July 21, 1925. 1,547,018

R. E. BRESSLER

RAILWAY SPREADER CAR

Filed Nov. 5, 1920 4 Sheets-Sheet 1

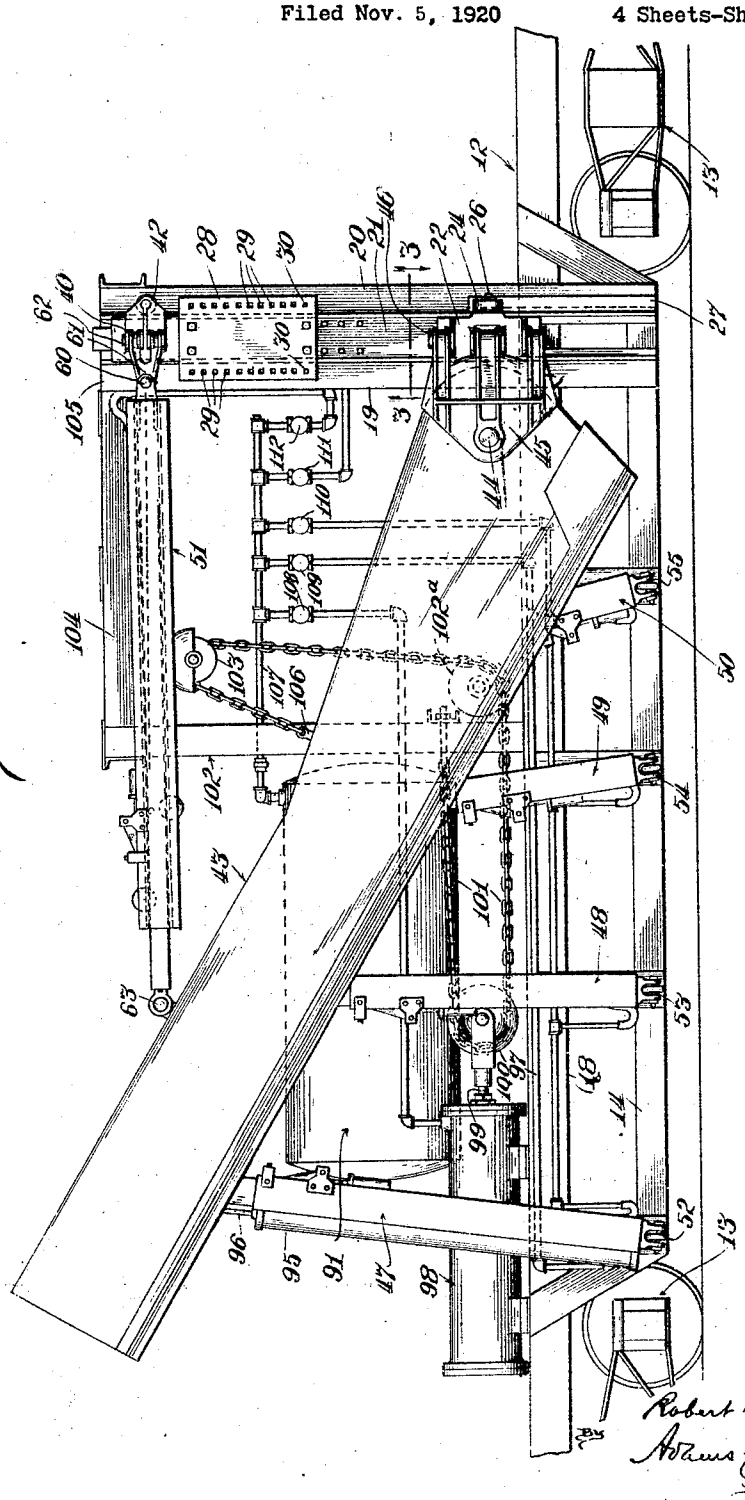


Fig. 1.

Inventor:
Robert E. Bressler,
By Adams & Jackson.
Attorneys.

