

Jan. 10, 1939.

A. S. BENSON
TRACTIVE DEVICE FOR TRACTORS

2,143,403

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2 Sheets-Sheet 1

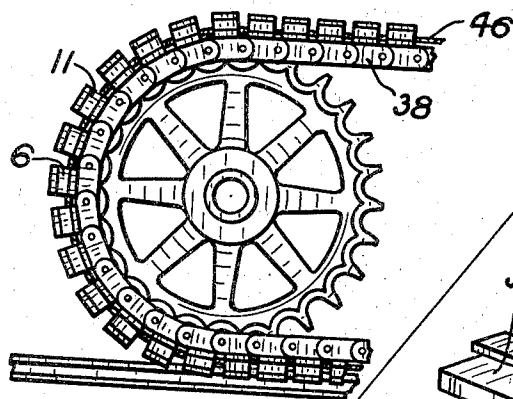


Fig. 1

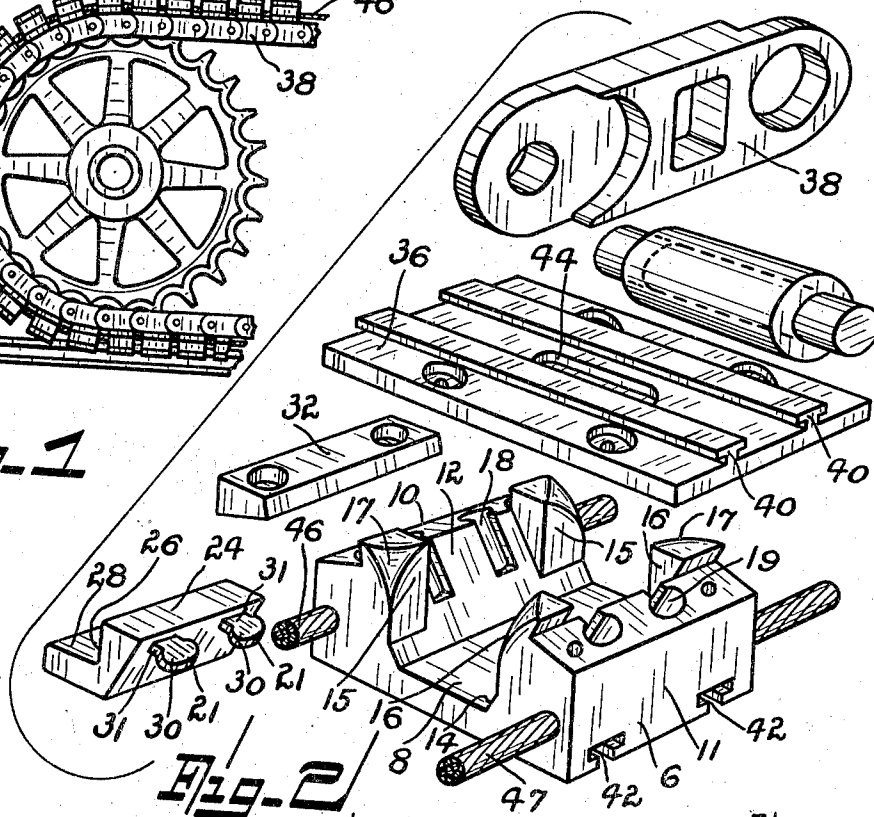


Fig. 2

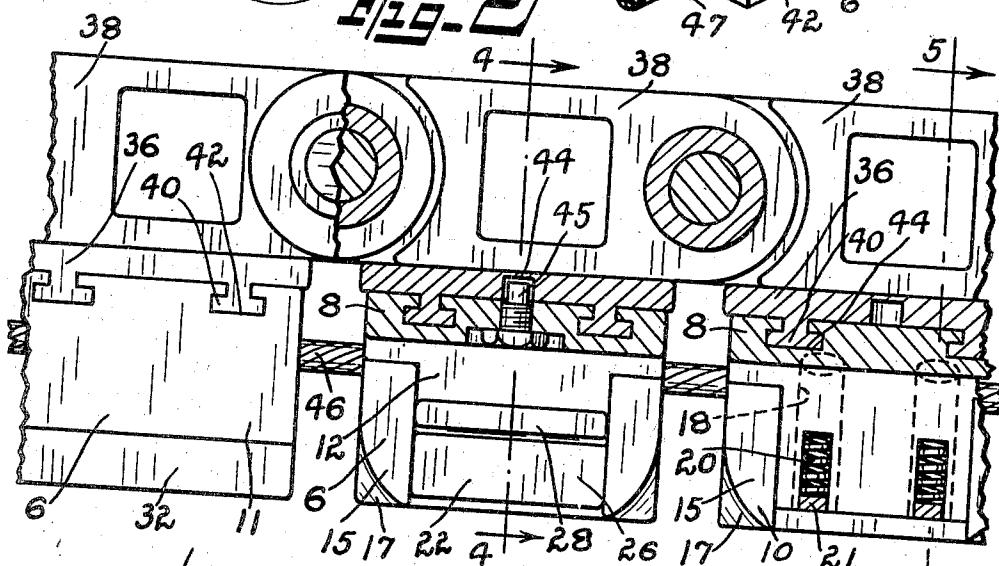


Fig. 3

