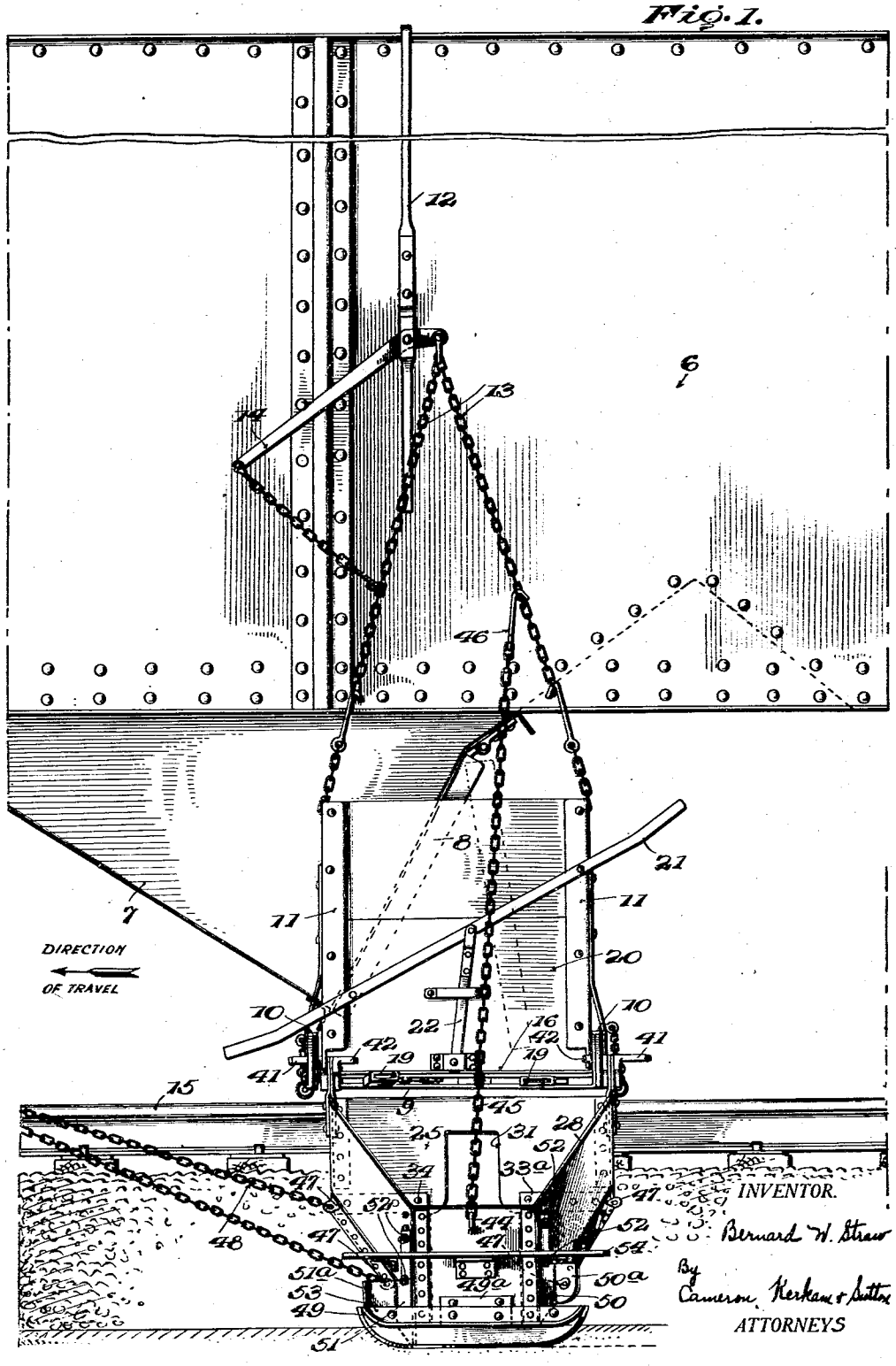
Jan. 14, 1930. B. W. STRAW 1,743,579

MEANS FOR DISCHARGING BALLAST

Filed Aug. 6, 1927 4 Sheets-Sheet 1

Fig. 1.



