O. C. MANN.

RAILWAY TRACK SPREADER.

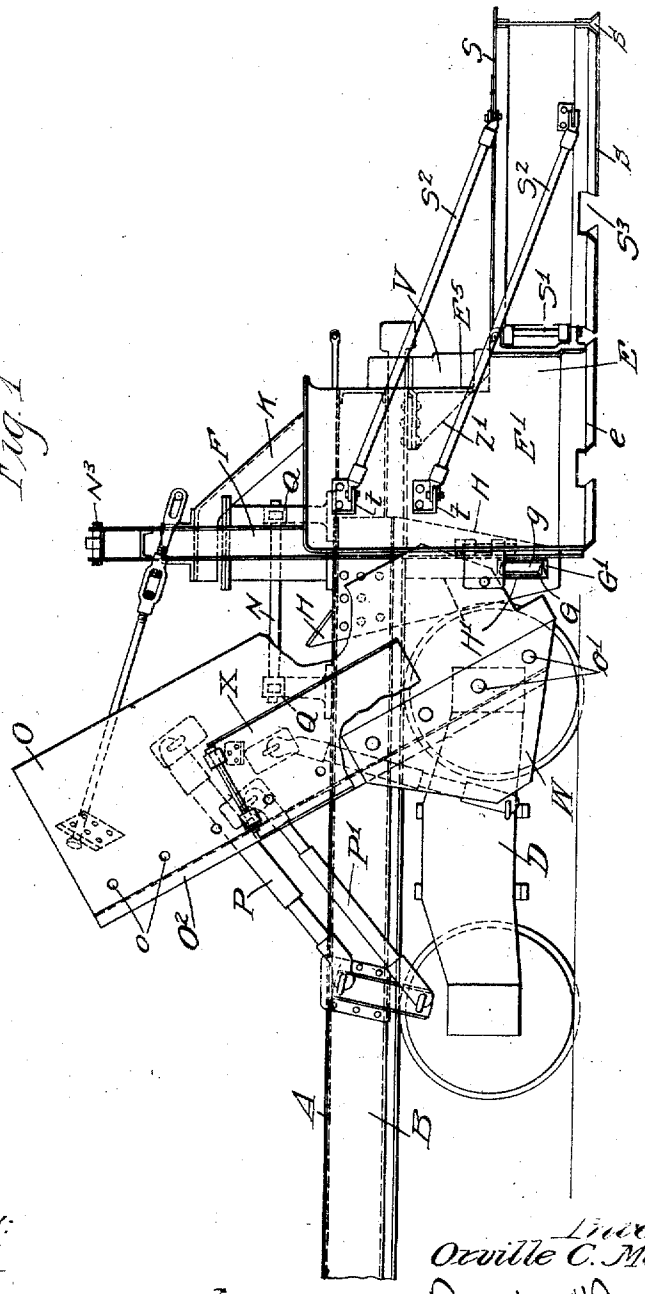
APPLICATION FILED OCT. 8, 1914.

1,208,809.

Patented Dec. 19, 1916.

3 SHEETS—SHEET 1.

Fig. 1.



