

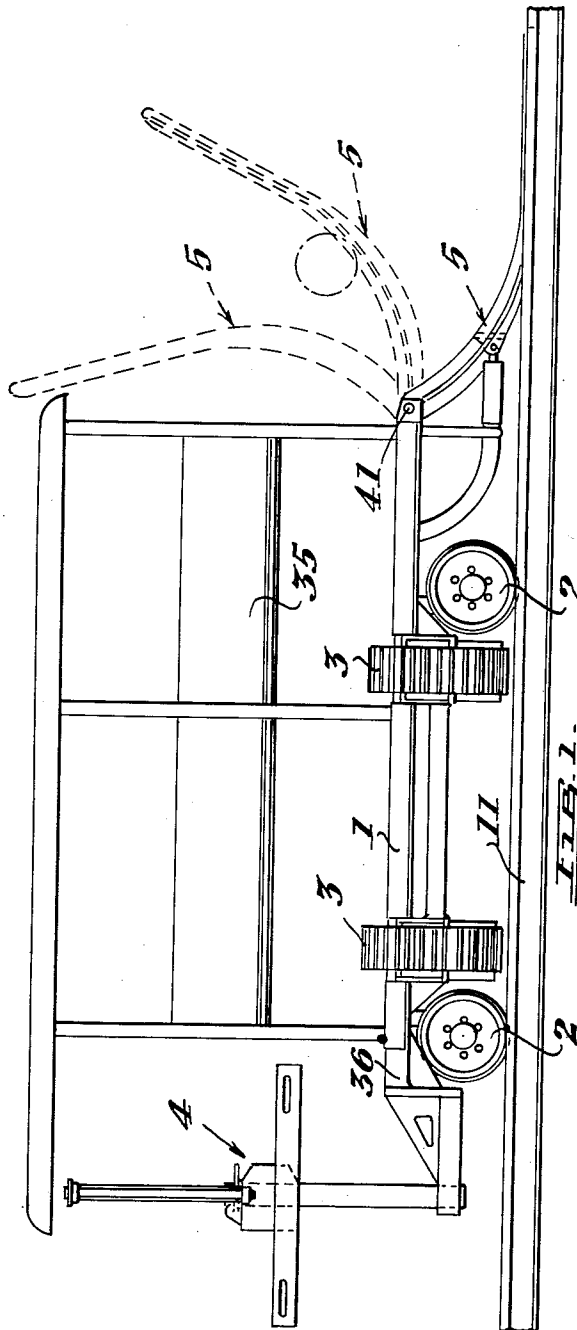
May 22, 1962

J. K. STEWART
UTILITY CAR

3,035,529

Filed March 12, 1959

3 Sheets-Sheet 1



INVENTOR
JOHN K. STEWART
BY *Smart & Biggar*
ATTORNEYS

May 22, 1962

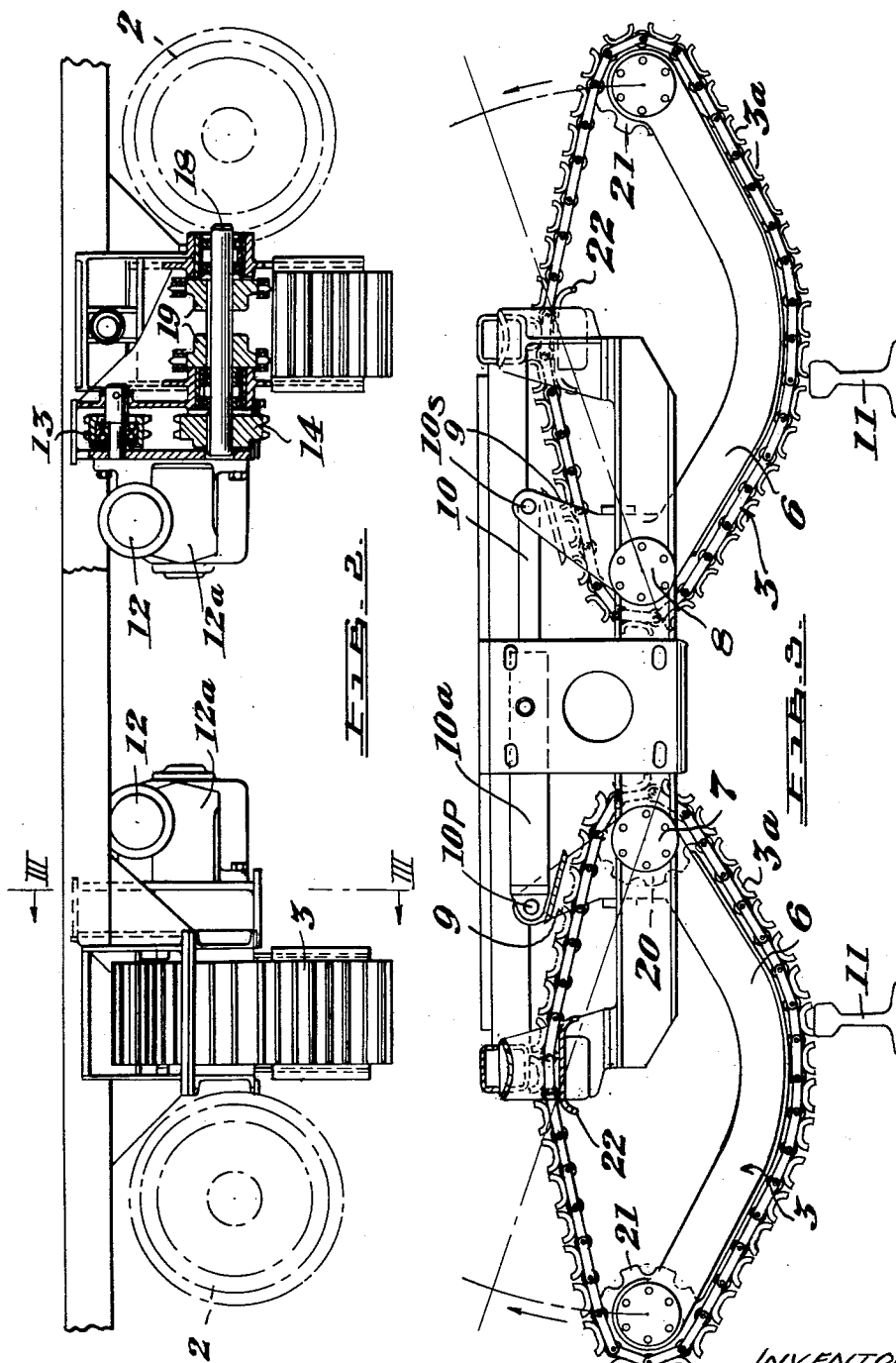
J. K. STEWART

3,035,529

UTILITY CAR

Filed March 12, 1959

3 Sheets-Sheet 2



INVENTOR
JOHN K. STEWART
