Feb. 27, 1962 C. JACKSON 3,022,744

TIE TAMPING OR BALLASTING MACHINE

Filed Jan. 23, 1957 5 Sheets-Sheet 1

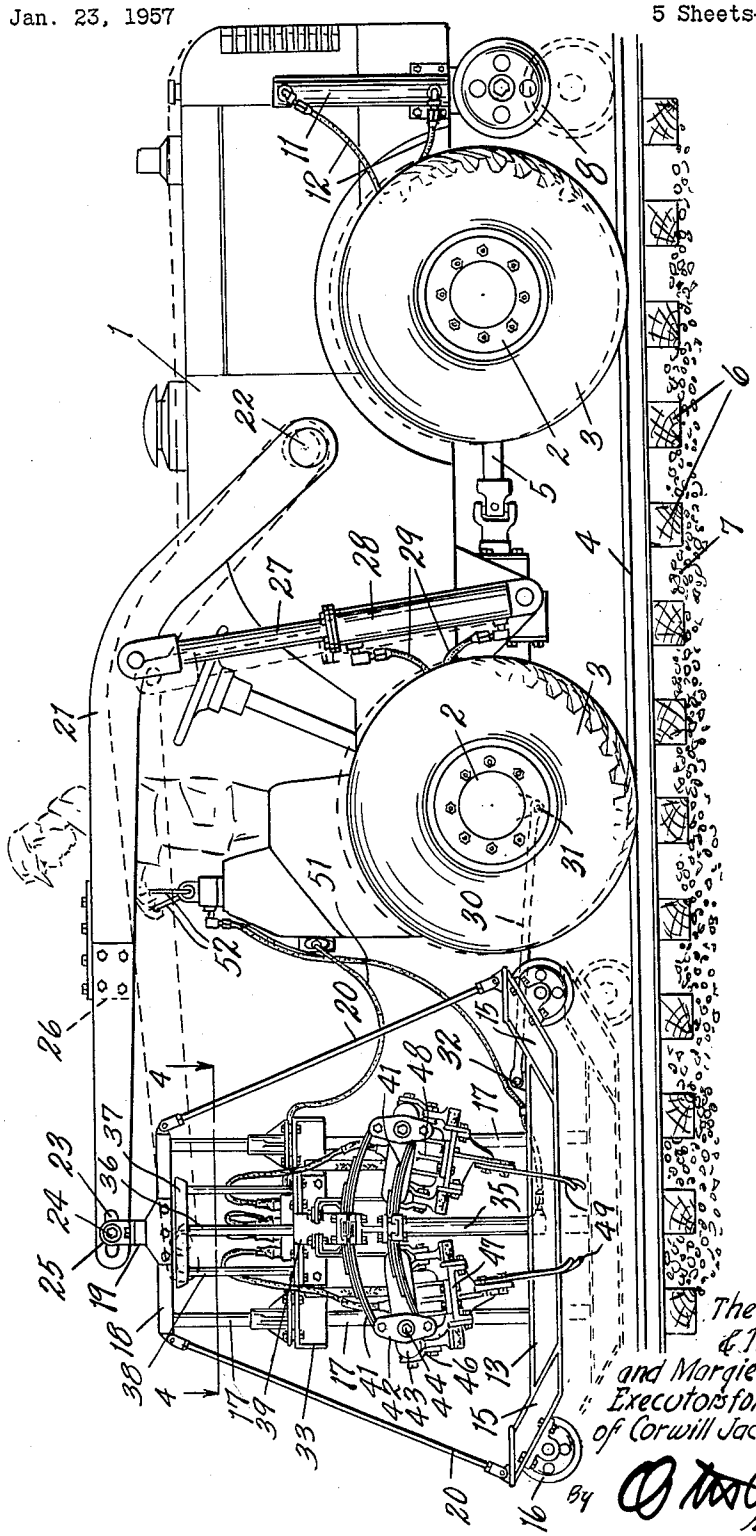


FIG. 1.