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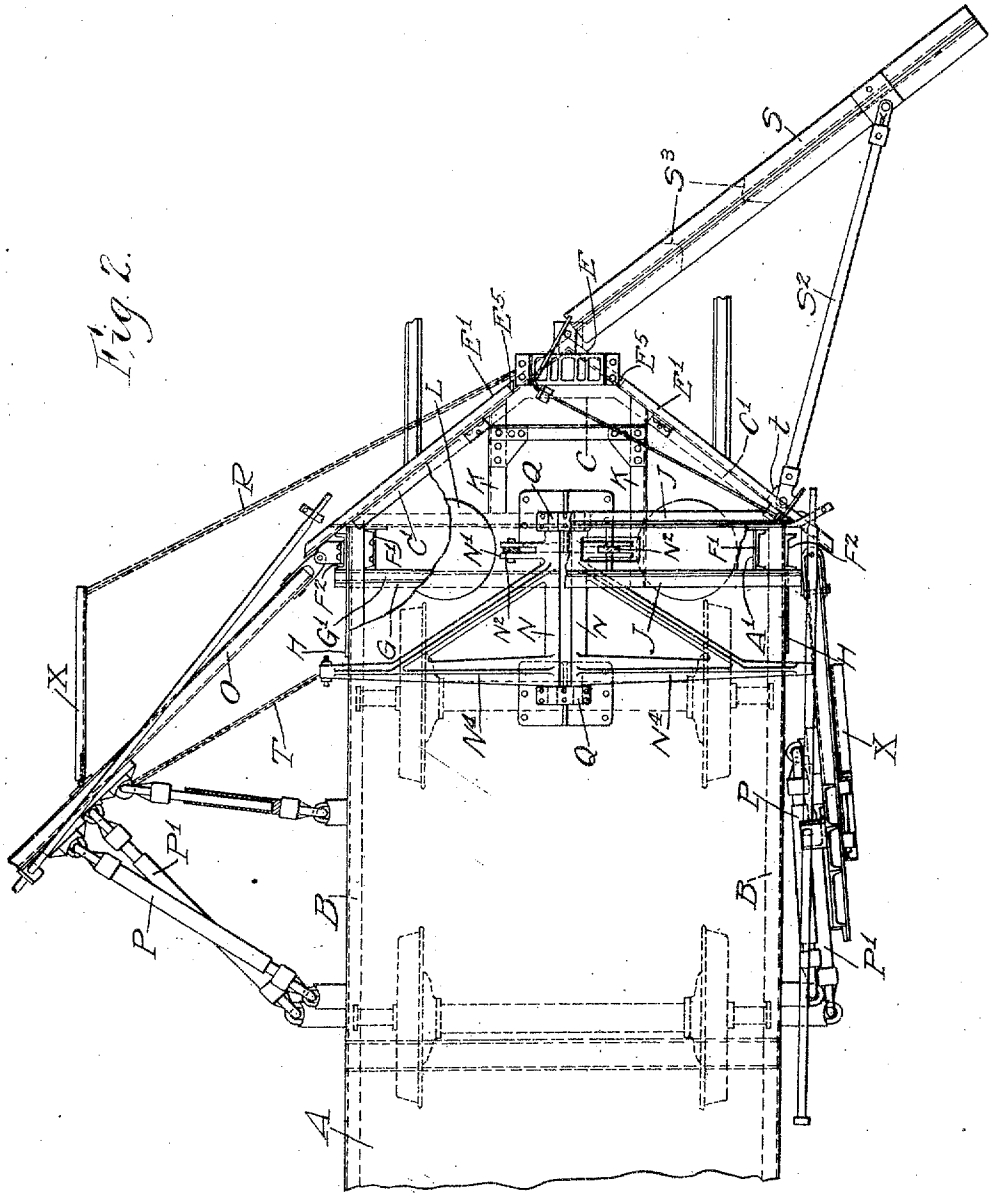
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

