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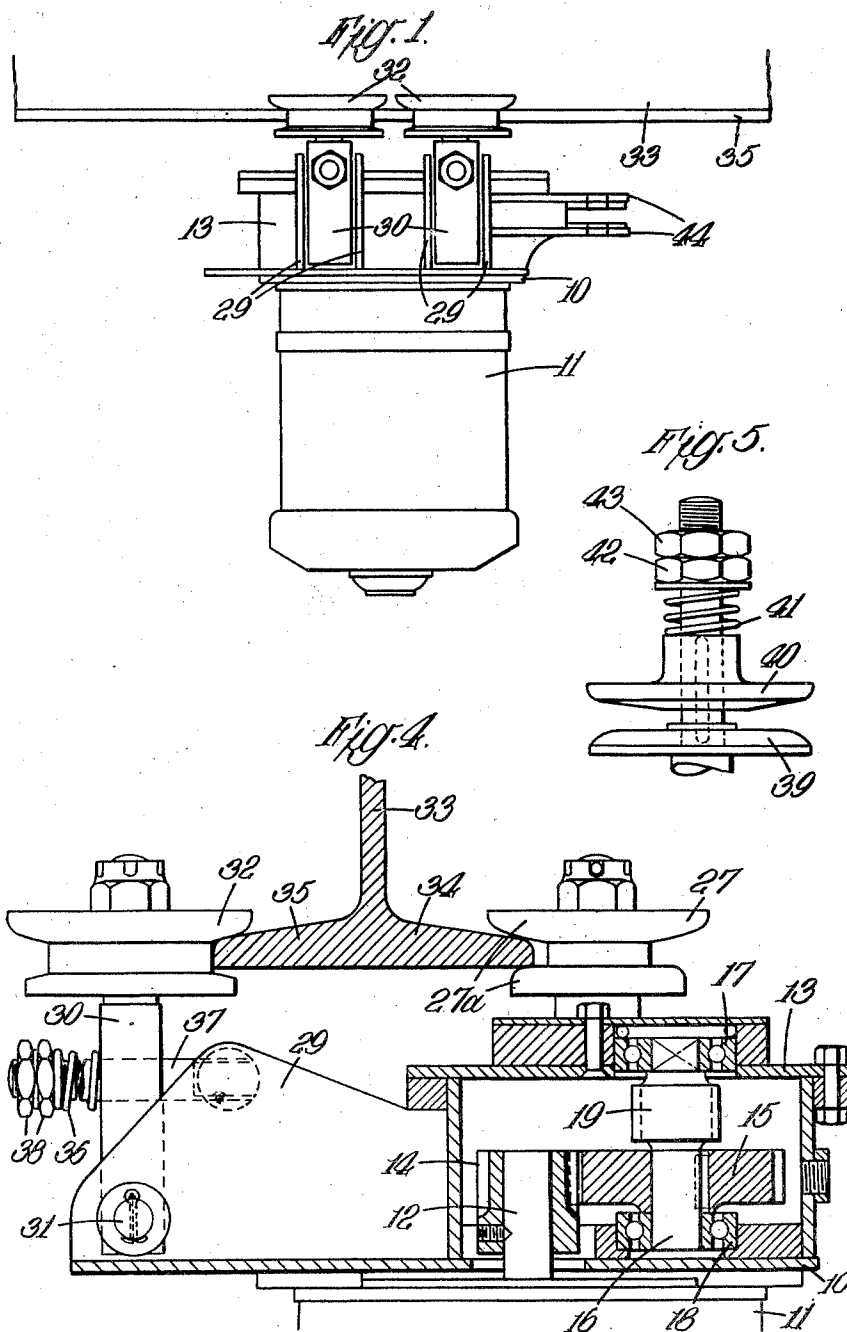
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RAIL TRACTOR OR LIKE HAULAGE UNIT

