Aug. 23, 1932. F. SPENO 1,873,794

RAILROAD BALLAST SCRAPER

Filed Feb. 19, 1931 3 Sheets-Sheet 1

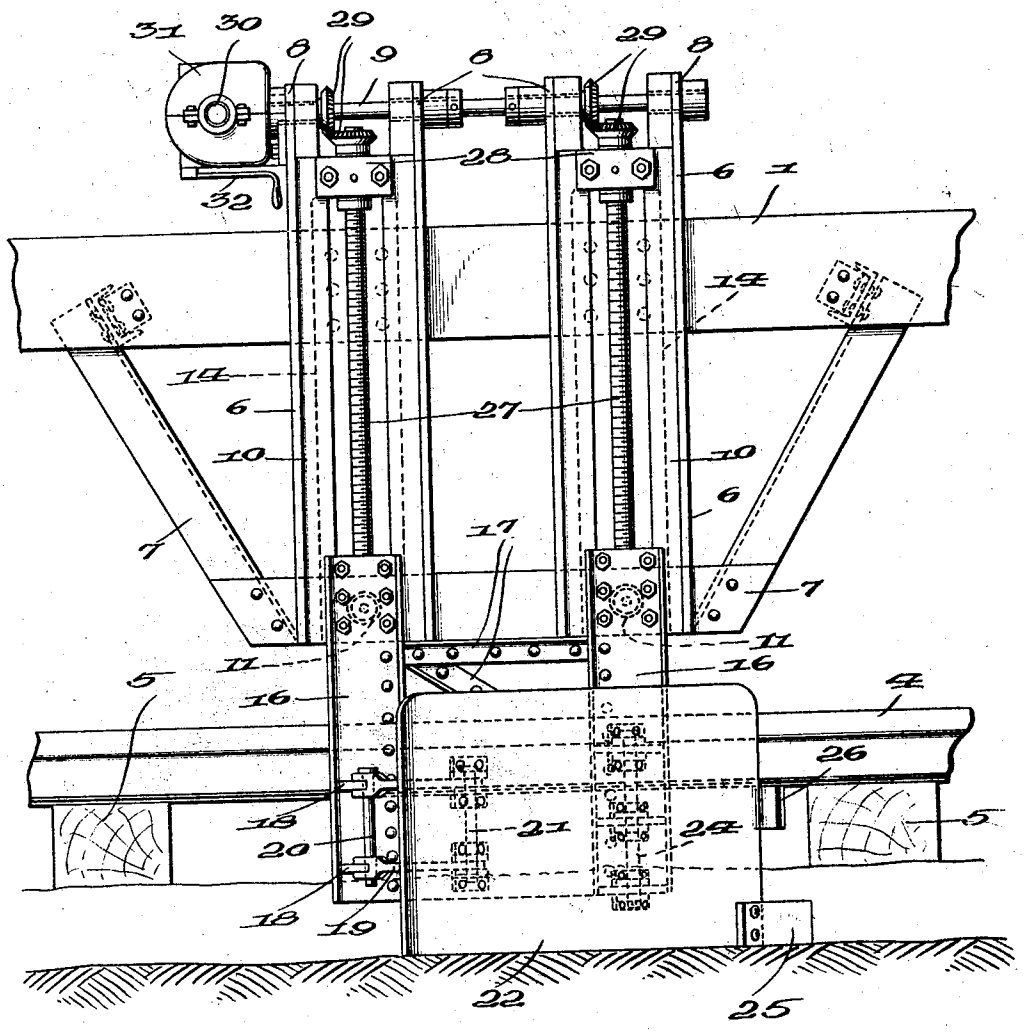


Fig. 1.

