

Dec. 20, 1955

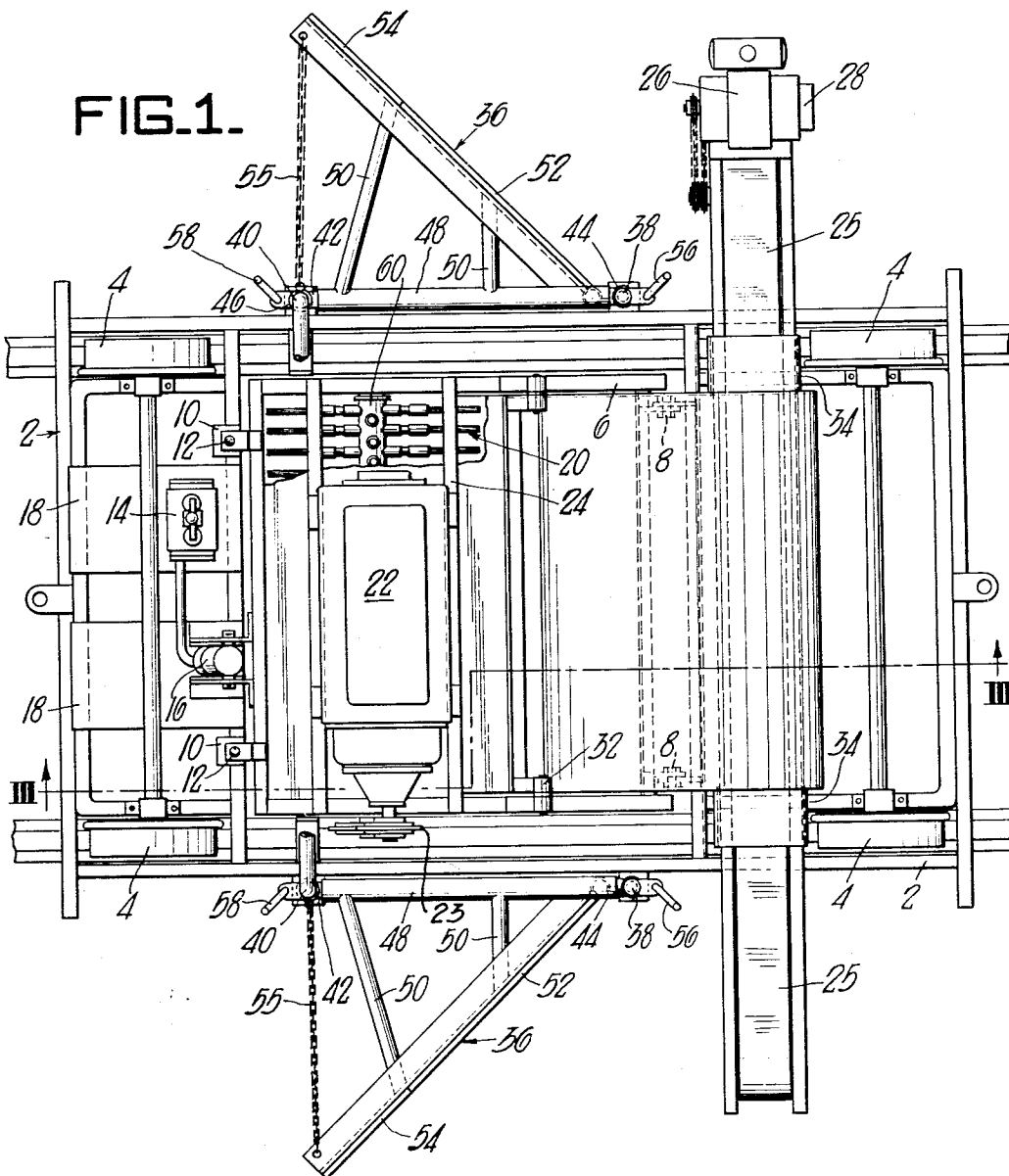
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2,727,263

RAILWAY TRACK CLEANING MACHINE

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4 Sheets-Sheet 1



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4 Sheets-Sheet 2

FIG. 2.

