No. 885,736. PATENTED APR. 28, 1908.

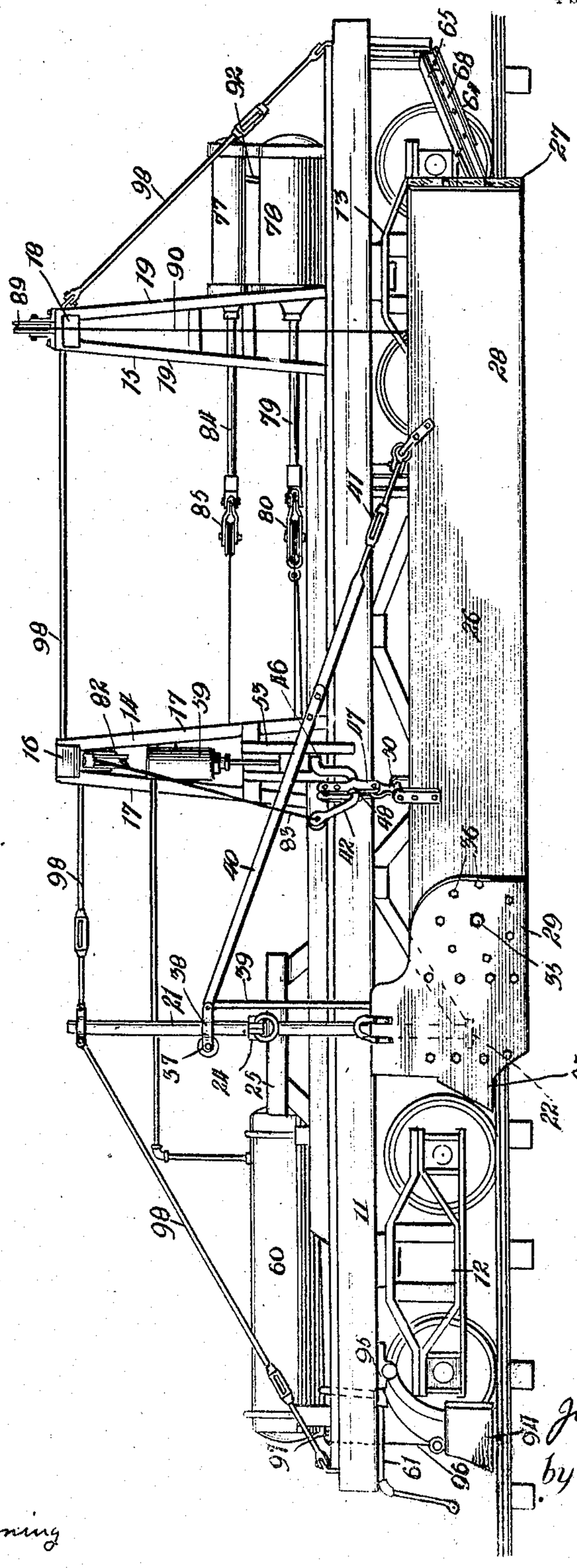
J. C. DEPEW.

RAILWAY SPREADER.

APPLICATION FILED JULY 13, 1907.

4 SHEETS—SHEET 1.

Fig. 1.



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4 SHEETS—SHEET 2.

