April 14, 1925.

1,533,198

O. C. MANN

RAILWAY DITCHER

Filed Oct. 15, 1921

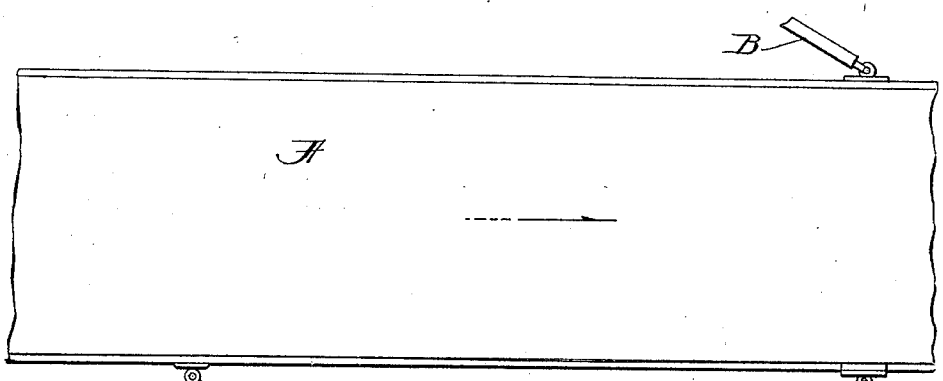
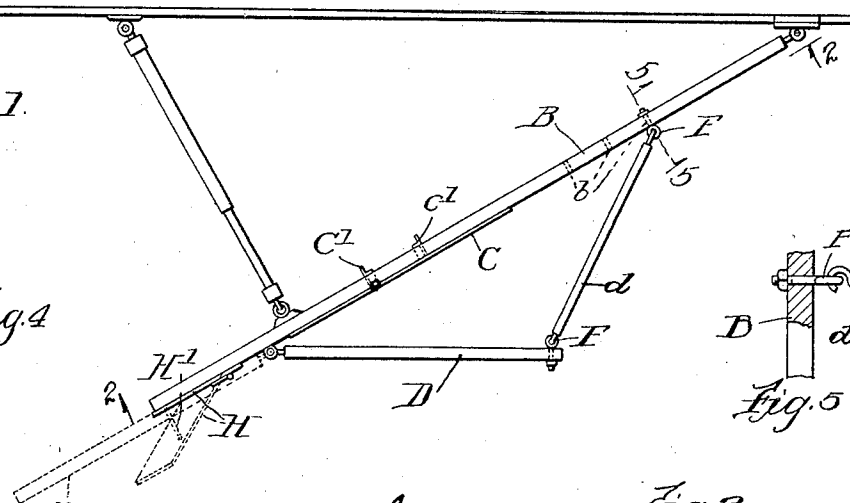


Fig. 1.



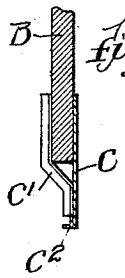


Fig. 4.

Fig. 5.

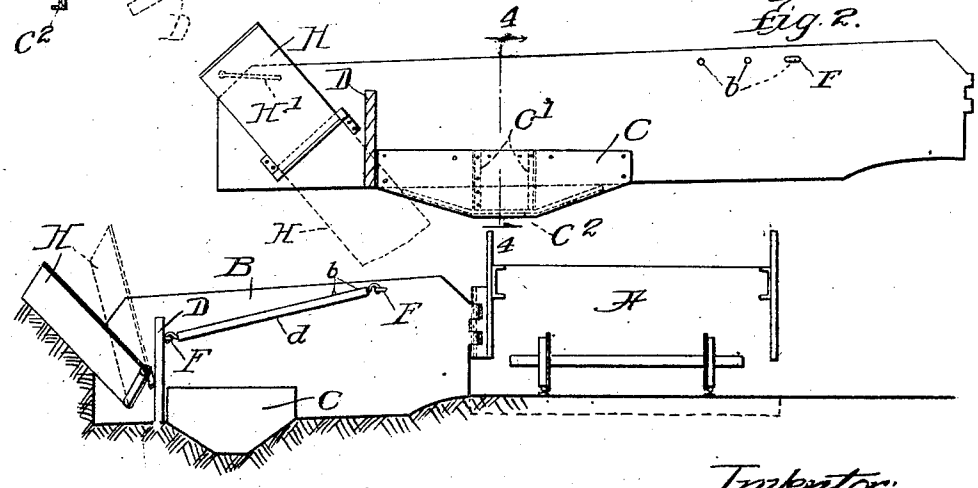


Fig. 2.

Fig. 3.

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Orville C. Mann,
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his Attys.