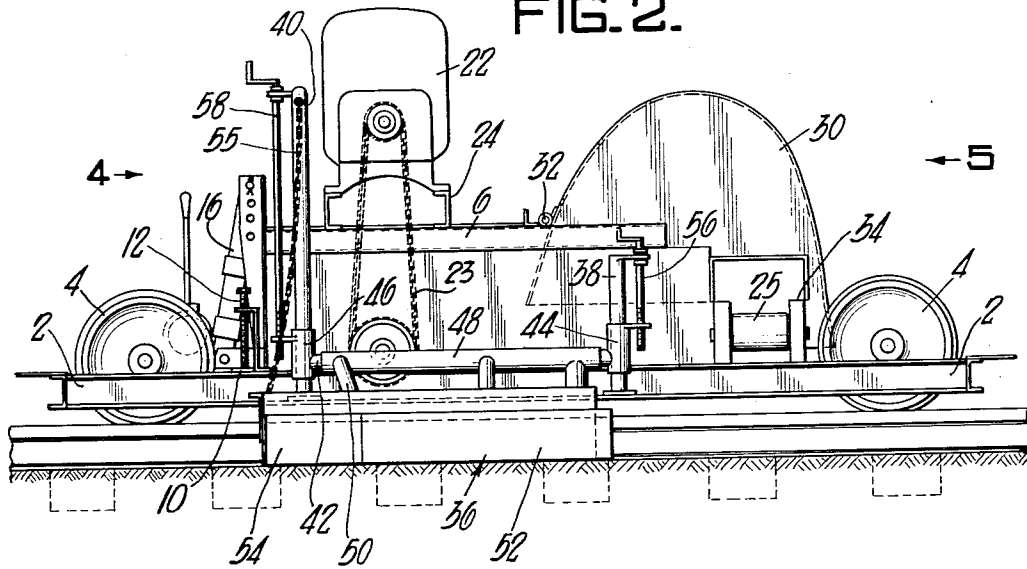
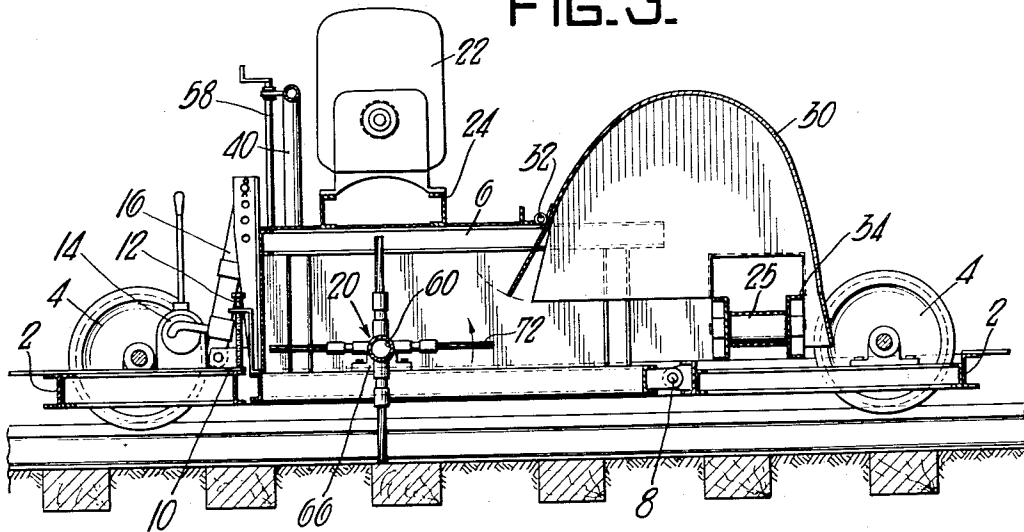


FIG. 3.