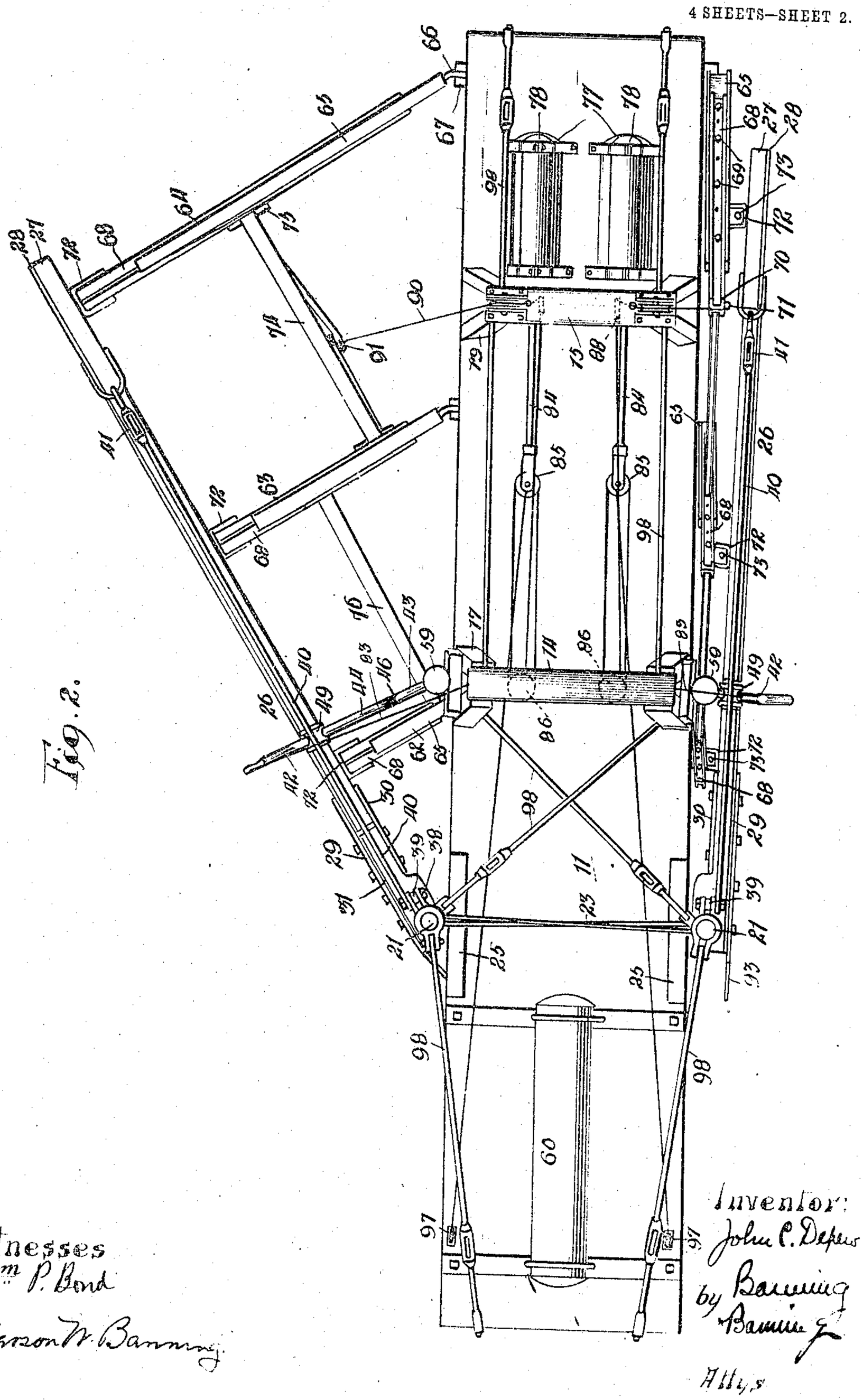

Fig. 2.

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4 SHEETS—SHEET 3.

Fig. 3.

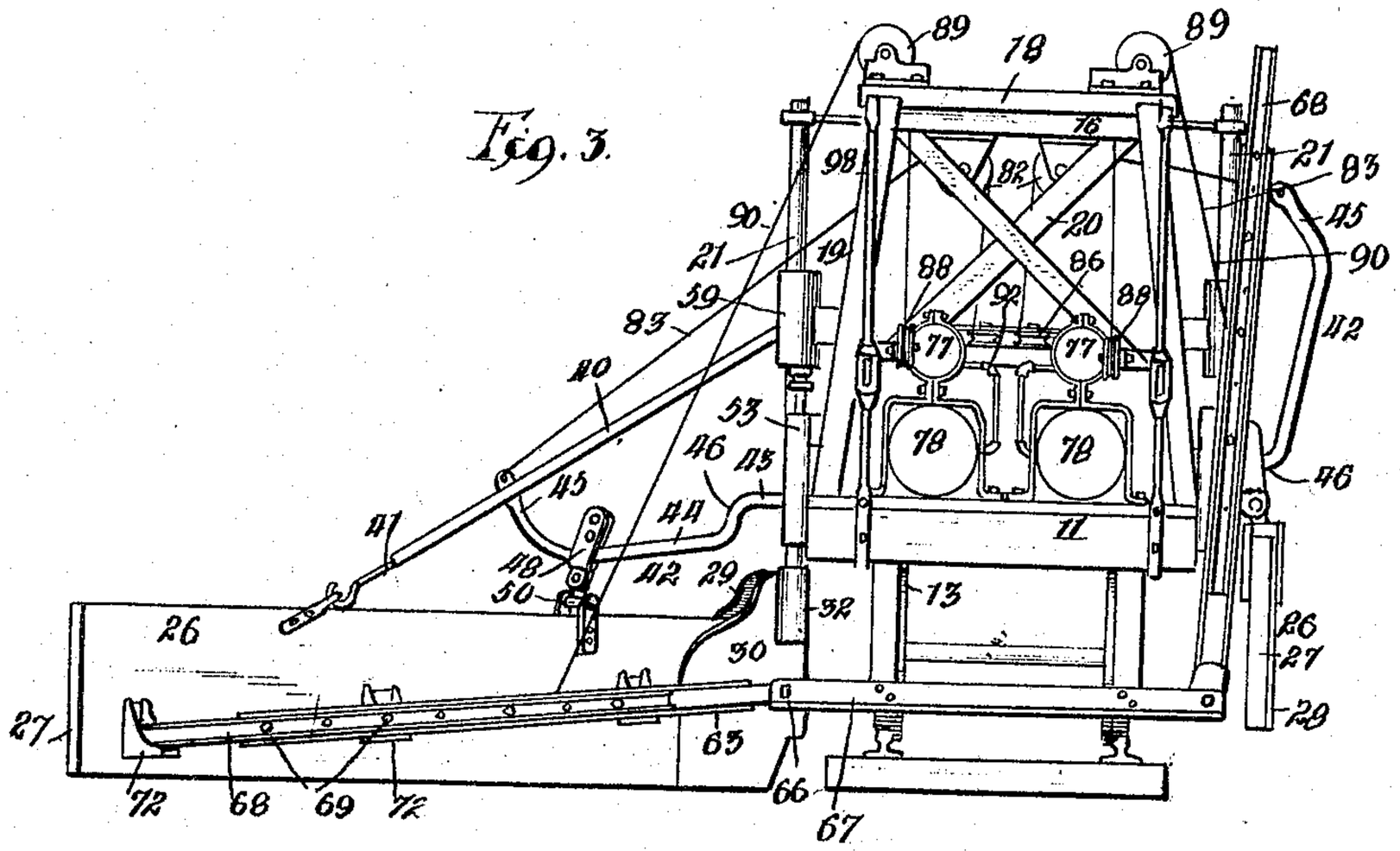
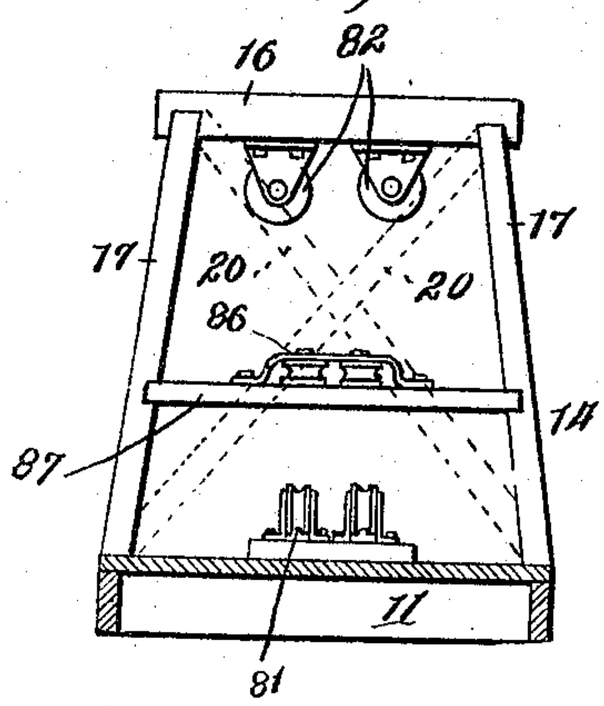


