing of the vehicle running gear.

The running gear or trucks of the railway vehicle are conventionally mounted on a body in such manner as to require elevation of the body before the truck can be properly serviced or exchanged. This operation is normally most advantageously accomplished by positioning the vehicle between a pair of body support members with the truck to be serviced resting on a drop table top. The drop table, operating in a pit beneath the top, is employed to lift the truck and the car sufficiently to permit engagement of the rigid laterally projecting body support arms with the car body, after which the drop table top is lowered together with the truck, thus permitting disengagement of the truck from the body.

Usually, although not in all instances, the position of the body support arms is fixed with respect to the body support girders. Since the position of the jacking pads or railway vehicle bodies varies considerably, it is frequently difficult to position the trucks properly on the drop table top and at the same time bring the arms into engagement with the jacking pads. In addition, the drop table is required to lift both the truck and body sufficiently to permit engagement of the body support arms, with the result that the drop table structure is usually considerably stronger than would be required if its only service requirement were to raise and lower drop table tops carrying vehicle trucks.

It is therefore one of the principal objects of my invention to provide apparatus for use in hoisting and supporting diverse railway vehicle bodies in such manner as to facilitate servicing and replacing of the vehicle running gear.

More specifically, it is the object of my invention to provide novel, durable and stable supports for longitudinal movement along a body support girder, the supports include a laterally projecting adjustable body engaging arm and jacking means for elevating the arm.

Other important objects of my invention refer to various novel components and combinations thereof hereinafter more fully described and illustrated in the appended drawings, in which:

Figure 1 is a partial end elevation of the apparatus incorporating my invention; and

Figure 2 is a partial side illustration of apparatus illustrated in Figure 1.

In brief, my invention incorporates upright jacking means, such as a screw jack, carrying a laterally projecting body support arm for engagement with jacking pads on a vehicle body. The jack is pivotally secured to a body member which includes wheels movable along the top of a square or rectangular body support girder mounted parallel to the track. A stabilizer hook

2

is secured to the body and extends downwardly along the outer side of the girder and inwardly to a level immediately below a fixed girder surface to prevent overturning of the body and jack while in operation. Wheels mounted on the jack engage the inner surface of the girder at a point below the top to further stabilize the device. Preferably, although not necessarily, the jack is motor driven, the requisite motors and gearing being mounted on the jack body.

In most instances, the body support girders span a drop table pit and are parallel to the vehicle tracks, the girders being spaced apart sufficiently to permit passage of the vehicle. When the vehicle has been positioned between the support girders, the respective supports are moved longitudinally along the girder until the support arms can be extended into position directly below jack pads disposed on the vehicle, after which the hoisting mechanism is actuated to lift the body. Thus it becomes obvious that the drop table is not required to lift both the vehicle truck and the vehicle body and that the effort exerted by my device is confined to that required to hoist the vehicle body alone. It is also believed clear that since my device includes means for both lateral and longitudinal adjustment, that it is capable of handling a great diversity of vehicle bodies without major readjustment.

From the foregoing, it will be appreciated that identical devices are employed on the opposed parallel support girders. The following description will therefore be confined to only one of these devices, it being understood that the other is substantially identical.

As indicated in Figures 1 and 2, my invention is particularly adapted for use in connection with a generally square or rectangular box type body support girder 10 supported on columns 11 and having a top member 12 and bottom member 13 projecting laterally beyond the inner and outer side members 14 and 16, respectively. The girder 10 is mounted parallel to a track 17 and preferably, although not necessarily, spans a drop table pit bridged by a removable top, indicated at 18. A jack body 19 is provided with four parallel, laterally projecting arms 21 upon which flanged wheels 22 are mounted for movement along the top 12 of the girder 10. Secured to the body 19 is a stabilizer hook 23 which extends downwardly from the body 19 generally parallel to the outer side member 16 and includes a lip portion 24 which extends inwardly below the projecting edge of the top 12 in such manner as to resist any tendency of the body 19 to overturn in a clockwise direction as seen in Figure 1.

A heavy pivot pin 26 is secured to the inner portion of the body 19 parallel to the girder 10 and pivotally supports spaced parallel legs 27 of a jack frame, generally designated 28. The frame 28 includes a transverse top member 29 upon which a nut 31 is rotatably supported.

Suitable jack driving means 32, such as an electric motor and gear train, may be mounted on the frame 28 and includes a projecting worm 33 which engages a worm gear 34 secured to the external periphery of the nut 31. An upright threaded shaft 36 extends upwardly through the nut 31 and is engaged therewith in such manner that rotation of the nut 31 will raise and lower the shaft 36.