Witness:

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UNITED STATES PATENT OFFICE.

ORVILLE C. MANN, OF OAK PARK, ILLINOIS; EMMA I. MANN, EXECUTRIX OF SAID ORVILLE C. MANN, DECEASED, ASSIGNOR TO O. F. JORDAN COMPANY, OF EAST CHICAGO, INDIANA, A CORPORATION OF INDIANA.

RAILWAY DITCHER.

Application filed October 15, 1921. Serial No. 507,971.

To all whom it may concern:

Be it known that I, ORVILLE C. MANN, a citizen of the United States, residing in the village of Oak Park, in the county of Cook and the State of Illinois, have invented certain new and useful Improvements in Railway Ditchers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide means which will be easily applicable to a car equipped for alongside-track work, for cutting a drainage ditch parallel to the track. It consists in the elements and features of construction shown and described as indicated in the claims.

In the drawings:—

Figure 1 is a plan view of a railway car carrying a spreader equipped with this invention.

Figure 2 is a direct forward side elevation of the spreader wing and ditcher looking in the direction of the arrow, 2, on Figure 1.

Figure 3 is a transverse vertical section of a car equipped with a spreading apparatus on a track and having the ditcher of this invention upon it, showing the ditch cut by the ditcher.

Figure 4 is a section at the line, 4—4, on Figure 2.

Figure 5 is a detail section along the line. 5—5, on Figure 1.

The structure shown in the drawings comprises a flat car, A, having hinged to its opposite sides spreader wings, B, and having means for operating said spreader wings which forms no part of the present invention, and though shown conventionally in the drawings need not be here described. It is sufficient for the purpose of the present invention to indicate that the spreader wings are adapted to be extended rearwardly with respect to the direction of advance of the car at a comparatively small acute angle thereto, usually and preferably about 30 degrees, with the lower edges of the spreader wing at the level and extending at a slight inclination downward away from the track which corresponds to the usually desired grading of the lateral portion of the railway bed to be thus finished by the ordinary operation of the spreader. The feature constituting the present invention consists of a trapezoidal ditcher blade, C, made of suitably heavy iron plate suitably braced, secured to the forward side of the spreader wing by angle iron cleats, C^1, C^1, extending vertically, and a similar angle iron cleat, C^2, extending along just back of the lower edge for stiffening it. The vertical width of this ditcher blade is such that its lower edge is about one foot below the lower edge of the spreader wing, thus adapting it to cut a ditch one foot deep below the graded level of the road-bed. The angle of slope of the two sides of the trapezoidal ditcher blade is enough wider than the desired angle of slope of the sides of the ditch to be cut to compensate for the very acute angle (about 30 degrees) at which the said ditcher blade extends to the direction of advance in its path for ditching as it is carried by the car. The slope of the banks of the ditch, being, as nearly as may be calculated, the angle of repose of the material in view of its usually considerably cohesive character, is about 60 degrees away from vertical, which requires the trapezoid angles of the ditcher blade to be approximately 150 degrees.

The ditcher blade is mounted upon the spreader wing with its inner end at the distance from the inner end of the wing corresponding to the desired distance of the ditch from the side of the track, usually about 11 feet. The length of the ditcher blade at its upper, wider edge, this is, at the line of the lower edge of the spreader, is about 9 feet, and its sloping lower edge for cutting a drainage ditch which shall be one foot deep, is about 4 feet and its shorter lower side is a little over 2 feet. With these dimensions the spreader wing of usual length extends about three or four feet beyond the outer end of the ditcher blade. In the operation of the device this results in the spreader wing taking the material which is excavated by the ditcher and spreading it back from the outer bank of the ditch far enough so that there is no danger of its falling back into the ditch.

In operating with this spreader and ditcher in a cut where there is not room outside the ditch for spreading the material excavated from the ditch, it is desirable to carry the excavated material forward along the line of advance to the end of the cut, and to