Fig. 4.



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No. 885,736. PATENTED APR. 28, 1908.

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4 SHEETS—SHEET 4.

Fig. 5.

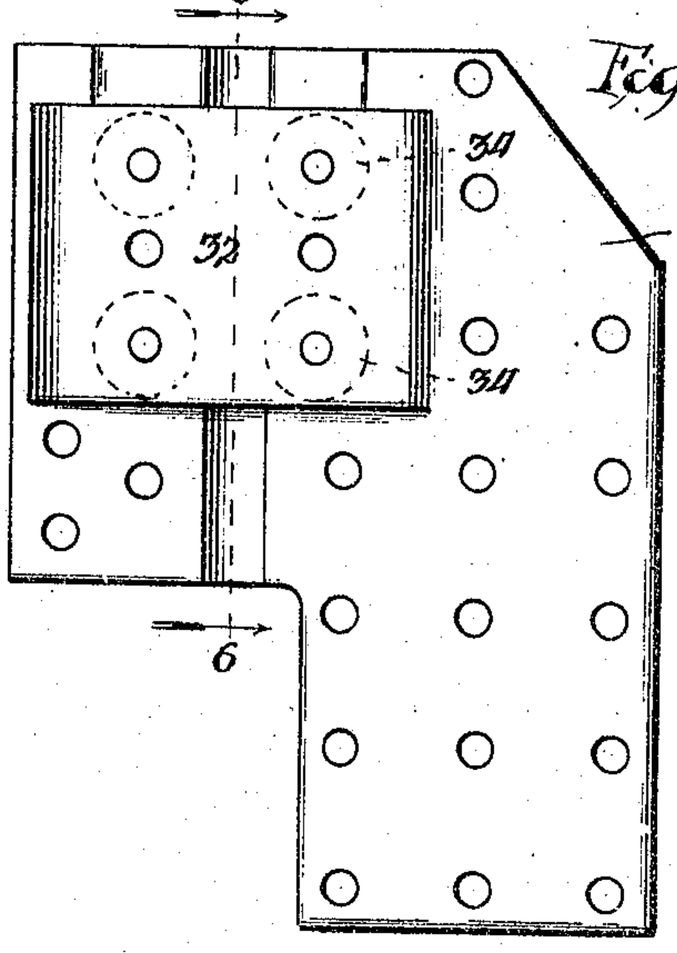


Fig. 6

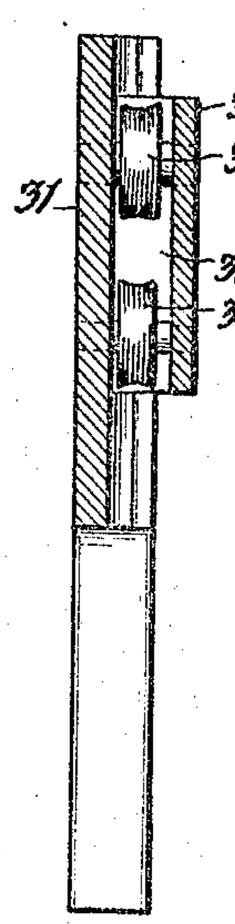


Fig. 11.

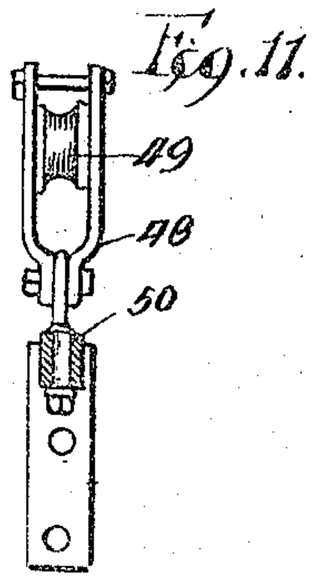


Fig. 7.