INVENTOR.
Bernard W. Straw
By Cameron, Kerkam & Sutter
ATTORNEYS

Jan. 14, 1930. B. W. STRAW 1,743,579

MEANS FOR DISCHARGING BALLAST

Filed Aug. 6, 1927 4 Sheets-Sheet 2

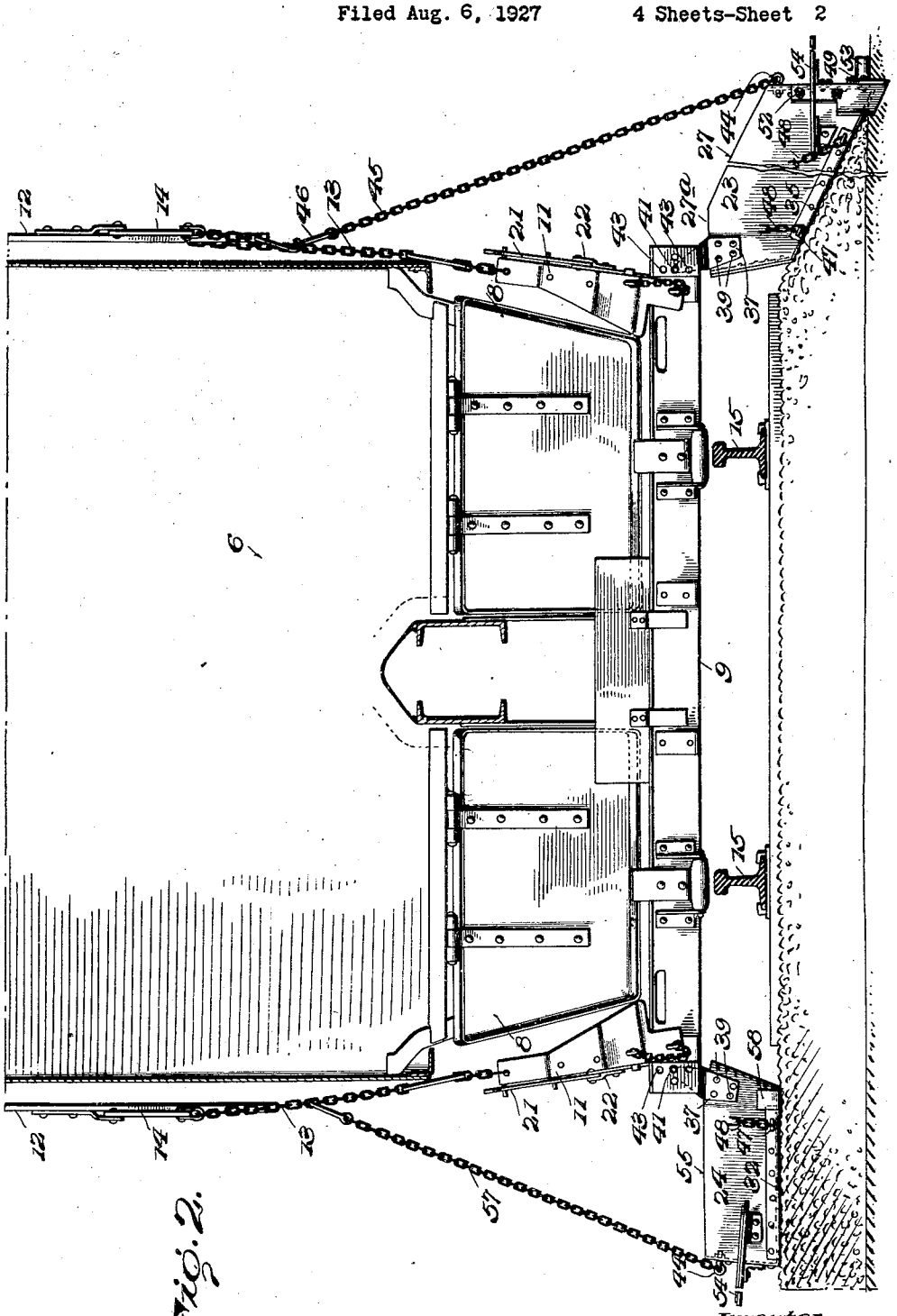


Fig. 2.

Inventor
Bernard W. Straw
By Cameron, Kerkam & Sutton
Attorneys.