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4 Sheets-Sheet 3

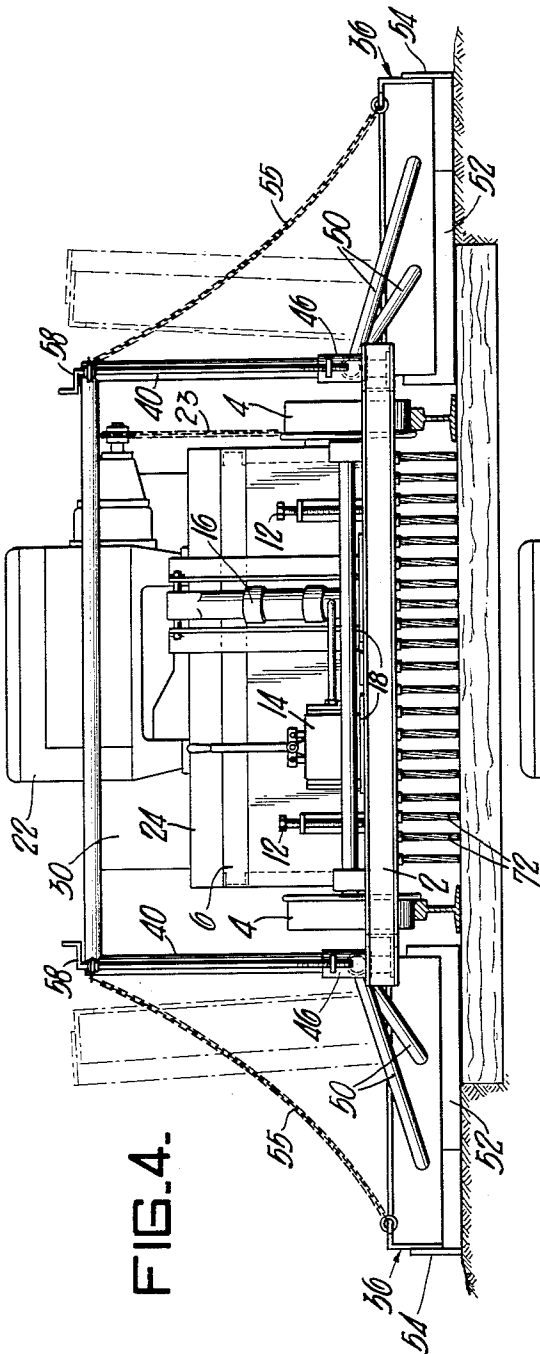


FIG. 4.

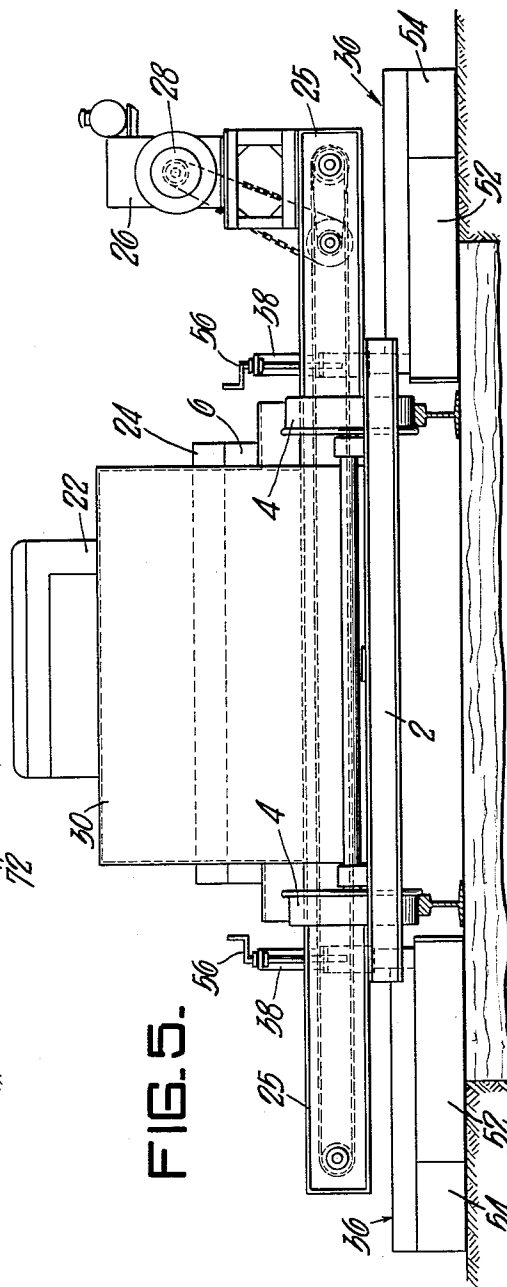


FIG. 5.