Inventor

Frank Speno

By Vernon E. Hodges

his Attorney

Aug. 23, 1932. F. SPENO 1,873,794

RAILROAD BALLAST SCRAPER

Filed Feb. 19, 1931 3 Sheets-Sheet 2

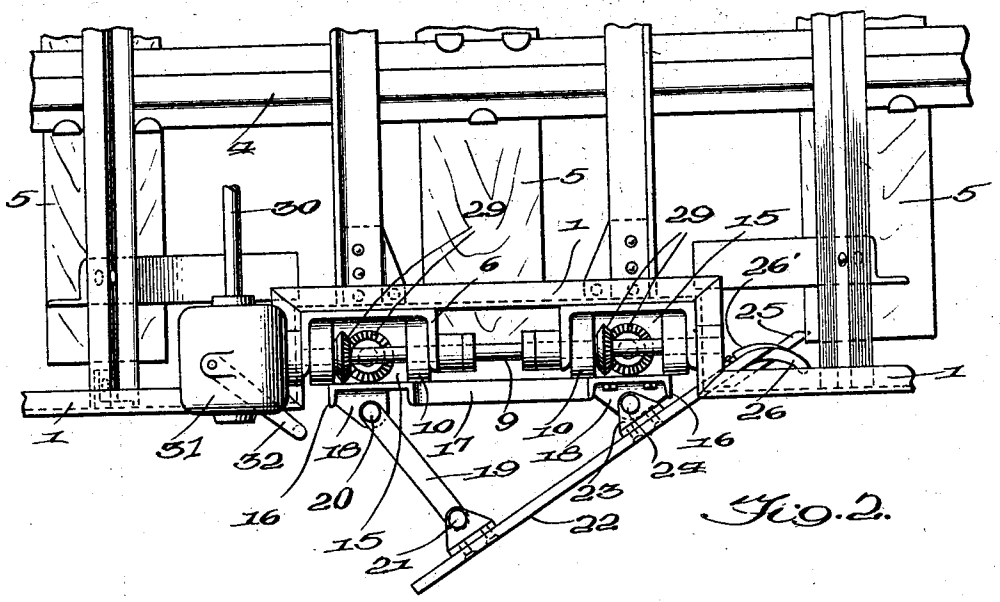


Fig. 2.

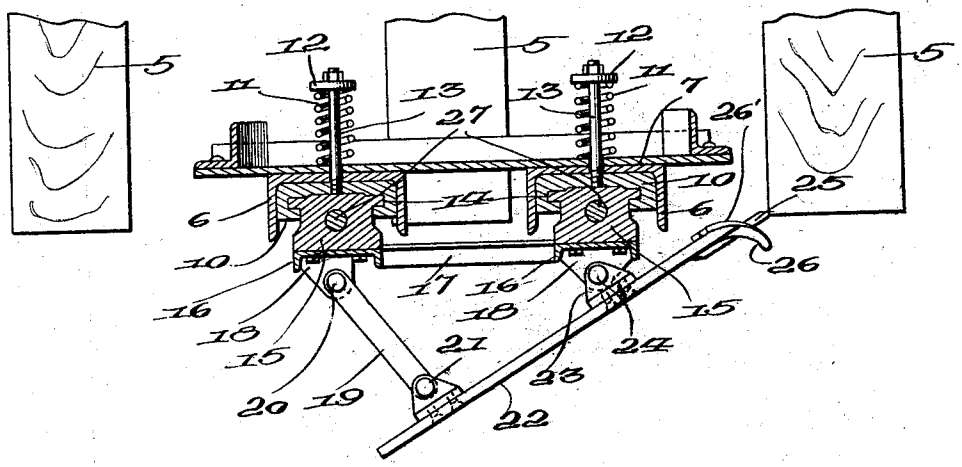


Fig. 3.

Inventor

Frank Speno

By Vernon L. Hodges

his Attorney

Aug. 23, 1932. F. SPENO 1,873,794

RAILROAD BALLAST SCRAPER

Filed Feb. 19, 1931 3 Sheets-Sheet 3

Fig. 4.