BY *Smash & Biggan*
ATTORNEYS.

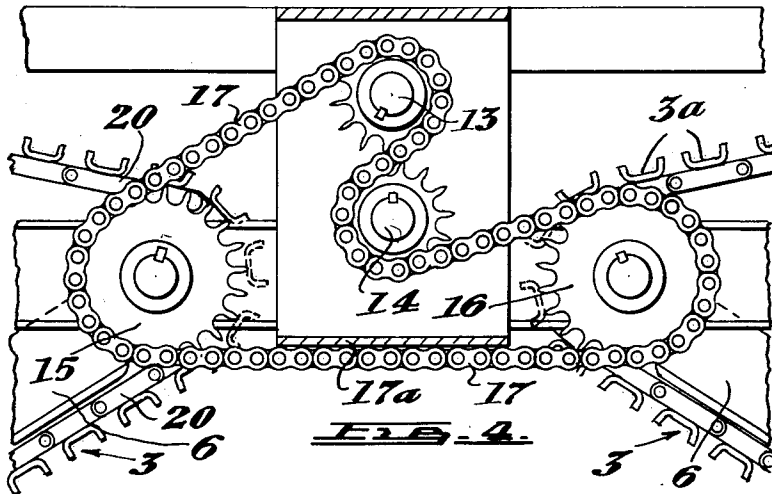
May 22, 1962

J. K. STEWART
UTILITY CAR

3,035,529

Filed March 12, 1959

3 Sheets-Sheet 3



INVENTOR
JOHN K. STEWART
BY *Smart & Biggar*
ATTORNEYS

1

3,035,529

UTILITY CAR

John Kenneth Stewart, Montreal, Quebec, Canada, assignor to Canada Iron Foundries Limited, Montreal, Quebec, Canada