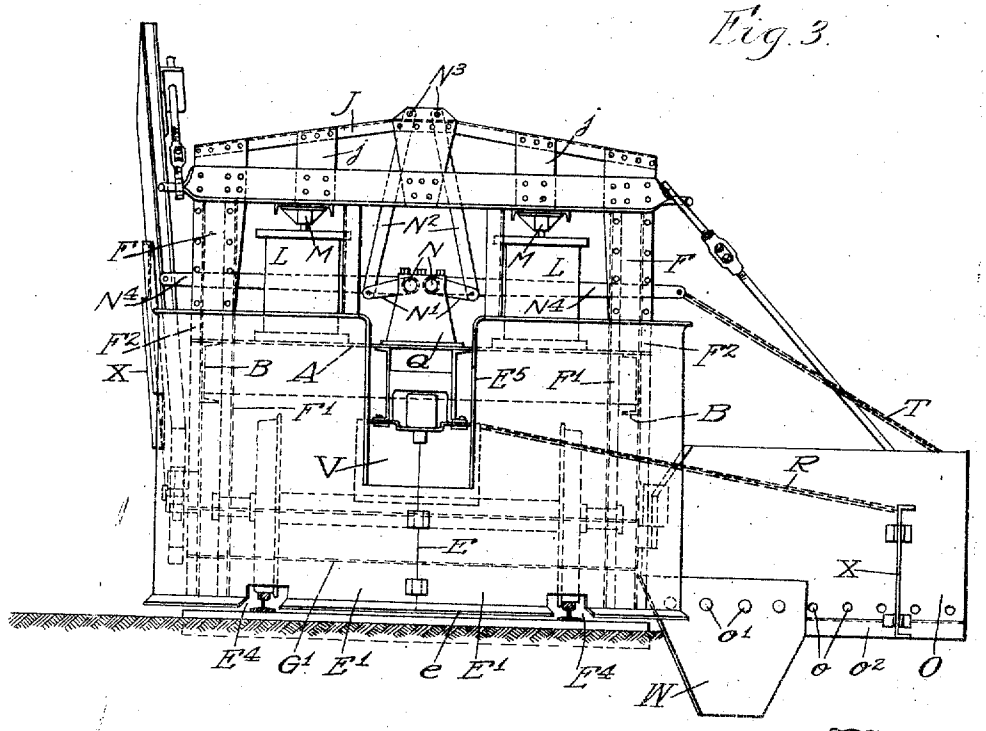
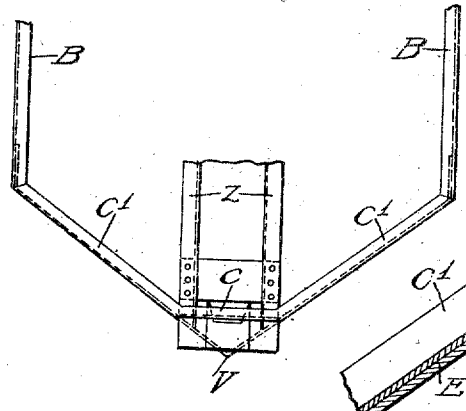


Fig. 4



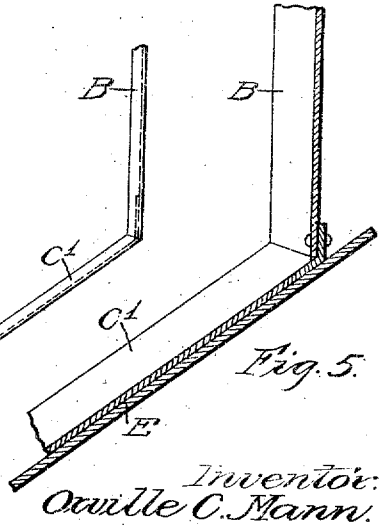


Fig. 5.

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UNITED STATES PATENT OFFICE.

ORVILLE C. MANN, OF OAK PARK, ILLINOIS.

RAILWAY TRACK-SPREADER.

1,208,809. Specification of Letters Patent. Patented Dec. 19, 1916.

Application filed October 8, 1914. Serial No. 865,659.

To all whom it may concern:

Be it known that I, ORVILLE C. MANN, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented new and useful Improvements in Railway Track-Spreaders, 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 an improved implement of the nature of a spreader comprising a car ready for travel on a railway track and equipped with apparatus and devices for spreading earth in leveling and trimming the track, and adapted also for use in clearing snow from the track.

It consists in the elements and features of construction shown and described as indicated in claims.

In the drawings Figure 1 is a side elevation of a portion of a car embodying this invention. Fig. 2 is a plan view of the same showing the various spreading devices in operative position for spreading dirt at one side of the track, the devices at the opposite side of the track being out of operative position. Fig. 3 is a front end elevation of same. Fig. 4 is a detailed plan of the side-sills and converging forward under-sills and the forward end of the longitudinal central beam of the platform frame. Fig. 5 is a detailed horizontal section through the corner junction of one of the side-sills and the adjacent oblique forward end-sill, on a larger scale than the remaining figures.

