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G. H. CRAVENS.
APPARATUS FOR RAISING SUPERSTRUCTURES AND BALLASTING RAILWAY
ROAD BEDS.

APPLICATION FILED MAY 6, 1904.

2 SHEETS—SHEET 2.

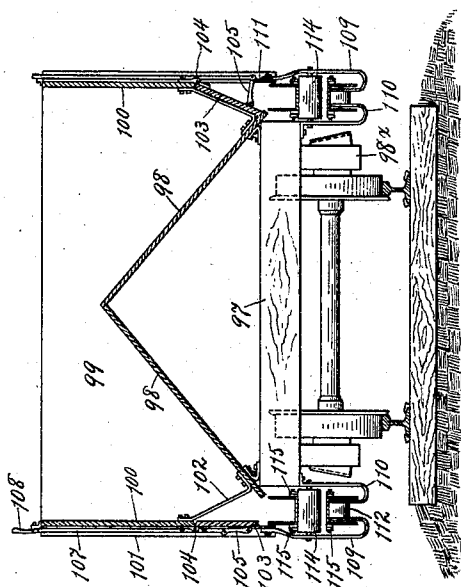


Fig. 5.

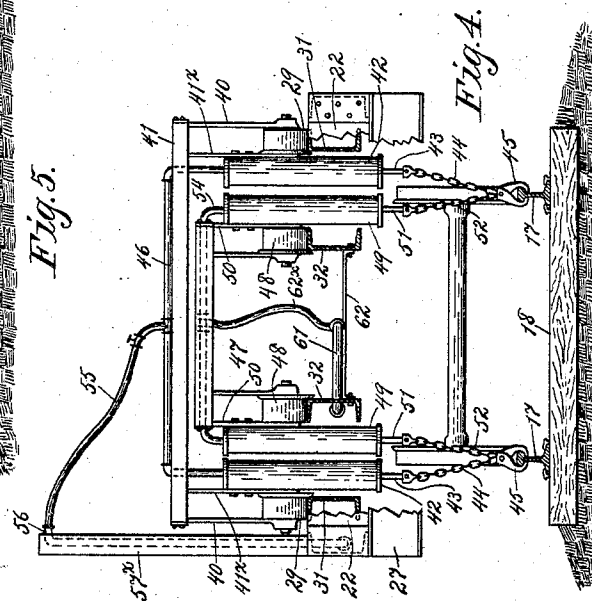
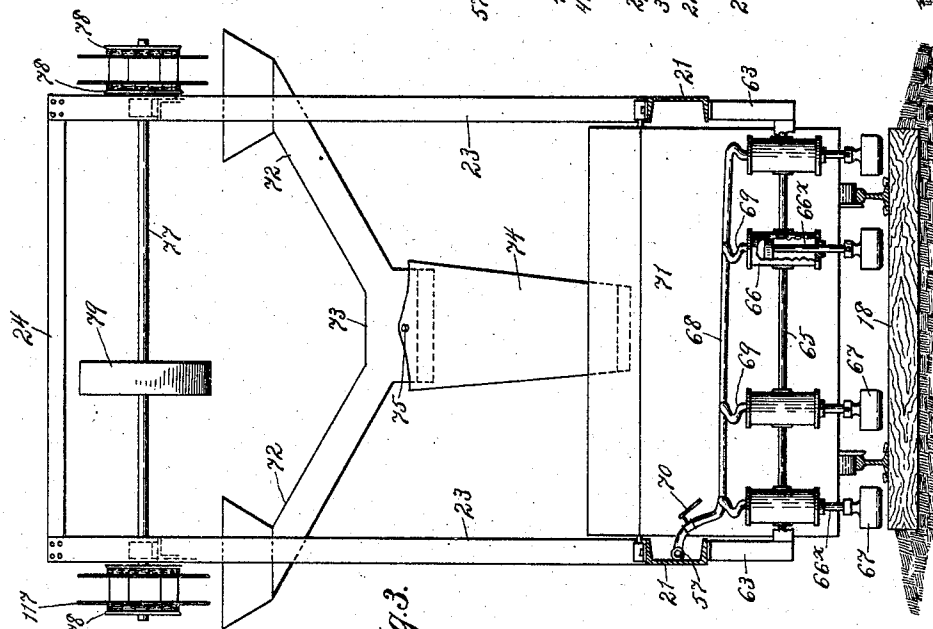


Fig. 4.