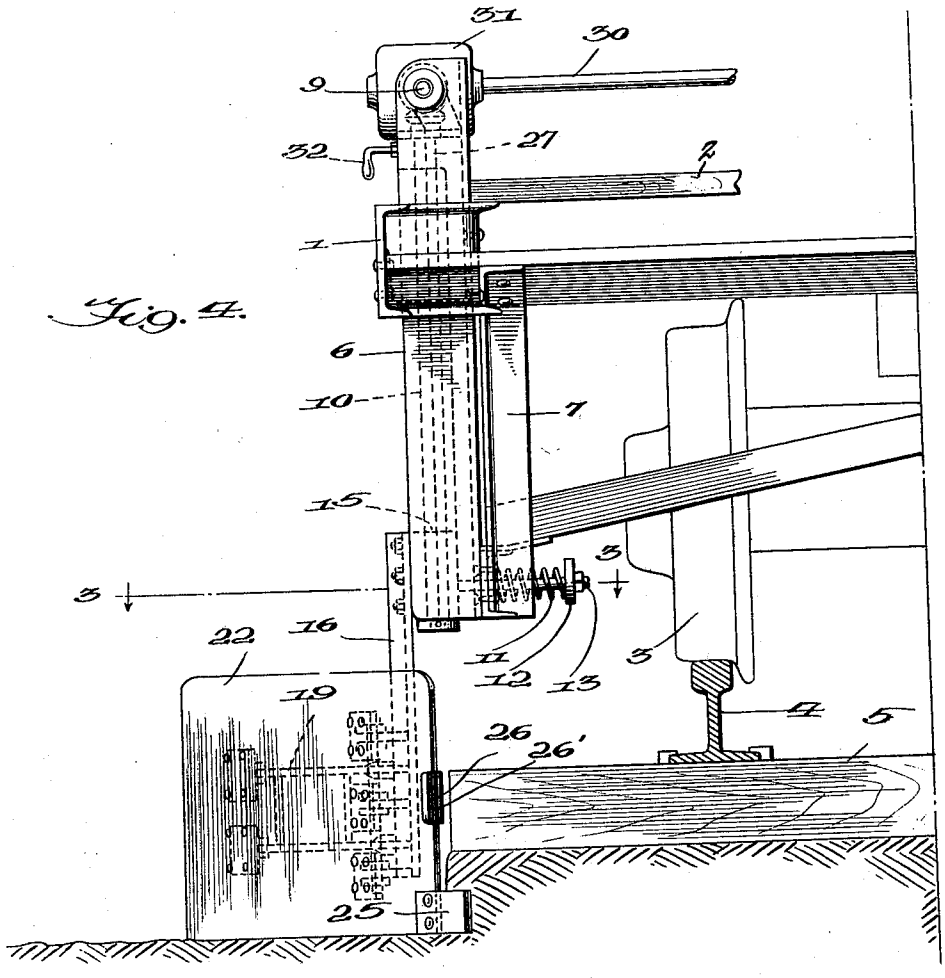
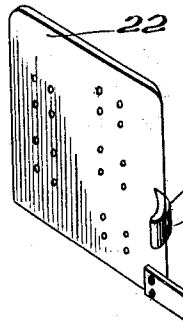


Fig. 5.



Inventor

Frank Speno

By Vernon E. Hodges

his Attorney

Patented Aug. 23, 1932 1,873,794

UNITED STATES PATENT OFFICE

FRANK SPENO, OF ITHACA, NEW YORK

RAILROAD BALLAST SCRAPER

Application filed February 19, 1931. Serial No. 517,018.

This invention relates to an improvement in railroad ballast scrapers.

The invention is designed for use primarily in connection with a railroad ballast cleaning machine, such as is set forth in my application on ballast cleaning machines, Serial No. 283,669, filed June 7, 1928, and in which the ballast is gathered up by the machine at the ends of the railroad ties and is cleaned and redeposited between the ties.

It has been found that in the operation of such a machine, the scoops for scooping up the ballast must be kept at a distance from the ends of the ties in order to prevent injury to the scoops or to the ties, but this leaves a small amount of ballast packed up against the ends of the ties and does not smooth it out evenly beside the tracks.

It is the object of this invention to provide a scraper which will move along the track and scrape the ballast left by the scoops of the ballast cleaning machine away from the ends of the ties and place it in the path of the scoops. The scraper may be attached directly to the ballast cleaning machine or be applied to a separate structure moved along the tracks.