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R. E. BRESSLER

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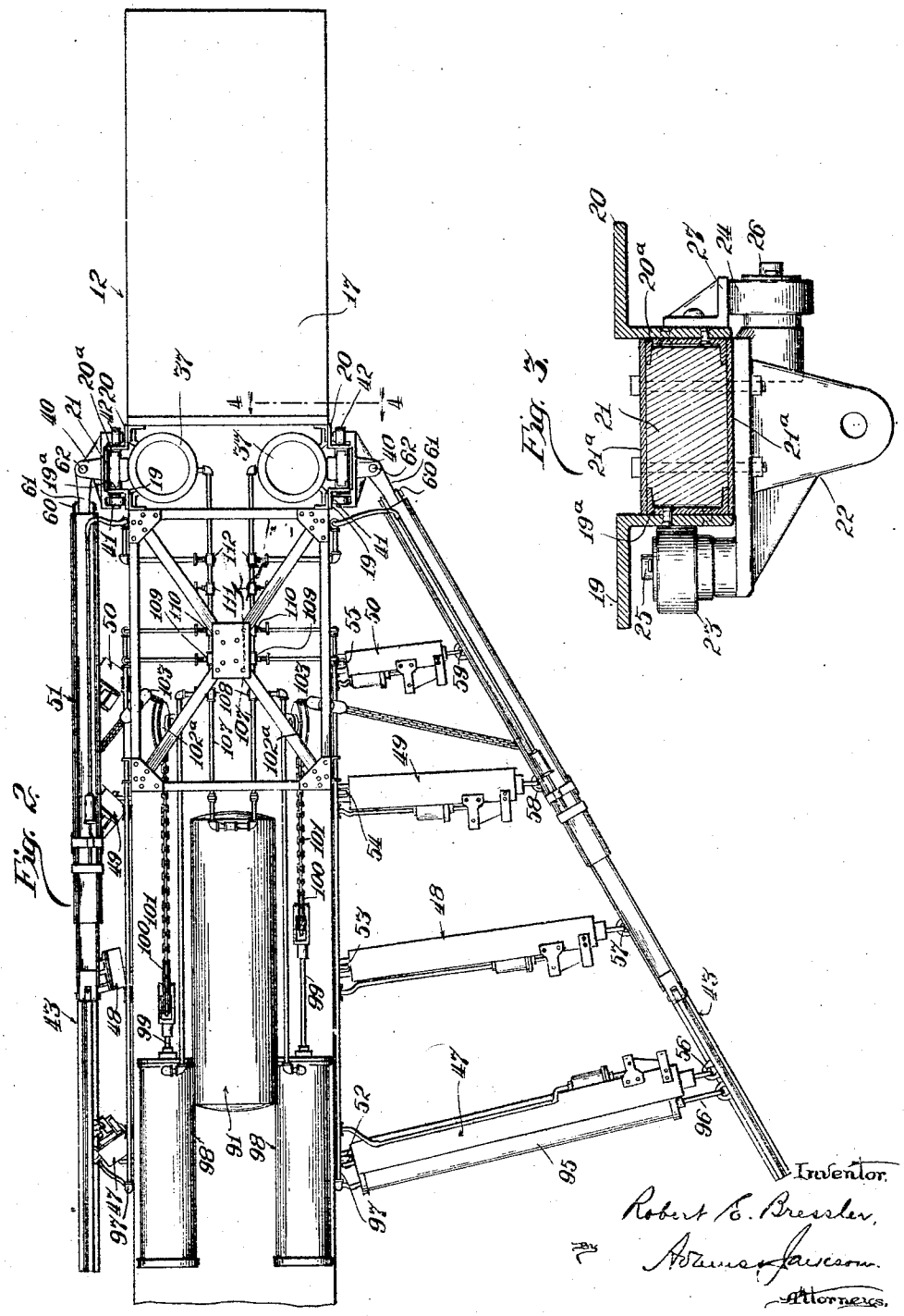


Fig. 2.

Fig. 3.

Inventor.
Robert E. Bressler,
By Adams & Jameson.
Attorneys.

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R. E. BRESSLER

RAILWAY SPREADER CAR

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Fig. 4.

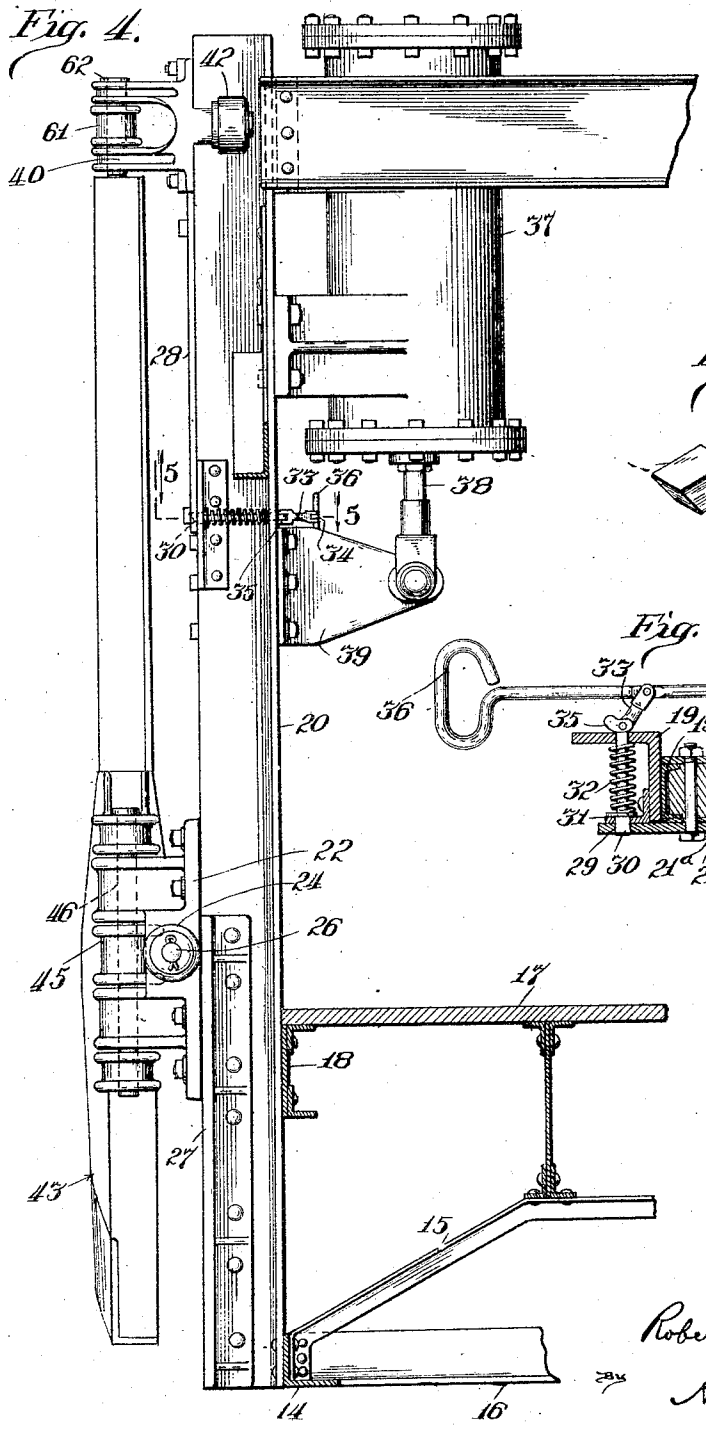


Fig. 6.