Inventor
The Detroit Bank & Trust Company and Margie N. Jackson, Executors for the Estate of Corwill Jackson, Deceased.
By Attorneys

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TIE TAMPING OR BALLASTING MACHINE

Filed Jan. 23, 1957 5 Sheets-Sheet 2

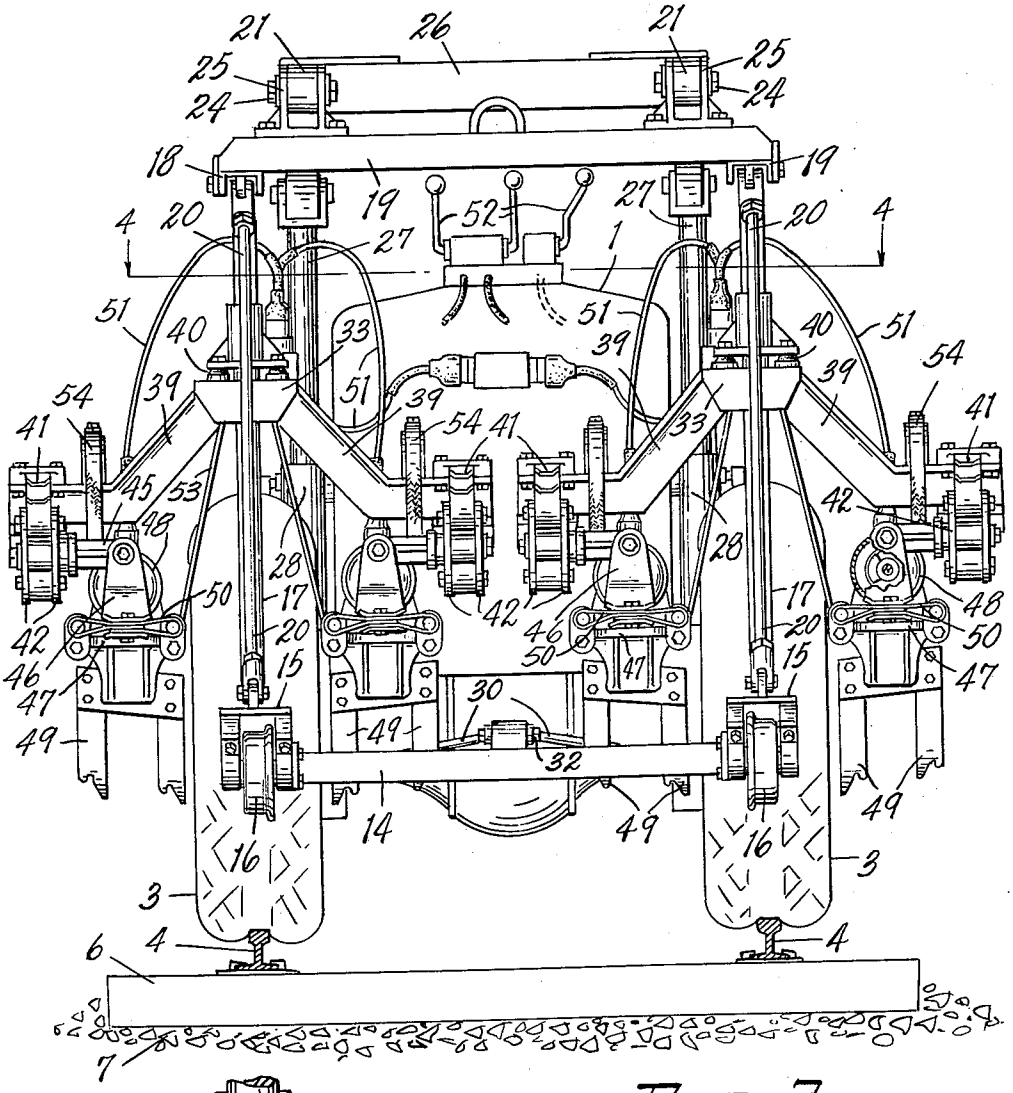


FIG. 2.