UNITED STATES PATENT OFFICE.

GRAHAM H. CRAVENS, OF DE QUEEN, ARKANSAS.

APPARATUS FOR RAISING SUPERSTRUCTURES AND BALLASTING RAILWAY ROAD-BEDS.

SPECIFICATION forming part of Letters Patent No. 785,252, dated March 21, 1905.

Application filed May 6, 1904. Serial No. 206,699.

To all whom it may concern:

Be it known that I, GRAHAM H. CRAVENS, a citizen of the United States of America, residing at De Queen, in the county of Sevier and State of Arkansas, have invented certain new and useful Improvements in Apparatus for Raising the Superstructure and Ballasting Railway Road-Beds; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The objects of my invention are, first, to enable the superstructure of a railway to be raised in an elevated position and so supported while the road-bed is being progressively ballasted beneath the superstructure; second, to deliver the ballasting material to the road-bed automatically in the forward movement of the machine; third, to tamp the ballasting material during its automatic delivery to the road-bed; fourth, to regulate the delivery of the ballasting material from its source of supply to the road-bed; fifth, to combine the several operations enumerated heretofore in a self-propelled road-ballasting apparatus; sixth, to provide for the tangent offset of the track-supporting devices in following the curves in the track.

The invention consists in the novel construction and combination of parts, such as will be first fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a side view in elevation of the novel railroad-ballasting and superstructure-raising apparatus in position upon the track-rails and showing in outline the road-bed partially ballasted, also showing the novel vehicle or car for holding the ballasting material and the conveyer of the ballasting material to the road-bed from the car. Fig. 2 is a plan view of the machine as shown on Fig. 1. Fig. 3 is a transverse vertical sectional view taken upon the line *xx* of Fig. 1 looking rearwardly. Fig. 4 is a view in elevation of the forward end of the apparatus, with the forward end beam broken away, showing the rear track-supporting carriage

at the forward end of the railway-superstructure-supporting frame. Fig. 5 is a transverse vertical sectional view of the car for supplying the ballasting material, taken on the line *yy* of Fig. 1, one feed-gate being open, the other closed. Fig. 6 is a detail view of the rear I-beam on the superstructure-supporting frame, showing the pivoted support for the bar supporting the rear ends of the track-rails. Fig. 7 is a detail view of the forward I-beam in the superstructure-supporting frame, showing the connected forward ends of the material-conveyer. Fig. 8 is a detail view, in perspective, of a portion of the material-conveyer.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Referring to the drawings, 10 represents a platform vehicle or car, the platform 12 of which is of the usual width and mounted at its forward end upon the ordinary car-trucks 13 and at its rear end upon similar trucks 14. The trucks are provided with the ordinary flanged wheels 15, which are mounted on the track-rails 17, the rails and cross-ties 18 forming the superstructure of the railway.

19 represents the road-bed to be ballasted. From the forward end of the car 10 extends horizontally a truck-supporting frame 20, the sides 21 of which are composed of channel-beams provided with upper and lower flanges, the flanges being directed inwardly, as seen in Fig. 3. The rear ends of the beams 21 are connected rigidly with the sides of the platform 12 and their forward ends extended in length of an ordinary track-rail and connected together by a transverse end plate 22.

Upon the platform 12 of the car, relatively above the forward truck 13, is an elevated frame 24, supported rigidly with the platform near its longitudinal sides and arranged in pairs in opposite transverse positions. With the frame 24 are connected the upper ends of the stay or supporting rods or bars 25, the lower ends of which bars are connected rigidly with the sides 21 of the horizontally-extended frame 20 at a point a short distance in rear of its forward ends. The standards 23

are braced by the brace-bars 26, extending from the lower end of the forward and nearly to the upper end of the rear standards.

