Oct. 16, 1951 A. W. BANTON, JR., ET AL 2,571,183

TRACK BALLASTING

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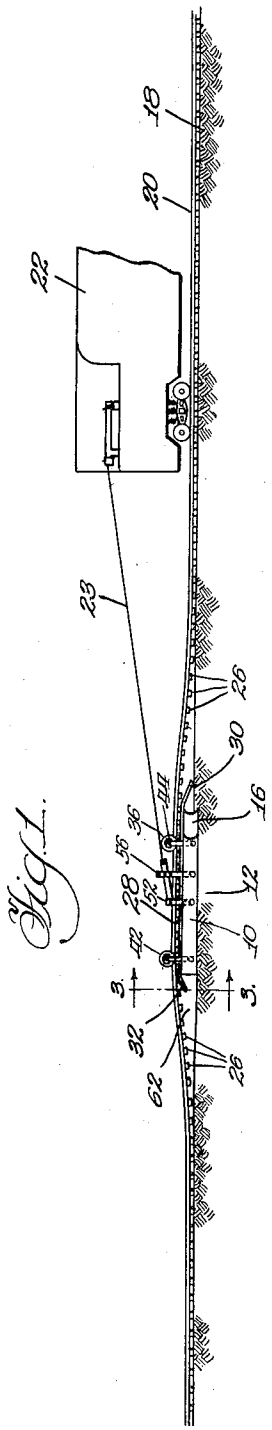


Fig. 1.

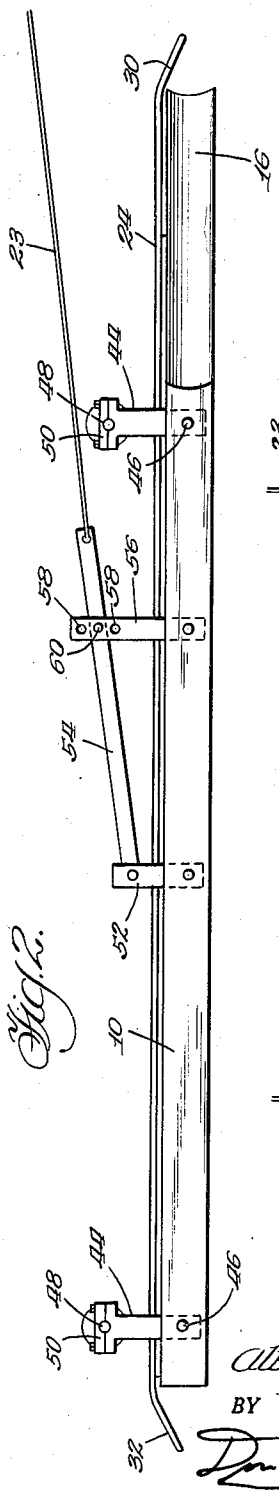


Fig. 2.

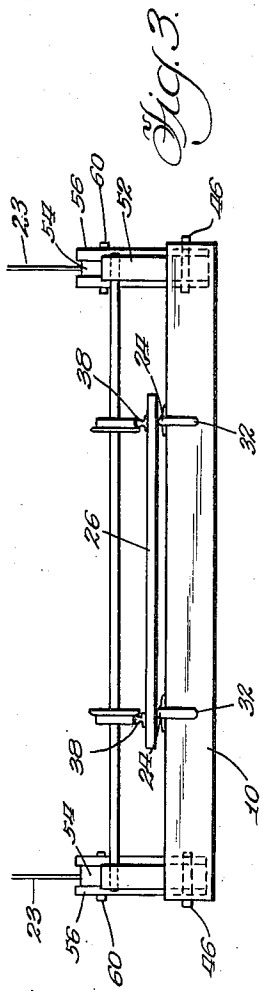


Fig. 3.