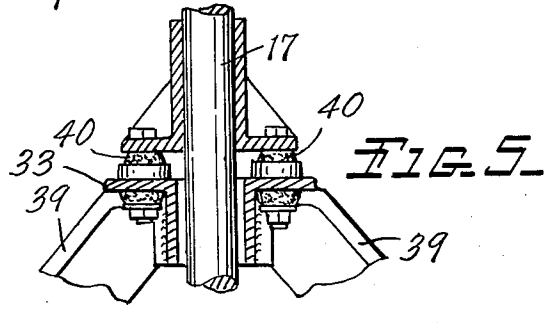


FIG. 5.

Inventor
The Detroit Bank & Trust Company
and Margie N. Jackson,
Executors for the Estate
of Corwill Jackson, Deceased.
BY
Attorney.

Feb. 27, 1962 C. JACKSON 3,022,744

TIE TAMPING OR BALLASTING MACHINE

Filed Jan. 23, 1957 5 Sheets-Sheet 3

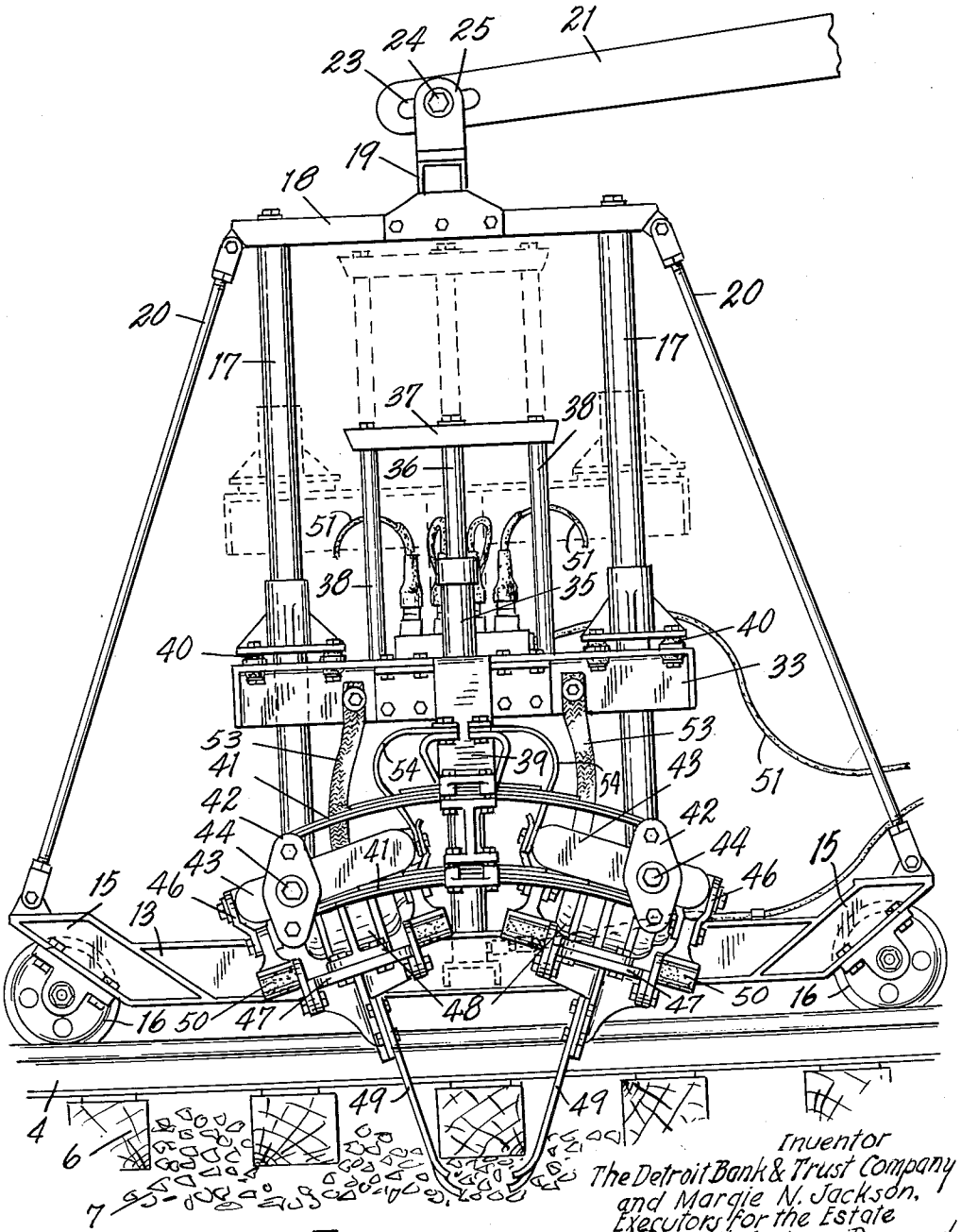


FIG. 3.