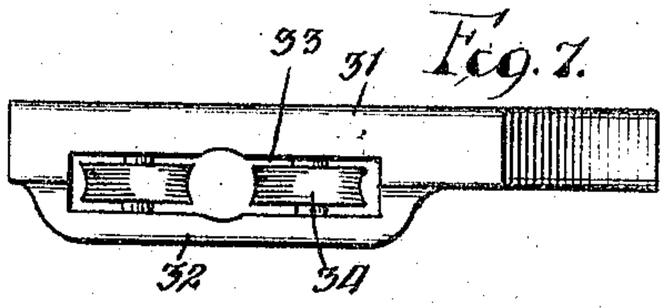


Fig. 8

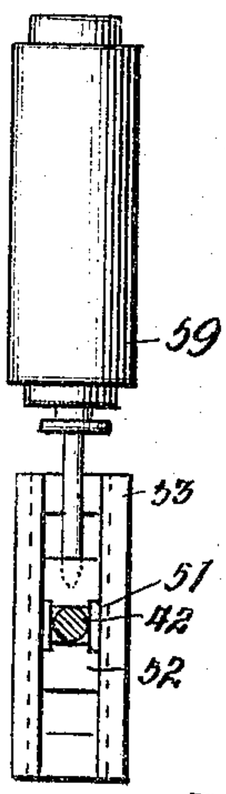


Fig. 9.

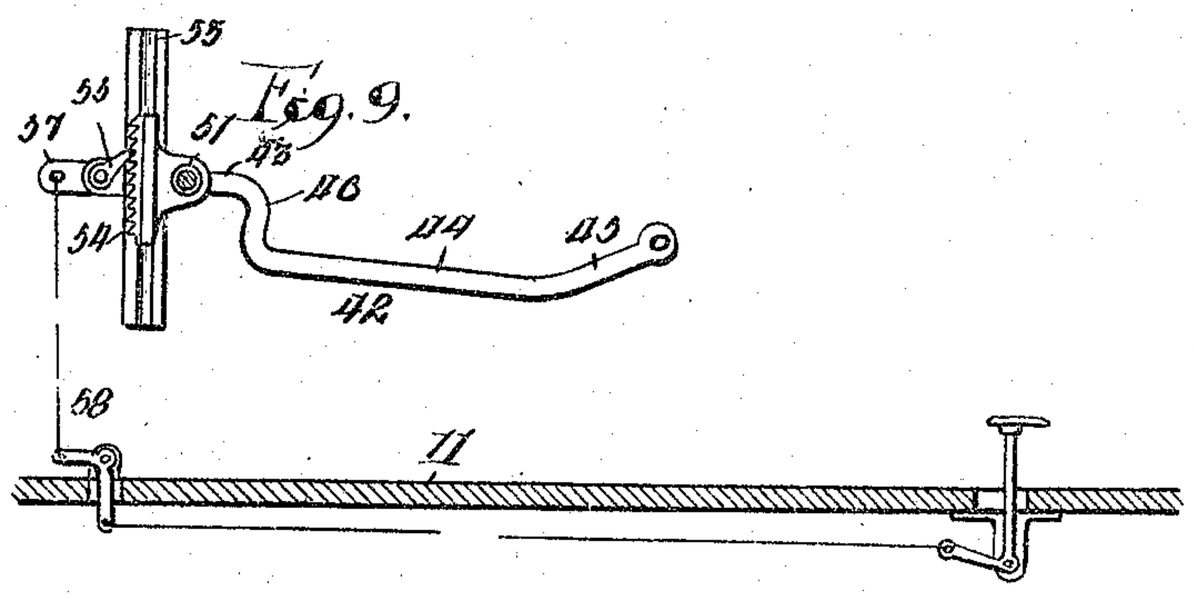
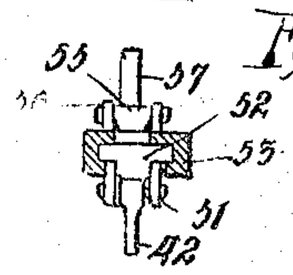


Fig. 10.



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UNITED STATES PATENT OFFICE.

JOHN C. DEPEW, OF CHICAGO, ILLINOIS.

RAILWAY-SPREADER.

No. 885,736. Specification of Letters Patent. Patented April 28, 1908.

Application filed July 13, 1907. Serial No. 383,594.

To all whom it may concern:

Be it known that I, JOHN C. DEPEW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Spreaders, of which the following is a specification.

This invention relates to spreaders for use on railways, for the purpose of distributing or leveling dirt or filling piled up alongside the track, in the form of ridges or mounds; and the invention more particularly relates to certain features of construction pertaining to the method of mounting and operating the wings of the spreader, whereby the latter may be adjusted and raised and lowered to meet the requirements of use.

The invention further relates to the formation and method of mounting and operating the supporting arms for the spreader wings, whereby the vertical elevation and lateral distention of the wings can be adjusted at a single operation, and by means of pneumatic, or other power, thus facilitating the operation of the device and enlarging its field of operation.

The invention further relates to the mounting for permitting vertical adjustment of the spreader wings, and to the arrangement of sheaves and rollers, whereby the friction is mimimized, and the adjustment of the wings facilitated.

The invention further relates to the construction and arrangement of the wing braces and to the mode of adjusting the same; also to the arrangement of pressure cylinders and pistons for operating the mechanism; also to the construction and arrangement of the entire car body, and the mode of reinforcing the same and securing the various operating structures thereto.