In the accompanying drawings:

Fig. 1 is a side elevation showing the application of the invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is a horizontal section on the line 3—3 of Fig. 4;

Fig. 4 is an end elevation of the invention; and

Fig. 5 is a detached perspective view of the scraper.

As shown in the drawings, the invention is applied to or carried by the side of a flat car or the like, and which may be the same flat car that supports the ballast cleaning machine.

The flat car is provided with the usual side sills 1, forming the frame for the car and may have a floor 2, shown in Fig. 4, while the wheels of the car are designated by the numeral 3 to ride on the rails 4, which are in turn mounted on ties 5. The space between the ties is approximately or partially filled with ballast which it is desirable to clean at intervals, at which time it is shoveled out from between the ties to the space outside the end of the ties, and the ballast cleaning machine gathers up the ballast, cleans it, and redeposits it back between the ties or any place desired. This operation, however, leaves a wall of ballast at the ends of the ties which should be cleaned.

The mechanism for accomplishing this comprises guides 6 fixed to the side sills 1 and to a frame 7 suspended from the side sills 1.

The upper ends of the guides 6 are provided with bearings 8, through which a shaft 9 extends, as shown in Fig. 1.

Journaled on the shaft 9 are cross-head guides 10 which extend within the guides 6, being pivotally supported at their upper ends on the shaft 9 and free to swing outward about the axis of said shaft. This outward swinging movement is opposed by springs 11 shown in Figs. 3 and 4, which bear against the stationary frame 7 at one end and against rings 12 at their opposite ends, which rings are connected with the outer ends of bolts 13 projecting outwardly from the cross-head guides 10 through openings in the guides 6 and frame 7, the inner ends of said bolts being fixed to the cross-head guides 10. The outward swinging movement of the cross-head guides 10 is therefore opposed by the tension of the springs 11, and these springs are compressed upon the outward swinging movement of the cross-head guides to return the cross-head guides to their normal positions within the guides 6, as shown in Fig. 3.

The cross-head guides 10 are provided with tracks 14 therein, as shown in Fig. 3, and receive cross-heads 15, which are guided in said tracks. The cross-heads 15 support a scraper frame comprising side posts 16 fixed to the cross-heads 15 and held in spaced relation by braces 17. Each of the posts 16 is provided with brackets 18. A link 19 is pivotally connected by the bolt 20 to brackets 18 of one post 16, the opposite end being pivotally connected as at 21 with the outer end of a scraper 22. The opposite end of the scraper 22 has a hinge 23 fixed thereto, which is pivotally connected by a bolt 24 with the bracket 18 carried by the other post 16. In this way, the

scraper 22 is pivotally connected with the posts 16 but is normally held against pivotal movement by the link 19.

As shown in Figs. 2 and 3, the scraper extends upward at the ends of the ties and at an acute angle to the direction of travel thereof along the track and with its forward end turned inward toward the track. The lower end of the scraper has a tooth 25 fixed thereto to plow through the ballast and force the same outward along the scraper. A guard lug 26 is formed at the forward edge of the scraper 22 and is curved laterally therefrom to keep the edge of the scraper separated from the ends of the ties in order to prevent injury to the mechanism by the scraper striking against the overlength ties. A strip 26′ extends behind the lug 26 and the scraper 22 and is welded thereto.

As shown in Fig. 3, the cross-heads 15 have screws 27 threaded therethrough, and these cross-heads are supported by the screws, which extend upwardly within the cross-head guides 10 and are journaled in bearings 28 near the upper ends thereof. The upper ends of the screws 27 are geared to the shaft 9 by beveled gears 29 for causing rotation of these screws.

The shaft 9 may be driven in any suitable manner from a source of power, as for instance by the drive shaft 30 connected with the shaft 9 by gearing enclosed within the housing 31 and which may, if desired, be controlled by a suitable clutch having a clutch lever designated by the numeral 32. Any other suitable means may be employed, as found desirable, for driving the shaft 9.

