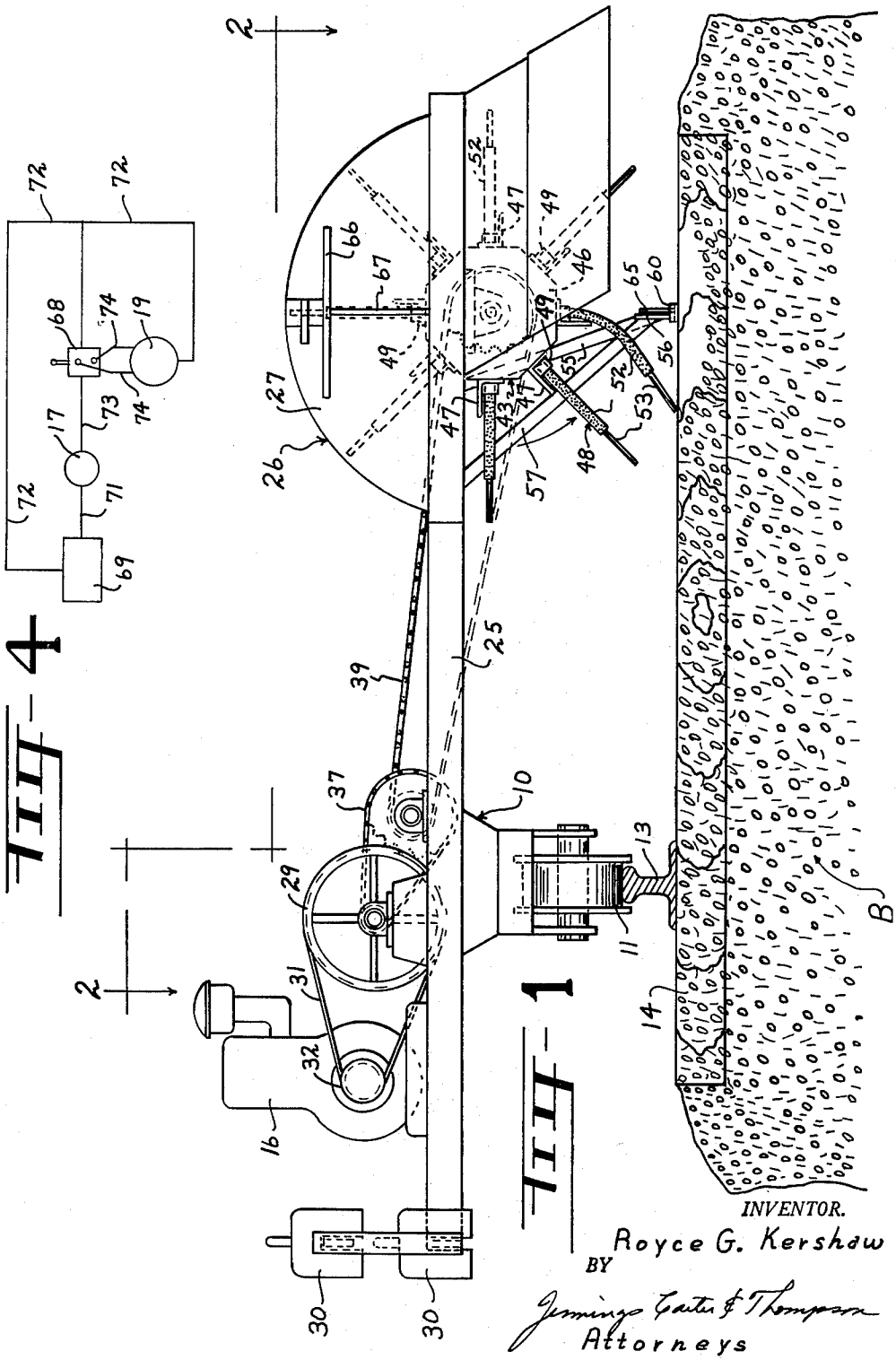
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APPARATUS FOR REMOVING BALLAST FROM BETWEEN CROSSTIES