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2 Sheets-Sheet 1



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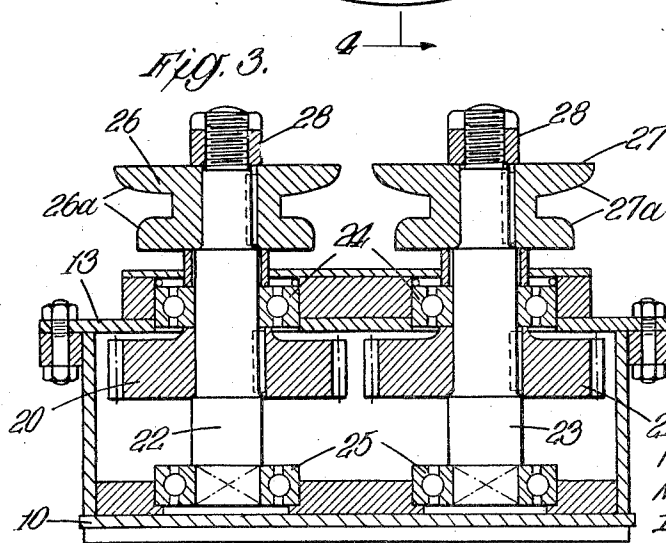
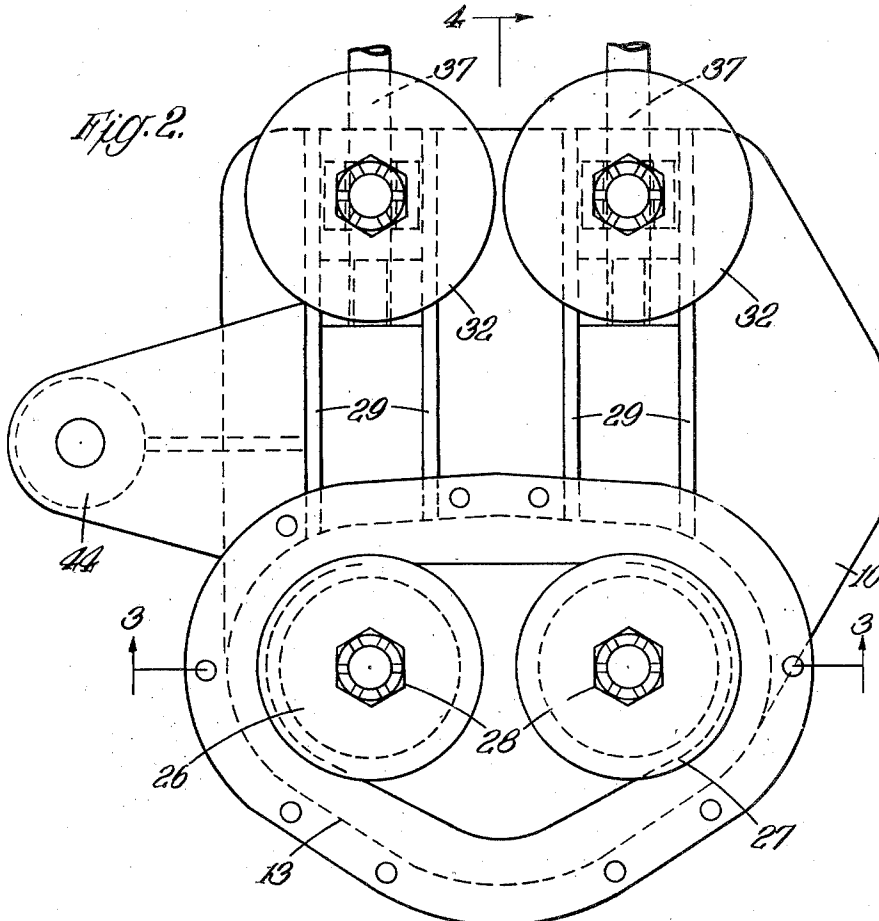
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UNITED STATES PATENT OFFICE

2,229,015

RAIL TRACTOR OR LIKE HAULAGE UNIT

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Application February 13, 1940, Serial No. 318,693
In Great Britain February 6, 1939

5 Claims. (Cl. 105—39)

This invention relates to tractors or like haulage units and more particularly to such units adapted to be supported and to run on a fixed track or runway.

5 It is the chief object of the invention to evolve an efficient and compact tractor or haulage unit which is adapted to run on a single track or rail and is capable of moving or towing loads, for example, over a floor or other surface or along an overhead runway or across pits and the like.

10 In order that the said invention may be clearly understood and readily carried into effect, the same will now be described more fully with reference to the accompanying drawings, which show one embodiment by way of example and in which:

15 Figure 1 shows a tractor or haulage unit according to the invention in side elevation.

Figure 2 is a plan view on a larger scale.