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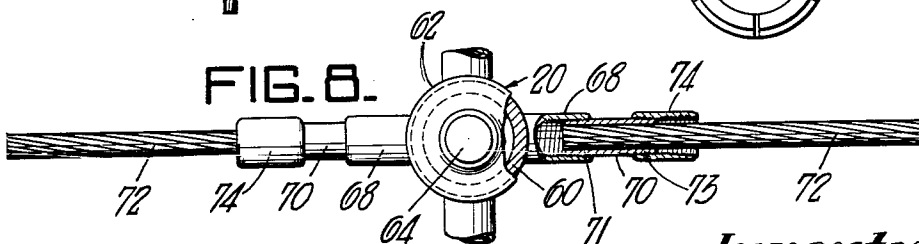
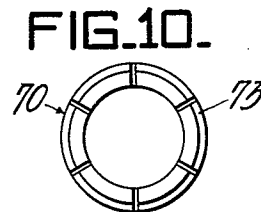
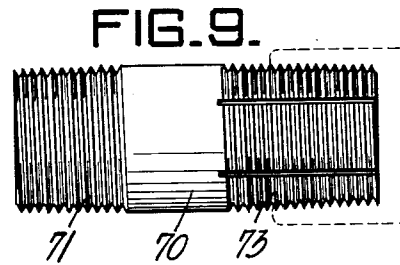
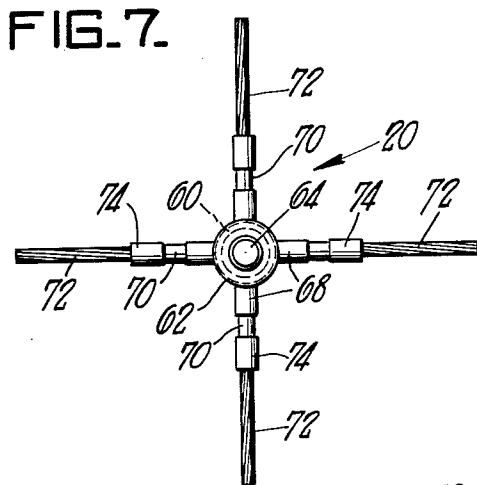
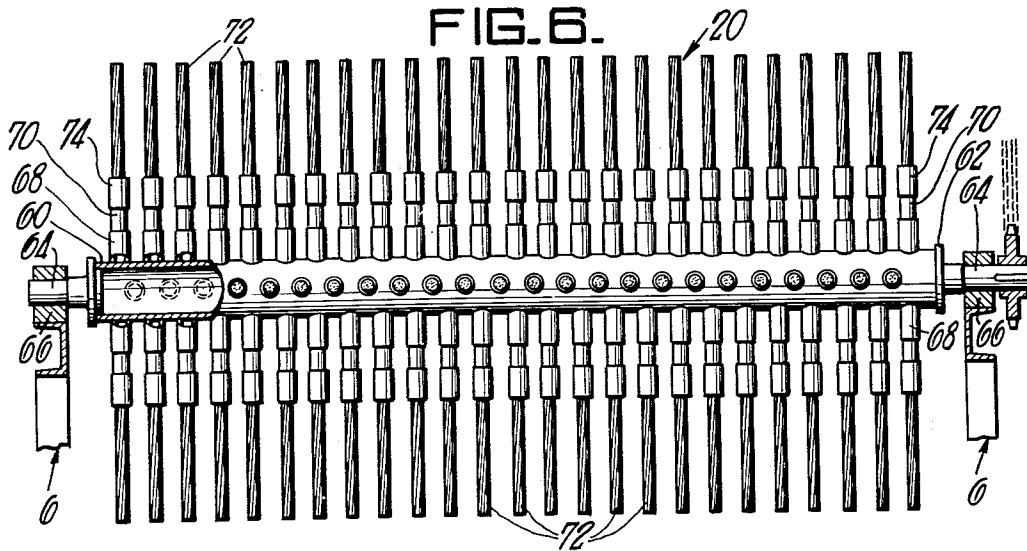
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1