Beneath the forward end of the frame 20 and secured rigidly to the lower edges of side beams within the vertical line of the transverse bar 22 is a transverse I-beam 27. The ends of the beam 27 are further supported in the stirrups 28, the ends of which stirrups are connected with the bar 22 and the lower edge of the side beams 21 of the frame 20. A similar transverse I-beam 29 is secured to the lower edges of the side beams 21 at a point about one-fourth the distance from the forward end of the platform 12 to the forward end of the frame 20, and upon the upper surface of the beam is a bar 30. Upon the bar 30 are laid the rear ends of the longitudinally-extended channel-beams 31 31, the flanges extending outwardly, which are placed in position a short distance from the inner surfaces of the respective side beams 21, the forward ends of the track-rails resting on the upper surface of the I-beam 27. Between the outer track-rails 31 are the separate parallel inner track-rails 32, composed of channel-beams, which are placed in a relatively close position and rigidly connected at the ends with the bar 30 on the I-beam 29. In order to admit of the lateral movement of the forward ends of the track-rails 31 and 32, the bar 30 is pivoted to the beam 29 midway its length by means of an ordinary king-bolt 33, extending within a perforation in the beam, as seen in dotted lines in Fig. 6. Between the bar 30 and the beam are strips 34, transverse to the bar and upon which the bar moves. Through the parallel ends of the track-rails 31 and 32 extends a rod 35, which is screw-threaded and upon which on each side of the respective rails are the adjusting-nuts 36, which enable the parallel track-rails at said forward end to be moved laterally at an angle to the frame 20 and simultaneously lateral movement of the parallel track-rails 31 and 32.

In the upper surface of the I-beams 22 are a series of openings 37, in which pins 38 are inserted in order to retain the track-rails in position when in a parallel position with the sides of the frame or moved at an angle thereto, as seen in Fig. 7.

Upon the track-rails 31 31 are mounted the flanged rollers 29 29 in pairs, which are journaled in the lower opposite corners of the side carriage-frames 40 40, which extend upwardly a considerable height, and with the upper ends of the said frames are connected the ends of a horizontal frame 41. On the inner side of the side frames 40 40 and about midway the ends of the frame and supported by the depending straps 41^x are the vertical compressed-air cylinders or jacks 42 42 of the ordinary construction, the piston-rod 43 extending through the lower head of the cap of the cylinders, with which rod is connected a chain 44, and

upon the lower end of said chain is a grappling-hook 45, which engages with the upper flange of the track-rail 17. An air-conducting pipe 46 extends from the upper end of one cylinder 42 to the upper end of the other cylinder.

In rear of the supporting carriage-frames 40 41 for the lifting-jacks 42 is a jack-supporting frame 47 of similar construction, the width and height of which frame 47 are considerably less than the frames 40 and 41, so as to telescopically admit the passage of the frame 47 within the sides 40 and beneath the top frame 41 of the carriage in a forward movement of the frame 47. The carriage-frame 47 is provided with flanged wheels 48, which are mounted on the inner track-rails 32 32. The cylinders 49 49 are secured adjacent to the outer vertical sides of the carriage-frame 47 by the straps 50, extending downwardly from the upper or top portion of the frame. The cylinders 49 are provided with a piston-rod 51, and connected therewith are chains 52 and grappling-hooks 53, which grasp the upper flange of the track-rails. An air-pipe 54 extends from one cylinder 49 to the other cylinder upon the carriage 47 in like manner as the pipe 46. With the pipe 46 is connected one end of a flexible hose 55, which extends to and is connected with the upper end of a pipe 56, supported in a vertical position by the standard 57^x, connected rigidly with the side beam 21 of the frame 20 at a point about one-half the distance rearwardly from the end beam 22 to the transverse supporting-beam 29. The lower end of pipe 56 is bent at right angles and a section 57 is extended rearwardly within the channel-beam 21 to the forward end of the platform 12 and along the inner side of the side beam of said platform to a position near the rear standard 23, supporting the frame 24, thence bent at right angles and extended upwardly through the platform of the car and connected with the side of the air-compressor 58, located midway the sides of said platform and mounted upon a suitable stationary bed 60 upon said platform. From the section 57 of the air-conducting pipe at a point near the rear ends of the track-rail 31 extends inwardly a branch pipe 61, which also extends through the channel or track beams 31 and 32, thence bent at right angles and extended forwardly to a position transversely in line with the standard 59, thence bent at right angles and said end supported by a transverse connecting-bar 62, extending from the inner side of one of the rails 32 to the inner side of the other rail 32, as seen in Fig. 4. With the end of pipe 61 is connected one end of a flexible hose 62^x, the other end of which hose is connected with the pipe 54, connecting the cylinders 49 with each other.