The invention finally consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings Figure 1 is a side elevation of the entire spreader, showing the spreader wing lowered and distended; Fig. 2 a top or plan view showing, one of the wings distended, and the other wing retracted or folded back; Fig. 3 a rear end elevation, showing one of the wings distended and the other folded; Fig. 4 a cross sectional detail of the car body, showing the arrangement of sheaves on the forward bridge; Fig. 5 an inner face view of the mounting for one of the wings; Fig. 6 a cross sectional elevation taken on line 6—6 of Fig. 5, looking in the direction of the arrow; Fig. 7 a top view of the mounting; Fig. 8 a detail, showing the mechanism for raising and lowering one of the supporting arms; Fig. 9 a side elevation of the same, showing the arm projected; Fig. 10 a sectional view of the same and Fig. 11 a detail of the wing hanger.

Referring to Fig. 1, the mechanism is carried by a flat car body 11 mounted upon forward trucks 12, and rear trucks 13 of the usual character. The car body is preferably of somewhat less width than the standard, in order to accommodate the wings when folded alongside the car and permit the car to travel under standard conditions. The car has mounted thereon a forward bridge 14 and a rear bridge 15, which serves to support various structures and mechanisms to be hereinafter described. The forward bridge comprises a cross beam 16, which is supported by means of two pair of divergent uprights 17, which serve to elevate the beam 16 a considerable distance above the car level. The rear bridge likewise comprises a cross beam 18, which is supported by means of two pair of divergent uprights 19. The forward bridge, furthermore, is provided with diagonal braces 20, as shown in Fig. 4. Forward of the forward bridge, on each side of the car, and outside of the edge thereof, is a guide post 21, the lower end of which is supported within a step 22, shown in dotted lines in Fig. 1, which guide posts, above the floor level, are spaced and supported by means of a cross brace 23, the ends 24 of which are clamped around the vertical guide posts and serve, in conjunction with the steps, to hold the guide posts rigidly in position and out of contact with the sides of the car. The cross brace 23 is supported, near its ends, upon raised side frames 25, elevated above the car level.

Each post serves as a guideway for a wing 26, which wings consist of a timber backing 27 and a plate metal facing 28. The inner forward ends of the wings are entered between inner and outer attaching plates 29 and 30 respectively, which plates project rearwardly from and are rigidly secured to a pivotal mounting head 31, as shown in Fig. 5, which head is of generally rectangular formation having its lower forward corner cut away; and above the cut away corner, on

the inner side, is a protuberant wall 32 which is hollowed out to provide a sheave chamber 33, within which are mounted four sheaves 34, adapted to bear against the opposite sides of the vertical guide post, which is rounded to permit a swinging movement of the wing as well as an up and down movement. The inner and outer side plates are secured to the interposed mounting head 31, by means of bolts, or in any other suitable manner; and the wing is secured between the side plates by means of the central pivot bolt 35 and a plurality of clamping bolts 36 arranged in a ring, which arrangement permits the wing to be raised and lowered upon the pivot bolt 35 as a center, and held in adjusted position by the clamping bolts. In addition to the lower bearing sheaves 34 is a guide bearing sheave 37, which is pivoted within a mounting 38 embracing the guide post a considerable distance above the wing, which mounting is secured to the head by means of a vertical bar 39, which is supplemented by a diagonally extending brace bar 40 which is hooked onto the wing at its outer end and is adjusted by means of a turn buckle 41. This method of pivotally mounting the wing permits it to ride up and down the guide post as a bearing, and permits it to swing around such post to any position of lateral adjustment, and these movements will be easily performed by reason of the very considerable distance between the upper and lower sheaves, which obviates any cramping or wedging which might take place if the bearing points were not thus widely separated.

Each of the wings is adapted to be raised and lowered and folded by means of a supporting arm 42, which engages the wing at a point about one-fourth of the distance from the front to the rear thereof and is of the peculiar shape best shown in Fig. 3. The supporting arm, in its entirety, comprises a straight inner pivotal end 43, a supporting portion 44, and an upturned attaching end 45. The supporting portion is connected with the pivotal end portion by a shoulder 46, and when the arm is in depressed position, as best shown in Fig. 3, the main or supporting portion of the arm will be slightly inclined towards its outer end, and will extend in substantially transverse relation with respect to the rearwardly divergent wing with which it coöperates. The wing is connected with the supporting arm by means of a hanger 47, best shown in Fig. 11, which comprises a yoke 48, between the arms of which is pivotally mounted a grooved roller 49, which bears against the upper side of the supporting arm. The yoke is connected with the wing by means of a universal swivel joint 50, which permits the necessary play or movement as the wing is adjusted from one position to another.

The inner or pivotal end 43 of the supporting arm is loosely mounted between ears 51, which outwardly project from a slidable block 52 mounted within guideways 53, which are rigidly secured to the end of the forward bridge. The block is provided, on its rear face, with teeth 54, which coöperate with a dog 55 pivotally mounted between ears 56 rearwardly extending from the guideway 53. The dog is provided with a rearwardly extending lever arm 57, which is adapted to be retracted by suitable trip mechanism 58, which is under the control of the operator. The slidable block 52 and the parts connected therewith are adapted to be raised and lowered by means of a motor cylinder 59, which is preferably connected with a reservoir 60, which is adapted to be charged with compressed air from the train brake system through a pipe 61, or is adapted to be supplied from any other source of compressed air, or other medium under pressure. It is to be understood that the mechanism heretofore described is duplicated on both sides of the car, so that further description of these features is deemed unnecessary.