Jan. 14, 1930. B. W. STRAW 1,743,579

MEANS FOR DISCHARGING BALLAST

Filed Aug. 6, 1927 4 Sheets-Sheet 3

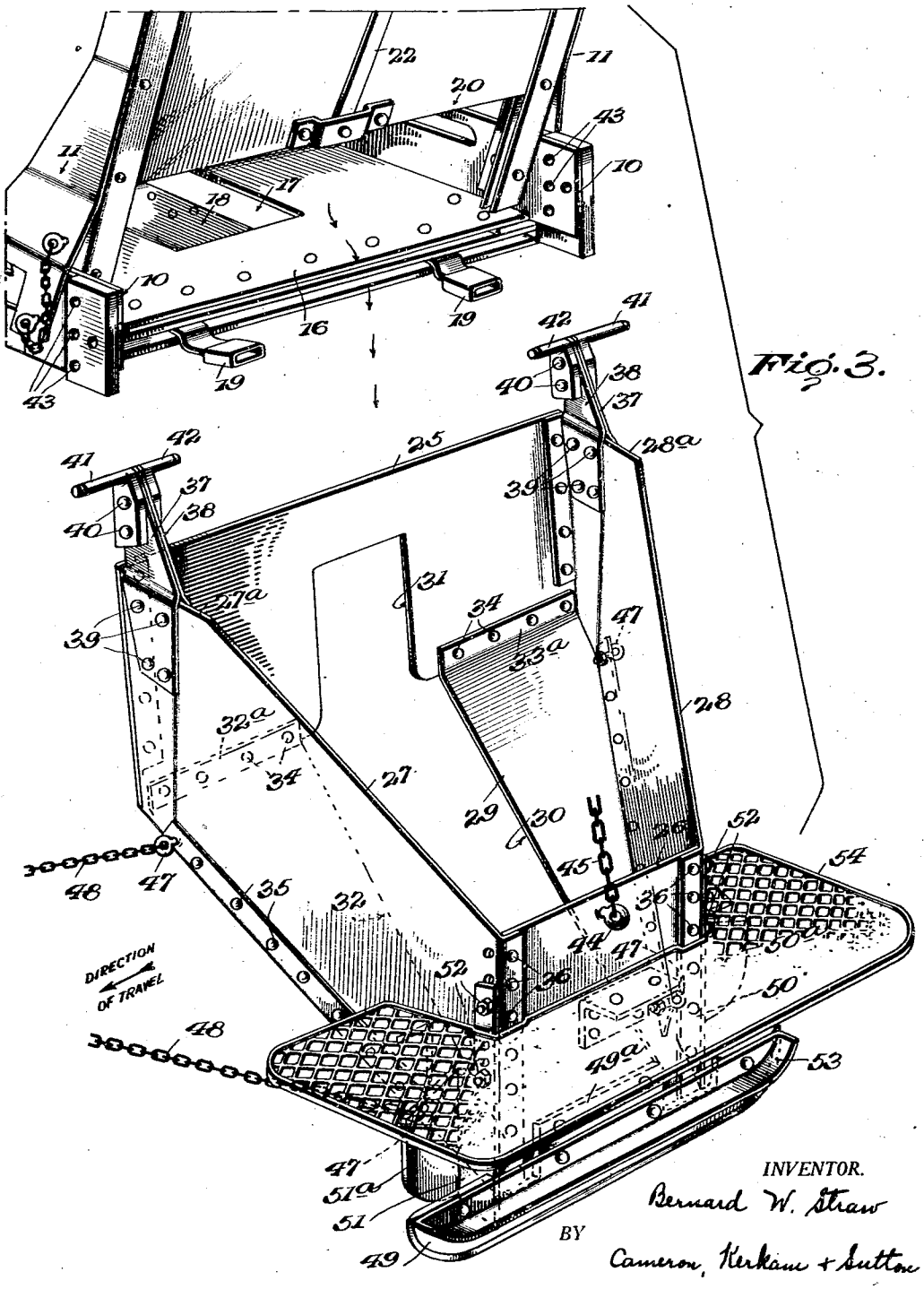


Fig. 3.

INVENTOR.
Bernard W. Straw
BY
Cameron, Kerkam + Sutton
ATTORNEYS

Jan. 14, 1930. B. W. STRAW 1,743,579

MEANS FOR DISCHARGING BALLAST

Filed Aug. 6, 1927 4 Sheets-Sheet 4

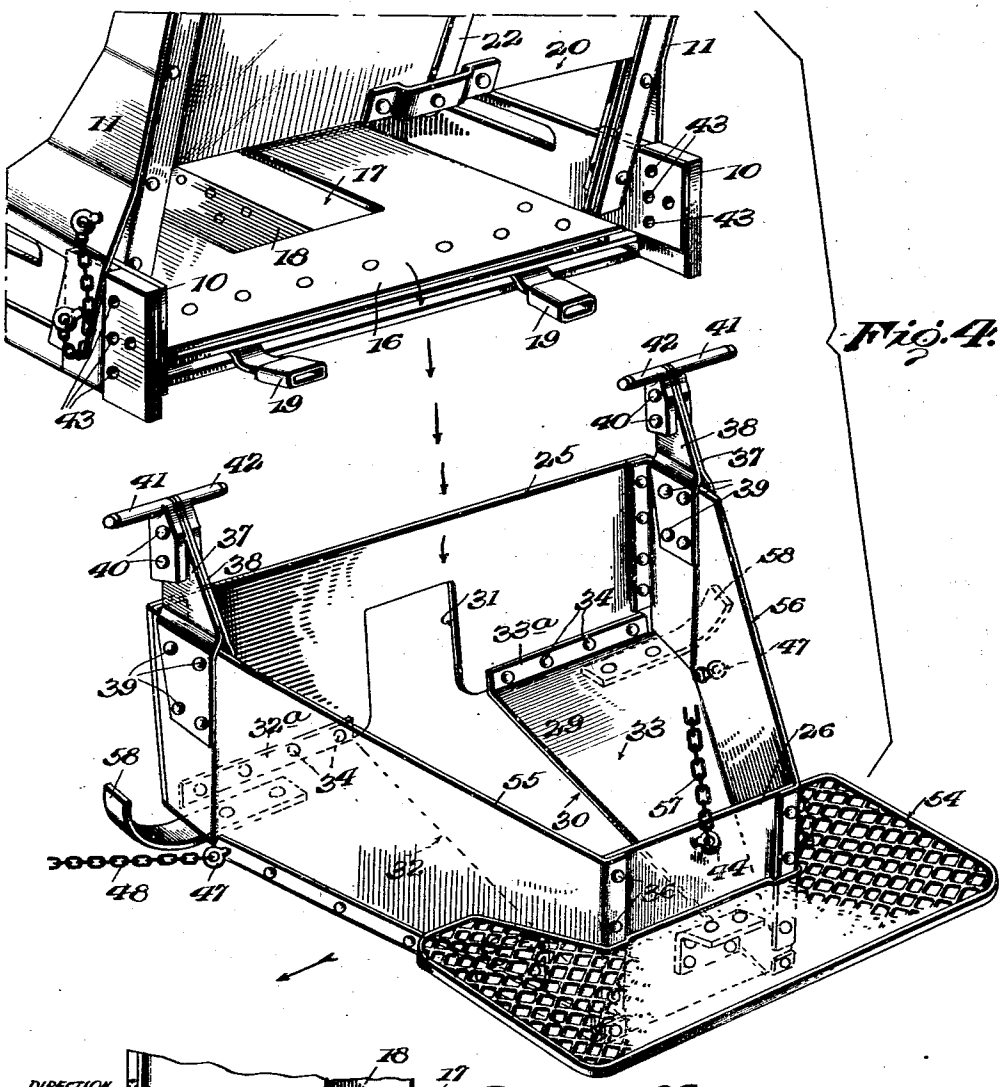


Fig. 4.

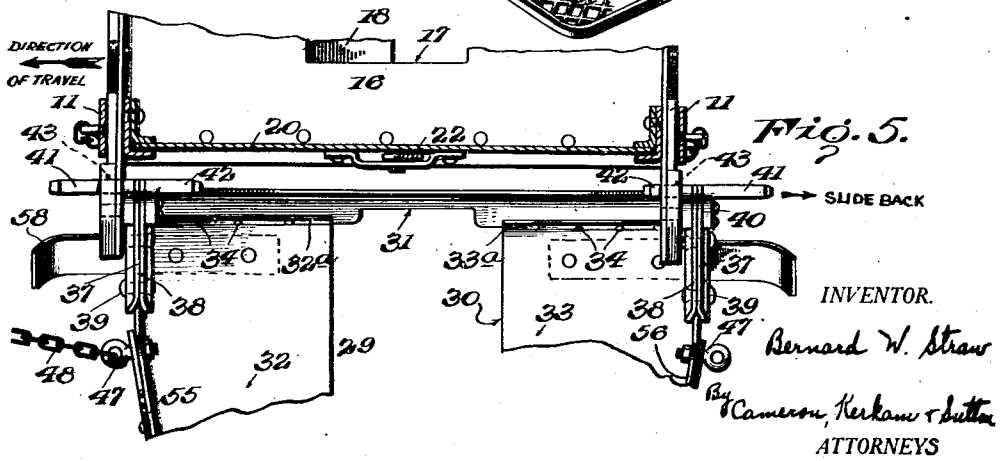


Fig. 5.