With the inner portion of the channel-beams 21, forming the sides of the frame 20,

between the forward end of the platform 12 of the car and the transverse beam 29, supporting the track-rails 31, is rigidly connected the upper ends of the suspended frames 63 5 63, the lower horizontal portions of the said frames extending downwardly a considerable distance. Upon the upper surface of said horizontal portion of frames 63 are journal-boxes 64, arranged in position a short distance from and upon each side of the vertical center line of each frame. In the journal-boxes 64 is journaled a transverse rock-shaft 65, upon which are mounted a series of pneumatic ballast-tamping devices, consisting of 10 ordinary air-cylinders 66, the reciprocating piston-rods 6^x in each cylinder extending downwardly through the lower heads of the cylinder, and upon the lower end of each piston-rod is a ballast hammer head or tamper 20 67, which contacts with the ballast between the cross-ties 18. From one of said cylinders extends an air-conducting flexible hose 68, which is connected with the horizontal air-conducting pipe 57, leading to the air-compressor 58, and with the hose 68 is connected 25 short branch flexible hose 69, leading to the other cylinder in the series. In the flexible hose 68 is a cut-off valve 70.

Between the rock-shafts 65 65, supporting 30 the pneumatic cylinder 66, extends a hopper 71 for the ballasting material, which is narrow in width and extends parallel with the shafts 65, the ends of the hopper being connected with the side beams 21 of the frame 20. The lower end of the hopper extends 35 nearly to the track and the upper end extends above the line of the upper surface of the beams 21 and its sides are outwardly flaring.

With the rear side of the forward standards 40 23, supporting the frame 24 at a point a considerable distance below the said frame, are connected the separate inwardly and downwardly inclined hopper or conduits 72 72, the openings in which extend outwardly beyond 45 a vertical line extended through the ends of the frame 24. The lower ends of the conduits 72 are connected with a single conduit 73, which extends downwardly and forwardly a short distance, and telescoping with the 50 lower end of the conduit 73 is a supply conduit or spout 74, the upper end of which is slightly larger than the conduit or pipe 73 and pivotally connected by the pivot 75 therewith, so as to permit of a lateral movement 55 of the conduit 74, the lower end of which extends within the flaring sides of the upper end of the hopper 71. Connected with the standards 23 23 on each side of the platform 12, a short distance below the ends of the frame 60 24, are the shaft-supporting beams 76, upon which are journaled the ends of a transverse shaft 77, the ends of which shaft extend outwardly beyond the outer side of the beams, and upon said ends are sprocket-wheels 78 in

pairs and separated apart. Upon the shaft 77 65 within the standards 23 is a band-wheel 79.

Upon the bed 60, supporting the compressed-air cylinder 58, is a transverse crank-shaft 80, which operates the piston-rod to each compressor. Upon one end of shaft 80 is a band-wheel 81. In rear of the bed 60 and upon the 70 platform 12 is an upright steam-engine 82, upon the driving-shaft of which is a balance-wheel 83 and the band-wheels 84 and 85. Over the band-wheel 85 extends a belt 86, which 75 also extends over the band-wheel 81 on the crank-shaft operating the piston of the air-compressor. Over the band-wheel 84 extends a belt 87, which extends to and over the band-wheel 79 on shaft 77. 80

In order that the progress of the machine may be gradual while the ballasting is being accomplished and at the same time tamped properly, the power of the engine 82 is also 85 utilized to propel the machine. In order to transmit the power on the under side of the platform and supported on the hangers 88 is a sprocket-wheel 88^x, and upon the outer end of the driving-shaft of the engine is a sprocket-wheel 89, over which wheels extends 90 a sprocket-chain 90, the sprocket-chain passing through an opening 91 in the platform 12.