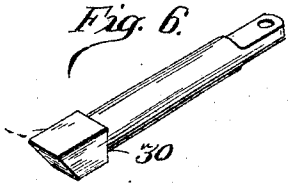
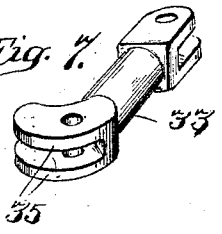


Fig. 5.

Fig. 7.



Inventor.
Robert E. Bressler,
Adams & Jackson.
Attorneys.

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R. E. BRESSLER

RAILWAY SPREADER CAR

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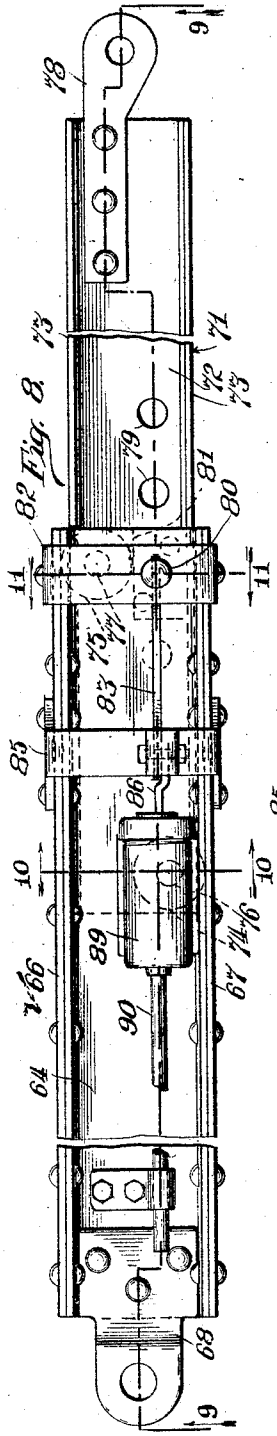


Fig. 8.

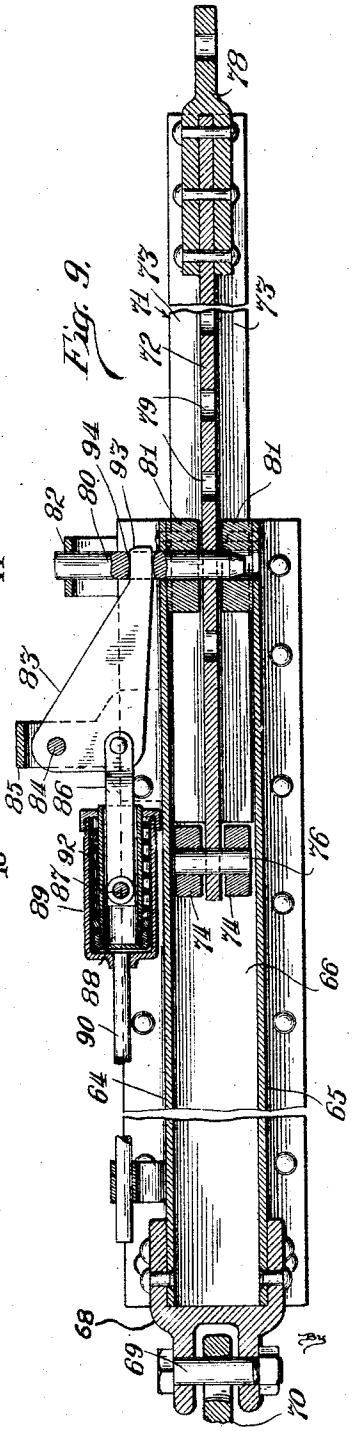


Fig. 9.

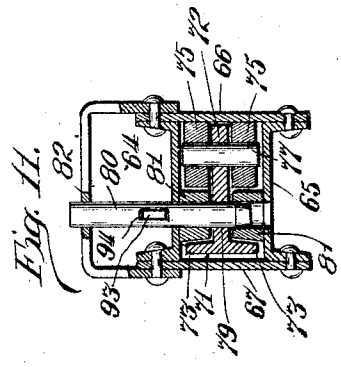


Fig. 11.

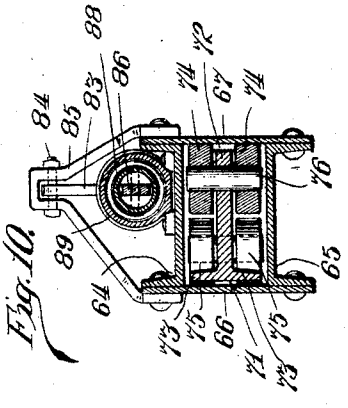


Fig. 10.

Inventor:
Robert E. Bressler,
Adams & Jackson.
Attorneys.

Patented July 21, 1925. 1,547,018

UNITED STATES PATENT OFFICE.

ROBERT E. BRESSLER, OF AURORA, ILLINOIS, ASSIGNOR TO WESTERN WHEELED SCRAPER COMPANY, OF AURORA, ILLINOIS, A CORPORATION OF ILLINOIS.

RAILWAY SPREADER CAR.

Application filed November 5, 1920. Serial No. 421,845.

To all whom it may concern:

Be it known that I, ROBERT E. BRESSLER, a citizen of the United States, and a resident of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Railway Spreader Cars, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to railway cars used for grading and road maintenance work, and has particularly to do with cars provided with means for spreading or grading earth along the right of way. Such cars usually comprise wings mounted at one or both sides of the car and connected at one end with the car by pivotal connections arranged to permit the wing either to be extended at a greater or less angle with the car while occupying a horizontal or approximately a horizontal position, or to be raised and swung back substantially parallel with the sides of the car when not in use. These wings are necessarily made strong and heavy in order to withstand the heavy strains to which they are subjected when in use, and are provided with braces which hold them firmly in operative position and at the same time are so constructed that they do not interfere with the raising and folding back of the wings when that operation is to be performed. The pivotal connections about which the wings swing are also usually arranged to be vertically adjustable so that the height of the inner end of the wings may be regulated to suit varying conditions.