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APPARATUS FOR REMOVING BALLAST FROM BETWEEN CROSSTIES

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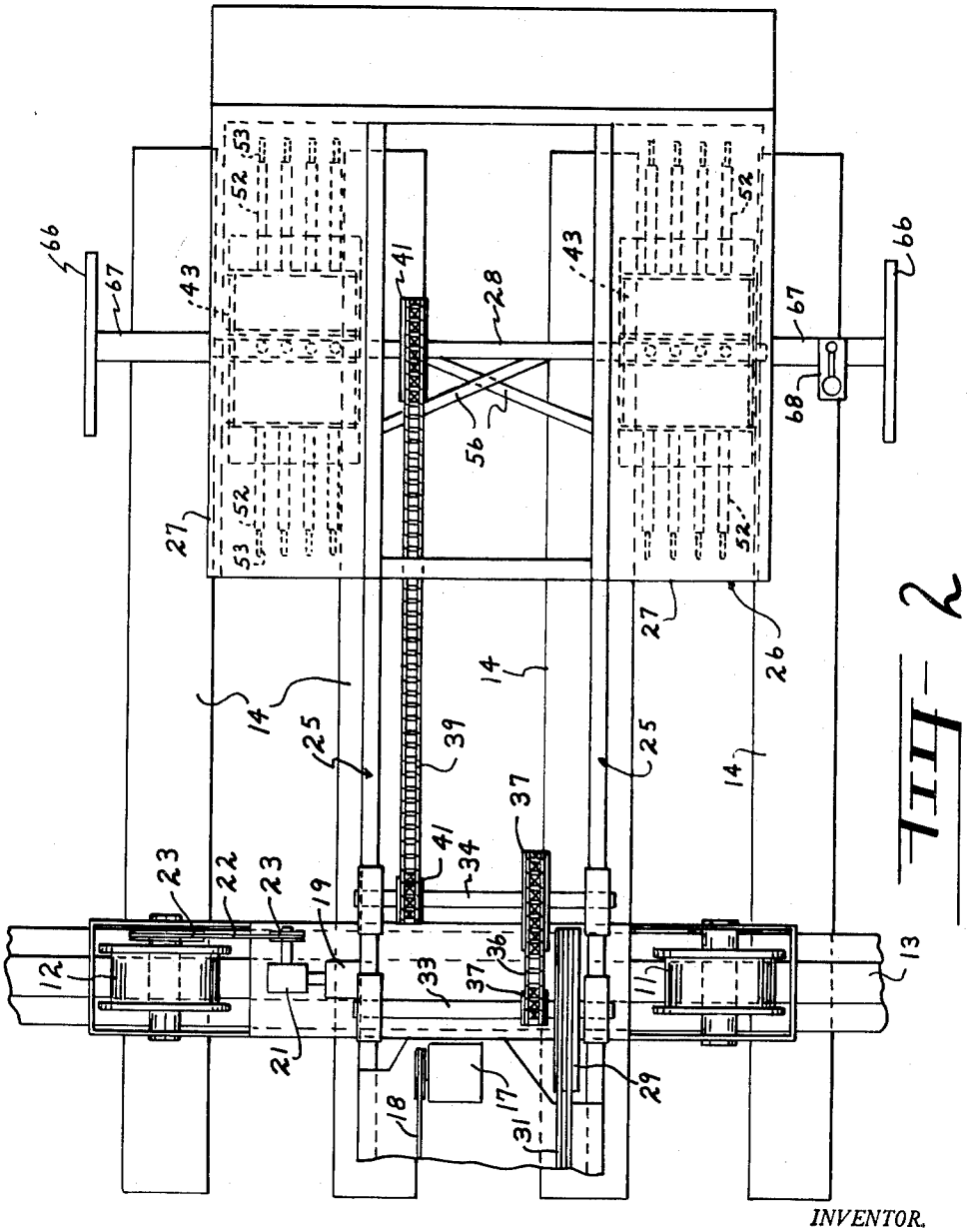