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RAILWAY TRACK CLEANING MACHINE

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6 Claims. (Cl. 15—55)

This invention relates to a cleaning machine and more particularly to a railway track cleaning machine.

The object of our invention is to provide a railway track cleaning machine adapted to remove the dirt and debris that accumulates in and alongside of railway tracks.

The nature of the invention and its distinguishing features and advantages will be fully apparent from the following detailed disclosure and the appended claims when read in connection with the accompanying drawings in which:

Figure 1 is a top plan view;

Figure 2 is a side elevational view;

Figure 3 is a side elevational view with parts broken away to show the position of the impeller of our invention;

Figure 4 is an end view showing the end indicated by the numeral 4 and arrow in Figure 2 with parts omitted for the sake of clearness;

Figure 5 is an end view showing the end indicated by the numeral 5 and arrow in Figure 2.

Figure 6 is an elevational view, partly in section, of the impeller of our invention;

Figure 7 is an end view of the impeller;

Figure 8 is an enlarged end view of the impeller partly in section;

Figure 9 is a plan view of the nipple used in constructing the impeller; and

Figure 10 is an end view of the nipple shown in Figure 9.

Referring more particularly to the drawings, reference numeral 2 indicates a main steel frame mounted on four car wheels 4 adapted to form a push car for travel on any specified gauge railroad track. A secondary steel frame 6 is mounted within the main steel frame with its one end hinged as at 8 and its free end supported by two stop plates 10 and adjusting screws 12 adjacent the one end of the main steel frame. The adjustable stops include two brackets having threaded openings therein projecting from the forward end of the secondary frame 6. An adjusting screw 12 is threaded into the opening in each of the brackets. The bottom of each of the adjusting screws cooperates with the two stop plates 10 in the main frame to hold the secondary frame in any vertical position desired. The hinged connection of the secondary steel frame to the main frame allows vertical movement of the former which is obtained by means of a hydraulic pump 14 and a hydraulic ram 16 mounted on the floor plates 18 at the one end of the main frame 2. A large steel impeller 20 is mounted on the secondary frame 6 near the end thereof opposite the hinged end. An internal combustion motor 22 is mounted on a top platform 24 of the secondary frame 6. The motor 22 serves to revolve the impeller 20 by means of a chain 23 and sprockets on the impeller and motor shafts. Although we have found it preferable to use an internal combustion motor, it is to be understood that any suitable type motor may be used for this purpose.

A standard flat belt conveyor 25, including spaced parallel side rails 34 secured to and forming part of the main frame 2, is mounted on the latter transversely thereof ad-

2

jacent its forward end. The conveyor 25 is individually powered by a reversible motor 26 which is mounted on the side rails 34 at one end of the conveyor. As seen in Figures 1, 2 and 3, the direction of travel of the machine is to the right. The conveyor 25 is mounted forward of the impeller 20 for movement in a direction parallel to the longitudinal axis of the impeller 20 to receive and convey the dirt and debris from the center portion of the track to the windrow on either side. A reversible connection 28 is provided between the conveyor and its driving motor 26 so that the conveyor may be driven in either direction to deposit the debris and dirt on either side of the track for later pick up. The dirt and debris are guided onto the conveyor 25, after leaving the impeller 20, by a curved steel hood or deflecting baffle 30 which is positioned in the path of material discharged from the impeller. The baffle is concave in shape and extends arcuately upward from the impeller 20 and downward to the main frame 2 beyond the conveyor 25. One end of the hood or baffle 30 is hinged to the secondary frame as at 32. The opposite end thereof engages the forward side rail 34 of the conveyor 25 or is held up by frame 2 in any suitable manner. This arrangement permits the secondary frame to be raised or lowered with no change in the position of the hood or baffle 30.