The wings are adapted to be held in distended position by means of forward, intermediate and rear braces 62, 63 and 64 respectively, which are of increasing length to accommodate the divergent position of the wing. The braces are of telescopic formation, and, except for difference in length, are of uniform construction, so that a description of the rear or longest braces 64 will apply to the other two. The brace 64 comprises a main section 65 of I-beam formation, which terminates, at its rear end, in a tongue 66, which is pivoted between cross beams 67, which are positioned below the car body and behind the rear trucks. Between the flanges of the I-beam 65 are mounted a pair of oppositely disposed channel beams 68, which constitute the outer section of the telescopic brace. The channel beams are adapted to be adjusted with respect to the I-beam, with which they coöperate, and are held in adjusted position by means of bolts 69, which arrangement permits the length of the braces to be varied considerably by removing the bolts and adjusting the channel beam sections with respect to the I-beam until the desired length of brace is secured. The outer ends of the channel beams are connected, as shown in Fig. 2, by means of a tie plate 70 provided with a depending pin 71, and the ends, thus connected, are supported, when in lowered position, within an outer seat 72 on the inner side of the wing, which seat is provided with a hole 73 adapted to receive the pin or stud 71 when the brace is lowered. It will be understood that the method of mounting and positioning the forward and intermediate braces is the same as that pertaining to the outer brace, so that further description of these parts is deemed unneces-

sary. The intermediate and rear braces are connected by means of a cross brace 74 of I-beam formation, which cross brace is pivoted, at its ends, between ears 75 on the intermediate and rear braces, which connection is a loose one and permits a slight amount of play or movement when the parts are being raised and lowered, which is essential to the proper operation of the parts. In like manner the intermediate and forward braces are connected by means of a square rod or shaft 76, which engages the forward brace near its inner or pivoted end, which arrangement of braces and cross braces serves to firmly maintain the wing in its distended position and enable it to withstand the strain of actual usage.

Near the rear end of the car are located a pair of lower pressure cylinders 77 adapted to operate the wing supporting arms, and a pair of upper pressure cylinders 78, adapted to raise and lower the braces. The upper cylinders are located upon the lower cylinders and the connections, between the cylinders and the parts to be raised and lowered, being duplicated on each side of the car, a description of one set of cylinders will suffice to convey full understanding of the other set. The lower cylinder 78 is provided with a piston 79 and is secured, at its end, to a sheave 80. The sheave 80, which may be termed the actuating sheave, is in alinement with the lower guide sheave 81, which is located immediately beneath the forward bridge, which sheave 81 coöperates with an upper sheave 82 secured to the beam 16 of the forward bridge. The sheaves above referred to serve to guide a cable 83, the end of which is attached to the outer end of the supporting arm. The cable, thus attached, is passed over the upper guide sheave 82 and the lower guide sheave 81, and thence around the actuating sheave 80, the end of the cable being then fastened to any suitable fixed portion of the car structure. This arrangement is one which gives a movement to the end of the supporting arm, twice as great as the movement of the piston. In like manner the upper cylinder 77, which is preferably smaller than the lower cylinder, is provided with a piston 84, having, on its end, a sheave 85 in alinement with a guide sheave 86 which is mounted upon a cross beam 87 on the forward bridge, and the sheave 86 coöperates with a guide sheave 88, suitably secured to the rear bridge, which lower guide sheave is immediately beneath and in alinement with an upper guide sheave 89, which is positioned upon and secured to the cross beam 18 of the rear bridge. The several sheaves above referred to serve to guide and actuate a cable 90, the outer end of which is attached to a loop 91 rigidly secured to the cross brace 41, the cable being thence passed up over the top guide sheave 89, thence passed around the lower guide sheave 88, thence forward around the sheave 86, thence around the actuating sheave 85, and finally secured to a fixed portion of the car structure. This arrangement gives a movement to the outer end of the cable equal to twice the movement of the piston. The pressure is supplied to the respective upper and lower cylinders by means of pressure supply pipes 92, which are connected with the storage cylinder in any suitable manner.

The outer plate 29 of each of the wings is provided with a forwardly projecting guard 93 which, when the wing is extended, projects in close proximity with the rail and is adapted to protect the rail against the dirt or filling which might otherwise accumulate. In order to more thoroughly insure the rail against obstructions a wedge shaped pilot 94 is employed, which is pivotally mounted at the forward end of the car by means of depending brackets 95, and the pilot is adapted to be raised by means of the cable 96 which is carried over a sheave 97 and extends rearwardly and connects with the lower actuating sheave 80, the cable being of proper length to give the necessary movement to raise the pilot away from the track to the desired elevation. In addition to means for securing or bracing the several structures previously referred to, a series of adjustable brace rods 98 are employed, which brace and support the guide posts 21 and the forward and rear bridge structures, and the brace rods are preferably provided with turn buckles, so that the entire structure can be tightened up at will.

In use, with the wing raised and inwardly folded, as shown at the right of Fig. 3, the supporting arm will be pulled up by the retraction of the lower piston rod and the tension of the cable, and when the supporting arm is in this position, the hanger 47 will be supported by the shoulder 46, which will be raised sufficiently, above the pivotal point, to cause the wing to clear the track surface. The wing will also be thrown back in substantially parallel relation with the car by reason of the fact that when the supporting arm is raised the shoulder portion thereof will be in substantial longitudinal alinement with the vertical guide post which affords the pivotal mounting for the forward end of the wing. With the parts in this position, a forward movement of the lower piston rod and actuating sheave serves to release the supporting arm, which will descend in substantially the position shown in Fig. 3. As the arm is released the sheave in the hanger 47 will roll down from the shoulder and onto the main or supporting portion of the arm, and this movement lowers the wing proportionately to its outward or swinging movement. The provision of the shoulder permits the wing to be supported upon the arm a considerable

