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2,861,359

BALLAST PLOW

Filed May 11, 1953

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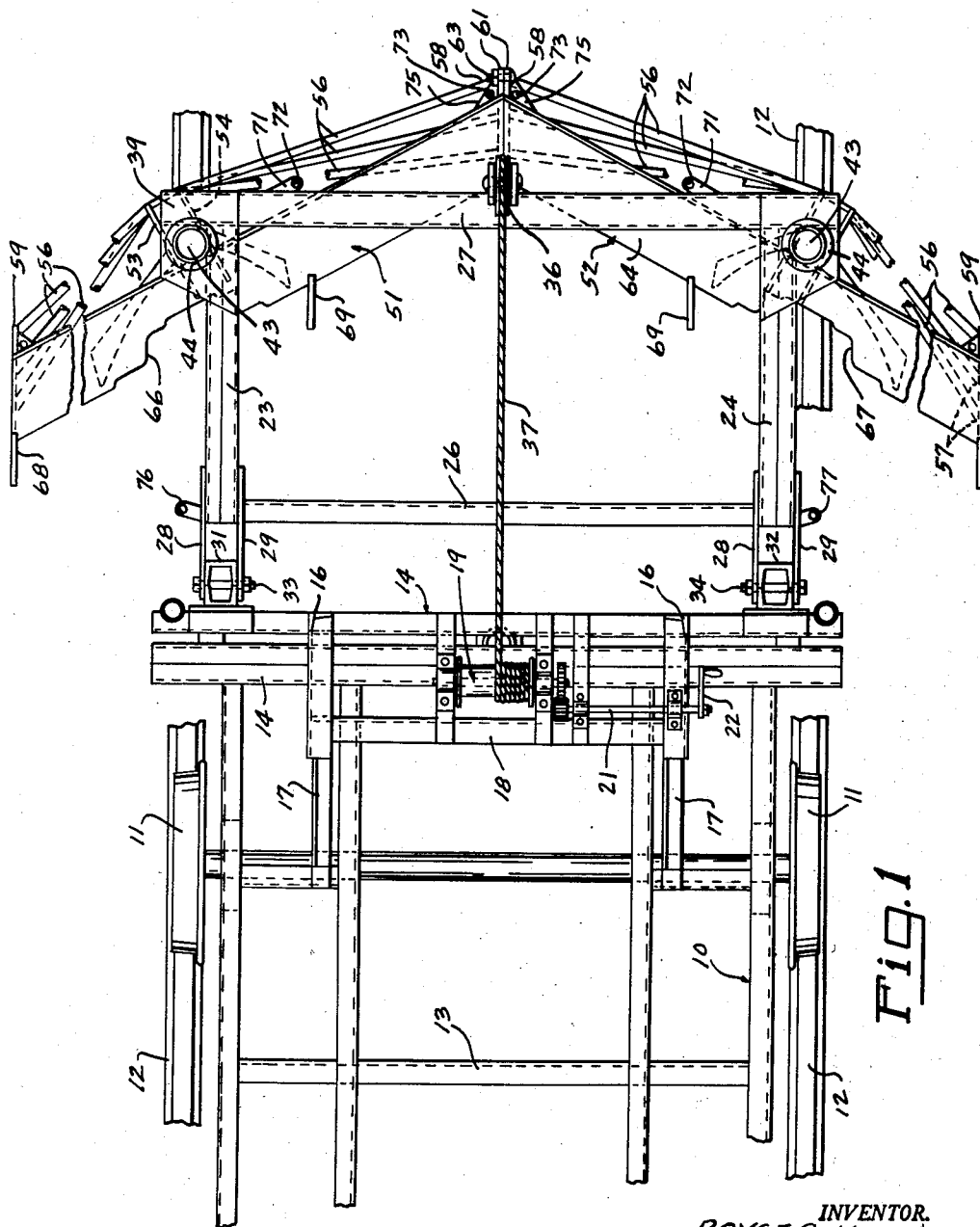