Upon the side of the sprocket-wheel 88^x is a sprocket-wheel 92, smaller in circumference than the sprocket-wheel 88, over which passes 95 a sprocket-chain 93, which also passes over a sprocket-wheel (not shown) on the axle connected with the rear wheels 15 of the forward truck 13, supporting the platform of the car. Upon the said platform 12, in rear of the engine 82, is a vertical steam-boiler 94, the supply-pipe 95 leading therefrom to the engine. 100 In rear of the platform 12 and coupled thereto by the usual coupling is the material-supply car 96 for the ballasting material, upon 105 which is the receptacle herein described for the material. This car consists of a bed-frame 97, which is narrower in width than the platform 21 of the car 20 and is supported upon a railway-truck 98^x, mounted upon the track 110 17 in the same manner as the platform 21. The car may be of any desired length, the portion shown upon the truck 98 fully illustrating the invention. The false bottom of the car consists of two oppositely-inclined longitudinal plates 98 98, extending the length 115 of the bed-frame 97, the upper ends of the plates meeting at an elevated point above in a vertical line with the longitudinal center of the bed-frame. The lower ends of the plates 120 98 are connected rigidly with the longitudinal sides of the bed-frame and extend a short distance past the upper edge of said sides. The end 99 of the car extends transversely a short distance beyond the plane of the longitudinal 125 sides of the bed-frame and in an upward direction a considerable distance above the apex of the false bottom 98. The sides 100 of the

car are the same height as the end, and connected therewith and upon the outer surface of said sides are the vertical ribs 101, arranged at intervals in the longitudinal direction of the car. Between the inner surface of the sides and the longitudinal edges of the bed-frame is a wide feed opening or space for the passage of the material conveyed, hereinafter described. In order to brace the sides of the bed-frame, a series of brace-bars 102 are connected at their upper ends with the inner surface of the sides at a point about two-thirds the distance downwardly from the upper edges of the said sides, the lower ends of the brace-bars extending outwardly and downwardly through the false bottom 98 and secured to the upper surface of the bed-frame 97 of the car, as seen in Fig. 5. On the inner sides of the vertical ribs 101 are a series of material-feeding doors or gates 103, each door closing upon the rib and forming parts of the sides of the car below the point of attachment of the brace-bars 102, these gates being hinged at their upper ends by the hinges 104 on the outer surface of the sides 100 of the car, and the lower ends are movable inwardly in the direction of and in contact with the outer surface of the plates 98 of the false bottom. Levers 105 are pivotally connected with the outer surface of each gate, and connected with the outer end of the levers are vertically-operated rods 107, the upper ends of which rods are pivotally connected with the operating-lever 108 on the sides of the car near the upper edges, the outer ends of which levers are bent in nearly parallel with the portion connected with the rods 107. Below the door and connected with the inner surface of the ribs are the flat bars 111. Roller-hangers 109 are connected at their upper ends to the flat bars 111 near the lower ends of ribs 101, one roller-hanger near the forward end and the other near the rear end of the car. In this instance the roller-hanger is shown midway its length of the broken car, these being arranged at intervals. The lower end of the roller-hanger is bent upwardly and inwardly in a hook shape in the direction of the space between the sides of the bed 97 and the sides 100. Opposite these hangers and connected with the under surface of the bed 97 are similar roller-hangers 110, between the upwardly-curved ends of which hangers is a roller 112, which is journaled in said curved ends of the hangers. Directly above the roller 112 and journaled in the upper portion of the hangers 109 and 110 is a roller 114.

Endless sprocket-chains 115 in pairs are extended over the rollers 114 upon the hangers 109 and 110 at the rear end of the car, and thence to and over the sprocket-wheels 78 78 on the shaft 77, supported by standards 23.