INVENTOR.
Bernard W. Straw
By Cameron, Kerkam & Sutton
ATTORNEYS

Patented Jan. 14, 1930 1,743,579

UNITED STATES PATENT OFFICE

BERNARD W. STRAW, OF MOUNT AIRY, MARYLAND, ASSIGNOR TO AUTOMATIC BALLAST SPREADER CORPORATION, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE

MEANS FOR DISCHARGING BALLAST

Application filed August 6, 1927. Serial No. 211,111.

This invention relates to means for distributing ballast on a railway roadbed.

In the discharge or deposit of ballast on a track ballast cross-section by the use of an ordinary hopper car, substantially all of the ballast in the hopper must be discharged when the hopper door is opened, and said door cannot be closed or controlled during the time the ballast is being discharged, so that the latter is therefore discharged at a substantially uniform rate. Since widely varying quantities of ballast are requirred at various points along the track, the ballast discharged from a hopper car must subsequently be moved from place to place by hand labor to form the proper ballast cross-section.

Another objection to the use of a hopper car for depositing ballast resides in the fact that the ballast is necessarily deposited between the track rails and immediately adjacent the ends of the crossties, due to the construction of the car. In many instances, however, it is desirable to discharge the ballast onto the ballast shoulder or into the center ditch when ballasting a double track railway, and for this purpose special ballast cars are provided. The use of special service cars is, however, disadvantageous since said cars are practically limited to this one use and must be hauled great distances as "empties" after ballast has been discharged therefrom. Moreover, special cars heretofore provided have been subjected to one of the objections resulting from the use of hopper cars in that the amount of ballast distributed cannot be properly controlled and must be manually distributed after being discharged from the car.

In my Patent No. 1,689,694, granted October 30, 1928, there is disclosed ballast distributing means for discharging ballast onto a road way or track at one or more selected points and in the desired amount or amounts. The present invention is, however, primarily concerned with means for controlling the delivery of ballast to form the outside shoulder of the track ballast cross-section. So far as I am aware it has always been necessary heretofore to manually handle ballast distributed onto a roadway or track ballast cross-section to form the outside shoulder of the cross-section, and in the event the ballast has been discharged onto a double track railway, it has been necessary to manually distribute the ballast deposited between tracks in order to properly form the center ditch.

The principal object of this invention is to provide apparatus adapted to be associated with a ballast carrier, whereby ballast may be distributed in the required amount and formed into the desired shape on a particular portion of a railway track ballast cross-section.

Another object is to provide apparatus for receiving ballast from a ballast carrier and for depositing it on the ballast section shoulder in the proper amount required to form the shoulder, whereby the shoulder is properly shaped without the necessity for manually handling the ballast.

Another object of this invention is to provide, for use in combination with a ballast carrier, apparatus adapted to receive ballast from the carrier and to deposit it in the required amount and form to constitute a ballast section shoulder or a center ditch, or both.

Another object of this invention is to provide a ballast distributing and shaping device or dresser for forming a ballast cross-section shoulder, or a center ditch, said dresser being adapted for use in combination with a ballast spreader.

A further object of this invention is to provide a ballast dresser adapted to be adjustably and removably attached to a ballast spreader.

Another object of this invention is to provide novel ballast spreading and dressing means for use in combination with a railway hopper car, said means being so constructed that the same are operatively associated with said car without the necessity for making any structural changes in the car, whereby the latter may be employed for other purposes.

A further object of this invention is to provide a novel ballast distributing means whereby ballast may be deposited in a proper amount at the desired point or points along the track ballast cross-section, the discharge of the ballast being capable of being stopped, retarded, or adjusted as desired, and the bal-

last being simultaneously shaped to form the desired ballast shoulder or center ditch.

A further object is to provide novel means for connecting the dresser to the ballast carrier whereby the dresser will not be damaged when it encounters an obstacle.

A still further object is to provide novel means for forming the ballast line at the outer edge of the berm of the ballast cross-section.

The invention is capable of receiving a variety of mechanical expressions and it will therefore be understood that the embodiment shown on the accompanying drawings is for purposes of illustration only, and that said drawings are not to be considered as defining the limits of the invention, reference being had to the appended claims for this purpose.

Referring to the drawings—

Fig. 1 is a side elevation of a portion of a ballast carrier provided with a structure embodying the present invention;

Fig. 2 is a transverse sectional view of a hopper car having attached thereto one form of the present invention, the latter being shown in side elevation;

Fig. 3 is a perspective view of one form of ballast dresser embodying the present invention, a portion of a ballast spreader which may be used in combination with the dresser also being shown;

Fig. 4 is a perspective view illustrating another type of dresser which may be employed in combination with a spreader, a portion only of the latter being shown; and

Fig. 5 is a fragmentary plan view partly in section, illustrating one manner in which the dresser means may be operatively connected to the ballast carrier.

The structure constituting the subject matter of the present invention is particularly adapted for use in combination with a well-known type of railway car, but it is to be expressly understood that the invention is not limited to such use.

Referring more particularly to Figs. 1 and 2, a railway hopper car 6, provided with a suitable hopper 7 and hopper door 8, has associated therewith ballast spreading means which, in the present instance, comprises a ballast spreader and a pair of ballast dressers.