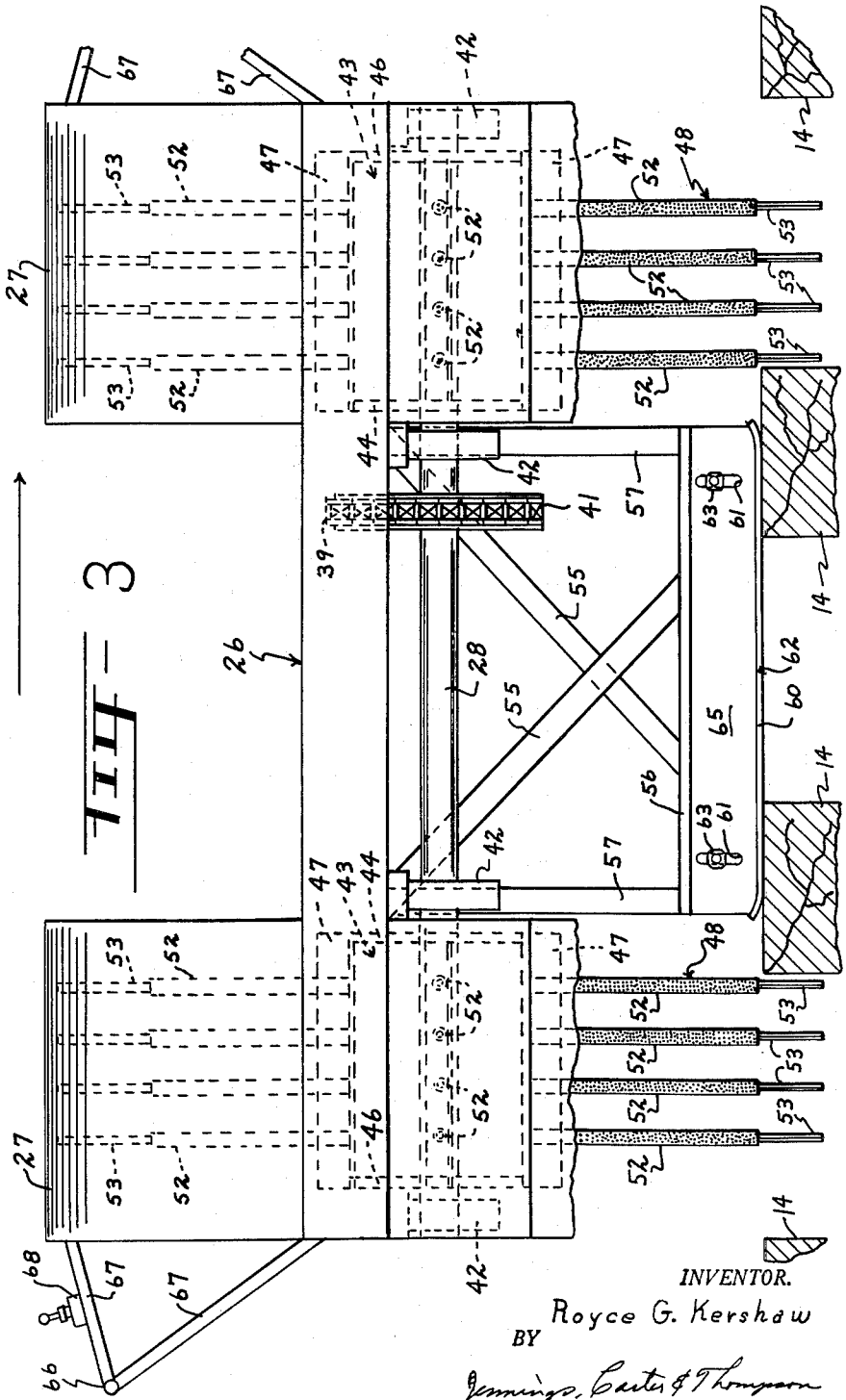
FIG. 2

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APPARATUS FOR REMOVING BALLAST FROM BETWEEN CROSSTIES

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APPARATUS FOR REMOVING BALLAST FROM BETWEEN CROSSTIES

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This invention relates to apparatus for removing ballast from the upper surface of and between the crossties of a railroad track and more particularly to such apparatus in which means is provided to support a digging implement frame for continuous sliding movement along the upper surface of crossties.

Heretofore, in cribbing apparatus for removing ballast from between crossties, the digging units have been wheels with attachments thereon mounted in an implement frame. Due to the rigid nature of such prior digging units it has been necessary for the operator to raise the digging tools when passing from crib to crib.

By the present invention, apparatus is provided to remove ballast from between crossties either between the rails or in the area of a removed rail comprising digging implements in the form of flexible lengths of wire rope or the like mounted for rotation about an axis generally normal to the crossties together with means sliding along the upper surface of the crossties to support the implements as the apparatus moves along the track whereby the cribs are dug out without having to lift the frame.

It is an object of the present invention to provide apparatus to remove ballast from between crossties in which a digging unit having flexible tools is mounted for rotation about an axis generally normal to the crossties and a skid of a length sufficient to span a pair of crossties supports the digging tools for sliding movement from one crib to the next, the flexible diggers simply sliding across the crossties.

A further object of the present invention is to provide means to support a brush-like digging implement over the crossties in the area of a removed rail, which means slides along the crossties and is adjustable vertically to determine the height of the implement relative to the crossties.