In the structure shown in the drawings the car which forms a part of the spreading apparatus and upon which the spreading devices are mounted and operated, is of the nature of a flatcar having a floor of heavy metal plate, A, the platform frame comprising longitudinal sills, B, B, which are preferably made of channel iron and which are practically continuous with end sills, C, also made of channel iron (one end of the car only being shown and only one of the end-sills therefore appearing), the channel bar for the end-sills being bent to form oblique corner slopes, C^1 C^1, deflected inward at an angle of approximately 45 degrees to the longitudinal vertical planes of the side-sills, B, the said slopes being formed at opposite sides of the draw-bar, across and above which the channel bar, C, forming the end-sills extends in directly transverse direction, giving to the platform of the car a blunt end tapered off obliquely at both sides. The end-sill, C, is secured to the side-sills, B, B, by lapping the web of the end-sill on to the web of the side-sills and riveting the same together securely, the flanges of the end-sill being cut away at the ends to the extent of such lap of the webs upon each other. Substantially the entire extent of the tapered end of the platform frame which is defined by the front sills formed as described, is situated forward of the forward truck, which is represented by its end truss, D. Any desired number of cross-beams may be provided to connect the lateral sills, B, B, at different points throughout the length of the car.

In front of the tapered end of the platform frame there is mounted a prow, E, comprising divergently sloping skirts or deflecting members, E^1 E^1, rigidly united at the apex of the prow below the draw-bar, and notched through the apex, to accommodate the draw-bar at opposite sides of which said deflecting members, E^1, extend up in front of the diverging slopes, C^1 C^1, of the front sills, C. The skirt members or deflectors, E^1 E^1, are rigidly framed together by suitable cross-braces and angle members extending under the sill, C, forward of the forward truck. In addition to such braces each of said members, E^1 has rigid with it near the rear end a post, F, each of said posts comprising two vertically positioned channel bars, F^1 F^2, the channel bars, F^1, being inside and the channel bars, F^2, being outside the longitudinal sills, B, B, respectively. The two bars of each post and the two posts, comprising the four channel bars, are rigidly connected together by a cross-beam which preferably consists of two channel bars, G and G^1, nested together channel to channel, one being narrower than the other, said channel bars being braced by fillers, *g*—*g*, and suitably bolted together to constitute a practically rectangular hollow beam. This beam is located near the lower end of said posts and is bolted rigidly to the posts at the rear side. At the outer sides of the longitudinal sills, B, B, respectively, there are rigidly bolted heavy flat metal plates, H, H, extending downward from said sills respectively, and having near their lower ends vertically elongated slots, H^1 H^1,

whose transverse dimension adapt them to receive the ends of the rectangular hollow beam referred to, loosely enough to permit it to slide vertically in said slots, and by this means the lower ends of the posts, G—G¹, are checked in the direction longitudinal of the car and guided vertically, said posts being checked transversely of the car by the two members of each post being positioned as described at opposite sides of the longitudinal sills, B, adjacent to which a post is located. Said posts are further guided, considerably above their lower ends, by being engaged in notches, A¹ A¹, in the lateral edges of the flooring plate, A. From the cross-beam, G G¹, braces, K, K, are extended forward to the oblique skirt members or deflectors, E¹, E¹, of the prow, E. Above the platform of the car the posts, F, F, are connected by a pair of trusses, J, J, constituting a cross-beam, positioned at a considerable distance above the surface of the platform, A. The two trusses are bolted at the opposite sides of the post members, F¹ F², whereby they are spaced apart, and they are also spaced apart and secured together by plates *j*, *j*, positioned intermediate the ends of the trusses.

The platform frame of the car supports air cylinders L, L, located under the cross-beam above described, and the pistons or plungers, M, operating in said cylinders are operatively connected to the said cross-beam for raising and lowering said beam and thereby raising and lowering the prow, E, when compressed air is admitted and released from the cylinders by means not shown.