My present invention has to do with cars of this general type and has for its object to simplify and improve the construction and operation of such cars so that the several operations required may be performed expeditiously and accurately with the least possible manual labor. The several improvements by which I accomplish this object will clearly appear from the following description of the embodiment thereof illustrated in the accompanying drawings. What I regard as my invention is particularly pointed out in the claims.

In the accompanying drawings,—

Fig. 1 is a side elevation showing the greater part of a spreader car illustrating my improvements, the wing being shown in its inoperative position;

Fig. 2 is a plan view showing a car equipped with two wings, one wing being shown in operative and the other in inoperative position;

Fig. 3 is an enlarged detail, being a partial horizontal section on line 3—3 of Fig. 1;

Fig. 4 is an enlarged detail, being substantially a vertical cross-section on line 4—4 of Fig. 2, illustrating the mechanism for raising and lowering the pivotal support of the wing;

Fig. 5 is a partial horizontal section on line 5—5 of Fig. 4, showing the mechanism for locking such pivotal support in its different positions of adjustment;

Fig. 6 is a perspective view of one of the locking bolts shown in Fig. 5;

Fig. 7 is a perspective view of one of the cam levers required for actuating the bolts shown in Fig. 6;

Fig. 8 is a side view of one of the braces used to hold the wing or wings in operative position;

Fig. 9 is a longitudinal section on line 9—9 of Fig. 8;

Fig. 10 is a cross-section on line 10—10 of Fig. 8; and

Fig. 11 is a cross-section on line 11—11 of Fig. 8.

In using cars of this description for spreading earth or other materials the car is run in such direction that the inner or pivoted ends of the wings are toward the front end of the car, and the wings are arranged to extend backward and outward at a greater or less angle, usually of from thirty to forty-five degrees. Also the wings may be set in an approximately horizontal position or they may incline either upward or downward, depending upon the nature of the work to be performed.

Referring now to the drawings for a description of the embodiment of my invention therein illustrated, 12 indicates a car which is provided with the usual trucks 13, and is very much like an ordinary flat car in general construction. As shown in Fig. 1, the car is provided with a truss-like frame 14 at each side thereof, which extends downwardly and is suitably braced so as to be capable of resisting the strains to which it is subjected. This bracing is usually accomplished by providing transverse truss-braces 15, shown in Fig. 4, connected with the underbody of the car, and also horizontal

braces 16 which extend across the car and connect together the frames 14 at the opposite sides of the car. 17 indicates the platform or deck of the car and 18 the side sills, as shown in Fig. 4.

Near the forward end of the car and at opposite sides thereof are pairs of upright members in the form of angle bars 19, 20, the angle bars of each pair being disposed oppositely with reference to each other, and spaced apart, as shown in Fig. 3, to form guides between which are mounted vertically moving pivot supporting blocks 21. The side edges of these blocks fit nicely between channel bars 19ª, 20ª secured to the opposite parallel flanges of the members 19, 20 so that said blocks may slide vertically freely, and they are held against lateral displacement by side plates 21ª secured to said blocks and overlapping the said channel bars, as shown in Fig. 3. The members 19, 20 are strongly braced to the side sills and frame 14 of the car, as shown in Figs. 1 and 4. Each of the blocks 21 is provided with a bracket 22 which is fixedly secured to its outer face near its lower end, and is equipped with two anti-friction rollers 23, 24, as shown in Fig. 3. The roller 23 is mounted upon a pivot 25 which projects parallel with the transversely disposed flange of the member 19 so that the roller 23 runs on the outer face of said flange, whereas the roller 24 is mounted upon a pivot 26 disposed at right angles to the pivot 25. The roller 24 runs upon a rail 27 fixedly secured to the transverse flange of the member 20 and disposed at right angles thereto. These two rollers, therefore, serve to hold the pivot carrying block 21 in its proper position and steady it as it operates.

28 indicates a locking plate secured to the outer face of the pivot-carrying block 21, preferably near the upper end thereof, as shown in Fig. 1, said plate extending across the outer edges of the flanges of the members 19, 20, as shown in Fig. 5. The projecting edges of said plate are provided with a series of perforations 29 adapted to receive bolts to lock the block 21 in its different positions as will presently be described. Referring now to Figs. 4 and 5,—30 indicates beveled latch bolts mounted in the longitudinally-disposed flanges of the members 19, 20 and in angle plates 31 secured to the transversely-disposed flanges thereof, as shown in Fig. 5. These bolts are adapted to enter the perforations 29 of the locking plate 28, as shown in said figure, and are normally projected into operative position by springs 32 mounted upon said bolts. The beveled portions of the bolts 30 are at their under sides, and obviously when said bolts are in engagement with the plate 28 the pivot supporting block 21 is held against downward movement, but is free to move upward owing to the beveled edges of said bolts. While I prefer to provide two of the bolts 30, that is not essential. 33 indicates hand levers pivotally connected with the inner ends of the bolts 30 and bearing against the longitudinally-extending flanges of the members 19, 20. Said levers are connected together by an operating rod 34 so that they may be operated in unison. It will be apparent that when the bolts 30 are in operative position, as shown in Fig. 5, by moving the operating rod 34 to the left as viewed in said figure the cam portions 35 of said levers will operate to withdraw the bolts from the plate 28, thereby leaving the block 21 free to move downward. The operating rod 34 is provided with a handle 36 which is located at some point within convenient reach of an operator on the car. The block 21 is moved vertically as occasion may require by fluid pressure operated mechanism, preferably a compressed air operated piston contained in a cylinder 37 and connected by a piston rod 38 with a lug 39 secured to the inner face of the block 21, as shown in Fig. 4.