Filed Mar. 12, 1959, Ser. No. 798,894

5 Claims. (Cl. 105—177)

This invention relates to railway vehicles, primarily, but not exclusively, to railway maintenance vehicles of the type used for carrying a repair or maintenance gang and equipment.

Such vehicles often have to be removed from the railway track temporarily to make way for through going traffic and it is a primary object of the present invention to provide a railway vehicle with improved means for effecting ready removal of the vehicle from the railway track and subsequent replacement thereon.

It has previously been proposed to provide a railway vehicle with a pair of longitudinally spaced transversely extending endless track mechanisms extending across the full width of the vehicle, these mechanisms being adapted to be forced downward onto the rails to effect upward movement of the wheels of the vehicle so that the vehicle is carried solely by the endless tracks. The endless tracks are then driven to effect sideways movement of the vehicle from the railway track, the operation being reversed to effect replacement of the vehicle on the railway track. One great disadvantage of such prior proposals lay in the fact that when the vehicle was climbing an embankment to get on to a railway track the front end of the vehicle continued to rise above the rails until the centre of gravity of the vehicle crossed the rim of the embankment whereupon the front end of the vehicle came crashing down on the nearest rail. This, of course is extremely undesirable as it could cause serious damage to the rails. The present invention overcomes this disadvantage.

According to the invention there is provided a railway maintenance vehicle mounted on rail engaging wheels and having at least two pairs of endless tracks and supports therefor disposed transversely of the vehicle and spaced longitudinally thereof, the tracks and supports of each pair being mutually spaced transversely of the vehicle and adapted, in operation, to present relatively small ground-engaging portions of the tracks spaced apart a distance which differs slightly from that between the rails of a railway track, means for effecting vertical adjustment of said endless tracks and supports, to raise and lower the vehicle, and means for driving said endless tracks.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a side elevation of the vehicle with the endless tracks in raised position, the tamper head in raised position and the loading ramp member in lowered position in full lines and in raised position in dotted lines.

FIGURE 2 is a fragmentary side elevation partly in section showing the endless tracks and driving mechanism therefor.

FIGURE 3 is a sectional view in the line III—III of FIGURE 2 looking in the direction of the arrows.

FIGURE 4 is a detail showing the chain and sprocket drive for the endless tracks.

As shown in FIGURE 1 the vehicle comprises a body 1 having rail-engaging wheels 2, retractible endless tracks 3, tamper mounting mechanism 4 at the front end, and a rear loading ramp member 5.

The wheels 2, endless tracks 3, tamping mounting mechanism 4 and loading ramp member 5 are all adapted to be operated from a convenient source of power on the vehicle for example a hydraulic pumping mechanism driven by an internal combustion engine.

2

Referring to FIGURES 2, 3 and 4 it will be seen that the retractible endless tracks 3 are guided on their lower run by support members 6 which are downwardly bowed and are pivotally mounted on the vehicle chassis to be vertically swingable about axes 7, 8 which are spaced transversely of the vehicle. As shown in FIGURE 3 the ground-engaging portion of each endless track is relatively small (in fact but a few links in span) and these portions in each pair of endless tracks are spaced apart a distance slightly greater than that between the rails of a railway track. Thus, when the vehicle is climbing an embankment onto a railway track, the leading endless tracks will climb over the rim of the embankment and remain in contact with the ground until they engage the nearer rail, in contradistinction to what occurs when the vehicle is provided with endless tracks extending across the full width thereof, namely a continued elevation of the front end of the vehicle until the centre of gravity of the vehicle passes over the rim of the embankment, whereupon the whole vehicle swings upon the rim and the front end crashes down onto the nearer rail.