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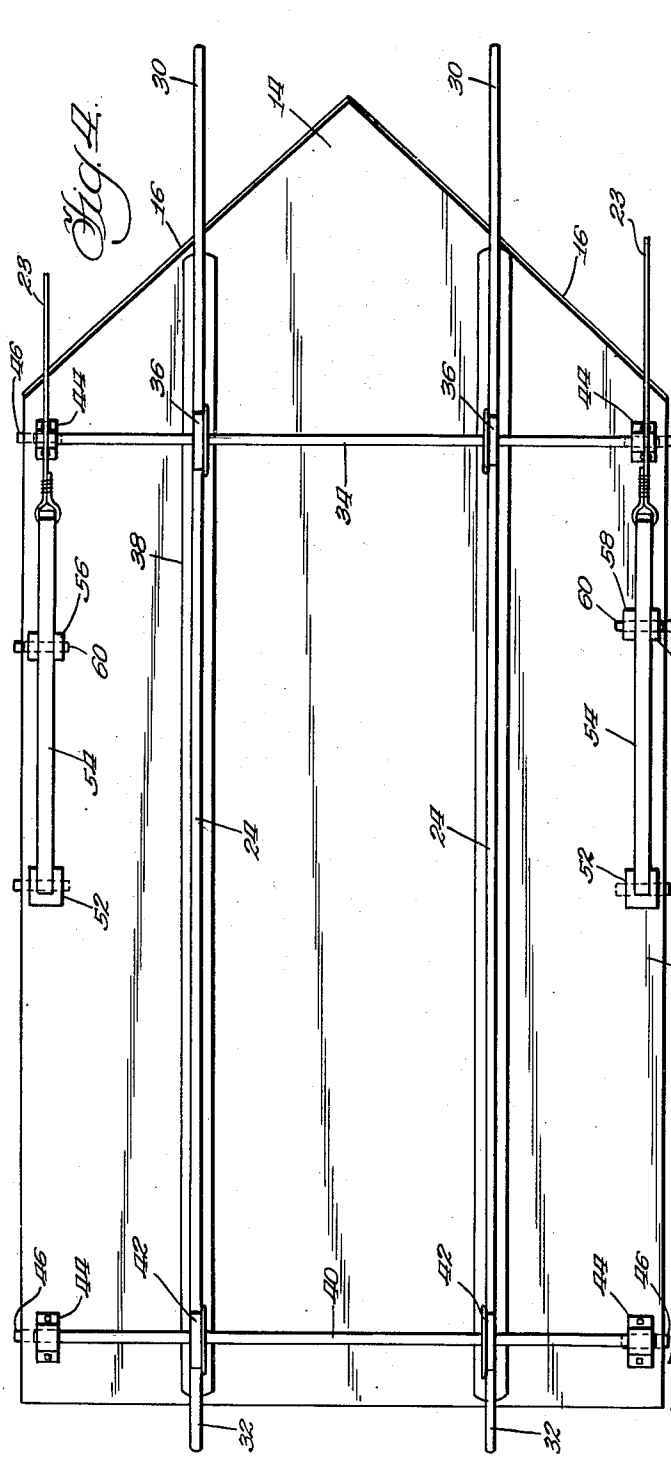


Fig. 4.

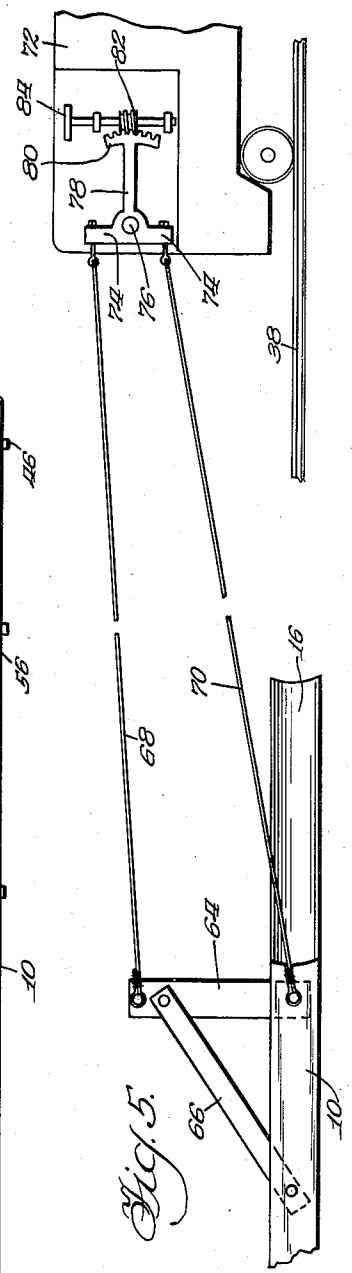


Fig. 5.