The block 21 is provided near its upper end with a bracket 40, as shown in Fig. 4, which is similar to the bracket 22, and is also provided with a pair of anti-friction rollers similar to the anti-friction rollers 23, 24. These rollers, which are indicated by 41, 42, (see Fig. 2), are, however, oppositely arranged as regards the rollers 23, 24, the roller 41 running on the longitudinally-disposed flange of the member 19, while the roller 42 runs on the transversely-disposed flange of the member 20. These rollers, therefore, cooperate with the rollers 23, 24 to hold the block 21 in place and prevent it from binding.

43 indicates the spreader wings, one of which is preferably provided at each side of the car, although if desired only one wing with the parts cooperating therewith need be provided. As shown in Fig. 1, the wing 43 is connected by a horizontally-disposed pivot 44 with a bracket 45 which is pivotally connected by a vertically-disposed pivot 46 with the bracket 22, the bracket 45 thus forming one leaf of a hinge by which the wing is connected with the block 21 in such manner that it is permitted to swing about a vertical axis. At the same time the pivot 44 permits the wing to swing vertically about a horizontal axis. These two pivots, therefore, cooperate to form a substantially universal joint or connection between the wing and the pivot block 21. Consequently the wing may be swung to any desired horizontal or vertical angle relatively to the car.

The wing is braced to resist horizontal thrust by a series of braces 47, 48, 49 and 50, the number of which may be varied, al-

though I prefer to use four braces as illustrated in Fig. 1, and it is braced to resist upward thrust by what for convenience will be termed a diagonal brace 51. The construction of the several braces 48, 49, 50 and 51 is the same, although their dimensions are in some respects different, and the brace 47 is similar to the others except that it is provided with means for projecting the wing into operative position, as will be hereinafter described. All these braces are telescopic in construction and are connected at one end with a permanent or fixed part of the car, and at the other with the wing. From an inspection of Fig. 1 it will be seen that the outer members of said braces 47, 48, 49 and 50 are each loosely pivoted to the frame 14, as shown at 52, 53, 54 and 55, so that they may swing approximately vertically, the inner or extensible members of said braces being pivotally connected with the wing at different points in its length, as shown at 56, 57, 58 and 59, in Fig. 2. The outer member of the brace 51 is connected by a horizontal pivot 60 with a bracket 61 which is in turn connected by a vertical pivot 62 with the bracket 40. Thus the brace 51 is adapted to swing vertically about the pivot 60 and also horizontally about the pivot 62, the two pivots forming substantially a universal connection between said brace and the block 21. The inner member of the brace 51 is connected with the outer portion of the wing 43 at or near its upper margin by a horizontal pivot 63. By this construction the diagonal brace 51 automatically accommodates itself to the position of the wing 43 when the latter is moved into or out of operative position. As will be understood by those familiar with devices of this character, when the wing is in its inoperative position shown in Fig. 1, the several braced 47, 48, 49 and 50 will be in an approximately upright position and the wing will be substantially parallel with the side of the car and will extend backward and upward, as shown in said figure. When, however, the wing is lowered, owing to the different lengths of said braces it will be swung outward to an approximately horizontal position and will be disposed diagonally with reference to the car body. At the same time the diagonal brace 51 will swing downward and outward to accommodate the new position of the wing.

The purpose of making the braces 47, 48, 49 and 50 extensible is to provide for varying the angular position of the wing, and it is obvious that it is necessary to provide means for holding the members of each brace in fixed relation to each other after they have been adjusted to the desired length. It is also apparent that the members of the brace 51 must be secured in fixed relation to each other in order that such brace may properly perform its function of holding the wing down in operative position. For this purpose the several braces are provided with suitable locking mechanism by which the members of each brace are adjustably held in fixed relation to each other, and for convenience of operation my invention comprises means by which such locking devices are controlled by fluid pressure operated mechanism within convenient reach of an operator on the car. Inasmuch as the construction of all these braces is substantially the same a description of one will suffice for all, except as to certain special mechanism applied to one of said braces, as the brace 47.

Referring now to Figs. 8 to 11, it will be seen that the main or fixed portion of the brace is a box-like structure formed of oppositely-disposed channel bars 64, 65 connected by plates 66, 67. This structure is provided at one end with a bracket 68 which closes that end and also forms a hinge member to receive a pivot 69 by which the brace is connected with a bracket 70 attached to a permanent part of the car, as indicated at the points 52, 53, 54 and 55. In the case of the brace 51 the part 70 corresponds with the bracket 61. The brace member is open at the opposite end to receive the extensible member 71, which is preferably in the form of an I-beam, as shown in Fig. 8. In Figs. 10 and 11, 72 indicates the web of the I-beam and 73 the flanges thereof. The extensible member 71 is adapted to fit in the main brace member and to slide freely therein when not locked, and to this end is provided with preferably two pairs of antifriction rollers 74, 75. These pairs of rollers are located at different points in the length of the extensible member 71 and are adapted to bear respectively on the plates 66, 67, portions of the flanges 73 being cut away for that purpose, as shown in Figs. 10 and 11, so that they cooperate to support the extensible member and hold it in proper position to operate smoothly. The rollers are mounted on pins 76, 77 fitted in the web 72 of the member 71, as shown in said figures. At its outer end the extensible member 71 carries a bracket 78 by which it is pivotally connected to the wing, as shown at the points 56, 57, 58, 59 and 63 in Figs. 1 and 2. For locking the extensible member in its different positions of adjustment, it is provided with a row of perforations 79 in the web 72, as shown in Figs. 8 and 9, which perforations are adapted to be brought into registration with alined perforations in the channel bars 64, 65, as best shown in Figs. 9 and 11. By this arrangement a bolt 80 may be passed through the perforations in the bars 64, 65 and one of