20 Figure 3 is a section on the lines 3—3 of Figure 2.

Figure 4 is a section on the lines 4—4 of Figure 2.

Figure 5 shows a modification.

25 Referring to the drawings, the tractor unit therein illustrated comprises a frame or base plate 10 at the underside of which a driving motor 11 is suitably mounted. The motor 11 preferably comprises an electric motor of any suitable type the operation of which may be controlled in any suitable manner either directly or by means of a remote control. Further the motor is so arranged that the shaft 12 associated therewith will project upwardly into a gear box or housing 13, a pinion 14 being mounted at the upper end of said shaft which pinion is adapted to mesh with a gear wheel 15, keyed or otherwise suitably secured to a shaft 16. The shaft 16 is rotatably journaled at its upper and lower ends in anti-friction bearings 17 and 18 respectively, the lower bearing 18 being suitably mounted on the frame or base plate 10 while the upper bearing 17 is disposed at the upper part of the gear box or housing 13. Also mounted on the shaft 16 is a gear wheel 19 which is adapted to mesh with spur wheels 20 and 21 respectively keyed to shafts 22 and 23. The shafts 22 and 23 are suitably journaled at their upper and lower ends in anti-friction bearings 24 and 25 respectively, the lower bearings 25 being suitably supported on the frame or base plate 10 while the upper bearings are located at the upper part of the gear box or housing 13. Mounted on the shafts 22 and 23 are roller members 26 and 27 respectively, said members being keyed to their respective shafts to rotate therewith and being held against longitudinal

displacement by means of nuts or the like 23. As can be seen, the roller members 26 and 27 are of disc-like form and are formed with flanges 26a and 27a adapted to engage over the flange of a track or runway.

Also mounted on or formed integrally with the frame or base plate 10 are two pairs of webs or the like 29 each pair being adapted to support a shaft 30 therebetween said shafts being carried by pins or the like 31 in such a manner that pivotal movement thereof may take place about horizontal axes. The shafts 30 are each adapted to carry a roller member 32, which latter are mounted for free rotation with respect to their supporting shafts and are formed similarly to the roller members 26 and 27.

The tractor unit illustrated in the drawings is adapted to run on a single trackway or rail such as that designated by 33 in Figures 1 and 4, which trackway or rail is formed with two oppositely directed flanges 34 and 35, the rollers 26 and 27 at one side of the unit being adapted to engage the flange 34 while the rollers 32 are adapted to engage the flange 35. It will be appreciated from the foregoing that the rollers at one side of the track, namely the rollers 26 and 27 constitute the driving rollers for the haulage unit and are driven at the same peripheral speed, while the rollers at the opposite side of said track, namely the rollers 32, are idler rollers and merely serve to stabilise the unit and to support the weight thereof in conjunction with the driving rollers 26 and 27. Each of the rollers 32 is adapted to be held resiliently in its operative position, and for this purpose a spring 36 is provided in respect of each shaft 30, each spring being adapted to bear on its respective shaft and to urge the same into a position wherein the roller 32 will engage the track. The springs 36 are carried by rods 37 which are pivotally mounted between the webs 29, and extend through and transversely to the shafts 30. The tension of the springs 36 may be adjusted as required by means of nuts 38. The provision of the springs ensures that the requisite grip of the rollers on the track will be obtained to produce sufficient tractive friction to enable the unit to tow one or more load trolleys or the like. In addition, by virtue of their mounting, the shafts 30 may be readily swung outwardly against the action of the springs 36 to allow for disengagement of the unit from the track. Further, the mounting of the idler rollers 32 in this manner allows for automatic adjustment of the position thereof such as may be necessary due to irregularities in

the track and when, for example, the unit is negotiating a curve.

In order to ensure that the necessary tractive friction will be present between the driving rollers 26 and 27 and the rail to effect movement of the tractor or haulage unit on operation of the motor 11, said driving rollers are so formed that the peripheral recesses present between the flanges 26a and 27a thereof will be of substantially V-shape and will provide for a wedge-like action between said rollers and the rail flange, which will be sufficient to produce the required driving friction.