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TRACK BALLASTING

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Application September 17, 1949, Serial No. 116,335

8 Claims. (Cl. 104—7)

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Our invention relates to maintenance of a railroad right of way and includes among its objects and advantages an improved track ballasting system.

In the accompanying drawings,

Figure 1 is a side elevation of the novel portion of a track ballasting outfit according to the invention;

Figure 2 is an enlarged side elevation of the plow;

Figure 3 is an enlarged rear end elevation of the plow;

Figure 4 is a plan view of the plow; and

Figure 5 indicates a modified arrangement for controlling the elevation of the plow.

In the embodiment of the invention selected for illustration, the plow 10 is a fabricated frame with a smooth bottom adapted to slide over the underlying ground indicated at 12 in Figure 1. The front end of the plow is V-shaped, with a slightly concave forwardly facing edge 16, to push earth to either side. In Figure 1 the old bed is indicated at 18, and the ballasting operation involves lifting the track 20 and reconditioning the material upon which the track rests with cracked stone or other suitable materials. To get the parts into operation as in Figure 1, a short section of track 20 is lifted so that the plow 10 can be pushed in place from one side. This is usually done with jacks. After the plow is in place as in Figure 1, it is connected to a locomotive indicated at 22, as by means of two cables 23 one at each side of the plow. The top of the plow is provided with spaced slide rails 24 positioned to engage the individual ties 26 and support the elevated section 28 of the track. At the front end, the slide rails 24 are curved downwardly as indicated at 30 so that if any of the ties are connected to the rails loosely, the inclined sections 30 will still get under the ties and lift them up against the rails. The following ends of the slide rails 24 are also bent down as indicated at 32 to release the ties gently.

To keep the plow well aligned with the track we provide a detachable front axle 34 carrying wheels 36 positioned to ride on top of the track rails 38. A duplicate axle 40 at the rear end of the plow similarly supports the rear guide wheels 42. Both axles must be removable to permit the skid to be installed. We have indicated standards 44 for the end bearings of both axles, detachably connected to the plow. Each standard enters a suitable socket in the plow, and is fastened in place by a dowel pin 46. The axle ends 48 may turn in conventional plain bearings 50.

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We have indicated adjustable means for connecting the tension cables 23 to the plow, which connection includes an anchor 52 about midway of the side of the plow and a tension arm 54 pivotally connected to the anchor 52. The elevation of the bar 54 may be quickly adjusted from time to time by means of standards 56, each provided with a series of spaced holes 58 to receive a dowel pin or fastening bolt 60.

In use, the operator of a locomotive 22 draws the plow along very slowly while a gang of workmen positioned around the empty space at 62 behind the rear end of the plow throw in the desired amount of ballast and settle the track in place by suitable tamping and other manipulation. The supplies for ballasting can come up on the same track 20 behind the plow, or they can be conveniently dumped in piles from a parallel track. If the plow starts to gouge a little too deeply or not quite deeply enough, the operator of the locomotive gives a little slack on the tension cables 23, and one of the crewmen can lower or raise the tension bars 54 quickly and easily to correct the deviation.

In Figure 5 the same plow 10 is shown equipped with detachable standards 64 and tension braces 66 near the front end. Two tension cables are provided on each side, an upper tension cable 68 and a lower cable 70. At the rear end of the locomotive 72 the front ends of the cable 68 and 70 are connected to the arms 74 of a short equalizer pivoted at 76, which carries a forwardly directed arm 78 and a toothed sector 80. The worm 82 can be manipulated by turning the hand wheel 84 to rotate the equalizer and shift the tension in the cables 68 and 70. As it is possible to arrange the cable 70 so that its line of pull passes well below the center of resistance of the plow, and the parts carried thereby, while the cable 68 is well above the center of resistance, this provides a somewhat more effective and quickly adjustable control of the movement of the skid.