The legs 27 are formed to define opposed internal ways, indicated at 37, which receive guide rollers 38 rotatably mounted on a jack block 39. A body support arm 41 is slidably mounted in the lower portion of the block 39 and projects laterally and inwardly for engagement with a jack pad 42 on a vehicle body, indicated at 43. Parallel opposed ears 44 project outwardly from opposite sides of the frame 28 and rotatably support guide rollers 46 which are preferably positioned in such manner as to engage the inner edge of the lower girder member 13.

In operation, the vehicle 43 is positioned between a pair of support girders 10 mounted parallel to the track 17 and the jack body 19 moved along the girder 10 until the inner end of the support arm 41 is in alignment with the jack pad 42 on the vehicle body 43, the arm 41 being extended inwardly the necessary distance. The jacking devices on opposite sides are then actuated until the jack arms are engaged with the pads 42, after which motors are energized to lift the body 43 evenly.

Any tendency for the jack to tip inwardly is immediately counteracted by the stabilizer hook 23 coming into engagement with the lower surface of the projecting portion of the top member 12. Pivotally mounting the jack frame with respect to the jack body overcomes any binding effect or irregularity of the external surface of the girder 10. Since the body 43 is elevated entirely by the action of the jacking device, a drop table is not required to manipulate any weight exceeding the weight of the truck resting on the top 18. It is, of course, obvious that because the jack body 19 is movable laterally along the girder 10 and because the arm 41 is laterally adjustable, a great diversity of vehicle bodies can be successfully serviced without major adjustment of the body support mechanism.

It should not be understood that the foregoing refers to the sole embodiment of my invention, since many modifications may obviously be made without departing from its true scope. For example, the stabilizer hook may engage any suitable horizontal surface along the outer portion of the girder other than that indicated, and the rollers 46 may engage any suitable stable horizontal surface along the inner surface of the girder below the level of the wheels 22. The girder may therefore assume any one of several suitable shapes. In addition, a hydraulic jack may be substituted for the screw jack illustrated, or a ratchet type lifting device may also be employed, although the latter is considered unsatisfactory for ordinary usage because of its inability to precisely position the body.

I claim:

1. Apparatus for use with an elongated elevated vehicle body support girder having inner and outer sides, comprising a jack having a wheeled body for movement along a flat upper portion of the girder, a frame on the body including upright guide means spaced inwardly from the inner side of the girder and the jack body, a block movable on the guides, a generally horizontal inwardly projecting body support arm slidably carried by the block, and means for forcing the block upwardly.

2. A jack for use in servicing the running gear of railway vehicles and the like and adapted for use with a girder having upper and lower laterally projecting edge flanges on the inner and outer faces, comprising a body having wheels for movement along the girder, a stabilizer extending downwardly from the body and inwardly around a flange on the outer face of the girder, an upright guide on the body engaging the lower inner guide flange, a block slidably mounted on the guide, a generally horizontal inwardly projecting body support arm slidably carried by the block, and means for forcing the block upwardly.

3. A jack for use in servicing the running gear of railway vehicles and the like and adapted for use with a girder having upper and lower laterally projecting edge flanges on its inner and outer faces, comprising a body having wheels for movement along an upper surface of the girder, a stabilizer on the body extending downwardly therefrom and inwardly around a flange on the outer face of the girder, an upright guide pivotally secured to the body for movement about a generally horizontal axis and slidably engaging the lower inner girder flange, a block slidably mounted on the guide, a generally horizontal inwardly projectable body support arm slidably carried by the block, and means for forcing the block upwardly.

4. A jack for use in servicing the running gear of railway vehicles and the like and adapted for use with a body support girder, comprising a wheeled body above the girder, means for limiting upward movement of the outermost portion of the body from the said girder, an upright guide pivotally secured to the body for movement about a generally horizontal axis, wheels on the guide below the body engaging a portion of the inner face of the girder, a block slidably mounted on the guide, inwardly projecting body support arms slidably carried by the block, and means for forcing block upwardly.

5. Apparatus for use in servicing the running gear of railway vehicles and the like, comprising a box girder having inner and outer faces, means for supporting said girder in an elevated position parallel to a track, a jack body having wheels engaging the upper surface of the girder, a stabilizer hook secured to the body and extending downwardly and inwardly on the outer side of the girder to a point immediately below, but spaced from a portion of the girder, an upright guide frame pivotally secured to said body and projecting downwardly therefrom across the inner face of the girder, wheels on the frame engaging the girder at a level below the level of said first mentioned wheels, a block slidably mounted on the guides, screw means for raising and lowering the block, and a body support arm slidably carried by the block and projecting inwardly therefrom.

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