As mentioned above the prow, E, is notched to accommodate the draw bar in the up and down movement of the prow. This notch, E⁵, it is desirable to close to prevent dirt from being passed through it and left on the track, causing the track to be in untidy condition after the spreader has passed over it. For this purpose there is provided a hood, V, which is carried rigidly on the forward end of the longitudinal central beam, Z, of the platform frame. This hood is V shape in horizontal section to conform to the divergently sloping corner members, C¹ C¹, of the front sill, C, that is positioned with its forward horizontal diverging surfaces in the vertical planes of the forward surfaces of said diverging members, C¹ C¹, of the forward end sill, said hood having its entire extent at a lower position than the sills of the platform frame. It is secured and held in this position by brackets, Z¹, extending to it from the said central sill, Z, having its forward surfaces seated against the rear surfaces of the divergent deflectors, E¹ E¹, of the prow, E, so that the prow in its up-and-down movement slides on these surfaces as it does upon the forward surfaces of the oblique members, C¹ C¹, of the forward sill. Fitting thus on to the surface of the prow adjacent to the notch, E⁵, this hood, V, makes an effective closure for the notch throughout the entire range of the up-and-down sliding movement of the prow, that is closing the notch entirely up to the draw bar, above which point the directly transverse middle portion of the forward sill is positioned. This hood, V, being supported as described on the central longitudinal sill of the platform frame serves conveniently as lodgment for the draw bar at its emergence past the directly transverse middle portion of the front sill, C.

Upon the upper side of the platform frame journaled in pillow-blocks or standards, Q, Q, there are mounted longitudinally extending rock-shafts, N, N, which at one end extend transversely of the truss cross-beam below the same. Each has a crank, N¹, which is connected by a pitman or operating link, N², with a pivot, N³, which extends between the two trusses. By these means the raising and lowering of the truss beam operates to rock the shafts, N, the length of the cranks, N¹, being so related to the extent of the up-and-down movement of the cross beam as to cause said shafts to be rocked through an angle of about 90 degrees. Each shaft, N, has a lever-arm, N⁴, which at one limit of the rocking movement of the shaft extends substantially horizontally above the floor of the platform, and at the other limit of said rocking movement is substantially vertical. The constructions each involving the rock-shaft with its crank, lever-arm and operating connections are exact duplicates, said duplicate constructions being symmetrically disposed with respect to the longitudinal middle line of the platform, each at a short distance laterally from said line, and the cranks of said rock-shafts both extend outwardly from their respective shafts, so that the shafts are rocked in opposite directions by the same movement of the truss-beam and parts connected therewith. At the lowest portion of the truss-beam the lever-arms of both the rock-shafts extend outwardly from the shaft toward, and substantially reaching to, the opposite sides of the car platform frame; and at that position of said shaft the cranks extend outwardly from their respective shafts and downwardly at an angle of ten or fifteen degrees below horizontal, so that they are in favorable position for rocking the shaft upon the upward movement of the truss-beam causing the pitmen of the respective connections to pull upward upon the crank wrists. This relative disposition of the members of the rock-shafts it will be seen tends to yield the most effective action of the lever-arms upon the connections for which they are designed, as hereinafter described, and

causes the cranks to come to the limit of their upward swing at a position far enough removed from alinement with the links or pitmen to be safe against accidentally passing dead center and becoming locked. The purpose of the rock-shafts and their operating connection and lever-arms is to operate the lateral wings with which the car is provided as will now be described.