Plow assemblies 36 are provided on each side of the main frame 2 for scraping the tops of the ties outside of the rails and pushing the dirt and debris into a windrow for pickup and removal. Each plow assembly includes two vertical supporting members or posts 38 and 40 mounted in spaced relationship on the two sides of the main frame 2, posts 40 being relatively higher than posts 38. Shaft 42 extends horizontally between the lower ends of posts 38 and 40. The ends of the shaft 42 are attached to short vertical sleeve members 44 and 46 which are slidably mounted on posts 38 and 40, respectively. A rotatable sleeve 48 having a length slightly shorter than the shaft 42 is rotatable thereon. Plow braces 50, which support the plows 36, are attached to and project laterally from the sleeve 48. As best seen on Figure 1, the lengths of the plow braces 50 are varied so as to cause the plows 36 to lie at an oblique angle to the sides of the main frame 2 when in horizontal position. By the construction described, the plows are hinged and may be manually tilted from horizontal to vertical position. They may also be adjusted vertically for track rails of various heights, by screws 56 and 58. When in normal operating position, the plows 36 extend from the main frame 2 at an angle of approximately 45 degrees thereto. Each of the plows 36 is provided with a length of heavy rubber belting 52 bolted along the lower edge which serves as the cutting edge of the plows and permits them to ride over the tops of the cross ties extending beyond the rails. This belting is flexible enough to follow the contour of the tops of the cross ties and is strong enough to remove the debris and dirt from the portion of the track which lies between the rail and the ends of the ties. The cutting edge of plows 36 beyond the cross ties is made up of steel plates 54, of any desired length, bolted to the plows beyond the flexible rubber belting 52.

Chains 55 attached to the outer ends of the plows 36 and to the tops of the posts 40 prevent the plows from tilting too far down as on passing a hole. They also serve, when desired, to secure the plows in vertical inoperative position. The plows are capable of vertical adjustment to accommodate various height rails of the track, by means of the slidably fitted sleeves 44 and 46, and cooperating crank screw arrangements 56 and 58. The chains, of course, are taken up or slacked as necessary, depending on the vertical adjustment of shaft 42.

The impeller 20 for cleaning the track is provided with a plurality of impeller elements mounted thereon in a

3

series of rows. The rows of said elements are spaced apart a substantial distance about the impeller to provide sufficient circumferential clearance therebetween permitting free flight of the dirt and debris discharged from each row when rotated in use. As shown, the impeller may be constructed from steel tube 60 which functions as a shaft on the body of the impeller, a flange 62 welded on each end of the tube, and a short length of steel shafting 64 welded to each flange 62. The ends of the shafts 64 are supported in bearings 66 on the secondary frame 6 to hold the impeller in place. Standard pipe couplings 68 are welded to the shaft 60 normal to the axis thereof in aligned spaced relationship. Four rows of the couplings are provided 90° apart on the circumference of the impeller shaft 60.

Short pipe nipples 70, having a standard thread 71 on one end and a tight thread 73 on the other, are slit the length of the tight thread parallel to the axis of the nipple and 60° apart around the circumference thereof. Equal lengths of wire rope 72 are deposited in each of the nipples 70 to form elongated impeller elements. A standard pipe coupling 74 is screwed on the tight thread end of each nipple to draw the cut end of the pipe nipple tight against the wire rope. Each nipple, with wire rope and coupling, is screwed into the couplings 68 which are welded on the impeller shaft 60. The impeller illustrated has four rows of wire rope elements with an impeller diameter determined by the lengths of wire rope desired and an axial length determined by the track gauge on which the machine will be operated.

In operation, the impeller 20 is lowered to a position just clearing the tops of the ties by releasing the hydraulic pump 14 and allowing the secondary frame 6 to rest on the stop plates 10. The plows 36 are then lowered to a horizontal position and adjusted vertically to just clear the tops of the ties. The impeller is then rotated and the conveyor 25 started. The machine is then moved on the track by a suitable type railroad motor car or other propelling means.