The ballast spreader comprises a substantially rectangular pan structure 9 provided with side walls 10 and with detachable end walls 11. The pan 9 may be operatively connected to the hopper car by means of suitable hook-shaped bars 12 and chains 13, the bars being adapted to engage the top edges of the sides of the car and the lower ends of the chains being secured to the upper corners of the end walls 11 in any suitable manner. The pan-shaped spreader is thus removably secured immediately below the hopper 7 in a position to receive ballast from the hopper when the door 8 is open, said pan extending transversely of the car. Means including a lever 14 are preferably connected to the bar 12 and chains 13 for readily adjusting the height of the ballast spreader above the head of the rails 15. The bottom 16 of the pan structure (Fig. 3) is provided with one or more longitudinally extending openings 17, and with one or more sliding doors 18 for controlling the flow of ballast through said opening or openings, said sliding door or doors being suitably actuated, as by means of levers 19. Each end wall of the spreader is provided with a sliding door 20 for controlling the discharge of ballast outwardly over the end of the pan 9, said door being preferably controlled by means of a lever 21 having a link 22 which is pivoted to the door 20.

As the details of construction of the ballast spreader or distributor per se constitute no part of the invention herein claimed, it is only necessary to point out herein that the required amount of ballast for the crosstie cribs may discharge onto the ballast cross-section through the opening or openings 17, and that doors 20 control the discharge of ballast from the ends of said spreader.

Means are provided at the opposite ends of the ballast spreader 9 for depositing ballast on the track ballast cross-section in the required amount, beyond the opposite ends of the crossties, said means being so constructed that the portions of the ballast cross-section beyond the outer ends of the ties are properly shaped substantially simultaneously with the discharge of the ballast. For this purpose there is provided a pair of dressers 23 and 24 respectively, which are operatively connected to the ballast carrier and spreader for receiving ballast therefrom.

Referring more particularly to Fig. 3, the shoulder dresser comprises a pan constituted by inner and outer end walls 25 and 26 respectively, side walls 27 and 28, and a bottom wall 29 having an opening 30 therein. End walls 25 and 26 may be substantially parallel and inner portions 27^a and 28^a of the two side walls are also substantially parallel, but the outer portions of said side walls are preferably convergent outwardly. The outer end wall 26 is therefore of less length than the inner wall 25. The end wall 25 is preferably inclined with respect to the vertical, and is provided with a centrally disposed opening 31 which forms a continuation of opening 30, thereby enabling ballast to be distributed intermediate the ends of the crossties and the inner end of bottom wall 29. The lower edge of each of the side walls 27 and 28 is preferably inclined from the horizontal, the inner end of each edge being higher than the outer end thereof, and the upper edge of each outer portion of said side wall is substantially parallel to the lower inclined edge thereof.

The bottom wall 29 is preferably constituted by two plates 32 and 33 which are substantially triangular in shape, the inner

end of each plate being flanged upwardly as at 32ª, 33ª, respectively, and said flanges being secured adjacent the lower edge of the inner end wall 25, as by means of rivets 34. The outer edges of plates 32, 33 are flanged upwardly and engage the lower portions of the outer faces of the side walls 27 and 28 respectively, rivets 35 being preferably employed for securing the parts. The outer ends of side walls 27 and 28 are flanged inwardly and are secured to the opposite edges of the outer face of end wall 26, as by means of rivets 36.

In the form of the invention shown, the dresser is adapted to be operatively connected to the ballast spreader 9 adjacent the end thereof, whereby ballast flowing past door 20 is discharged by gravity into said dresser. Since it is desirable to vary the angle of the ballast shoulder, and since this angle is controlled by the angular position of the bottom of the shoulder dresser, means are provided for adjustably associating the dresser with the ballast carrier. For this purpose a pair of hanger plates 37, 38 are secured adjacent the upper ends of each of the portions 27ª and 28ª of the side walls of the dresser 23, as by means of rivets 39, the upper portions of said hanger irons being bent inwardly into engagement with each other immediately above the upper edges of the dresser side walls. Secured to the upper ends of the hanger irons, as by means of rivets 40, is a pair of alined pivot pins 41, 42. Each of the outer pivot pins 41 is preferably of greater length than the inner pivot pins 42 for a purpose to be described hereafter. The side walls 10 of the spreader 9 are provided with a plurality of openings 43 for receiving the pins 41, 42. As shown, three openings 43 are provided adjacent the end of each wall 10 in order that the height of the inner end of the dresser, relative to the ballast cross-section, may be adjusted.

For adjusting the height of the outer end of the dresser with respect to the ballast cross-section, the outer end wall 26 is preferably provided with an eye-bolt 44 to which may be connected a flexible member, such as a chain 45 provided on its upper end with a hook 46 adapted to engage a link of one of the supporting chains 13, any change in the adjustment of chain 45 serving to swing dresser 23 about pivot pins 41, 42, and hence changing the angular position of said dresser.

It is desirable to provide means whereby permanent damage will not result to the dresser in the event that the latter strikes an obstacle. In the form shown, the dresser is provided on each of the lateral side walls thereof with a pair of eye-bolts 47. Secured to that pair of eye-bolts which extends in the direction that the dresser is to be moved along the track, are chains 48 which lead forward from said eye-bolts in the direction of travel of the ballast carrier, and are secured to the latter at any suitable point above the points of attachment of the chains to the dresser, the grab irons of the car being well suited for the purpose. These chains, which primarily transmit the force required for moving the dresser along the track, are each provided with one or more comparatively weak links so that, in the event the dresser strikes an obstacle, such as the end of an unusually long cross-tie, the chains will break and the pins 41 and 42 will readily slide from openings 43, thereby permitting the dresser to fall to the ballast cross-section without danger of permanent injury to the dresser structure.