At each side of the car there is hinged thereto at the forward end and preferably just behind the rear outer end of the skirt or deflecting member, E^1, of the prow a spreading wing, O, the hinge of said spreading wing at its forward end being adapted to permit the wing to swing inwardly and outwardly, that is, toward and from the car, and also upwardly and downwardly at its rear free end. For controlling such swinging movement of the wing there are provided controlling links, P, P^1, pivotally connected at their inner ends to the side of the car and at their outer ends to the wing at points separated along the width of the wing. The mode of operation of these controlling links is familiar and need not be further described except to say that they operate to cause the wing, when it is pulled upward at its rear end, to swing inward and collapse against the side of the car, and when it is swung outward at its rear end to descend at the rear end, preserving its position substantially in a vertical plane throughout all its said movements. For giving the wings this movement (in addition to other operating means not shown) a flexible connection, such as a chain, T, is extended from the end of the lever-arm, N^4, of the proximate rock-shaft and connected to the wing at its inner side near its rear end and somewhat nearer its upper than its lower edge. By the connection described it will be seen that when the air cylinders are operated for causing their plungers to lift the truss-beams and thereby lift the prow, E, the same movement causes the lateral wing, O, to be lifted and swung inward and collapsed against the side of the car; and when the reverse action of the plungers in the cylinders causes the prow, E, to be lowered to operative position close above the rails, that movement causes the lateral wings to be swung outward and downward to their operative position for spreading the earth which may be delivered to them by the prow clearing the middle portion of the track or to be found by them in their path at the side of the track as the car advances. The flexibility of the operating connections from the lever-arms, N^4, to the wing, O, is necessary to permit either wing to be raised, if desired, while the prow and the other wing are down at their working positions.

It frequently happens that dirt which has been distributed along the track for the purpose of being afterward spread evenly thereupon or upon the embankment, is so unevenly delivered, or that the road-bed or embankment is so unevenly in need of filling, that a considerable excess of earth may be encountered for several rods along the track which excess is needed a few rods later; and it is desirable that this excess should be automatically carried forward by the spreading device and dropped where the condition of the road-bed or embankment requires it for filling to the level at which the spreading devices are set for leveling the track. For this purpose there is hinged to each of the wings, O, at the outer side thereof, that is the side which is outward when the wing is collapsed against the side of the car, a supplemental wing, X, which extends forward from its hinged end and is intended to fold flat against the outer side of the lateral wing, O, by gravity when that wing is folded inward against the car and lifted upward, so that the supplemental wing, O^1, hangs downward from its hinge. This supplemental wing is by this construction adapted to swing outward from the lateral wing, O, when said lateral wing is swung down to its operative spreading position; and it will be seen that it will be automatically drawn outward so as to stand at a forwardly open angle to said wing, O, when the car is advanced so that the lateral wing encounters earth to be spread, if the earth as encountered becomes engaged between said supplemental wing and the lateral wing when said supplemental wing is swung out so that it projects somewhat outward from the fore and aft path in which it is carried by the advance of the car. It will also be seen that the supplemental wings will come to such a position in the downward and upward swinging movement of the lateral wing when this is swung down to operative position, especially if this lateral wing is dropped and swung somewhat rapidly from its folded-up to its lowered operative position. It is, therefore, not considered necessary ordinarily to provide any particular means for swinging the supplemental wing outward to its operative position. But it is necessary to provide means for checking it against swinging too far outward, and for this purpose its free end is preferably connected by chain, R, which extends forward and inward toward the car and may be connected to any convenient part of the car or of anything moving with the car ahead of it, as, for example, the engine which may be attached to the spreader car for propelling it over the track.

It is often desirable to transfer the dirt from one side of the track to the other. For this purpose there is provided a removable deflector, S, of sufficient length to extend obliquely across the track from the

middle thereof outward and forward substantially at the angle of inclination of either side of the prow, and of such extent as to reach as far outside the track at either side to which it may be extended as it is considered desirable to engage outlying masses of earth. This is provided with rigid brackets at its rear end, and the prow is provided at its apex with corresponding brackets, the two brackets—those on the prow and on the deflector—together being adapted to constitute hinged connection by which the deflector is hinged to the apex of the prow disengageable pintles S^1, being provided for connecting said members together thereby in position. When thus mounted it will be seen that it may be swung to either side so as to project in the direction of either of the oblique skirts or deflectors of the prow forward and in front of the other of said skirts, and thereby be adapted to transfer earth from the side at which it projects into the path of the opposite oblique side of the prow by which such earth will be farther moved outward and deposited at the opposite side of the track from that at which it is engaged by the deflector, S. It is necessary to brace the forwardly projecting end of the deflector, S, and for that purpose brace-links, S^2, S^2, may be provided adapted to be rigidly engaged with the rear side of the deflector near its forward end and thence extending up rearward for connection to the brackets, t, t, which are provided on the front side of each of the diverging skirts of the prow.