When the invention is applied to a ballast cleaning machine such as is illustrated in my application Serial No. 283,669, filed June 7, 1928, the shaft 9 may be suitably driven from the main drive shaft of said machine.

This apparatus may, if desired, be placed in front of the scoops of the machine to loosen the ballast and force it outward in position to be gathered up by the scoops.

In operating the machine, the screws 27 are rotated by the shaft 9 to lower the scraper 22 carried by the scraper frame, which in turn is suspended from the screws into a predetermined position opposite the ends of the cross-ties, and the machine is moved forward on the railroad car or with the ballast cleaning machine in order to scrape the ballast away from the ends of the ties and place it in the path of the scoops. The guard lug 26 may bear against the edges or ends of the ties to keep the scraper 22 from striking the ends of the overlength ties. As the guard lug engages an edge of an overlength tie, it swings the scraper, its supporting frame and the cross-head guides 10 outward slightly against the tension of the springs 11, and about the axis of the shaft 9, so that the scraper will swing outward sufficiently far to clear the end of the overlength ties, and in this way prevent injury or destruction thereto.

In transporting the machine from place to place, the scraper should be elevated by the screws 27, which causes the cross-heads 15 to slide upward within the cross-head guides 10, carrying the scraper 22 and supporting the same in a protected position opposite the frame 7.

In this way, an effective means is provided for scraping the ballast left by the scoop of the ballast cleaning machine away from the ends of the ties and placing it in the path of the scoop.

I claim:

1. A scraper structure comprising a support, a scraper element, guiding means, means for adjusting the scraper element vertically in the guiding means, means for supporting the scraper element for swinging movement on the support, and resilient means normally opposing said swinging movement of the scraper element.

2. A scraper structure comprising a support, a scraper element, guiding means, means for adjusting the scraper element vertically in the guiding means, means for supporting the scraper element for swinging movement on the support, and means for causing an outward swinging of the scraper element to clear an obstruction.

3. A scraper structure comprising a support, a scraper element, guiding means, means for adjusting the scraper element vertically in the guiding means, means for supporting the scraper element for swinging movement on the support, means for causing an outward swinging of the scraper element to clear an obstruction, and resilient means normally tending to oppose said outward swinging movement of the scraper element and to return the same to its initial position.

4. A scraper structure comprising a support, guides carried by the support, a scraper element connected with the guides for vertical adjustment relative thereto, power means for causing vertical adjustment of the scraper element, and means for supporting this scraper element for lateral swinging movement to clear an obstruction.

5. A scraper structure comprising a support, guides carried by the support, a scraper element connected with the guides for vertical adjustment relative thereto, power means for causing vertical adjustment of the scraper element, means for supporting this scraper element for lateral swinging movement to clear an obstruction, and resilient means normally opposing the lateral swinging movement of the scraper element and tending to return the same to its initial position.

6. A scraper structure comprising a plu-

rality of parallel guides, cross-heads mounted in the guides, a scraper frame suspended between the cross-heads mounted in the parallel guides, power means connected with the cross-heads for simultaneously raising and lowering the same, and a scraper element connected with the scraper frame and carried thereby.

7. A scraper structure comprising a plurality of guides, a support therefor, cross-heads mounted in the guides, power screws for vertically adjusting the cross-heads in the guides, a scraper frame supported by the cross-heads, a vertically arranged scraper, means for pivotally connecting an end portion of said scraper with the scraper frame, and a link pivotally connecting the opposite end portion of said scraper with the scraper frame.

8. A scraper structure comprising a support, guides carried thereby, cross-head guides mounted in said first-mentioned guides, means for supporting said cross-head guides for swinging movement, cross-heads mounted in the cross-head guides, power screws operatively connected with the cross-heads for vertical adjustment thereof, a scraper frame carried by the cross-heads, and a scraper carried by said scraper frame.