Fig. 1

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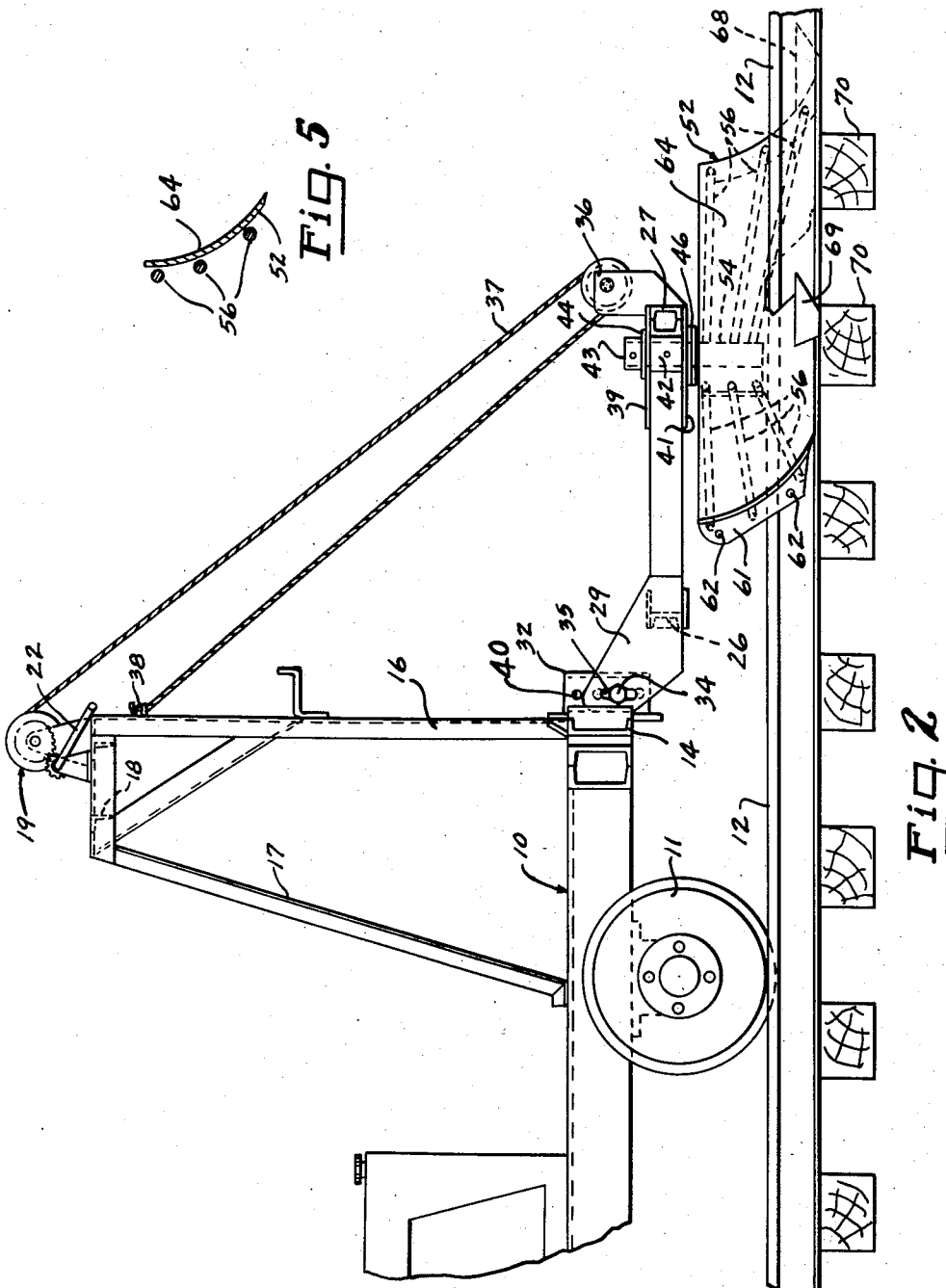
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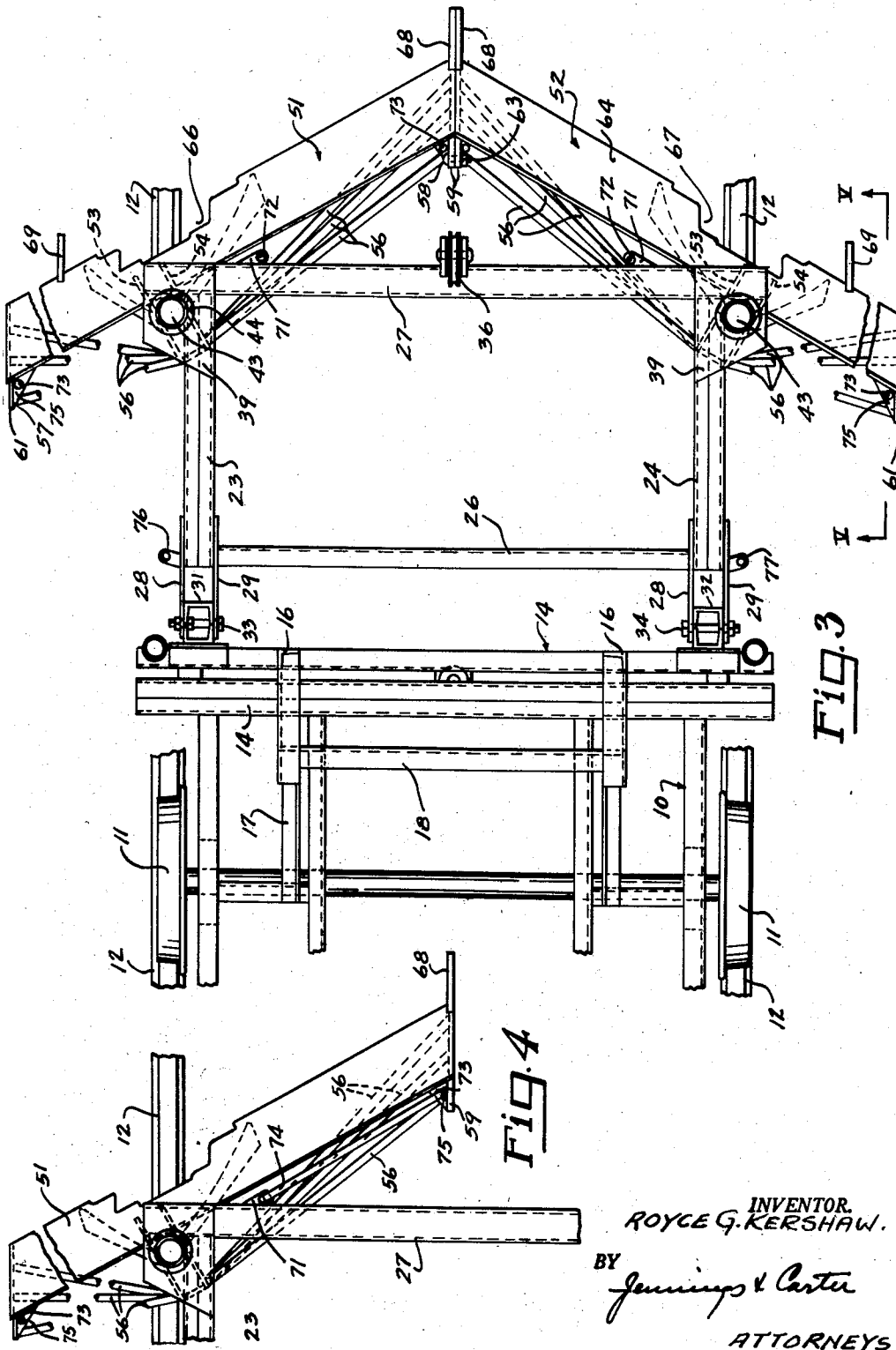
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BALLAST PLOW