For the purpose of cutting a ditch at the side of the track the lateral wing, O, is adapted to carry a ditch-cutting blade, W, which is in the form of a truncated triangle, the slopes of the downwardly converging lateral edges and the length of the truncated bottom edge being such as to produce the desired conformation of the ditch when ditching blade advances while standing at an angle of about 45 degrees, across the path of advance. The lower margin of the wing, O, is provided with bolt holes, o, at any of which the ditching blade may be secured by bolts, O^1, said blade having a suitable number of bolt holes along its upper margin for receiving the required number of bolts to hold it firmly to the wing, O.

The wings, O, and the skirt, E^1, of the prow and the deflector, S, are preferably made with forwardly or outwardly projecting flanges, designated by letters, o^2, e, and s, respectively, for shaving the earth smoothly in the advancing and spreading movement. Since the deflector, S, is designed to be positioned with either face forward according to whether it is swung to the right-hand or to the left-hand side of the track, its lower edge is provided with a flange, s, projecting in both directions. The skirts, E^1, on the deflector, E, are preferably dimensioned so that these flanges at their lower edges shave the earth a very short distance above the top of the ties both inside and outside the rail; and to do this said skirts and deflector are notched as shown at E^4 E^4, and S^3, respectively, where they must cross the rails and extend lower than the top surface of the rails to do the work as stated.

I claim:—

1. A railway track spreader comprising a car having a draw-bar and having its platform frame at the forward end beveled off at both corners substantially from the opposite sides of the draw-bar to a transverse vertical plane at the forward end of the truck; a prow comprising two divergent deflecting members rigidly united, mounted for vertical movement against the bevels of the platform, said prow being cut away through the apex at a distance above the lower edge of said prow at the position of the draw-bar, to accommodate the draw-bar in such up-and-down movement of the prow, and means on the car for supporting, raising and lowering the prow.

2. A railway track spreader comprising a car having a draw-bar and having its platform frame at the forward end beveled off at both corners substantially from the opposite sides of the draw-bar to a transverse vertical plane at the forward end of the truck; a prow or V-shaped deflector having its diverging sides mounted for vertical movement against the bevels of the platform; a transverse horizontal framing bar which is rigid with the divergent side members of said prow at the lower part thereof, and upright posts which are rigidly extended upward from said transverse framing bar through the platform; a cross-beam which rigidly connects said posts at their upper ends, and means acting upon the cross beam for raising and lowering the posts and thereby raising and lowering the prow, and guiding brackets extending rigidly from the sides of the platform outside said posts, said brackets being provided each with a vertical slot and the ends of said transverse framing bar being engaged in said slots for guiding the prow in such up-and-down movement for checking the same against any forward movement relative to the platform.

3. A railway track spreader comprising a car having a draw-bar and having its platform frame at the forward end beveled off at both corners substantially from the opposite sides of the draw-bar to a transverse vertical plane at the forward end of the truck; a prow or V-shaped deflector having its diverging sides mounted for vertical movement against the bevels of the platform; the platform frame comprising longitudinal side bars from the ends of the

parallel portions of which the beveled corners of the platform extend; means for framing rigidly together the said diverging sides of the prow, comprising a cross-beam extending below the platform and crossing under the longitudinal side bars of said platform frame, and tie bars which connect said cross-beam rigidly with said diverging members of the prow; posts rigidly secured to the cross-beam at the opposite end portions thereof, each post comprising two members, one extending up inside and the other extending up outside of the longitudinal side bar of the platform; brackets rigidly secured to the platform at the outer sides of said longitudinal side bars of the platform, said brackets being provided each with a rearwardly-facing vertical edge, the ends of the cross-beam being extended beyond the posts and engaging behind said vertical edges of the brackets respectively for checking the prow against swinging forwardly and for guiding the same in vertical movement; a cross-head connecting the posts at their upper ends, and means operating upon the cross-head for lifting and lowering the prow.