Inventor
The Detroit Bank & Trust Company
and Margie N. Jackson,
Executors for the Estate
of Corwill Jackson, Deceased.
BY
Attorneys.

Feb. 27, 1962 C. JACKSON 3,022,744

TIE TAMPING OR BALLASTING MACHINE

Filed Jan. 23, 1957 5 Sheets-Sheet 4

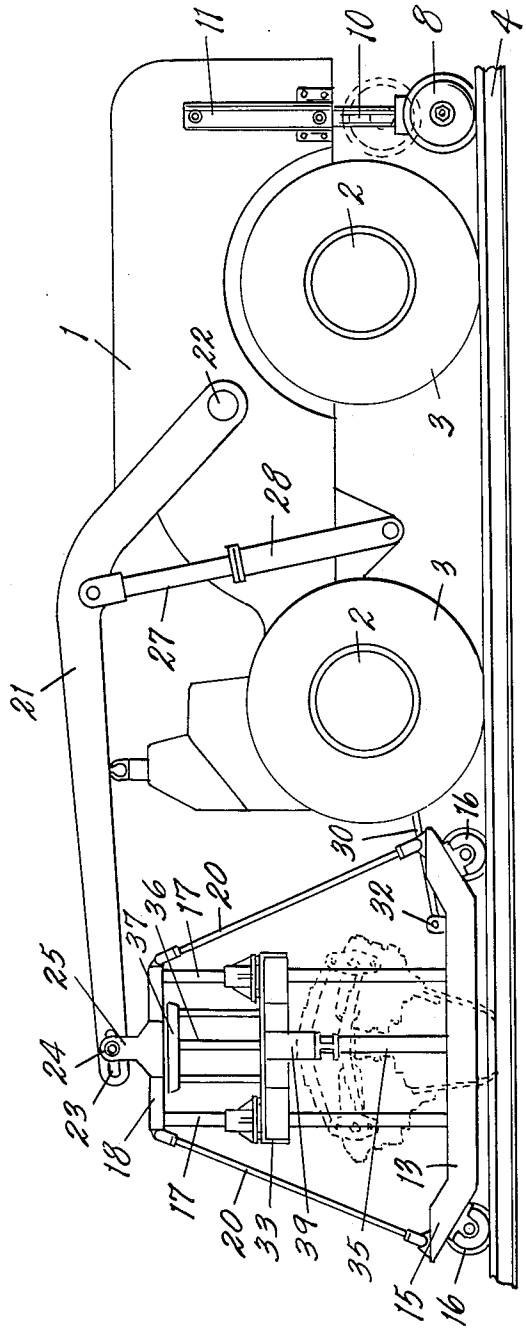


FIG. 6.

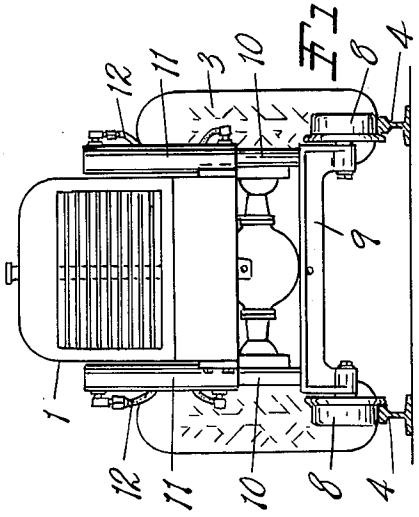


FIG. 7.