The well-known conveyer-sections for the ballast material consist of a series of overlapping flat plates 116, composing the bottom,

with which are connected the vertical sides 117, the edges of which sides are inclined downwardly and inwardly, and the sides of one section overlap the sides of an adjacent section, as seen in Fig. 8. The sprocket-chains 115 are connected with the opposite sides of each section near the bottom, and in passing over the upper roller 114 in the hangers 109 and 110 the bottom of the sections of the conveyer contacts with the said roller, and in passing under the roller the inner side of the bottom section contacts with the smaller roller 112.

In order to prevent sagging of the sprocket-chains, the upper length of the chains is supported by the idler 117, mounted on the bar 118 on the platform of the car.

In operation the levers 108 on the car 96 are operated to swing the lower ends of the series of doors or gates 103 inwardly past the buckets of the endless conveyer and adjacent to the false bottom 98, the lever 105 taking a position horizontally and acting to prevent the outward movement of the gates. The car is then supplied with the ballasting material, which is supported by the false bottom 98. Power from the engine 82 is communicated to the sprocket-chains 90 and 93 and thence to the axle of the forward truck 13, supporting the platform 10, and a slow forward movement to the machine is afforded on the track-rails 17, this being necessary in order that the tamping of the ballast material may be accomplished in a complete and thorough manner. The power of the engine is transmitted simultaneously through the belt 86 to the band-wheel 81 and the air-compressor 58 set in operation, the compressed air being communicated to the lifting jacks or cylinder 49 in the frame 47 and also to the lifting jacks or cylinders 42 and regulated by the valves in the air-conducting pipes. A section of the superstructure comprising the rails and ties in advance of the truck 13 is raised from the original road-bed to the desired track-level and supported temporarily in position. The power from the engine, through the band-wheel 76, is communicated through the shaft 77, supported by standards 23, to the sprocket-chains 115, and the conveyer-sections travel horizontally within the space above the rollers 114 and below the lower ends of the false bottom 98. When the supply of ballast material is desired, one or more of the levers 108 is operated to swing the gate upon its hinges rearwardly against the ribs 101 upon the side of the car, and the material falls by gravity into the conveyer and which material is carried by the conveyer to a position above the conduits 72 and dumped into said conduits, which material falls into the hopper 71 and thence between the ties upon the road-bed 19 until the quantity of the material supplies a new bed for the cross-ties. The compressed air from the cylinder 58 is then admitted by a valve 70 to the cylinder

or jacks 66, and the tamping of the ballasting material is accomplished upon each side of a single tie until the tie is furnished with a solid foundation.

now claim as new, and desire to secure by Letters Patent, is—

1. A material-conveying, self-discharging vehicle for ballasting road-beds, separate feeding-conduits for the material and a distributor of the material yieldingly connected with the separate conduits.

2. A material-conveying, self-discharging vehicle for ballasting road-beds, separate receiving-conduits for the material thereon, and an elevated support upon the vehicle therefor, means for conveying the material to the separate conduits, a laterally-extended hopper upon the vehicle, and a spout for the material yieldingly connected with the separate conduits and movably connected with the hopper.

3. A railroad-ballasting apparatus, comprising a track-supported vehicle, means thereon for suspending a portion of the railroad superstructure in advance of the vehicle above the road-bed, and means for discharging the material from the vehicle beneath the suspended superstructure.

4. A railroad-bed-ballasting apparatus comprising a track-supported vehicle, motor-operated devices thereon for raising and suspending a portion of the railroad superstructure above the bed of the road, and motor-operated devices on the vehicle for discharging the material upon the bed of the road beneath the suspended superstructure.

5. A railroad-bed-ballasting apparatus comprising a motor-propelled, rail-supported vehicle, motor-operated devices thereon for raising and suspending a portion of the railroad superstructure above the bed of the road, and motor-operated devices for discharging the material upon the bed of the road beneath the suspended superstructure and tamping the ballasting material.

6. In a railroad-bed-ballasting apparatus, a motor-propelled vehicle upon the track-rails, a self-discharging receptacle for the ballasting material, and a motor-operated conveyer of the material from the receptacle to the track.