the perforations 79, thereby securely locking the extensible member in position, as illustrated in Figs. 9 and 11. Preferably the channel bars 64, 65 are provided with reinforcing blocks 81 around the perforations therein to obtain greater strength. The outer end of the bolt 80 is fitted to slide in clip 82 which is secured to the channel bar 64, as shown in Fig. 11, and serves to hold the bolt in proper alinement with the holes in the channel bars in which it operates. For actuating the bolt I provide a triangular lever 83 fulcrumed upon a pivot 84 which passes through one arm thereof and is supported by a bracket 85 mounted on the channel bar 64 a short distance back of the clip 82, as shown in Fig. 9. The lever 83 is connected at one side of the fulcrum 84 by a link 86 and pivot 87 with a plunger 88, which operates in a cylinder 89. This cylinder is mounted upon the channel bar 64 in any suitable way and is adapted to receive compressed air or other operating fluid through a pipe 90 connected with any suitable source of supply, such as a compressed air reservoir 91, shown in Fig. 1. A spring 92 is mounted in the cylinder 89 around the plunger 88, and acts in opposition to the compressed air admitted to said cylinder. It will be seen that normally the plunger will occupy the position shown in Fig. 9 under the action of the spring 92, but when air is admitted to said cylinder said plunger will be moved to the right as viewed in said figure, thereby compressing said spring. As soon as the air pressure is exhausted the spring will operate to restore the plunger to the position shown. The plunger 88, therefore, acts to rock the lever 83 about its pivot 84, and this motion is transmitted to the locking pin 80 by providing said lever with an arm 93 which enters a slot 94 in said pin, as shown in Figs. 9 and 11. By this construction, when the plunger 88 is forced to the right the rocking of the lever 83 will move the locking pin 80 upward as viewed in Fig. 9, thereby moving it out of engagement with the extensible member 71 of the brace. When the air pressure is relieved the spring 92 will move the locking pin 80 inward so that it will again lock the extensible member 71 in fixed relation to the main member of the brace.

The brace 47 differs from the others only in that it is provided with a cylinder 95 mounted upon it and which operates a piston having a piston rod 96 which is pivotally connected with the outer end of the wing 43, as shown in Fig. 2. This cylinder is connected by a pipe 97 with the compressed air reservoir 91, or other suitable source of fluid pressure supply.

The wing 43 is raised and swung inward out of operative position by fluid pressure operated mechanism comprising a cylinder 98 mounted on the car and containing a piston having a piston rod 99 which carries a sheave 100, as shown in Fig. 1. 101 indicates a chain or cable, one end of which is fixedly connected to a permanent part of the car, as an upright 102, and after passing around the sheave 100 passes around another sheave 102^a mounted near the deck of the car and over a sheave 103 suspended from a cross-bar 104 connected to the upright 102 and to an upright 105 near the front of the car. The opposite end of the cable 101 is connected at 106 to the wing 43. Fig. 1 shows the piston rod 99 in its retracted position, which is the one it occupies when the wing is in inoperative position, and it is evident that when the pressure in the cylinder 98 is permitted to exhaust the piston rod 99 moves to the right from the position shown in Fig. 1, thereby paying out the cable 101 and permitting the wing to descend. To close the wing from its fully extended position, at which time the piston will be near the right hand end of the cylinder 98, compressed air is admitted to the forward end of said cylinder thereby moving the piston in the opposite direction and taking up the cable 101 so that the wing is raised and at the same time swung inwardly under the action of the several braces. If it be desired to move the wing about its vertical pivot toward the car, from its fully extended toward its least extended position, this may be done by unlocking braces 47, 48, 49 and 50, leaving diagonal brace 51 locked. The admission of air to the forward end of cylinder 98 will then swing the wing inwardly on its vertical pivot. This may also be accomplished by admitting air to the outer end portion of the cylinder 95 through suitable connections.

107 indicates a pipe leading from the compressed air reservoir 91 and connected through valves 108, 109, 110, 111, 112 with the several compressed air operated devices hereinbefore described. Where the car is provided with wings at both sides a set of these valves is provided for each wing and the operating devices associated therewith.

The operation of the car will no doubt be understood from the foregoing description, but it may be conveniently summarized as follows: Assuming that the wing 43 is in its inoperative position shown in Fig. 1, when it is desired to lower it into operative position the valve 112, which controls the admission of compressed air to the cylinder 89 of the diagonal brace 51, is opened, thereby admitting compressed air to said cylinder and releasing the extensible member 71 of said brace. The valve 108 being first closed to cut off pressure from the cylinder 98, the wing 43 will swing downward and

outward by gravity, its outward movement resulting from the action of the several braces 47, 48, 49 and 50, the extensible members of all of which may remain locked. If, however, it is desired to extend the wing at an angle greater than that to which it would be carried by the braces as previously set, the valve 109 is opened to admit air to the cylinder 95, which results in projecting the piston rod 96 thereof, thereby swinging the rear end of the wing outward to a greater distance. In order that this may be accomplished, however, it is necessary to unlock the extensible members of the several braces 47, 48, 49, and 50, which may be done by opening the valve 110. This admits compressed air to all the cylinders 89 of the several horizontal braces since, as shown in Fig. 1 all such cylinders take air from the same pipe 113. When the wing has been extended to the desired position the valves 109, 110 and 112 are closed, whereupon the extensible members of the several braces are automatically locked in position. Since the length of the diagonal brace 51 must be reduced to permit the wing 43 to be moved out of operative position, when it is desired to raise the wing the valve 112 must be opened to again unlock the extensible member of said brace, but the extensible members of the other braces need not be unlocked except when it is desired to change the horizontal angle of the wing. The manner in which the wing may be swung inwardly about its vertical pivot has already been explained. If it be desired to raise the pivot of the wing the valve 111 is opened to admit air to the cylinder 37, whereupon its piston rod 38 will lift the block 21 which carries said pivot, and ordinarily it is preferable to admit air to said cylinder if the pivot of the wing is to be lowered in order to take the weight off the bolts 30 so that they can be easily released, after which the valve 111 can be closed and the block 21 be permitted to descend by gravity. During the latter operation the block and the load sustained by it will be cushioned by the slowly escaping air contained in the said cylinder. By using the latch bolts 30 the block 21 is permitted to rise in emergencies to avoid breakage.