Others may readily adapt the invention for use under various conditions of service by employing one or more of the novel features disclosed or equivalents thereof. For instance, the cables 68 and 70 might be provided with take-up connections at the plow end also, so that the workmen standing beside the plow can control the elevation of it, with or without assistance from the locomotive personnel. It will be understood by those skilled in the art that a substantial portion of the material filled in at 62 behind the plow will be the same material pushed to either side by the front end of the plow. Such

material will lie close beside the space at 62 in a convenient ridge on each side, where it can be sorted over and wholly or partially put back under the track. As at present advised with respect to the present scope of our invention, we desire to claim the following subject matter:

1. Equipment for reconditioning a railroad right of way comprising, in combination: a shallow plow having a large flat bottom adapted to engage and slide on underlying earth; said plow having a pointed breast adapted to thrust to either side all material above the level of its bottom; said plow being of sufficient width to plow a strip at least as wide as the length of a railroad tie; skids on said plow adapted for sliding engagement with the bottoms of the ties of a previously laid railroad track, to support said ties and the track associated therewith as said plow moves along under said track; positive guide means in the nature of front and rear axles mounted on said plow and positioned above said plow; each axle carrying a pair of flanged wheels having guiding engagement with the rails of the track, whereby said plow is held in alignment with said track as it moves along; tension means extending forward from said plow on each side thereof; said tension means having connections at its front end for connecting it to a locomotive or equivalent traction means; and means for connecting the rear end of said tension means to said plow; said tension means being adjustable to vary the direction of pull of said plow in a vertical plane; said tension means on each side including an upper cable connected to deliver tension well above the center of resistance of said plow; a lower cable connected to deliver tension well below the center of resistance of said plow; and means at the forward ends of said upper and lower cables for varying the effective length of said cables; whereby any deviation by said plow in the vertical plane from the desired path abruptly transfers the effective pulling force to a position exerting a strong corrective force on the plow.

2. Equipment for reconditioning a railroad right of way comprising, in combination: a plow having a flat bottom adapted to engage and slide on underlying earth; said plow having a pointed breast adapted to thrust to either side material above the level of its bottom; said plow being of sufficient width to plow a strip at least as wide as the length of a railroad tie; skids on said plow adapted for sliding engagement with the bottoms of the ties of a previously laid railroad track, to support said ties and the track associated therewith as said plow moves along under said track; positive guide means in the nature of front and rear axles mounted on said plow and positioned above said plow; each axle carrying a pair of flanged wheels having guiding engagement with the rails of the track, whereby said plow is held in alignment with said track as it moves along; tension means extending forward from said plow on each side thereof; said tension means having connections at its front end for connecting it to a locomotive or equivalent traction means; and means for connecting the rear end of said tension means to said plow; said tension means being adjustable to vary the direction of pull on said plow in a vertical plane.

3. Equipment for reconditioning a railroad right of way comprising, in combination: a plow to slide on the road bed and under the track; said plow having a breast adapted to thrust material laterally; guide means on said plow adapted for sliding engagement with the bottoms of the ties of a previously laid railroad track, to support said ties and the track associated therewith as said plow moves along under said track; a second guide means including wheels having guiding engagement with the rails of the track, whereby said plow is held in alignment with said track as it moves along; and tension means extending forward from said plow on each side thereof; said tension means having connections at its front end for connecting it to a locomotive or equivalent traction means.

4. Equipment for reconditioning a railroad right of way comprising, in combination: a plow to slide on the road bed and under the track; said plow having a breast adapted to thrust material laterally; guide means on said plow adapted for sliding engagement with the bottoms of the ties of a previously laid railroad track, to support said ties and the track associated therewith as said plow moves along under said track; a second guide means including wheels having guiding engagement with the rails of the track, whereby said plow is held in alignment with said track as it moves along; and tension means extending forward from said plow on each side thereof; said tension means having connections at its front end for connecting it to a locomotive or equivalent traction means; said tension means including an upper cable on each side delivering tension well above the center of resistance of said plow; and a lower cable on each side connected to deliver tension well below the center of resistance of said plow; whereby any deviation by said plow in the vertical plane from the desired path abruptly transfers the effective pulling force to a position exerting a strong corrective force on the plow.

5. Equipment according to claim 4, in combination with means for adjusting the lengths of said upper and lower cables to vary the position toward which corrective forces are exerted.

6. Equipment according to claim 5, in which adjusting means operates simultaneously to increase the length of an upper cable and decrease the length of a lower cable, or vice versa.

7. Equipment according to claim 4 in combination with means for adjusting the length of certain of said cables to vary the position toward which corrective forces are exerted.

8. Equipment according to claim 7 in which said adjusting means is located adjacent the front end of the cable to be adjusted.

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