Inventor
The Detroit Bank & Trust Company
Margie N. Jackson,
Executors for the Estate
of Corwill Jackson, Deceased.
BY

Attorney

Feb. 27, 1962 C. JACKSON 3,022,744

TIE TAMPING OR BALLASTING MACHINE

Filed Jan. 23, 1957 5 Sheets-Sheet 5

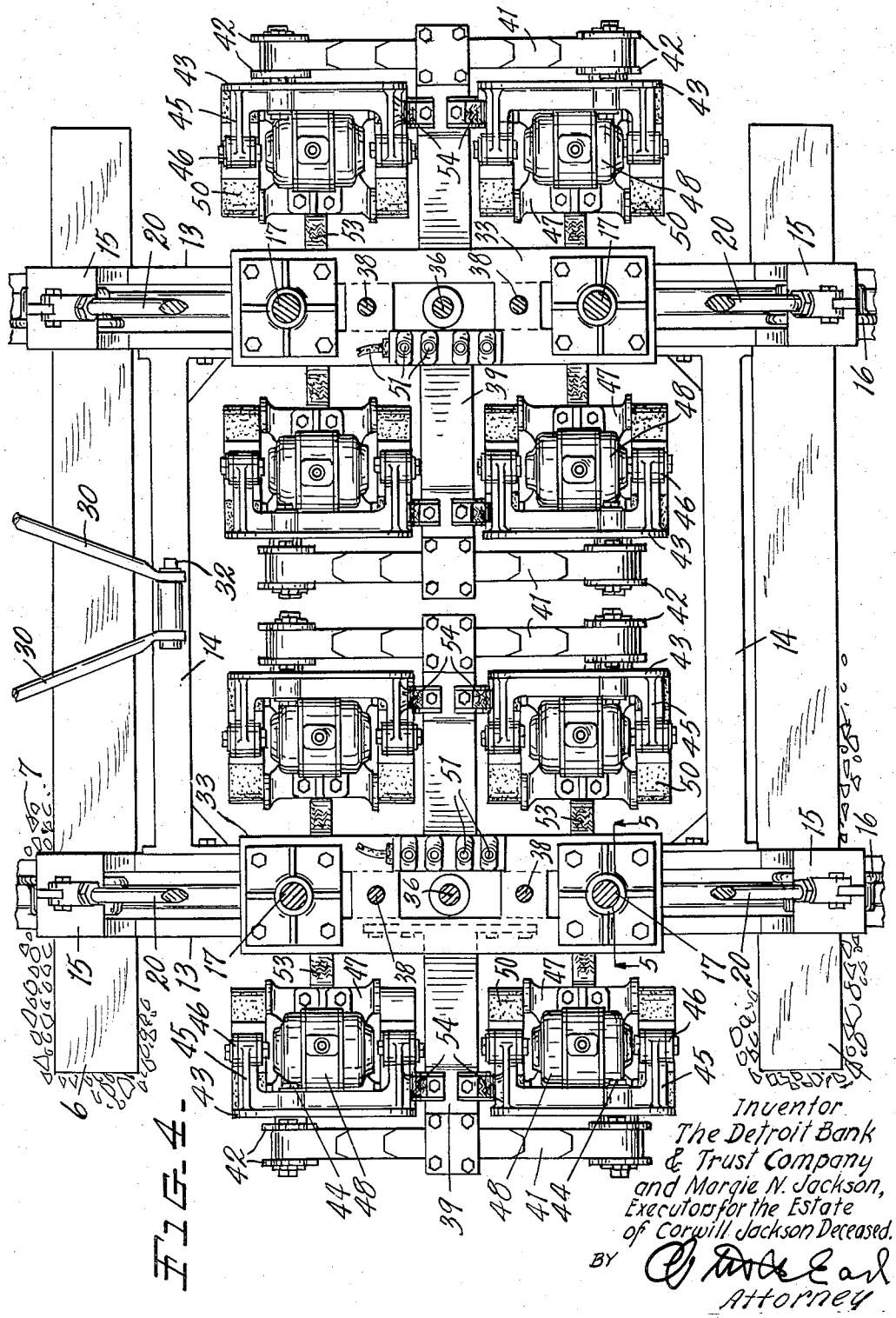


FIG. 4.