4. A railway spreader comprising in combination with a car a deflecting prow positioned in front of the forward truck and mounted on the car platform frame for up and down movement past the forward end of said frame, means on the car for so moving it; a lateral wing hinged at its forward end to the car behind the outer end of the prow in position to receive and further deflect the material deflected and delivered by the prow for swinging at the rear end toward and from the car, means for controlling the rear end of said wing in such swinging, and connections by which the upward movement of the prow pulls on the wing to swing it inward and upward; whereby such wing is collapsed against the side of the car when the prow is lifted out of working position.

5. A railway spreader comprising in combination with a car a deflecting prow positioned in front of the forward truck and mounted on the car platform frame for up and down movement past the forward end of said frame; a rock shaft journaled longitudinally on the platform frame of the car having a crank-arm, a member connected with the prow so as to partake of the up and down movement of the latter, and connections from such member to the crank-arm for rocking the shaft by the up and down movement of the prow said shaft having also a lever arm which extends upwardly at the position of the rock shaft at the upper limit of the movement of the prow; a lateral wing hinged at its forward end to the car behind the outer end of said prow for swinging at its rear end toward and from the car, and a connection from said lateral wing to said lever arm whereby the arm is swung inward and upward by the rocking of the shaft which results upon the upward movement of the front prow.

6. A railway spreader comprising in combination with a car a prow positioned in front of the forward truck and mounted on the car platform frame for up and down movement at the forward end of said frame; means on the car for so moving it; lateral wings hinged at their forward ends to the opposite sides of the car behind the outer end of the prow for swinging at their rear ends toward and from the car, a pair of parallel longitudinally journaled rock-shafts on the platform frame each having a crank-arm; connections from the prow to such crank-arms for rocking the two shafts in opposite directions by the upward movement of the prow, said rock-shafts having each a lever-arm, said lever-arms being positioned with respect to the crank-arms so as to be upstanding at the position to which the rock-shaft is rocked by the upward movement of the prow, and connections from said lever-arms respectively to the respective lateral wings for operating them by the movement of the prow.

7. A railway spreader having in combination with a car a lateral wing hinged at its forward end to the car for swinging at the rear end toward and from the car, means controlling the rear end of such swinging movement and means for swinging it; a supplemntal wing hinged at its rear end to the outer side of said lateral wing, adapted to fold inward against said lateral wing and to be swung outwardly therefrom so as to extend forward therefrom at a delivery-obstructing angle thereto, and a stay-link connected with the free end of said supplemental wing for limiting the spread of said supplemental wing away from the said lateral wing at such delivery-obstructing angle.

8. A railway spreader comprising in combination with a car, a lateral wing hinged at its forward end to the car for swinging at its rear end toward and from the car also up and down; means for controlling the rear end of said wing in such swinging, and means for swinging it; a supplemental wing hinged at its rear end to the outer surface of said lateral wing for swinging outwardly away from the latter and folding up flat against it and a stay connection from a forward point of the car to the free end of the said supplemental wing connected and dimensioned for limiting the spread of said supplemental wing away from the lateral wing at a delivery-obstructing angle between said wing, said stay being flexible, whereby the supplemental wing hangs freely against the lateral wing when the latter is elevated out of service.

9. A railway track spreader comprising a car having its platform frame at the for-

ward end beveled off at both corners, the bevels having their proximate ends positioned at the vertical longitudinal planes of the opposite sides of the drawbar; a deflecting prow mounted on the platform frame of the car adapted for up-and-down movement; means carried on the car for raising and lowering said prow, said deflector having a notch in its apex to accommodate the drawbar in said up-and-down movement of the prow and a V shaped hood carried rigidly by the platform frame positioned with its forward diverging surfaces substantially in the vertical planes of the forward sides of said beveled-off corners of the platform frame and the rear diverging surfaces of the prow and adapted in its vertical extent for closing said notch below the drawbar throughout the entire range of vertical movement of the prow.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 5th day of October 1914.

ORVILLE C. MANN.

Witnesses:
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LUCY I. STONE.