If desired, however, all or certain of the rollers may be constructed in the manner indicated in Figure 5, in which case they may be readily adjusted to produce the required friction and also to suit any thickness of track flange. In the embodiment illustrated in Figure 5, the roller is adapted to constitute a driving roller and comprises two parts 39 and 40, the lower part 39 being fixedly mounted on the shaft while the upper part 40 is slidably mounted on said shaft in such a manner as to be rotatable therewith. Disposed above the upper part 40 is a spring 41, the tension of which may be adjusted on manipulation of a nut 42 and lock nut 43. It will be appreciated that by adjusting the position of the nut 42 the position of the upper part 40 may be adjusted with respect to the lower part 39 to allow engagement with a rail flange of any thickness within limits determined by the length of travel of the nut 42, and also to produce the necessary tractive friction. A similar construction to that illustrated in Fig. 5 may be employed in the case of the idler rollers, the only difference being that the upper and lower parts of each roller will be freely rotatable with respect to the supporting shaft.

A unit having rollers such as that indicated in Fig. 5 is capable of use on tracks of varying thickness and if desired arrangement may be such that said unit may also be capable of use on tracks of varying widths.

With the arrangement according to the invention it is quite possible to negotiate small bends in the track without it being necessary to provide for any swivelling movement of the rollers as would be essential in units where the rollers were disposed vertically, that is to say rotated about a horizontal axis.

Finally, both ends of the tractor or haulage unit may be fitted with a towing device such as that indicated at 44, Figure 1, which may be readily attached to or detached from hand propelled trolleys, hoists or other bodies so that the unit may be used to tow such bodies around a track while being controlled directly or otherwise by the operator. Furthermore, as indicated above, the arrangement may be such that the unit will be remotely controlled and may thus be employed for towing loads across pits and the like where it is impossible for the operator to walk.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a rail traction or haulage unit adapted to be supported by and to run on fixed rail means

with two spaced rail surface portions, said unit including a body portion having one or more drive rollers and at least one idler roller, there being at least 3 rollers, drive means for driving the drive roller or rollers, the combination of a pair of spaced flanges upon each of said rollers straddling the two extreme outer edges of said rail surface portions, means for causing the flanges of at least the drive roller or rollers to grip said rail surface portions adjacent said outer edges and one flange of each pair on all of the rollers being supporting flanges which together carry the entire weight of said body portion upon the respective inner surfaces of said supporting flanges, while bearing down upon the rail surface portions in a direction generally parallel with the axis of rotation of each roller, and when operating making wiping contact with said rail surface portions.

2. A rail traction or haulage unit according to claim 1, in which the one or more idler rollers is shiftable toward or from the drive rollers for the purpose of adjusting the extent to which the edge of the rail surface portion in contact with the drive roller flanges projects into the space between said flanges and correspondingly adjusts the wedging of said flanges and results in traction obtained between the inner surface of said flanges and the said rail surface portions.

3. A rail traction or haulage unit according to claim 1, wherein the flanges upon the rollers are horizontally disposed and the axes of the rollers are disposed substantially in vertical positions generally parallel with each other.

4. A rail traction or haulage unit according to claim 1, wherein only the drive roller or rollers have the two spaced flanges with a wedging groove or channel between into which the rail surface portion extends with predetermined wedging and resulting traction effect, while the idler roller or rollers by contact with the opposite outer edge of the other rail surface portion determine the degree to which the first mentioned rail surface portion extends into the wedging groove of the one or more drive rollers.

5. A rail traction or haulage unit adapted to be supported by and to run on fixed rail means with two spaced rail surface portions, said unit including a body portion having one or more drive rollers and at least one idler roller, there being at least 3 rollers, drive means for driving the drive roller or rollers, the combination of a pair of spaced flanges upon each drive roller straddling the edge of one of said rail surface portions means for causing, said flanges to grip said rail surface portions adjacent said edge thereby producing a traction effect upon said rail surface portions, and at least one flange upon the one or more idler rollers, one flange upon each drive roller, and the one flange upon each idler roller being supporting flanges which together carry the entire weight of said body portion upon the respective inner surfaces of said supporting flanges, while bearing down upon the rail surface portions in a direction generally parallel with the axis of rotation of each roller, and when operating making wiping contact with said rail surface portions.

HENRY WALTER MAYER KING.