An additional object of the present invention is to provide apparatus in which a skid for sliding along the upper surface of the crossties is mounted between a pair of brush-like implements to support the implements over the crossties, the skid being of a length to span a pair of adjacent crossties.

Apparatus embodying features of my invention is illustrated in the accompanying drawings, forming a part of this application, in which:

FIG. 1 is a front elevational view of my ballast removing apparatus mounted for movement along one rail of a railroad track with the other rail removed;

FIG. 2 is a top plan view of the apparatus shown in FIG. 1 looking generally along the line 2—2 of FIG. 1;

FIG. 3 is a right side elevational view of the digging implement frame of the apparatus shown in FIGS. 1 and 2 and showing a pair of spaced brush-like digging implements with a skid positioned therebetween to limit the working depth of the implements; and

FIG. 4 is a schematic view of the fluid system of my apparatus.

Referring now to the drawings for a better understanding of my invention, I show ballast removing apparatus comprising a railway vehicle with a vehicle frame indicated generally by the numeral 10 and having a pair of double flanged wheels 11 and 12 thereon riding on a rail 13 which is supported on crossties 14. Ballast B supports crossties 14.

A gasoline engine or other power source 16 is mounted

on frame 10 and drives a fluid pump 17 (see FIG. 2) by belt 18. Pump 17 supplies fluid through suitable fluid lines (not shown) to fluid motor 19. Fluid motor 19 drives wheel 12 through gear box 21 and chain 22. Chain 22 passes over sprockets 23 on the output shaft of gear box 21 and the axle of wheel 12. Thus, to propel the vehicle along rail 13, fluid motor 19 is energized and wheel 12 is driven thereby. When the apparatus is in operable cribbing position, one of the rails is removed and it is desirable to have double flanged wheels to ride on the remaining rail to keep the apparatus from sliding off the rail.

A digging implement frame indicated generally by the numeral 26 is secured to cross members 25 of frame 10 and is disposed in the area of the removed rail on one end of vehicle frame 10. Frame 26 comprises a pair of implement housings 27 disposed on opposite ends of frame 26. To counterbalance the weight of the implement frame, counterweights 30 are disposed on the opposite end of vehicle frame 10 and thereby tend to balance vehicle frame 10. An implement shaft 28 is supported by frame 26 and is driven by engine 16 through a mechanical drive. Pulley 29 is driven from engine 16 by belts 31 which extend between drive pulley 32 on engine 16 and pulley 29. Cross shaft 33 is driven from pulley 29 secured thereto and cross shaft 34 is driven from shaft 33 by chain 36 passing over sprockets 37 on shafts 33 and 34. Shaft 28 is driven from cross shaft 34 by a chain 39 passing over sprockets 41 on shafts 28 and 34. Engine 16 is provided with a suitable centrifugal clutch which engages at a predetermined engine speed.

Referring now to FIG. 3, the implement shaft 28 is mounted in bearings 42 which are secured to the frame 26. A reel 43 is secured to each end of shaft 28 and comprises end plates 44 and 46. Angles 47 extend between and are secured to the end plates 44 and 46. Ballast digging implements or elements indicated generally by the numeral 48 are secured to angles 47 by cover plates 49 having grooves therein. Cover plates 49 are secured to angles 47 by suitable nuts and bolts (not shown).

Each of the elements 48 comprises a length of rubber hose 52 secured about a length of wire rope 53. The rope may be slightly longer than the rubber hose 52 to extend therefrom for engaging ballast.

A vertically extending plate 56 is mounted on frame 26 with cross members 55 secured to plate 56 at one end thereof and to the underside of frame 26 at the opposite ends thereof. End supports 57 secure plate 56 at its ends to frame 26. A skid 62 is mounted on plate 56 and is vertically adjustable thereon. Skid 62 comprises a runner 60 and a vertical support member 65 extending therefrom. Plate 56 to which supports 55 and 57 are secured has studs 63 extending therefrom to fit in vertically extending slots 61 in member 65. Suitable nuts may be positioned over studs 63 to secure skid 62 to plate 56. Skid 62 supports the frame 26 by engaging the upper surface of crossties 14 thus to limit the working depth of the digging tools. Runner 60 is of a length to span at least two adjacent crossties. The average crosstie is about 8 inches wide with a 13 inch space or crib between adjacent crossties. Thus, the center line to center line distance between adjacent crossties is around 21 inches. The skid is normally of a length about 24 inches with the reels 43 being spaced slightly over 24 inches to allow skid 62 to be easily positioned therebetween. The reels 43 are of a length from the outer surface of plates 44 and 46 of around 12 inches. The center line distance from one reel 43 to the other reel 43 is about 37 inches. Thus, the flexible digging elements 48 on the reels 43 are of a length to reach in the

crib between adjacent crossties and cover a width approximately equal to the crib between adjacent crossties 14. As the digging elements 48 move over a crosstie they are bent upon engagement with the crossties but easily pass over the crossties to the adjacent cribs as elements 48 are of a flexible nature.