7. In a railroad-ballasting apparatus, the combination with a motor-propelled platform-vehicle, of a frame extending from the end of the platform above to the track-rails, and track-rails on said frame, and motor-actuated raising and lowering devices, and track-grasping devices upon the rails of said frame.

8. In a railroad-ballasting apparatus, the combination with a motor-propelled vehicle, of a longitudinally-extended frame extending forwardly from the end of the vehicle, and means on the vehicle for supporting said frame, track-rails on said frame, a carriage upon said track-rails raising and lowering devices on the carriage for raising the superstructure of the railroad above the road-bed, and material-discharging devices upon the vehicle discharging beneath the elevated superstructure.

9. In a railroad-bed-ballasting apparatus,

As illustrated, the apparatus is shown upon the track-rails, beneath which the superstructure of the railway has been raised to the proper level and fully ballasted.

In ordinary operation the initial work is begun when the superstructure is upon the ordinary unballasted subroad-bed above which the superstructure is to be raised the desired height in a uniform inclined plane, from which point the desired grade may be indefinitely maintained. In the raising of a section of the superstructure beneath the frame 20 in the progressive work, as illustrated, the jack 42 on the carriage-frame 41, which is, as shown, located at the forward end of the frame 20, and operated to raise the portion of the superstructure directly beneath the carriage-frame 41 and to the position seen in dotted lines, Fig. 1, and the frame is normally held in a stationary position by the grappling-hooks 45. At the completion of the upward movement of the superstructure to the level stated the weight of the superstructure is released from the hooks 53 from the jacks 49 on the carriage 47, and this carriage is moved forward to the forward end of the frame 20 telescopically within the carriage-frame 41 and occupies a stationary position on the frame 20 until the machine advances the requisite distance. This may be any number of feet, approximately from five to thirty feet, when the grappling-hooks 53 are caused to grasp the track-rails, the frame 41 in the advanced movement of the machine occupying the relative position to the frame 47 at the beginning of the movement, and in the progressive raising of additional portions of the superstructure the movement of the carriage-frames 41 and 47 are alternately operated, as heretofore described, while the ballasting of the road-bed and its tamping when ballasted is being carried on. When the machine is following a curved line of track, the pins 38 are removed from the I-beam 29, the forward end of the combined tracks 31 32 are moved into a position or given a tangent offset to the track superstructure to be raised, this movement being permitted by the pivotal connection 33 of the bars 30 in the beam 29. The laterally-movable material-distributor 74 acts in conjunction with the conduits 72, so that should the amount of ballasting material be delivered to one conduit in larger amounts than the other a uniform distribution may be maintained laterally to the track. It is obvious that the ballasting-machine may be utilized for analogous purposes and the receptacle for the material provided in the platform 2 and various modifications made such as are within the scope of the invention. Having fully described my invention, what I

the combination with a motor-propelled vehicle, of a longitudinal frame upon the forward end of the vehicle, and suitable supports upon the vehicle therefor, and track-rails upon said frame, a carriage upon said track-rails, and motor-energized raising and lowering devices on said frame for raising the superstructure of the railroad above the road-bed, means for discharging the ballast material from the vehicle beneath the elevated superstructure, and motor-energized tamping devices on the vehicle for tamping the ballast material upon the road-bed.

10. In a railroad-bed-ballasting apparatus, the combination with a propelled platform-vehicle, of a longitudinally-extended frame on the forward end of the platform and track-rails upon said frame, means upon said frame and track-rails for suspending a raised portion of the superstructure of the railroad, and means for adjusting the position of said track-rails on said frame at a tangent to the offset in the railroad track-rails.

11. In a railroad-track-ballasting apparatus the combination with a propelled platform-vehicle which consists of a longitudinally-extended suspended frame on the forward end of the platform, outer longitudinal track-rails, and separate inner longitudinal track-rails upon said suspended frame, separate carriages for raising a portion of the superstructure of the railroad above the bed of the railroad mounted upon the respective inner and outer track-rails and alternately telescoping with each other.