In forming a track ballast shoulder, it is desirable to provide a ballast line to limit the outward flow of the ballast and thus sharply define the lower edge of the shoulder. For this purpose the dresser may be provided at its outer end with a ballast line cutter 49 formed as a sharpened blade having rounded ends, the blade being preferably fashioned intermediate its ends with an upwardly extending portion 49ª which may be secured, as by means of rivets, to the lower outer face of end wall 26. Adjacent the cutter 49, plows 50, 51 are adjustably secured, as by means of bolts 52, to the outer faces of the side walls 28 and 27, respectively, of the dresser 23. Each plow is provided with a laterally projecting flange 50ª, 51ª for throwing the upturned earth outwardly. When the dresser is moved to the left, as shown in Figs. 1 and 3, the right hand, or rear, plow 50 is adjusted so that its share is substantially flush with the bottom of the dresser, while the forward plow 51 is adjusted so that its share projects below the bottom of the dresser a distance substantially equal to that of the lower edge of the cutter. The cutter 49 is preferably provided with a safety runner 53 for guiding the dresser over small obstacles in the path of travel of the outer end of the dresser, said runner being constituted by an angle iron having its opposite ends curved upwardly and having its vertically disposed portion fixedly secured to the outer face of the cutter 49.

Means are preferably provided on the dresser for supporting the operator who controls the device, the weight of the operator assisting in the proper formation of the ballast cross-section and the ballast line. For this purpose a platform 54 is fixedly secured in any suitable manner to the outer end of the dresser and if desired the upper surface of this platform may be suitably corrugated to provide a sure footing.

When it is desired to form a ballast shoulder, the shoulder dresser is operatively connected to the carrier in a position to receive ballast from the latter. In the form shown, pin 41 is inserted in one of the openings 43 from the inside of one of the side walls 10 of

the spreader and pivot pin 42 is inserted in one of the openings 43 in the opposite side wall of the spreader from the outside of the latter. Adjusting chain 45 is then engaged with a suitable link of one of the chains 13, whereby the dresser is supported in the desired angular position. Drag chains 48 are then led forward and are secured to a suitable portion, or portions, of the ballast carrier structure. The operator then mounts the platform 54 and actuates lever 21 to raise door 20, thereby permitting ballast, which has been discharged from the hopper into the spreader 9, to fall by gravity into the dresser. As the carrier and dresser are moved along over the ballast cross-section, the plow and cutter form the ballast line, the upturned earth being thrown outwardly clear of the shoulder by means of the laterally extending portion 51ª of the plow. It will be noted that the plows are secured to converging side walls and due to this convergence the laterally projecting portion 51ª of each plow assumes an angular position relative to the direction of movement of the cutter and plow, thus insuring that the earth will be turned outwardly.

As the dresser moves along the ballast cross-section the ballast falls through the opening 30, 31 and the shoulder is formed automatically, as an amount of ballast sufficient to completely fill the space between the sub-grade and the lower surface of the dresser will discharge by gravity from said dresser. Flow of the ballast outwardly beyond the desired distance is prevented by the ballast line. If the dresser passes over a portion of the ballast section where the shoulder is properly formed, no ballast will escape through opening 30, 31, but when the dresser is moved over a depression or pocket, sufficient ballast will flow from the dresser to fill said pocket and bring the upper surface of the ballast to the desired configuration. The device is thus entirely automatic in action, it only being necessary for the operator to raise door 20 to permit the ballast to fall by gravity into the dresser, the latter being maintained substantially full of ballast at all times during the operation thereof.

As shown more clearly in Figs. 2 and 4, the structure of the present invention includes a center ditch dresser 24 for use in properly shaping the ballast deposited between double tracks. The ditch dresser is quite similar in construction to the shoulder dresser and comprises end walls 25, 26, a bottom constituted by plates 32 and 33, a platform 54, and pivots 41, 42. The lower edges of the side walls 55 and 56 of the ditch dresser, however, extend outwardly at a lesser angle relative to the inner wall 25 than in the case of the shoulder dresser, although it will be understood that this angle may be varied as desired. Moreover, platform 54 may be slightly inclined, since, in certain instances, it is desirable to adjust the angular position of the ditch dresser 24, as by means of a suitable supporting chain 57, so that said center ditch will slope downwardly away from the adjacent edge of the cross-ties instead of extending horizontally as shown in Fig. 2.

As the wall 29 of the shoulder dresser 23 inclines downwardly away from the car its portions on opposite sides of the opening 30 trim or dress the ballast as the latter is deposited beyond the ends of the cross-ties, thus shaping the shoulder of the ballast cross-section. The portions of the bottom plate 29, at the sides of the discharge opening in the center ditch dresser 24, similarly serve to dress the ballast deposited at the opposite side of the track so as to impart to it the desired shouldered form. The dressers 23 and 24 are preferably constructed so that the ballast may be delivered therefrom substantially centrally instead of at the side, such a construction being especially advantageous in that, no matter in which direction the dressers move along the track, it enables one or the other of the bottom plate portions 32 and 33 at the sides of the discharge openings 30 to trim and shape the mass of ballast being deposited. Usually the slope of the center ditch is such that when the dresser 24 is adjusted for forming a ditch of this character, the platform 54 is substantially horizontal. The ditch dresser is provided with chains 48 similar to those employed in connection with the shoulder dresser and they are likewise secured to the car above the points of attachment of the chains to the dresser. Secured to the bottom faces of the plates 32 and 33 adjacent the inner end of the dresser is a safety runner or shoe which is formed by two upwardly curved bars 58. Upon encountering an unsually long cross-tie or similar obstacle, the runner 58 by engaging with the latter will cause the dresser to swing about its hinge pins 41 and 42 thus permitting it to readily pass over the obstruction. In the event an obstruction projects an unusual distance above the desired level of the ballast the dresser may be caused to rotate to an extent such that an inordinate amount of ballast will be discharged. However, due to the fact that an upward swinging movement of the dresser decreases, in effect, the distance between the opposite ends of the chains, the hinge pins 41 and 42 and chains 48 are so proportioned and arranged that when the dresser swings upwardly an unusual amount the hinge pins will slide from openings 43 thus permitting the dresser to fall to the roadbed thereby preventing the undesired discharge of ballast. It is obvious that should the shoulder dresser, for any reason, swing upwardly to a similar undesired extent, it will become detached from the

spreader 9 in a corresponding manner. If an obstacle is encountered which the ditch dresser cannot pass over, the chains, being provided with one or more comparatively weak links, will break and permit disengagement of the dresser from the spreader in the manner heretofore described.