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2 Sheets-Sheet 2

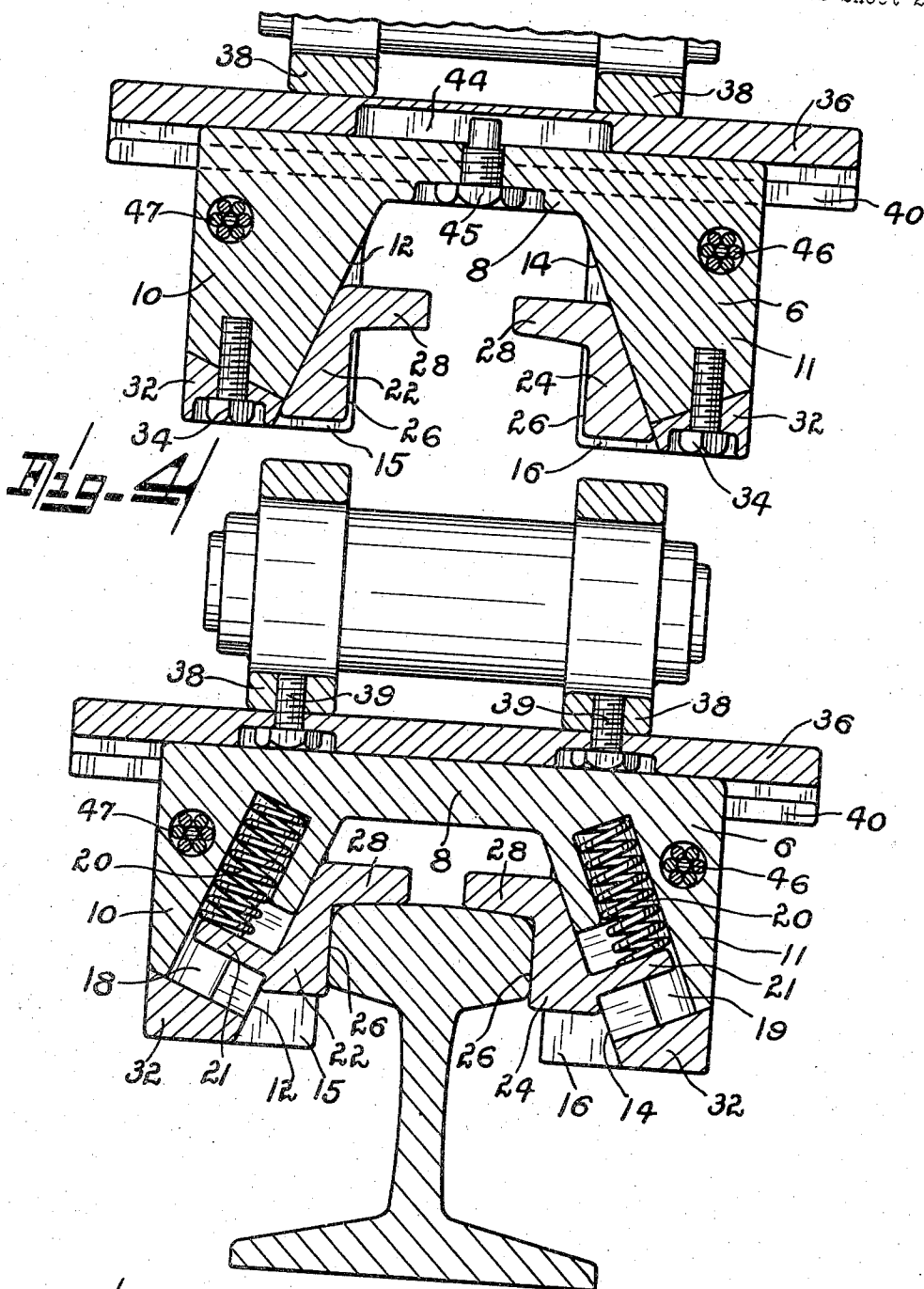


Fig. 5

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TRACTIVE DEVICE FOR TRACTORS

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9 Claims. (Cl. 105-30)

My present device relates to a tractive device for tractors.