Each of the support members 6 has an upstanding lever arm or bracket 9 which forms with its support 6 a bell-crank lever type of construction. The lever arms 9 of each transversely aligned pair of tracks are interconnected by a double-acting piston-and-cylinder arrangement 10, 10a. The cylinder 10a is pivotally connected to one lever at 10p and the piston 10 is connected to the other lever at 10s. The piston and cylinder is operable to effect the vertical swinging of the members 6 and endless tracks 3. Thus when the vehicle is resting on the rails 11 of a railway track and supported by the wheels 2, as shown in FIGURE 1, introduction of hydraulic fluid under pressure from a power source on the vehicle into the cylinder 10a forces the cylinder in one direction and the piston 10 in the other direction thereby effecting downward swinging of the supports 6 and tracks 3 into engagement with the rails 11 to lift wheels 2 off the rails so that the vehicle weight is taken by the tracks. The tracks 3 are forced downwards until the flanges of wheels 2 are well clear of the rails. By operating the tracks 3 the vehicle can be moved sideways off the rails without having the flanges of wheels 2 foul the rails. During sideways movement of the vehicle the wheels 2 are protected by the bowed contour of tracks 3 and supports 6. Individual links 3a of the tracks 3 are formed of hardened steel and are channel-like in their configuration. The size of the links is such that they will lie atop but not span a rail head (FIGURE 3).

To replace the vehicle wheels on the rails the vehicle is moved back onto the rails by tracks 3 and hydraulic fluid is introduced in the opposite sense to the cylinder of piston-and-cylinder arrangement 10 to draw pivot points 10p, 10s together and effect upward swinging of the members 6 and tracks 3, thereby lowering the vehicle until wheels 2 engage the rails 11. A considerable saving in the power required to replace the vehicle on the railway track is effected by virtue of the fact that the ground-engaging portions of the tracks 3 are spaced apart a distance which differs slightly from the distance between the rails 11. In FIG. 3 the distance between the ground-engaging portions of tracks 3 is slightly greater than the distance between the rails 11 but it will be appreciated that it could have been made slightly less than the distance between rails 11 and still suffice to effect a power saving. The sole requirement is that the spacing be such that the tracks will not engage both rails simultaneously to effect raising of the total weight of the vehicle in one step but instead will first engage one rail to effect 50% of the total raise before the other rail is engaged. The displacement of the rail head from the center line of the

ground-engaging portion of the corresponding track 3 is of the order of 3 to 6 inches, preferably 3 inches.

The tracks 3 are driven by a hydraulic motor through a reduction gear box 12a, sprockets 13, 14, 15, 16 and chain 17. The lower run of sprocket chain 17 runs under the bottom surface of a chain guide housing 17a so that if the front caterpillar tracks ride over an exceptionally high obstacle or bump and are left suspended on the other side the rollers of the chain will engage the top of the obstacle or bump to facilitate travel of the vehicle over same, the housing 17a serving as a rigid support for the lower run of the chain. This arrangement of chain 17 and housing 17a will also prove advantageous when the vehicle is climbing over the rim of an exceptionally steep embankment. Each of sprockets 15, 16 is keyed to a shaft, one of such shafts being shown at 18 in FIGURE 2. Also keyed to shaft 18 are sprockets 19 engaging the chain 20 of a track 3. An idler sprocket 21, also in engagement with chain 20 is provided at the outer end of each support member 6 and the upper run of each caterpillar track 3 is supported by a rounded web 22 secured to the frame of the vehicle.

It will be manifest, of course, that the contour of support members 6 must be such that the height of the lower run of tracks 3, as measured from the ground-engaging portions of the lower tangent points of tracks 3 with sprockets 15, 16 and 21, is greater than the height of a rail, thus ensuring ready engagement of the tracks 3 with the rail for climbing on to or over same.