Ballast may be discharged into the crosstie cribs by actuating levers 19 and sliding doors 18, said levers being readily actuated simultaneously with lever 21 and door 20 so that ballast is discharged in the proper amount simultaneously onto all portions of the track ballast cross-section. It will also be apparent that the shoulder and ditch dressers may be used separately or simultaneously.

There is thus provided means adapted to be associated with a railway car, for receiving ballast, and depositing it selectively onto the shoulder, the center ditch, or the crosstie cribs in the proper amount, the ballast so deposited being shaped to form the shoulder and the center ditch. The necessity for manually handling the ballast is avoided. The ballast spreading and dressing means may be readily attached to, and detached from the car, and no structural change in the latter is required for this purpose. The ballast line is formed substantially simultaneously with the discharge of the ballast onto the cross-section. Means are provided for operatively connecting the dressers to the car in such a manner that the dresser structures are not permanently injured when an obstacle is encountered.

Various changes may be made in the details of construction without departing from the invention as defined in the following claims.

What is claimed is:—

1. In combination with a ballast carrying railway car, ballast dressing means extending laterally beyond the ties of the railway track and operatively connected to said car, and means receiving ballast from said car for controlling the delivery of ballast to said dressing means.

2. In combination with a ballast carrying railway car, ballast spreading means associated with said car and adapted to deliver ballast between the track rails, ballast dressing means extending laterally beyond the ties of the railway track and operatively connected to said spreading means, and means for controlling the delivery of ballast from the spreading means to the dressing means.

3. In combination with a ballast carrying railway car, means for receiving ballast from said car and depositing the same on a ballast section shoulder, said shoulder being shaped by said means, and means for controlling the delivery of ballast to said first named means.

4. In combination with a ballast carrying railway car, means for receiving ballast from said car and depositing the same on a ballast section center ditch, said ditch being shaped by said means, and means for controlling the delivery of ballast to said first named means.

5. In combination with a ballast carrying railway car, means for receiving ballast from said car and depositing the same on a ballast section shoulder, means for receiving ballast from said car and depositing the same on a ballast section center ditch, and means for controlling the delivery of ballast to said first and second named means.

6. In combination with a ballast carrying railway car, means operatively connected to said car to receive ballast therefrom and deposit the same on the track ballast section shoulder and center ditch in the amount required and in the desired configuration, and means for controlling the delivery of ballast from the car to said first named means.

7. In combination with a railway car having an opening therein for the discharge of ballast and the like, ballast spreading means adapted to receive ballast discharged through said opening and to deliver it to the ballast cross-section, and ballast dressing means operatively connected to the spreading means, said dressing means extending outwardly beyond the crossties, and means for controlling the delivery of ballast from the spreading means to the dressing means.

8. In combination with a ballast carrying car having an opening for the discharge of ballast or the like, means operatively connected to said car for receiving ballast discharged through said opening, said means including a dresser for delivering to and simultaneously shaping a portion of the ballast cross-section beyond the ends of the railway cross-ties and means for controlling delivery of ballast to the ballast cross-section shaped by said dresser.

9. In combination with a railway car having an opening for the discharge of ballast or the like, means operatively connected to said car for receiving ballast discharged through said opening, a dresser operatively connected to said means and provided with an opening for the discharge of ballast, said dresser being so positioned as to discharge ballast outwardly beyond the ends of the railway crossties, and means for controlling the delivery of ballast to the dresser.

10. In combination with a railway hopper car having an opening for the discharge of ballast or the like, a ballast dresser operatively connected to the car for discharging ballast to a portion of the track ballast cross-section beyond the outer ends of the crossties, and means operatively associated with said dresser and car for discharging ballast into the dresser.

11. In combination with a ballast spreader adapted to be applied to a railway car for

receiving ballast from the latter, a dresser operatively connected to said spreader, and means carried by the spreader for controlling the delivery of ballast from the spreader to the dresser.

12. In combination with a railway hopper car, means positioned below the hopper of said car for receiving ballast therefrom, and means pivotally connected adjacent the end of said first named means for receiving ballast from the latter and delivering it to the track ballast cross-section, at a point beyond the outer end of the crossties.

13. In combination with ballast spreading means adapted to be applied to a railway car for receiving ballast from the latter, ballast dressing means for delivering ballast to a portion of a ballast cross-section beyond the ends of the railway cross-ties, means movably connecting said dressing means to said spreading means, and means for controlling the flow of ballast from the spreading means to the dressing means, said spreading means serving to cause the ballast to flow transversely of the railway track and to deliver it to said dressing means at a point beyond the rails of the track.

14. In combination with ballast spreading means provided with ballast discharge openings, slidable doors adapted to prevent the discharge of ballast through said openings, and ballast dressing means movably connected to said spreading means and extending laterally beyond the end of the latter for depositing ballast onto a ballast cross-section, the ballast so discharged being shaped by said dressing means.

15. A ballast dresser comprising a pan having converging side walls and having a bottom wall provided with an opening for the discharge of ballast, and a safety runner secured to said pan.

16. A ballast dresser comprising a box-like structure having an open top and being provided with converging side walls, said structure having an opening in the bottom thereof, a platform carried by said pan, and a safety runner secured to the pan.