a place where there may be room for spreading it. For this purpose, a retainer, D, such as is frequently provided in conjunction with a spreader for certain purposes, is hinged to the forward side of the spreader wing at a point proximate to the outer end of the ditcher, C, and provided with a releasable tension brace, *d*, extending from the free end of the retainer,—where it is disengageably connected by a pin engaging an eye-bolt, F,—obliquely forward and inward to the spreader wing, which has a plurality of holes, *b*, *b*, *b*, at any selected one of which a similar eye-bolt, F, may be secured for attaching the tension brace to the wing. This tension brace holds the retainer extending forwardly from the spreader, ordinarily parallel to the line of advance; but if desired by shifting the eye-bolt, F, to a different hole, *b*, it may be set at a small angle diverging outward from the line of advance. In either case it stands just outside the area to be occupied by the ditch. With this construction there is enclosed between the spreader wing and the retainer, a space in which the material excavated by the ditcher may be accumulated up to the height of the spreader wing and retainer, and carried by them without spreading for a limited distance, to the end of the cut, or to a place where there is an area available for spreading the excavated material. When such a place is reached the retainer will be released and allowed to swing back against the spreader, lapping against the 3 and 4 feet of the length of the spreader, from the edge of the ditcher blade and extending back and outward beyond the end of the spreader wing, thereby serving to spread the excavated and carried material over a wider area, as will be desirable in view of the excess of the accumulation over the amount at the part of the path traversed while spreading that accumulation. It will be understood that the retainer may be used in this way as an extension of the spreader, whenever it is desirable for widening the area over which the material excavated by the ditcher is distributed, and its use is not limited to spreading excavated material which may have been carried by it when adjusted for retaining as described.

When operating with a spreader, whether with or without the ditcher attached as shown, when the bank of the cut is from 2 to 5 feet high or thereabout, it is sometimes desirable to carry the material excavated either by the spreader or the ditcher or by both, up to the top of the bank for delivering it either onto or over the bank. For this purpose there is provided propeller wing, H, hinged to the forward side of the spreader wing at a line sloping upwardly and outwardly at an inclination of about 45 degrees, so that said propeller wing may be adjusted about its pivot so as to extend rearwardly in the direction of travel, outwardly, and upwardly, leaning forward, the upper end of its lower edge projecting above a five foot bank. A brace, H^1, suitably connected disengageably across the acute angle between the spreader wing and the propeller wing serves to hold the latter in operative position for propelling the excavated and spread material upwardly along the slope and to the top of the bank, delivering it onto the bank, or over its crest if it slopes downwardly on the opposite side. When passing under viaducts or any overhead structure crossing the track, the spreader wing H, is swung up wholly or partly out of operative position, the brace, H^1, will be disconnected and the propeller wing allowed to swing down against the forward side of spreader wing as shown in dotted line in Figure 2.

I claim:—

1. In combination with a car, a spreader wing operatively connected to one side of the car and normally extending rearwardly and laterally therefrom, a ditcher blade rigidly secured to the front face thereof at a point spaced from the outer end of said wing, a retaining wing pivoted to the front side of the spreader wing at a point proximate to the outer end of the ditcher blade, and detachable means for securing said retaining wing at a position extending forwardly from said spreader wing outside the path of the ditcher plate and substantially parallel with the side of the car.

2. In combination with a car, a spreader wing operatively connected to one side of the car and normally extending rearwardly and laterally therefrom, a ditcher blade rigidly secured to the front face thereof at a point spaced from the outer end of said wing, a retaining wing pivoted to the front side of the spreader wing at a point proximate to the outer end of the ditcher blade, and detachable means for securing said retaining wing at a position extending forwardly from said spreader wing outside the path of the ditcher plate and substantially parallel with the side of the car, said retaining wing being of a length greater than the distance between its pivotal connection with the spreader wing and the outer end of said wing so that when said securing means have been detached, said retaining means may be swung back into a position forming a continuation of said spreader wing.

3. In combination with a carrying arm and means for mounting it on the side of the car extending rearwardly off therefrom, means on said arm for removing material from the side of the road bed, a propeller wing hinged to the forward side of said

carrying arm at a line extending upwardly and outwardly and being thereby adapted to be swung to and from the face of the arm, and means for holding said propeller wing extending upwardly, outwardly and forwardly from the carrying arm.

4. In combination with a car, a spreader wing pivotally connected thereto and normally extending rearwardly and laterally therefrom, a relatively short propeller plate hinged to the front side thereof near its outer end upon a pivotal axis inclined from the vertical so that said plate may be swung toward and away from the front face of the spreader wing, and means for securing it when extending upwardly outwardly and forwardly from said spreader wing.

5. In combination with a spreader wing, a ditcher plate secured to the forward face thereof and extending downwardly below the lower edge thereof, a bracing member secured to the rear face of the ditching plate below the lower edge of the spreader wing and extending upwardly into contact with the rear face of the spreader wing.

6. In combination with a spreader wing, a tapered ditcher plate secured to the forward face thereof and extending downwardly below the lower edge of the spreader wing, a reinforcing plate secured to the rear face of the ditching blade along the lower edge thereof and a reinforcing member secured to the rear face of the ditching blade below the lower edge of the spreader wing and extending upwardly into engagement with the rear face of the spreader wing.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 12th day of October, A. D. 1921.

ORVILLE C. MANN.