There are many purposes for which tractors can be used to advantage on rails, such as street railways, or railroad rails. One such use is for switching cars in a switching yard, making up trains, or spotting cars for loading, or unloading. Another field for such a device is for the negotiating of grades which cannot easily be taken with the smooth tired wheels normally employed on locomotives, rail cars, steam shovels and the like.

My present device consists of a side slipping block arrangement which, while it might be employed on many types of block tread wheels is particularly adapted for use with caterpillar tractor and it is this use that I have illustrated and particularly described in my following specifications.

I provide means that are adjustable through a wide range so that it can be used on rails having tread head of varying width. I have also provided means for allowing a tractor traveling on two rails to successively negotiate the same even on curves where normally the rails are spread further apart than in straightaways.

The principal object of my present invention is, therefore, to provide a tractive device for tractors that will enable the same to be run on face rails which will guide the tractor on the rails without any aid from the driver; will provide sufficient tractive efforts so that steep grades, or heavy starting loads, can be accomplished and which will so accommodate themselves to rails of varying thickness, and to rails spread to varying degrees, that the tread can be used under all conditions normally met on railway tracks.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings, wherein

Figure 1 is a side elevation of a portion of a caterpillar tread made after the teachings of my invention showing the same as applied to a rail.

Figure 2 is a bracketed view showing in exploded perspective view, the parts making up one block unit of my tractive device.

Figure 3 is a side elevation of a tractor belt tread made after the teachings of my invention, certain parts of which are shown in section to better illustrate the construction.

Figure 4 is a cross-sectional view taken along the line 4-4 of Figure 3.

Figure 5 is a similar, sectional view taken along the line 5-5 of Figure 3 and showing the device as applied to a standard rail which also is shown in section.

Referring to the drawings, throughout which like reference characters indicate like parts, 6

designates my tractive block. This will probably be best understood from an inspection of Figures 2, 4 and 5. It consists of a slab-like portion 8 and two side portions 10 and 11. These side portions are each provided with an inclined inner face as 12 and 14 which have at either end the fixed vertically walled lug 15 and 16. These are provided with rounded corners at 17 to assist the block in following the rail. Each of the surfaces 12 and 14 are provided with guideways 18 and 19 of which there may be one or more under each surface. These guideways accommodate a compression spring 20 and guide lugs 21 formed as part of the gripping jaw members 22 and 24. The exact construction of these members will probably be best understood from Figure 2. They consist of the frictional engaging surfaces 26 and overhanging lug members 28 which are adapted to engage the top of the rail. Lugs 21 are preferably made with a circular end 30 and a reduced neck portion 31 so that once they are entered into guideways 18 and the cover plate 32 secured in place, as by bolt 34, the jaw members are held against being lost as they might be if permitted to drop out of block 6.

Blocks 6 are mounted for transverse movement upon base members 36 which are, in turn, fixedly secured to the caterpillar tread members 38, as by a plurality of bolts 39. The exact manner of mounting block 6 on blocks 36 is subject to some variation. The T-slide arrangement probably best illustrated in Figures 2 and 3, at 40 and 42, provides a very convenient and workable arrangement. These permit block 6 to slide on base 36 and thus be capable of conforming to varying gauges of tracks. Their maximum displacement is provided by slot 44 and bolt 45 which act as a limit stop. Normally, however, block 6 moves as a belt being held together in a flexible manner by cables 46 and 47 which are continuous throughout the entire belt tread.

Method of use

In using my device the usual track plates are removed and in place of them the base members 36 are installed, one for each tread plate removed. With most types of tractor treads this will mean one member 36 for each link of the tractor belt. The tread made up of a plurality of blocks 6 which are secured together in a flexible and yielding manner by cables 46 and 47 is then put in place, being applied from the side and when in about the center of the base members the limit stop screws 45 are screwed home. This holds the unit on the normal tractor drive means. The tractor may now be used on ordinary surfaces particularly around yards where they work on planks or on ties and when it is desired to use the same on the rails the treads are centered one over each rail.

In this position the rail top will engage lugs 28 and tend to force jaw members 22 and 24 up into the vertex of the angle formed by the inclined sides 12 and 14. As soon, however, as the vertical walls of the jaws, as 26, engage the sides of the rail heads any increased downward thrust will only serve to make the jaw members grip the rails more securely and thus provide the maximum tractive effort. It will be seen it is believed that a small rail will carry the jaw members well up into the vertex of the angles while a large one will only move them part way, thus my device is readily adaptable to worn rails, or rails of varying widths.