distance above its pivotal point, and the shoulder formation provides a space, when the arm is raised above the shoulder, for the reception of the wing which is thus enabled to lie closely up against the car body at this point. As the arm is lowered hanger sheave will roll out along the arm until the limit of distention has been reached, in which position the main or supporting portion of the arm will have a slight incline toward its outer end, which incline permits the weight of the arm to serve as the means for swinging it into distended position. As the arm is thus distended the universal swivel joint of the hanger will permit the wing to move into its intended position without jamming or binding of the hanger sheave which always maintains its proper engagement with the upper surface of the arm. The pivotal mounting for the arm, moreover, is one which permits a sufficient horizontal play or movement to accommodate the arm to the different angles of distention of the wing, and this movement of the arm, in conjunction with the movement afforded by the universal swivel joint for the hanger, gives an easy and uninterrupted movement to the wing which is enabled to swing out into position by gravity when the arm is released. The pivotal mounting for the wing on the vertical post, is one which gives a free up and down movement, so that the wing, when the arm is lowered will automatically adjust itself, both with respect to its vertical elevation and with respect to its angle of distention, and that without binding or cramping, which is prevented by the upper and lower sheave bearings for the wing. The wing can be furthermore adjusted, as to its vertical elevation, by the motor cylinder 59, which is adapted to adjust the pivotal mounting for the inner end of the arm to any desired degree, and the dog 55, which engages with the teeth on the slidable block, serves to provide a positive support for the pivotal mounting, regardless of the pressure in the motor cylinder. The formation of the braces is one which permits further adjustment with respect to the angle of distention of the wing, since the length of the braces can be varied, as desired, in order to accommodate the wing to different angles of distention.

The device, as a whole, is one which permits the various adjustments to be readily and quickly made by a single operator, and dispenses with all manual work in operating the spreader. The parts, when not in use, can be adjusted in such small compass that the width of the entire spreader will not be greater substantially, than ordinary flat cars, so that the spreader can be run over any track without removal of any of the parts, which, of course, is a great advantage in actual use. The employment of compressed air from the train pipes dispenses with the necessity for providing an independent engine or motor for the spreader and at the same time permits sufficient pressure to be stored up in the reservoir so that the device can be operated even though disconnected from the train.

What I claim as new and desire to secure by Letters Patent is:

1. A spreader, the combination of a vehicle body, a spreader wing, a mounting for the spreader wing permitting lateral distention and vertical adjustment, and a supporting arm pivoted at its inner end and connected to the spreader wing and adapted to be swung up and down to adjust the spreader wing, substantially as described.

2. A spreader, the combination of a vehicle body, a spreader wing, a mounting for the spreader wing permitting lateral distention and vertical adjustment, a supporting arm pivoted at its inner end and connected to the spreader wing and adapted to be swung up and down to adjust the spreader wing, a cylinder and piston, and a connection between the piston and the supporting arm, for adjusting the latter, substantially as described.

3. A spreader, the combination of a vehicle body, a spreader wing, a mounting for the spreader wing permitting lateral distention and vertical adjustment, a supporting arm pivoted at its inner end and connected to the spreader wing and adapted to be swung up and down to adjust the spreader wing, and a brace extending between the wing and the vehicle body, substantially as described.

4. A spreader, the combination of a vehicle body, a spreader wing, a mounting for the spreader wing permitting lateral distention and vertical adjustment, a supporting arm pivoted at its inner end and connected to the spreader wing and adapted to be swung up and down to adjust the spreader wing, a brace extending between the wing and the vehicle body, a motor cylinder and piston, and a connection between the piston and the supporting arm, for adjusting the latter, substantially as described.

5. In a spreader, the combination of a vehicle body, a wing, a vertical guideway to which the inner end of the wing is pivoted, and slidably connected, a supporting arm pivoted at its inner end, a hanger and sheave connected with the wing and adapted to travel along the arm, and means for raising and lowering the arm to vertically and laterally adjust the wing, substantially as described.

6. In a spreader, the combination of a vehicle body, a wing, a vertical guideway to which the inner end of the wing is pivoted, and slidably connected, a supporting arm pivoted at its inner end, a hanger and sheave connected with the wing and adapted to travel along the arm, a cylinder and piston,

and a connection between the piston and the arm, for adjusting the latter, substantially as described.

7. In a spreader, the combination of a vehicle body, a vertical guide post, a wing provided with a pivotal head through which the guide post is slidably entered, a supporting arm pivoted to the vehicle body and adapted to be swung up and down, and a traveling connection between the wing and the supporting arm, for vertically and laterally adjusting the latter by movement of the arm, substantially as described.

8. In a spreader, the combination of a vehicle body, a vertical guide post, a wing provided with a pivotal head through which the guide post is slidably entered, a supporting arm pivoted to the vehicle body to be swung up and down, a traveling connection between the wing and the supporting arm, for vertically and laterally adjusting the latter by movement of the arm, and means for adjusting the pivotal connection between the arm and the vehicle body, substantially as described.

9. In a spreader, the combination of a vehicle body, a vertical guide post, a wing provided with a pivotal head through which the guide post is slidably entered, a supporting arm pivoted to the vehicle body and adapted to be swung up and down, a traveling connection between the wing and the supporting arm, for vertically and laterally adjusting the latter by movement of the arm, and a brace pivoted at its inner end to the vehicle body, and adapted to be raised and lowered and adapted, when lowered, to be connected with the distended end of the wing for supporting the same, substantially as described.