When moving from one track to another, the impeller is raised to clear the rail by the hydraulic ram 16 and is held in place by a locking device (not shown). The plows are lifted to a vertical position by hand and power cut off until the machine is used for the next cleaning operation.

While one embodiment of our invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

We claim:

1. A machine for handling material on the roadbed of a railroad track comprising a wheeled main frame adapted to travel on said track, an impeller rotatably supported from said frame transversely thereof, means on said frame for driving said impeller, said impeller having radial impeller elements spaced therealong arranged in a plurality of rows, the adjacent rows being widely spaced apart circumferentially of the impeller, means for raising and lowering said impeller to bring the bottom of the path of the ends of said elements to a level such that on rotation, successive rows of impeller elements strike material accumulated on the roadbed above the ties of said track and traject the particles thereof in ascending free flight in the direction of travel of said frame, means on said frame spaced from the impeller in said direction and adapted to receive said particles for disposal, and a baffle mounted on the frame including adjacent portions, one extending upwardly and forwardly from a point adjacent the forward side of said impeller, the other extending upwardly and rearwardly from a point adjacent and ahead of said receiving means in the direction of travel of said frame, said portions meeting to form a continuous downwardly concave hood enclosing an unobstructed space, confining said trajected particles and ultimately guiding them downwardly toward said receiving means.

4

2. A device as defined in claim 1 characterized by a secondary frame within said main frame, said secondary frame being pivoted at one end thereof to said main frame, said impeller being journaled in said secondary frame, said baffle being pivoted at its rear end to said secondary frame and the forward end of said baffle engaging means fixed to said main frame.

3. A roadbed-cleaning machine comprising a wheeled main frame, a secondary frame on said main frame, said secondary frame being pivoted at one end to said first named frame, and a rotatable impeller journaled in said secondary frame having circumferentially spaced impelling elements effective to traject debris accumulated between the rails of a track on which the frame travels, a generally horizontal conveyor structure mounted transversely on said first-mentioned frame ahead of and spaced from said impeller adapted to receive debris trajected by said impeller for delivery to one side of the track, and a baffle of continuous downwardly concave shape having its rear side adjacent the vertical plane substantially tangent to the forward side of the path of the ends of the impeller elements, the forward side of the baffle extending over said conveyor whereby debris trajected by said impeller elements is thrown upwardly against said baffle and is guided thereby onto said conveyor, the space between said impeller and said conveyor enclosed by said baffle being clear of obstruction so as to permit free flight of debris particles from the roadbed upwardly and thence downwardly around the interior surface of said baffle onto the conveyor.

4. A roadbed-cleaning machine as defined in claim 3 characterized by adjustable stop means projecting downwardly from the free end of said secondary frame, said stop means being adapted to bear on the main frame to maintain the secondary frame at a predetermined angular position relative to the main frame.

5. A machine for handling material on the roadbed of a railroad track comprising a wheeled main frame adapted to travel on said track, an impeller rotatably supported from said frame transversely thereof, means on said frame for driving said impeller, said impeller having radial impeller elements spaced therealong, means for raising and lowering said impeller to bring the bottom of the path of the ends of said elements to a level such that, on rotation, said impeller elements strike material accumulated on the roadbed above the ties of said track and traject the particles thereof in the direction of travel of said frame, traveling conveyor means on said frame spaced from the impeller in said direction adapted to receive said particles, and transport them away from the area in which they land for disposal, and a baffle mounted on the frame including a portion extending forwardly from a point adjacent the forward side of the impeller and spaced above the roadbed and a portion extending downwardly to a point beyond said conveyor means in said direction, said portions together forming a hood enclosing an unobstructed space above said receiving means encompassing the field of flight of said particles and effective to confine the latter and ultimately deflect them downwardly onto the conveyor means.

6. A machine as defined by claim 5 characterized by said conveyor being disposed transversely of said frame and extending laterally beyond the track on one side of said frame so as to discharge collected material clear of the track.

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