12. In a railroad-bed-ballasting apparatus, the combination with a parallel platform-vehicle, of a longitudinally-extended suspended frame on the forward end of the platform and a series of track-rails upon said suspended frame, carriages mounted on said track-rails and alternately telescoping with each other, and motor-energized raising and lowering devices on said carriages for suspending a portion of the superstructure of the railroad above the bed of the railroad to be ballasted.

13. In a railroad-bed-ballasting apparatus, the combination with a motor-propelled platform-vehicle, of a longitudinally-extended suspended frame on the forward end of the platform, and a series of track-rails upon said suspended frame, a pivotal support for the rear ends of said track-rails and devices connecting the forward ends of said rails with each other, said rails being movable upon the said supporting-frame, and its pivotal support, at a tangent to the offset in the curved track-rails of the railroad and carriages upon said track-rails, and motor-energized raising and lowering devices on said carriages for suspending a portion of the railroad superstructure.

14. In a railroad-bed-ballasting apparatus, the combination with a motor-propelled platform-vehicle, of a longitudinally-extended frame upon the forward end of the platform, and an elevated support on the said platform,

and suspension devices for the said frame connected with the elevated support, track-rails on said suspended frame and carriages on said track-rails, motor-energized raising and lowering devices on said carriages for raising a portion of the railroad superstructure above the road-bed, and motor-actuated material-conveying devices on said elevated support, discharging the material beneath the superstructure.

15. In a railroad-bed-ballasting apparatus, the combination with a motor-propelled platform-vehicle, of a supply-receptacle for the material, and gates to said receptacle, and an endless motor-operated conveyer, movable beneath the gates and extending to the forward end of said platform, and discharging the material upon the bed of the road.

16. In a railroad-bed-ballasting apparatus, the combination with a motor-propelled platform-vehicle, of a discharging-receptacle for the ballasting material, gates in the sides of said receptacle and roller-hangers in the said receptacle beneath said gates, an elevated structure on the platform of the vehicle, and a power-driven shaft thereon, and an endless conveyer extending over the roller in the roller-hangers, and over the shaft on said elevated support and discharging the material upon the bed of the railroad.

17. In a railroad-bed-ballasting apparatus, the combination with a motor-propelled platform-vehicle, of a discharging-receptacle for the ballasting material, hinged gates in the sides of said receptacle, and lever operating devices for operating the gates, roller-hangers on the said receptacle beneath said gates, an elevated structure on the platform of said vehicle, and a power-driven shaft thereon, an endless material-conveyer extending over the roller-hangers in said receptacle and also over the shaft on said elevated support, and material-distributing conductors leading to the bed of the railroad from said elevated support.

18. In a railroad-bed-ballasting apparatus, the combination with a motor-propelled platform-vehicle, of a material-supply receptacle, a false inclined bottom in said receptacle, said receptacle having material-discharging openings between the inclined bottom and the sides of said receptacle, hinged gates in the sides of the receptacle movable upon the inclined surfaces of the bottom, roller-hangers upon said receptacle beneath the said discharge-openings, an elevated structure upon the said platform, and a power-driven shaft thereon, an endless conveyer of the material extending over said rollers in the roller-hangers and over the shaft in said elevated support, conductors for the material on said support leading to the road-bed, and means for opening and closing the gates in the sides of the material-supply receptacle.

19. In a railroad-ballasting apparatus, the combination with a propelled platform-vehicle,

cle, of motor-operated devices thereon for raising and suspending a portion of the railroad superstructure above the bed of the road, motor-operated devices for discharging the material upon the bed of the road beneath the superstructure upon said vehicle.

20. In a railroad-bed-ballasting apparatus, the combination with a motor-propelled platform-vehicle, of a supply-receptacle for the material, and devices actuated by the motor for conveying the material from the supply-receptacle to the forward end of the vehicle,

means on the platform for raising a portion of the railroad superstructure above the bed of the road, motor-actuated material-tamping devices oppositely suspended beneath the platform of the vehicle, and a hopper for the ballasting material leading to the road-bed between the tamping devices.

GRAHAM H. CRAVENS.

Witnesses:

ROBERT A. POLLOCK,
ANNIE L. GREER.