The vehicle illustrated in the drawings is adapted to transport a railway gang and maintenance or repair units from one working location to another. Such units may be wheeled tie removers, track aligners, etc., that are self-contained units provided with wheels for running on the track when the units are pushed. For the purpose of such transportation the body 1 of the vehicle is of box shaped construction to accommodate the equipment and is provided with seats 35 for the gang of workers, the seats 35 extending along the sides of the vehicle.

What I claim as my invention is:

1. A railway maintenance vehicle mounted on wheels, said wheels adapted to engage rails, and having at least two pairs of endless tracks and supports therefor disposed transversely of the vehicle and spaced longitudinally thereof, the tracks and supports of each pair being mutually spaced transversely of the vehicle and adapted, in operation, to present relatively small ground-engaging portions of the tracks spaced apart a distance which differs slightly from that between the rails of a railway track, said supports comprising a downwardly bowed member pivotally mounted at its inner end to the underside of the vehicle and having an upstanding lever arm at said inner end, the two lever arms of each transversely aligned pair being interconnected by a double-acting piston-and-cylinder arrangement for effecting vertical adjustment of the endless tracks and supports to raise and lower the vehicle wheels off and onto the rails, and means for driving said endless tracks, the downwardly bowed member being bowed to a depth greater than the height of the rail of a railway track.

2. A device as claimed in claim 1 in which the individual links of each endless track are too small to span a railhead but large enough to lie atop thereof.

3. A railway maintenance vehicle mounted on wheels,

said wheels adapted to engage rails, and having at least two pairs of endless tracks and supports including downwardly bowed guide members therefor disposed transversely of the vehicle and spaced longitudinally thereof, the tracks and supports of each pair being mutually spaced transversely of the vehicle and the bowed guide members presenting, in operation, a relatively small ground-engaging portion of the tracks, the centres of which portions are spaced apart a distance which differs slightly from that between the rails of a railway track, means for effecting the vertical adjustment of said endless tracks and supports to raise and lower the vehicle wheels off and onto the rails, and means for driving the endless tracks, the guide members being bowed to a depth greater than the height of a rail of a railway track.

4. A railway maintenance vehicle having front and rear ends and being mounted on wheels located near those ends, said wheels adapted to engage rails, a first pair of endless tracks and supports therefor, one track and support being mounted on each side of said vehicle, said pair extending transversely of the vehicle in transverse alignment and being located adjacent the front wheels of the vehicle, a second pair of endless tracks and supports therefor, one track and support being mounted on each side of said vehicle, said pair extending transversely of the vehicle in transverse alignment and being located adjacent the rear wheels of the vehicle, the supports for each track including a downwardly bowed guide member of greater depth than the height of a rail of a railway track and presenting in operation a relatively small ground-engaging portion of the tracks, the centers of which portions are spaced apart a distance which differs slightly from that between the rails of a railway track, means for effecting the vertical adjustment of said endless tracks and supports to raise and lower the vehicle wheels off and onto the rails, and means for driving the endless tracks.

5. A vehicle as claimed in claim 4 wherein the means for driving the endless tracks includes a sprocket connected to the inner end of the run of each endless track of each pair, a first chain drive mutually connecting the sprockets of the first pair of endless tracks and a second chain drive mutually connecting the sprockets of the second pair of endless tracks, each chain drive having a lower run extending across the bottom of both sprockets driven thereby and immediately beneath its chain guide whereby the lower run of each chain drive may act, if engaged by an obstacle to assist the endless tracks in driving the vehicle.

References Cited in the file of this patent

UNITED STATES PATENTS

1,388,236	Bressler	Aug. 23, 1921
1,448,372	Bager et al.	Mar. 13, 1923
2,734,463	Hursh et al.	Feb. 14, 1956
2,762,315	Talboys	Sept. 11, 1956
2,781,002	Talboys	Feb. 12, 1957
2,789,516	Hursh et al.	Apr. 23, 1957
2,789,707	Wolf	Apr. 23, 1957
2,792,134	Kinnee	May 14, 1957

FOREIGN PATENTS

2,283,435	Australia	May 30, 1935
-----------	-----------	--------------