A handle 66 is provided at the outer end of each housing 27 and supports 67 secure handle 66 to housing 27. Handle 66 is provided on each end of the apparatus so that an operator may move along the track with the apparatus and control the movement thereof in either direction of travel. A valve 68 is positioned on the upper support 67 to control the actuation of fluid motor 19 for propelling the vehicle along the track. Valve 68 is detachable and may be positioned adjacent either of the handles 66 depending on the direction of travel of the apparatus. The operator normally walks behind the apparatus as it is moving along the track.

Referring now to FIG. 4, a schematic diagram of the fluid system is indicated. Reservoir 69 supplies fluid to pump 17 through supply line 71. Pump 17 supplies fluid to control valve 68 through line 73 and valve 68 controls reversible fluid motor 19 through control lines 74. Fluid is returned to reservoir 69 from motor 19 and valve 68 through return lines 72.

In operation, skid 62 is set at the desired height by adjusting it relative to the supporting plate 56. This controls the digging depth of elements 48 relative to the tops of the crossties 14. Gasoline engine 16 is started and upon reaching a predetermined r.p.m., shaft 28 is driven through pulley 29 and cross shafts 33 and 34. Then, the operator of the apparatus who is positioned at one of the handles 66 actuates control valve 68, energizing fluid motor 19 and driving wheel 12 thereby propelling the apparatus along the rail 13. Runner 60 slides along the upper surface of crossties 14 and the operator merely walks along behind the apparatus as it is moving along the existing rail and assures that the skid 56 does not catch on any crossties or other obstructions. If any ballast is on the upper surface of the crossties the front implement unit sweeps the crossties.

From the foregoing, it will be understood that I have provided apparatus to remove ballast from between existing crossties comprising flexible digging elements or implements mounted for rotation about an axis generally parallel to the track and having a skid sliding along the upper surface of the crossties to support the implements as the apparatus is moved along the track. The skid is adjustable vertically to determine the height of the implements relative to the crossties and supports the implement frame on the crossties. The skid is of a length to span at least a pair of adjacent crossties so that it will slide easily therealong without catching on any of the crossties. Due to the flexible nature of the digging tools it is not necessary to raise the same when moving from crib to crib, as heretofore was the case with the rigid wheel type cribbers. With my improved apparatus the diggers are flexible enough to permit movement from crib to crib with the skid resting on the crossties.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. Apparatus for removing ballast from cribs between crossties of a railroad track, comprising a main frame having wheels to ride on the track, a digging implement frame over the crossties, a brush-like digging unit mounted for rotation on said implement frame on an axis generally normal to the crossties and having flexible members that extend below the crossties to dig ballast from the cribs, and means on the implement frame to support the same from the upper surface of the crossties for movement across the crossties from one crib to the next.

2. Apparatus for removing ballast from cribs between crossties of a railroad track, comprising a main frame having wheels to ride on the track, an implement frame over the crossties and mounted over said main frame, a digging unit mounted for rotation on said implement frame on an axis generally normal to the longitudinal axis of the crossties, digging implements on said unit of a length to extend below the upper surface of the crossties for digging ballast between the crossties, said digging implements being flexible to pass over the crossties without any vertical movement of the implement frame as the apparatus moves along the track, and means on the implement frame engaging the upper surface of the crossties in sliding relation to support said implement frame for movement from one crib to the next.

3. Apparatus for removing ballast from cribs between crossties of a railroad track, comprising a main frame having wheels to ride on the track, an implement frame on an end of said main frame, an axle mounted on said implement frame and extending in a direction generally normal to the longitudinal axis of the crossties, a rotary digging unit mounted on said axle for rotation, means to rotate said axle and digging unit, digging implements on said unit of a length to extend below the upper surface of the crossties in the cribs between adjacent crossties to dig ballast thereat, said digging implements being flexible to pass over the crossties from one crib to the next without any vertical movement of the implement frame, and a skid mounted on the implement frame to support the same for sliding movement over the upper surface of the crossties, said skid being of a length to span at least two adjacent crossties.