9. A scraper structure comprising a support, guides carried thereby, cross-head guides mounted in said first-mentioned guides, means for supporting said cross-head guides for swinging movement, cross-heads mounted in the cross-head guides, power screws operatively connected with the cross-heads for vertical adjustment thereof, a scraper frame carried by the cross-heads, a scraper carried by said scraper frame, means for automatically causing a swinging movement of said scraper to avoid an obstruction, and resilient means normally tending to oppose the swinging movement of said scraper.

10. In a scraper structure, the combination with a railway car, and a track therefor, of guides supported by said car, a scraper mounted for vertical adjustment relative to the guides, power means for causing vertical adjustment of the scraper, means for supporting said scraper for lateral swinging movement to avoid injury by an obstruction, and means for automatically causing said lateral swinging movement of the scraper.

11. In a scraper structure, the combination of a support, a scraper, means for supporting said scraper with its forward end pointed inward and for lateral swinging movement to avoid injury by an obstruction, and means for automatically causing a lateral swinging of the scraper.

12. In a scraper structure, the combination of a support, a scraper, means for supporting said scraper with its forward end pointed inward and for lateral swinging movement to avoid injury by an obstruction, means for automatically causing a lateral swinging of the scraper, and resilient means normally tending to oppose said lateral swinging movement and to return the scraper to its initial position.

13. In a scraper structure, the combination of a transportable support, an upright scraper, means for supporting said scraper from the transportable support with its forward end pointed inward and for lateral swinging movement to avoid injury by an obstruction, and means for automatically causing said lateral swinging movement of the scraper.

14. In a scraper structure, the combination with a railroad car to be supported on a track, of a scraper mounted in an approximately vertical plane with its forward end pointed inward, means for supporting said scraper from the car for lateral swinging movement relative thereto, and resilient means normally tending to oppose said lateral swinging movement of the scraper.

15. In a scraper structure, the combination with a railroad car to be supported on a track, of a scraper mounted in an approximately vertical plane with its forward end pointed inward, means for supporting said scraper from the car for lateral swinging movement relative thereto, resilient means normally tending to oppose said lateral swinging movement of the scraper and to return the same to its initial position, and means for automatically causing said lateral swinging movement of the scraper to avoid injury by an obstruction.

16. In a scraper structure, the combination with a railroad car to be supported on a tie-supported track, of a scraper, means for supporting the scraper with its forward end pointed inward toward the track and laterally disposed at an angle thereto, said means being so constructed and arranged as to mount the scraper for lateral movement relative to the car, and means for automatically causing said lateral movement of the scraper to avoid injury by an obstruction.

17. In a scraper structure, the combination with a railroad car to be supported on a tie-supported track, of a scraper, means for pivotally supporting the scraper from the car for lateral movement thereof, means for causing the scraper to be disposed with its forward end pointed toward the track, and a projection arranged at the forward end of the scraper for engaging an obstruction and automatically causing a lateral movement of the scraper.

18. In a scraper structure, the combination with a railroad car to be supported on a tie-supported track, of a scraper, means for pivotally supporting the scraper from the car for lateral movement thereof, means for causing the scraper to be disposed with its forward end pointed toward the track, and a projection arranged at the forward end of the scrap-

er for engaging an obstruction and automatically causing a lateral movement of the scraper, and resilient means normally opposing said lateral movement and to return the scraper to its initial position.

19. A scraper structure comprising a main support, cross head guides, means supporting said guides for pivotal movement about an approximately horizontal axis by said support, cross-heads mounted in the guides, means connected with the cross-heads for vertical adjustment thereof, and a scraper carried by the cross-heads.

20. A scraper structure comprising a support, cross-head guides carried by the support, means for supporting said cross-head guides for swinging movement about an approximately horizontal axis, cross-heads mounted in said guides, screws operatively connected with the cross-heads for vertical adjustment thereof, a scraper frame carried by the cross-heads, and a scraper carried by said scraper frame.

21. A scraper structure comprising a support, an upright guide carried by the support at the upper end portion of said guide and constructed for pivotal movement of the guide about an approximately horizontal axis, a scraper carried by the lower end portion of the guide, and means for vertically adjusting the scraper relative to the guide.

In testimony whereof I affix my signature.

FRANK SPENO.