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4 Claims. (Cl. 37—104)

This invention relates to a plow for spreading and distributing railroad ballast and has for its principal object the provision of such a plow with reversible blades whereby ballast may be plowed inwardly or outwardly with respect to the rails.

A further object of my invention is the provision of a ballast plow having reversible blades together with improved means for mounting and operating the same whereby ballast may be evenly distributed along the rails with a minimum expenditure of time and labor.

As is well known in the art to which my invention relates, it has heretofore been the custom, when applying ballast to railroads, to unload the ballast from dump cars alongside the track and then employ manual labor to shovel the ballast inwardly and spread it between the rails. Following that the track would be raised and the ballast tamped under the ties. With the advent of mechanical tampers the labor involved in the latter operation has been greatly reduced. This invention provides for the distribution of the ballast mechanically in preparation for the mechanical tampers, thus obviating the most laborious portion of the ballasting operation. One of the principal advantages of my invention is the provision of blade mounting means whereby the blades may be rotated through angles of 180° to present the working faces forwardly or rearwardly to move material inwardly of the rails when the plow is moving in one direction, and when reversed to move material outwardly of the rails when the plow is moving in the opposite direction. Other features of my invention reside in the details of construction of the blades; in the manner in which they are joined to the frame and braced for operation; in the provision of skids and guards to prevent hanging and consequent damage, and in many other details which will become apparent from the following description, and from the drawings forming a part of this application, in which:

Fig. 1 is a plan view of my improved plow with the blades in position to move the ballast inwardly of the rails;

Fig. 2 is a side elevational view thereof with blades in position to plow the ballast outwardly of the rails;

Fig. 3 is a view similar to Fig. 1, with parts omitted showing blades in the position shown in Fig. 2;

Fig. 4 is a view with parts broken away of the apparatus with a single blade in use; and,

Fig. 5 is a cross-section of a blade taken along the line V—V of Fig. 3.

Referring now to the drawings for a better understanding of my invention, my improved apparatus comprises a transporting vehicle including a main frame 10 which is suitably mounted on flanged wheels 11 to run on a railroad track 12. The frame may be suitably braced by a cross-brace 13 and has mounted at the forward end thereof a cross beam member 14. Extending upwardly from the frame 10 is an upper frame comprising forward upstanding members 16 and rear members 17 which are

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joined together at the top by a cross beam 18. Mounted on top of the upper frame is a windlass 19. An operating shaft 21 for the windlass 19 is provided on its outer end with a crank 22 for manual operation.

The frame for my improved plow comprises two forwardly extending lateral frame members 23 and 24 which are joined together by a rear cross brace 26 and by a relatively heavy forward beam 27. Mounted at the rear of each of the lateral beams 23 and 24 are side connecting plates 28 and 29, and mounted on the front of the main frame of the apparatus are brackets 31 and 32 to which the connecting plate members 28 and 29 are pivotally connected by means of bolts 33 and 34. The connecting plates are slotted as shown at 35 to receive the bolts 33 and 34, thereby providing means whereby the plow frame may move up and down a limited amount relative to the main frame 10. The brackets 31 and 32 are each provided with a plurality of vertically aligned holes 40 for receiving the bolts 33 and 34, thereby providing means for adjusting the position of the plow frame for various sizes of rail. Mounted midway the ends of the forward cross beam 27 is a pulley 36 around which passes a cable 37 having one end secured at 38 to the upper frame and the other end thereof passing around the windlass 19. By this means, the plow frame may be raised and lowered with reference to the main frame of the apparatus 10.

At each of the forward corners of the plow frame are mounted upper and lower gusset plates 39 and 41, each pair of which provides means for mounting a bearing 42 for a sleeve or pivot post 43 which extends upwardly therethrough and downwardly below the side frame members 23 and 24. Collars 44 and 46 on each of the pivot posts prevent vertical movement relative to its bearing.

At the forward corners of the plow frame, I show two blades 51 and 52 which are mounted for angular movement in a horizontal plane about the vertical pivot posts 43 and are detachably joined together at their inner ends between the rails 12. The free ends of the blades are of a length greater than one-half the width of the frame so that when joined together as shown in Figs. 1 and 3 they assume a V-shape. Secured to the rear of each of the blades 51 and 52, with respect to the working face thereof, are two mounting plates 53 and 54, which are, in turn, welded, or otherwise secured to the associated pivot post 43, below the frame members 23 and 24. By thus mounting the blades it will be seen that they may be rotated in a horizontal plane about their vertical pivots 180° or more to turn their working faces in either direction. A plurality of reinforcing struts or rods 56 are secured to the rear of each of the blades as indicated at 57 and 58, and to the mounting plates 53 and 54, whereby to reinforce the blades and add stability to the mounting plates 53 and 54. Mounted on the rear face of each of the blades, at the ends thereof, are locking plates 59 and 61. Each of the locking plates is provided with a plurality of bolt holes 62 whereby the two blades may be detachably locked, or joined together at their inner ends by means of bolts 63.

Each of the blades 51 and 52 is provided with a dish or concave working face 64 and the blades are notched at 66 and 67, where they pass over the rails 12. Secured to, and extending forwardly from, the working faces of the blades are a plurality of tie skids 68, 69. As shown in Fig. 2 of the drawing, the tie skids are provided at their forward ends with upwardly inclined undersides which slide over the ties 70 and thus prevent the blades from hanging on the ties.