Inventor
The Detroit Bank & Trust Company and Margie N. Jackson, Executors for the Estate of Corwill Jackson Deceased.
BY
Attorney

United States Patent Office 3,022,744 Patented Feb. 27, 1962

3,022,744

TIE TAMPING OR BALLASTING MACHINE

Corwill Jackson, deceased, late of Ludington, Mich., by The Detroit Bank & Trust Company, Detroit, Mich., and Margie N. Jackson, Ludington, Mich., executors, assignors to Jackson Vibrators, Inc., Ludington, Mich., a corporation of Michigan

Filed Jan. 23, 1957, Ser. No. 635,758
2 Claims. (Cl. 104—12)

This invention relates to improvements in tie tamping or ballasting machines.

The main objects of this invention are:

First, to provide a tie tamping or ballasting machine comprising a manually controllable wheeled powered vehicle and a wheeled tamper unit operatively associated therewith and which may be quickly mounted upon or removed from the rails of a railway track as an assembled unit.

Second, to provide a tamping or ballasting machine including a powered manually controlled carriage provided with resiliently tired wheels and which may be driven onto or from the rails of a railway track in combination with means for maintaining the resiliently tired wheels on the track when the machine is being operated thereon.

Third, to provide a machine having these advantages and including a tamper carriage which may be quickly positioned on the track or lifted therefrom, the tamping carriage being detachably connected to the powered vehicle so that the powered vehicle may be used for other purposes.

Fourth, to provide a machine of the class described in which a varied portion of the weight of the body of the wheeled powered unit may be applied to the tamper unit carriage.

Fifth, to provide a machine of the class described having these several advantages which is very easily operated.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a side elevational view of a machine embodying the features of this invention, the tamper carriage being shown in raised position by full lines and in lowered operative position by dotted lines. The flanged track engaging wheels being shown in raised position by full lines and in lowered position by dotted lines, and the raising and lowering of the body of the vehicle and its wheels also being indicated by dotted lines.

FIG. 2 is an enlarged front elevational view with the tamper carriage in elevated position, parts being broken away for convenience in illustration.

FIG. 3 is a side elevational view with the tamper carriage in operative relation to a railway track and one of the tamper units shown in operative position by full lines and partially shown in retracted position by dotted lines.

FIG. 4 is an enlarged horizontal section on a line corresponding to line 4—4 of FIG. 2; fragments of the railway track being shown conventionally, the push bars for propelling the tamping carriage being partially broken away.

FIG. 5 is a fragmentary view partially in vertical section on a line corresponding to line 5—5 of FIG. 4 illustrating certain details of the tamper unit slide members.

FIG. 6 is a side elevational view partially conventionalized and with various parts omitted illustrating the tamper unit in retracted position, the unit being shown by dotted lines.

FIG. 7 is a rear elevational view of the powered vehicle.

The embodiment of this invention illustrated includes certain features of the application for patent of Corwill Jackson (now deceased) filed September 27, 1955, Serial No. 536,386, now Patent No. 2,795,198, issued June 11, 1957, particularly the adaptation of the elliptical spring supports for the vibratory tamper units. Such features are included herein as they are particularly desirable for use in combination with other features of this invention. However, it is desired to point out that the vibratory units may be otherwise mounted, for example, as illustrated in the application for patent of Corwill Jackson, Serial No. 403,798, filed January 13, 1954, now Patent No. 2,899,909, issued August 18, 1959.

Where machines of this type are used in ballasting used tracks it is necessary that they be quite frequently removed from the track to permit the passing of trains and expeditious and easy removal and replacement is an important factor.

The machine of this invention is particularly designed and adapted for rapid positioning on the track and rapid removal and repositioning as occasion may require. Also, the present invention is directed to a machine comprising a powered unit and a tamper unit which may be easily and quickly associated for use or the tamper unit dismounted or disconnected from the power unit to permit use of the powered unit in various other relations, for example, as a propelling means or to permit a scraper or shovel being mounted thereon. However, no attempt is made herein to illustrate such adaptations of the power unit.