10. In a spreader, the combination of a vehicle structure, a wing, a pivotal connection between the wing and the vehicle structure, permitting simultaneous lateral and vertical adjustment, a supporting arm pivoted at its inner end to the vehicle structure and provided with a depending shoulder near its pivoted end, and a traveling connection between the wing and the arm adapted to engage the shoulder when raised and ride along the arm when lowered, substantially as described.

11. In a spreader, the combination of a vehicle structure, a wing, a pivotal connection between the wing and the vehicle structure, permitting simultaneous lateral and vertical adjustment, a supporting arm pivoted at its inner end to the vehicle structure and provided with a depending shoulder near its pivoted end, a roller bearing engaging the arm, and a hanger provided with a universal joint connecting the bearing with the wing, the bearing being adapted to rest upon the shoulder when raised and ride along the arm when lowered, substantially as described.

12. In a spreader, the combination of a vehicle structure, a wing, a pivotal connection between the wing and the vehicle structure, permitting simultaneous lateral and vertical adjustment, a supporting arm pivoted at its inner end to the vehicle structure and provided with a depending shoulder near the pivoted end, a traveling connection between the wing and the arm adapted to engage the shoulder when raised and ride along the arm when lowered, and a brace pivoted at its inner end to the vehicle structure and adapted, when lowered, to engage the rear side of the vehicle and support the same, substantially as described.

13. In a spreader, the combination of a vehicle structure, a wing, a pivotal connection between the wing and the vehicle structure, permitting simultaneous lateral and vertical adjustment, a supporting arm pivoted at its inner end to the vehicle structure and provided with a depending shoulder near its pivoted end, a roller bearing engaging the arm, a hanger provided with a universal joint connecting the bearing with the wing, the bearing being adapted to rest upon the shoulder when raised and ride along the arm when lowered, and a brace pivoted at its inner end to the vehicle structure and adapted, when lowered, to engage the rear side of the wing and support the same, substantially as described.

14. In a spreader, the combination of a vehicle structure, a wing, a pivotal connection between the wing and the vehicle structure, permitting simultaneous lateral and vertical adjustment, a supporting arm pivoted at its inner end to the vehicle structure and provided with a depending shoulder near its pivoted end, a traveling connection between the wing and the arm adapted to engage the shoulder when raised and ride along the arm when lowered, and an adjustable brace of telescopic formation pivoted at its inner end to the vehicle structure, and adapted, when lowered, to engage the wing and support the same, substantially as described.

15. In a spreader, the combination of a vehicle structure, a wing, a pivotal connection between the wing and the vehicle structure, permitting simultaneous lateral and vertical adjustment, a supporting arm pivoted at its inner end to the vehicle structure and provided with a depending shoulder near its pivoted end, a roller bearing engaging the arm, a hanger provided with a universal joint connecting the bearing with the wing, the bearing being adapted to rest upon the shoulder when raised and ride along the arm when lowered, and an adjustable brace of telescopic formation pivoted at its inner end to the vehicle structure, and adapted, when lowered, to engage the wing and support the same, substantially as described.

16. In a spreader, the combination of a vehicle structure, a wing, a vertical guide post,

lower sheaves pivoted to the wing and engaging the guide post, an upper sheave, a rigid connection between the upper sheave and the wing, a supporting arm pivoted at its inner end to the vehicle structure, and a traveling connection between the wing and the arm, substantially as described.

17. In a spreader, the combination of a vehicle structure, a wing, a vertical guide post, lower sheaves pivoted to the wing and engaging the guide post, an upper sheave, a rigid connection between the upper sheave and the wing, a supporting arm pivoted at its inner end to the vehicle structure, a traveling connection between the wing and the arm, and means for vertically adjusting the pivoted end of the supporting arm, substantially as described.

18. In a spreader, the combination of a vehicle structure, a wing, a vertical guide post, lower sheaves pivoted to the wing and engaging the guide post, an upper sheave, a rigid connection between the upper sheave and the wing, a supporting arm pivoted at its inner end to the vehicle structure, a traveling connection between the wing and the arm, and a brace pivoted at its inner end and adapted, when lowered, to support the wing, substantially as described.

19. In a spreader, the combination of a vehicle structure, a wing, a vertical guide post, lower sheaves pivoted to the wing and engaging the guide post, an upper sheave, a rigid connection between the upper sheave and the wing, a supporting arm pivoted at its inner end to the vehicle structure, a traveling connection between the wing and the arm, means for vertically adjusting the pivoted end of the supporting arm, and a brace pivoted at its inner end and adapted, when lowered, to support the wing, substantially as described.

20. In a spreader, the combination of a vehicle structure, a wing, a guide post, lower sheaves pivoted to the wing and engaging the guide post, an upper sheave, a rigid connection between the wing and the upper sheave, an arm pivoted at its inner end to the vehicle structure and provided with a shoulder near its pivoted end, a traveling connection between the wing and the arm, means for adjusting the pivoted end of the arm, and a vertical adjustable brace adapted, when lowered, to hold the arm in distended position, substantially as described.

21. In a spreader, the combination of a vehicle structure, a wing, a guide post, lower sheaves pivoted to the wing and engaging the guide post, an upper sheave, a rigid connection between the wing and the upper sheave, an arm pivoted at its inner end to the vehicle structure and provided with a shoulder near its pivoted end, a traveling connection between the wing and the arm, means for adjusting the pivoted end of the arm, a vertical adjustable brace adapted, when lowered, to hold the arm in distended position, and motor cylinders for raising and lowering the arm and raising and lowering the brace, substantially as described.

JOHN C. DEPEW

Witnesses:
WALKER BANNING,
PIERSON W. BANNIN