17. A ballast dresser comprising a pan having an opening in the bottom thereof and cutting means secured to said pan for forming a ballast line.

18. A ballast dresser comprising a pan having an opening in the bottom thereof, pivot means secured to one side of said pan and a platform secured to the opposite side thereof, said platform extending along a portion of each side wall of the pan.

19. In combination with a ballast carrier, a ballast dresser having an opening in the bottom thereof, means for removably securing said dresser to said carrier, and means for adjusting the angular position of said dresser relative to said carrier to control the configuration of a portion of a ballast cross-section formed by ballast discharged through said opening.

20. A ballast dresser comprising a pan having an opening in the bottom thereof, a plow carried by said dresser, and a safety runner secured to the pan adjacent the plow.

21. A ballast dresser comprising a structure having an opening in the bottom thereof, a pair of adjustable plows in said structure, and a safety runner secured to the structure adjacent said plows.

22. A ballast dresser comprising a structure having an opening in the bottom thereof, and means secured to said structure for forming a ballast line, said means including one or more adjustable plows.

23. A method for forming a ballast cross-section which consists in discharging ballast onto one or more selected portions of said section, controlling the amount of ballast discharged to said portion or portions, and dressing the ballast on one of said portions to a desired configuration substantially simultaneously with the discharge of the ballast onto the section.

24. A method for forming a ballast cross-section which consists in discharging ballast onto one or more selected portions of said section, controlling the amount of ballast discharged to said portion or portions, dressing the ballast line as the ballast is so discharged. a desired configuration substantially simultaneously with the discharge of the ballast onto said portion or portions, and forming the ballast line as the ballast is so discharged.

25. A method for forming a ballast cross-section shoulder which consists in discharging ballast onto said section in the proper amount and position to form a continuous, smooth shoulder, and forming the ballast line as said ballast is so discharged.

26. The method of forming a ballast cross-section which consists in discharging ballast onto one or more portions of said section, and controlling the amount of ballast discharged to said portion or portions, and applying pressure to said ballast to secure the desired configuration of ballast cross-section.

27. The method of forming a ballast cross-section which consists in discharging ballast onto selected portions of said section simultaneously, controlling the amount of ballast discharged on each of said portions, and forming the ballast line as the ballast is discharged onto said section.

28. A method for forming a ballast cross-section which consists in discharging the ballast onto selected portions of said section by gravity, controlling the amount of ballast discharged to each of said portions, forming the ballast line as the ballast is discharged onto said section, and dressing the ballast on one of said portions to a desired configuration substantially simultaneously with the dis-

charge of the ballast onto said section.

29. In combination with a railway car having an opening for the discharge of ballast or the like, a device movable with said car for receiving ballast discharged through said opening and delivering it outwardly beyond a rail of the track on which the car is supported, said device involving means for shaping a portion of the ballast cross-section formed by the ballast as the latter is delivered from said device.

30. In combination with a railway car having an opening for the discharge of ballast or the like, a device connected to and movable with said car for receiving ballast discharged through said opening, said device including ballast dressing means disposed outwardly beyond a rail of the track on which the car is supported, said dressing means serving to deliver ballast outwardly beyond said rail and simultaneously to shape the ballast cross-section.

31. In combination with a railway car having an opening for the discharge of ballast or the like, a device for receiving ballast discharged through said opening and delivering it outwardly beyond a rail of the track upon which the car is supported, said device including ballast dressing means projecting outwardly beyond the adjacent ends of the cross-ties of the track and extending downwardly below said rail.

32. In combination with a railway car having an opening for the discharge of ballast or the like, a device for receiving ballast discharged through said opening and delivering it outwardly beyond a rail of the track upon which the car is supported, said device including means projecting outwardly beyond and extending downwardly below the top of said rail and adapted to dress the ballast being delivered beyond said rail.

33. In combination with a railway car having an opening for the discharge of ballast or the like, a device for receiving ballast discharged through said opening and delivering it outwardly beyond a rail of the track upon which the car is supported, said device involving ballast dressing means disposed outwardly of the rail and extending downwardly below the top of the latter and having a downwardly sloping incline for cooperating with the ballast to dress the latter.

34. In combination with a railway car having an opening for the discharge of ballast or the like, a device for receiving ballast discharged through said opening and delivering it outwardly beyond a rail of the track upon which the car is supported, said device including ballast dressing means projecting outwardly beyond the adjacent ends of the cross-ties of the track and extending downwardly below said rail, said means being provided adjacent the point of delivery of ballast therefrom with means for cooperating with the ballast to dress the latter, said last named means being disposed rearwardly of the ballast being deposited as the car moves along the track.

35. In combination with a railway car having an opening for the discharge of ballast or the like, a device for receiving ballast discharged through said opening and delivering it outwardly beyond a rail of the track upon which the car is supported, said device including means projecting outwardly beyond said rail and extending below the top of the latter.

36. In combination with a railway car having an opening for the discharge of ballast or the like, a device for receiving ballast discharged through said opening and delivering it outwardly beyond a rail of the track upon which the car is supported, said device including ballast dressing means having a portion projecting outwardly beyond the adjacent ends of the cross-ties of the track and extending downwardly below the top of said rail, and having a flange for checking the discharge of the ballast to prevent its delivery from the rear side of said means as the car moves along the track, the said portion extending from said flange to the ballast discharge outlet of said means and being adapted to dress the ballast as the car moves along the track.

37. The method of forming a shoulder of a railway track ballast cross-section from ballast delivered from a moving railway car, which consists in causing the ballast to be discharged from the car and deposited on to said cross-section beyond the ends of the cross-ties of the track and simultaneously shaping the shoulder of the ballast cross-section by moving along the path of deposit of the ballast means adapted to establish the position of the upper surface of the shoulder.

In testimony whereof I have signed this specification.

BERNARD W. STRAW.