The manually controlled powered vehicle or unit is mainly conventionally illustrated and comprises a body portion designated generally by the numeral **1** provided with wheels **2** having resilient, preferably pneumatic, tires **3**. These tires are of a width substantially exceeding the width of the rails **4** and they are gauged to travel on the rails, their relation thereto being clearly shown in FIG. 2. At least one pair of wheels are driven, a transmission shaft being indicated at FIG. 5. The width of the tires and the resilence is such that they conform to substantial portions of the rail and this prevents their slipping off the rail and also provides effective traction engagement with the rail. The ties of the track are indicated at **6** and ballast at **7**.

To insure that this powered vehicle does not slip off the rails under variable stresses to which it may be subjected the track engaging flanged wheels **8** are provided and mounted to be raised and lowered to and from rail engaging position. These wheels are shown in track engaging position in FIGS. 6 and 7 and in raised position in full lines in FIG. 1 and in track engaging position by dotted lines. These wheels are mounted on the axle **9** which is supported by plungers **10** cooperating with the hydraulic cylinders **11**. The hydraulic connections to the cylinders are indicated at **12**. The means for providing the hydraulic fluid under pressure and the valve control means are not illustrated as suitable means are old in the art and will be readily adapted to the structure.

The flanged wheels also serve the purpose of a jack to raise the powered vehicle to desired degree or extent for applying downthrust to the tamper unit as will be more readily understood as the description proceeds.

The tamper unit of this invention in the embodiment illustrated comprises side members or side sills **13** and cross members **14**, the cross members being of such length as to support the side members **13** in vertical alignment with the rails. The side members **13** have upturned end portions **15** on which the flanged track engaging wheels **16** are mounted. This provides an open frame-like carriage body which permits the location of various

operating parts and mechanisms centrally relative to the body or frame of the track.

Uprights 17, preferably of cylindrical cross section, are mounted on the side members 13 in laterally spaced relation. Top bars 18 are mounted on the upper ends of these uprights 17 and are connected by the centrally disposed cross piece 19. Downwardly diverging struts 20 connect the ends of the crossbars 18 to the ends of the frame side members 13. These assist in sustaining the load when the tamper unit is lifted from the track as is illustrated in FIG. 1.

The tamper unit is driven from the powered vehicle and is connected thereto so that it may be raised and lowered to and from operative position relative to the track. In the embodiment illustrated this is accomplished by means of a boom comprising laterally spaced members 21 pivotally mounted on the power vehicle at 22. The forward ends of the boom members overhang the tamper carriage and have slots 23 therein which are engaged by the pins or bolts 24 on the coupling brackets 25 mounted on the crosspiece 19, see FIGS. 1 and 2. The boom members are connected by the crosspiece 26 disposed rearwardly of their forward ends. The boom is raised and lowered by hydraulic means, the plunger rods 27 coacting with the cylinders 28 which have hydraulic connections 29 at the ends thereof. The means for controlling these connections and supplying the hydraulic fluid are not illustrated. The tamper carriage is propelled by the forwardly converging push rods 30 pivoted at 31 to the power unit and at 32 to the rear crosspiece 14 of the tamper carriage, see FIGS. 1 and 4.

Slide members or crossheads 33 are slideably mounted on the uprights 17 of the frame and may be independently raised and lowered by hydraulic means, cylinders being shown at 35, the piston rods at 36. These piston rods have a crosspiece 37 on their upper ends which are connected by the tie bars 38 to the slides. The hydraulic fluid connections are indicated at 351. This provides means for raising and lowering the slides and for applying variable downthrust thereto and the crossheads may be independently raised and lowered. This is of importance as it is frequently desirable to tamp ballast under one rail only or at one end of the tie or to a different degree than that at the other end of the tie.

Each slide is provided with a centrally positioned, desirably yoke-shaped, cross arm 39, as is clearly illustrated in FIGS. 2 and 5. As these cross arms carry the vibratory tamping units their connection to the slides is preferably cushioned or includes vibration absorbing means best shown at 40 in FIG. 5. The vibratory tamper units illustrated are substantially those illustrated in the aforesaid Jackson Patent No. 2,759,198, and they comprise pairs of elliptical springs 41 mounted on the cross arms, the pairs of springs being connected at their outer ends by the links 42. Hanger bars 43 are mounted at 44 on these links for vertical swinging movement and are provided with laterally projecting arms 45 on which the hangers 46 are mounted for swinging movement transversely of the planes of the swinging movement of the hanger bars.