4. Apparatus in claim 3 in which said skid is mounted for vertical adjustment whereby the digging depth of the digging implements relative to the crossties may be adjusted.

5. Apparatus for removing ballast from cribs between crossties of a railroad track in the area under a removed rail comprising a main frame having wheels to ride on one rail only of the track, an implement frame mounted on an end of the main frame over the crossties in the area of the removed rail, a digging unit mounted for rotation on said implement frame on an axis generally normal to the longitudinal axis of the crosstie, digging elements on said unit of a length to extend below the upper surface of the crossties for digging ballast between the crossties, said digging elements being flexible to pass over the crossties without any vertical movement of the implement frame as the apparatus moves along the track, and means on the implement frame engaging the upper surface of the crossties in sliding relation to support said implement frame movement from one crib to the next.

6. Apparatus for removing ballast from cribs between crossties of a railroad track, comprising a main frame having wheels to ride on the track, an implement frame extending from the main frame over the crossties, a pair of aligned digging units mounted on said implement frame for rotation on an axis generally normal to the longitudinal axis of the crossties, said digging units being spaced from each other at least the distance between two adjacent crossties, digging implements on each of said units of a length to extend below the upper surface of the crossties in the cribs between adjacent crossties to dig ballast thereat, said digging implements being flexible to pass over the crossties from one crib to the next without any vertical movement of the implement frame, and a skid mounted between the digging units to support the implement frame for sliding movement along the crossties.

7. Apparatus for removing ballast from cribs between crossties of a railroad track, comprising a main frame having double flanged wheels to ride on the track, means to drive one of said wheels to propel said apparatus along

the track, an implement frame extending from the main frame over the crossties, a pair of generally aligned rotary digging units mounted on the implement frame on longitudinal axes extending in a direction generally parallel to the track and being spaced from each other at least the distance between two adjacent crossties, means to rotate the digging units, digging implements on each of said units of a length to extend below the upper surface of the crossties in the cribs between adjacent crossties to dig ballast thereat, said digging implements being flexible to pass over the crossties from one crib to the next without any vertical movement of the implement frame, and a skid mounted on the implement frame between the digging units for sliding movement over the upper surface of the crossties and supporting the implement frame thereon.

8. Apparatus for removing ballast from the cribs between crossties of a railroad track, comprising a main frame having double flanged wheels to ride on the track, means to drive one of said wheels to propel said apparatus along the track, an implement frame extending from the main frame over the crossties, a pair of generally aligned rotary digging units mounted on said implement frame on longitudinal axes extending in a direction generally parallel to the rails and being spaced from each other at least the distance between two adjacent crossties, means to rotate the digging units, digging implements on each of said units of a length to extend below the upper surface of the crossties in the cribs between adjacent crossties to dig ballast thereat, said digging implements being flexible to pass over the crossties from one crib to the next without any vertical movement of the implement frame, and a skid mounted on the implement frame between the digging units for sliding movement over the upper surface of the crossties to support the implement frame thereon, said skid being of a length at least equal to the distance between adjacent crossties.

9. Apparatus for removing ballast from the cribs between crossties of a railroad track in the area under a removed rail comprising a main frame having double flanged wheels to ride on one rail of the track, means to drive one of said wheels to propel said apparatus along

the track, an implement frame extending from the main frame over the crossties to the area of the removed rail, a pair of generally aligned digging units mounted for rotation on said implement frame on longitudinal axes extending in a direction generally parallel to the rails and being spaced from each other at least the distance between two adjacent crossties, means to rotate the digging units, digging implements on each of said units of a length to extend below the upper surface of the crossties in the cribs between adjacent crossties to dig ballast thereat, said digging implements being flexible to pass over the crossties from one crib to the next without any vertical movement of the implement frame, a housing extending over each of said digging units and thereby deflecting ballast thrown upwardly by the digging implements, and a skid secured to said implement frame and extending between the digging units to space the units at least the length of the skid, said skid being of a length to span two adjacent crossties and sliding over the upper surface of the crossties to support the implement frame thereon.

10. Apparatus defined in claim 9 in which said skid is mounted for vertical adjustment thereby to determine the digging depth of the digging implements.

11. Apparatus defined in claim 9 in which gripping means are provided at each end of said implement frame adjacent the digging units whereby workmen may aid in guiding said apparatus along the track.

12. Apparatus defined in claim 9 in which counterbalance weights are positioned on a side of the main frame opposite said implement frame whereby workmen may easily move said implement frame.

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