In Fig. 1 of the drawing the blades are shown rotated to the position where the working faces 64 and the tie skids 69 face rearwardly. In this position the locking

plates 61 are bolted together by the bolts 63 and the blades are in position to plow ballast inwardly across the road bed as the plow is moved rearwardly. In Fig. 3 of the drawing the blades are shown rotated to the position where the working faces are forwardly directed so as to plow ballast outwardly of the road bed as the plow is moved forwardly. In this position the locking plates 59 are joined together by the bolts 63.

Occasionally it may be found desirable to employ only one blade, as shown in Fig. 4. In order to provide for such use, I secure on the forward side of the cross beam 27 near each end thereof, a bracket 71 with a vertical hole 72 passing therethrough. Also, secured to each of the locking plates 59 and 61 is a gusset 75 which is welded to the rear face of the blade and which is provided with a vertical hole 73. When using a single blade, a stabilizing rod 74 is mounted at the rear of the blades with its ends extending downwardly through the holes 72 and 73 which serves to hold the blade in proper position against pivotal movement. Also, brackets 76 and 77 are provided on the lateral frame members 23 and 24 for reception of the stabilizing rod 74 when either of the blades is to be employed singly in the plowing-in position.

From the foregoing description, the operation of my improved ballast plow will be readily understood. Assuming first that ballast has been unloaded along the sides of the railway track, and it is desired to distribute it evenly across the road bed and between the rails. The blades are turned to the position shown in Fig. 1 of the drawing with the working faces at the rear side with respect to the plow frame. The plow is then moved rearwardly and the angle of the blades, as shown, is such as to draw the ballast inwardly between the rails and distribute it across the road bed. If it is desired further to distribute the ballast, the blades are rotated about their bearings 43 to the position shown in Fig. 3 of the drawing and bolted together as shown, and the plow is moved forwardly. This movement should provide an even distribution of the ballast, ready for the mechanical trammers and removes any excess ballast onto the road bed shoulder for final distribution. When the plow is in operation, the tie skids 68 and 69 slide along across the ties and maintain the plow in proper position with respect to the road bed. When the apparatus is not in use the forward end of the plow frame, with its blades, is raised by means of the windlass 19.

From the foregoing, it will be apparent that I have devised an improved railroad ballast plow, having reversible blades whereby to move ballast inwardly or outwardly of the track, which is simple and rugged of construction and which is effective to distribute ballast evenly across the road bed.

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. A railroad ballast plow comprising a supporting frame adapted for movement along a railroad track, a plow blade pivotally mounted intermediate its ends on a vertical pivot below each side of the frame and adapted for rotation through an angle of substantially 180° whereby the working face of the blade is presented selectively forwardly or rearwardly to convey the ballast outwardly or inwardly of the track, the length of each free end of each blade being greater than one-half the width of the frame, and means joining the free ends of said blades together inwardly of the frame whereby the blades thus joined assume a V-shape.

2. A railroad ballast plow comprising a rectangular frame, a blade mounted intermediate its ends on a vertical pivot at each front corner of the frame and adapted for pivotal movement below the plane of the frame whereby they may both be rotated through an angle of 180° to present the working faces of the blades selectively forwardly or rearwardly, the length of each free end of each blade being greater than one-half the width of the frame, locking plates on the free ends of the blades, and means for joining the locking plates together on the ends inwardly of the frame.

3. A railroad ballast plow comprising a rectangular frame pivotally mounted adjacent one end of a railroad vehicle, means for raising and lowering the front end of said frame relative to the railroad bed, a pair of plow blades mounted intermediate their ends below the front corners of the frame for pivotal movement about a vertical axis through an angle of 180° to present the working faces thereof selectively forwardly or rearwardly, locking plates on the free ends of the blades, and means to join the locking plates of the adjacent ends intermediate the sides of the frame.

4. In a railroad ballast plow, in combination with a railway vehicle, a rectangular frame pivotally mounted on one end of the vehicle to overhang the road bed, means to raise and lower the free end of the frame, and a pair of plow blades pivotally mounted under the forward corners of the frame on vertical pivots for rotation about said pivots whereby the working faces of the blades may be turned in either direction, said blades being notched where they pass over the railroad rails, tie skids on said blades maintaining the position of the plow with respect to the railroad track, and means to join the ends of the blades between the railroad rails.

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