Vibratory tamping units are mounted on these hangers in opposed pairs and each comprises a base 47 on which vibratory motors 48 are mounted, these being electric motors provided with rotors having unbalanced weights which results in vibrating the base member 47 and parts mounted thereon at high frequency. Pairs of tamper blades 49 are mounted on these base members in laterally spaced relation, as is most clearly illustrated in FIG. 2. This arrangement of blades is likewise that shown in the said Jackson Patent No. 2,759,198. The connections 50 for the base members of the tamping units to the hangers also acts to dampen the transmission of vibration from the base members to other parts of the machine at the same time permitting the application of downward thrust as has been pointed out. The electrical connections for the vibratory motors are indicated at 51 and manually controlled switches therefor are indicated at 52 but details of the switches are not illustrated. The swinging movement of the tamper units is limited by the straps 53 and 54.

There are some conditions to be met in which the ballast is such that it is difficult for the tamper blades to penetrate it. Under such conditions downthrust which may be imparted through the hydraulic ram mechanism described which is ordinarily sufficient but if not sufficient the flanged wheels at the rear of the power unit may be manipulated as a jack to apply additional load to the tamper carriage, that is, by transferring thereto a portion of the weight to the power vehicle.

With the parts thus arranged the machine may be very quickly positioned on or removed from the track as occasion may require and that is of particular advantage in situations where there is a considerable amount of traffic on the track.

Another advantage is the time saving factor as it permits the apparatus being used a maximum portion of time. The tamper unit may be quite quickly mounted on or removed from the power unit thus permitting the use of the power unit for other purposes as has been pointed out. While the power unit may be readily driven onto or from the rails it is very effectively retained thereon as a result of the rails being somewhat embedded in the resiliently yieldable tires and also the flanged wheels 8 may be quickly adjusted to track engaging position. The brake means for the power unit are not illustrated as it will be understood they constitute a part of the power unit and suitable brake means are old in the art. As stated, the tamper units of the Jackson application, Serial No. 536,886 are illustrated as that is a desirable commercial embodiment.

It should be understood that other embodiments or adaptations than those illustrated may be made but it is believed that this disclosure will enable those skilled in the art to embody or adapt the invention as may be desired.

Having thus described the invention, what is claimed to be new and is desired to be secured by Letters Patent is:

1. In a machine of the class described, the combination with a manually controllable powered vehicle provided with resiliently tired wheels gauged to travel on the rails of a railway track, flanged track engaging wheels mounted on the vehicle to be adjusted to and from track engaging position, a tamper carriage provided with wheels adapted to travel on the rails of a track, uprights on said carriage, side slide members slidably mounted on said uprights and provided with cross arms, means for independently raising and lowering said slides and applying swingable downthrust thereto, laterally spaced opposed pairs of vibratory units mounted on said cross arms with pairs on opposite sides of the rails of the track, a boom swingably mounted on said vehicle and connected to said tamper carriage to raise and lower the same to and from the operative position relative to a railway track, and propelling connections for said vehicle to said tamper carriage permitting the raising and lowering of the tamper carriage, said means for adjusting said flanged track engaging wheels of said vehicle being powered to raise the body of the vehicle so that the weight thereof or a portion of such weight is carried by said flanged wheels and said tamper carriage.

2. In a machine of the class described, the combination with a manually controllable powered vehicle provided with resiliently tired wheels gauged to travel on the rails of a railway track, flanged track engaging wheels mounted on the vehicle to be adjusted to and from track engaging position, a tamper carriage provided with wheels adapted to travel on the rails of a track, vibratory units mounted on said carriage, a boom swingably mounted on said vehicle and connected to said tamper car-

riage to raise and lower the same to and from the operative position relative to a railway track, said means for adjusting said flanged track engaging wheels of said vehicle being adjustable to raise the body of the vehicle so that the weight thereof or a portion of such weight is carried by said flanged wheels and said tamper carriage, and propelling connections for said vehicle to said tamper carriage permitting the raising and lowering of the tamper carriage.

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