The foregoing description and the accompanying drawings are believed to clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that such changes in the invention may be made as are fairly within the scope and spirit of the following claims.

I claim:

1. In a portable, endless, rail-track comprising a plurality of pivotally linked traction-blocks adapted to straddle a rail, the combination with a traction-block, of a pair of movable tread-blocks mounted in the traction-block and having operative and inoperative positions, co-acting means on said tread-blocks and the traction-block whereby they are frictionally engaged under load, means for returning the tread-blocks to inoperative position when the load is released, and means on the tread-blocks for frictional engagement with a rail under pressure of weight on the traction-block.
2. In a portable endless track comprising a plurality of traction blocks pivotally linked together adapted for travel on a rail, the combination with a traction-block straddling the rail and having outwardly and downwardly diverging inner walls, of a movable tread-block mounted within each tractive block having operative and inoperative positions, and adapted in operative position to frictionally engage the tread and side of the head of a rail under pressure of weight thereon, said tread block having a downwardly diverging outer wall in frictional engagement with one of said inner walls, and means intermediate said tread-block and tractive-block adapted to return said tread-block to inoperative position when the weight pressure is removed.
3. In a portable, endless, track comprising a plurality of traction blocks pivotally linked together for travel on a rail, of a pair of movable tread-blocks mounted in each traction block having operative and inoperative positions, and adapted in inoperative position to frictionally engage the rail-head under pressure of weight thereon, each tread-block having a face extending obliquely from a point above the longitudinal center of the rail and frictionally engaging a face of the traction-block, and means co-acting with said blocks for returning the tread-blocks to inoperative position when the weight pressure is removed.
4. In a portable endless railtrack comprising a plurality of traction blocks pivotally linked together, the combination with a traction block straddling a rail, of a pair of movable tread-blocks mounted in the traction block having operative and inoperative positions and adapted to frictionally engage a rail head under load, said traction-block and tread-blocks having frictionally engaged faces diverging downwardly from a point above the longitudinal center of

the rail, and springs mounted between said blocks for returning said tread blocks to inoperative position when the load is removed.

5. In a portable endless, rail-track comprising a plurality of traction blocks pivotally linked together, the combination with a traction block straddling a rail, of a pair of movable tread-blocks mounted in the traction block having operative and inoperative positions, said tread blocks each having a lug to engage the tread of a rail and gripping faces to engage the side of the head of a rail under load, said traction-block and tread-blocks having frictionally engaged faces diverging downwardly from a point above the longitudinal center of the rail, and springs mounted between said blocks for returning said tread blocks to inoperative position when the load is removed.

6. In a portable endless, rail-track comprising a series of base plates pivotally linked together and disposed transversely of said track and a plurality of traction blocks, said traction blocks straddling a rail and each said block being in laterally movable engagement with each said base plate, co-acting means on each plate and block for guiding lateral movement, and means for limiting said movement, of a pair of movable tread-blocks mounted in each traction-block for engagement with a track-rail and having operative and inoperative positions, means on said blocks adapted under pressure of a load to operatively and frictionally engage a tread-block with the rail head, and means for returning said tread blocks to inoperative position when the load is removed.

7. In a portable endless rail-track comprising a series of base plates pivotally linked together, disposed transversely of said track and having longitudinally extending tongues, and a plurality of traction blocks, said traction blocks straddling a rail and having guide grooves engaging said tongues to permit relative lateral movement between the plates and blocks, and means for limiting said movement, of a pair of movable tread-blocks mounted in each traction-block for engagement with a track rail and having operative and inoperative positions, means on said blocks adapted under pressure of a load to operatively and frictionally engage a tread-block with the rail head, and means for returning said tread-blocks to inoperative position when the load is removed.

8. In a portable rail-track, the combination with a traction-block straddling a track rail and having a face extending obliquely of and adjacent to a side of the track rail, of a tread-block having a complementary guide face in frictional engagement with said first mentioned face and movable under load to rail-engaging position, and co-acting means on said blocks for downwardly projecting the tread-block to a tread-position when the load is removed.

9. In a portable rail-track, the combination with a traction-block straddling a track-rail and having a guide-face extending obliquely of and adjacent to a side of the track-rail, of a tread-block mounted on the traction-block and having a complementary guide-face in frictional engagement with said first mentioned guide-face, said tread-block being movable under load to rail-engaging position, and resilient co-acting means on said blocks for projecting the tread-block to a tread-position when the load is removed.