It will be noted that by the construction described all the operations necessary for full control of the wing may be performed by a single operator on the car so that the apparatus can be used very economically. Also, the fact that the mechanical operation of the locking devices for the several horizontal braces is controlled by a single valve contributes largely to this desirable result and is an important feature of my invention, as is also the use of extensible braces which are at all times connected with the car and with the wing, thereby overcoming the necessity of using manually-operated coupling devices. In this connection it should be understood that while I have shown the locking devices as moved into operative position by springs and released by fluid pressure operated devices the reverse arrangement might well be used as an equivalent construction. Another important feature of my invention is the provision of power operated devices for adjusting the braces which resist the horizontal thrust of the wing, and more specifically the mounting of a fluid pressure operated cylinder on one or more of the braces to effect this result, as this gives direct action on the braces and secures more efficient operation.

What I claim as my invention and desire to secure by Letters Patent, is—

1. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a brace comprising a plurality of extensible members, said brace being pivotally connected with the car and with said wing, and means operable from the car for increasing the effective length of said brace to increase the angle of divergence of the wing with the car.

2. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a brace pivotally connected with the car and with said wing, said brace comprising a plurality of longitudinally extensible members, means operable from the car for positively extending the length of said brace to increase the angle of divergence of the wing with the car, and means for locking the members of the brace in their different positions of adjustment.

3. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, an extensible brace pivotally connected with the car and with said wing, said brace comprising a plurality of members, means operable from the car for increasing the effective length of said brace to increase the angle of divergence of the wing with the car, means for locking the members of the brace in their different positions of adjustment, and means operable from the car for controlling said locking means.

4. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, an extensible brace pivotally connected with the car and with said wing, said brace comprising a plurality of members, means operable from the car for positively extending said brace to increase the angle of divergence of the wing with the car, means for locking the members of the brace in their different positions of adjustment, and means operable from the car for releasing the members of the brace to permit adjustment thereof.

5. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing vertically and laterally, a plurality of extensible braces each comprising a plurality of members, said braces being pivotally connected with the car and with said wing for holding the wing in operative position, and means operable from the car for extending the length of said braces to increase the angle of divergence of the wing with the car.

6. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing vertically and laterally, a plurality of extensible braces pivotally connected with the car and with said wing for holding the wing in operative position, each of said braces comprising a plurality of members, means operable from the car for extending the length of said braces to increase the angle of divergence of the wing with the car, and locking devices carried by said braces for locking the members thereof in their different positions of adjustment.

7. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing vertically and laterally, a plurality of extensible braces pivotally connected with the car and with said wing for holding the wing in operative position, means operable from the car for extending said braces to increase the angle of divergence of the wing with the car, locking devices carried by said braces for locking the members thereof in their different positions of adjustment, and means operable from the car for releasing said locking devices.

8. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a plurality of extensible lateral braces pivotally connected with the car and with said wing, each of said braces comprising a plurality of members, means mounted on one of said braces and operable from the car for extending the length of said braces to increase the angle of divergence of the wing of the car, and means for locking the members of said braces in their different positions of adjustment.

9. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a plurality of extensible lateral braces pivotally connected with the car and with said wing, each of said braces comprising a plurality of members, means mounted on one of said braces and operable from the car for extending said braces to increase the angle of divergence of the wing with the car, means for locking the members of said braces in their different positions of adjustment, and means operable from the car for controlling said locking means.

10. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a plurality of extensible lateral braces pivotally connected with the car and with said wing, each of said braces comprising a plurality of members, means mounted on one of said braces and operable from the car for extending said braces to increase the angle of divergence of the wing with the car, means for locking the members of said braces in their different positions of adjustment, and fluid pressure operated mechanism operable from the car for controlling said locking means.

11. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a plurality of extensible lateral braces pivotally connected with the car and with said wing, each of said braces comprising a plurality of members, means mounted on one of said braces and operable from the car for extending said braces to increase the angle of divergence of the wing with the car, means for locking the members of said braces in their different positions of adjustment, and fluid pressure operated devices mounted on said braces and operable from the car for controlling said locking devices.

12. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a plurality of extensible lateral braces pivotally connected with the car and with said wing, each of said braces comprising a plurality of members, means mounted on one of said braces and operable from the car for extending said braces to increase the angle of divergence of the wing with the car, means for locking the members of said braces in their different positions of adjustment, fluid pressure operated devices mounted on said braces for controlling the locking devices of the several braces, and a single valve mounted on the car for controlling said fluid pressure operated devices.

13. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing vertically and laterally, an extensible lateral brace pivotally connected with said car and with said wing, said brace comprising a plurality of members, means operable from the car for positively extending said brace to increase the angle of divergence of the wing with the car, means for locking the members of said brace in their different positions of adjustment, an extensible diagonal brace pivotally connected with the car and with the wing, said diagonal brace also comprising a plurality of members, and means for locking the members of said diagonal brace in their different positions of adjustment.

14. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing vertically and laterally,

an extensible lateral brace pivotally connected with said car and with said wing, said brace comprising a plurality of members, means operable from the car for positively extending said brace to increase the angle of divergence of the wing with the car, means for locking the members of said brace in their different positions of adjustment, an extensible diagonal brace pivotally connected with the car and with the wing, said diagonal brace also comprising a plurality of members, means for locking the members of said diagonal brace in their different positions of adjustment, and means operable from the car for controlling the locking devices of said braces.

15. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing vertically and laterally, an extensible lateral brace pivotally connected with said car and with said wing, said brace comprising a plurality of members, means mounted on said brace and operable from the car for positively extending said brace to increase the angle of divergence of the wing with the car, means for locking the members of said brace in their different positions of adjustment, an extensible diagonal brace pivotally connected with the car and with the wing, said diagonal brace also comprising a plurality of members, and means for locking the members of said diagonal brace in their different positions of adjustment.

16. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing vertically and laterally, an extensible lateral brace pivotally connected with said car and with said wing, said brace comprising a plurality of members, means mounted on said brace and operable from the car for positively extending said brace to increase the angle of divergence of the wing with the car, means for locking the members of said brace in their different positions of adjustment, an extensible diagonal brace pivotally connected with the car and with the wing, said diagonal brace also comprising a plurality of members, means for locking the members of said diagonal brace in their different positions of adjustment, and means operable from the car for controlling the locking devices of said braces.

17. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, an extensible brace comprising a plurality of members adjustable relatively to each other to vary the effective length of the brace, one of said members being pivotally connected with the car and another of said members being pivotally connected with the wing, means for locking the members of said brace in their different positions of adjustment, and means operable from the car for controlling said locking means.

18. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally and vertically, an extensible diagonal brace pivotally connected with the car and with said wing, said brace comprising a plurality of members, locking means for holding the members of said brace in their different positions of adjustment, and fluid pressure operated mechanism for controlling the operation of said locking means.

19. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a brace comprising a plurality of members longitudinally adjustable relative to each other to vary the effective length of the brace, one of the members of the brace being pivotally connected with the car and another member being pivotally connected with said wing, means for locking the members of the brace in their different positions of adjustment, and fluid-pressure-operated mechanism for releasing said locking mechanism.

20. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally and vertically, a brace comprising a plurality of members longitudinally adjustable relative to each other to vary the effective length of the brace, one of the members of the brace being pivotally connected with the car and another member being pivotally connected with said wing, means for locking the members of the brace in their different positions of adjustment, and fluid-pressure-operated mechanism for releasing said locking mechanism.

21. A extensible brace for spreader cars comprising a box-shaped main member, an extensible member mounted to move telescopically therein, said extensible member having anti-friction rollers arranged to bear on opposite inner faces of said main member, and means for locking the members of said brace in their different positions of adjustment.

22. A brace for spreader cars comprising a box-like main member composed of oppositely-disposed channel bars and side plates connecting said channel bars, an extensible member mounted to move telescopically in said main member, anti-friction rollers arranged to bear on opposite sides of said main member, and means for locking the members of said brace in their different positions of adjustment.

23. A brace for spreader cars comprising a main member and an extensible member arranged to move longitudinally thereof, a locking pin mounted on said main member and adapted to engage said extensible member for locking said members in their

different positions of adjustment, a fluid pressure operated piston mounted on said main member, and means actuated by said piston for actuating said pin.

24. A brace for spreader cars comprising a main member and an extensible member arranged to move longitudinally thereof, a locking pin mounted on said main member and adapted to engage said extensible member for locking said members in their different positions of adjustment, a fluid pressure operated piston mounted on said main member, and a lever mounted on said main member and connected with said pin and with said piston whereby the movement of said piston controls the position of said pin.

25. A brace for spreader cars comprising a main member and an extensible member arranged to move longitudinally thereof, a pin mounted on said main member and adapted to engage said extensible member to lock said members in their different positions of adjustment, a piston mounted on said main member and adapted to be actuated in one direction by fluid pressure, a spring for moving said piston in the opposite direction, and means operatively connecting said piston with said bolt whereby the position of said pin is controlled by the movement of said piston.

26. A brace for spreader cars comprising a main member, an extensible member movable longitudinally with relation thereto, a cylinder mounted on said main member, a piston in said cylinder, and an inflexible connection between said piston and said extensible member whereby said extensible member may be projected by the admission of fluid pressure to said cylinder.

27. A brace for spreader cars comprising a main member, an extensible member movable longitudinally with relation thereto, a cylinder mounted on said main member, a piston in said cylinder, an inflexible connection between said piston and said extensible member whereby said extensible member may be projected by the admission of fluid pressure to said cylinder, means mounted on said main member for locking said members in their different positions of adjustment, and fluid pressure operated devices mounted on said main member for controlling the operation of said locking means.

28. A machine of the class described, comprising a car, spaced upright guides disposed at one side of the car, a hinge supporting block mounted to move vertically between said guides, anti-friction rollers carried by said block and disposed angularly with reference to each other and bearing on said guides respectively, a hinge member carried by said block, a wing connected with said hinge member, and means for adjusting the position of said wing.

29. A machine of the class described, comprising a car, spaced upright guides disposed at one side of the car, a hinge supporting block mounted to move vertically between said guides, anti-friction rollers carried by said block and disposed angularly with reference to each other and bearing on said guides respectively, a hinge member carried by said block, a wing connected with said hinge member, means for adjusting the position of said wing, and means for raising said block to vary the height of said hinge member.

30. A machine of the class described, comprising a car, spaced upright guides disposed at one side of the car, a hinge supporting block mounted to move vertically between said guides, anti-friction rollers carried by said block and disposed angularly with reference to each other and bearing on said guides respectively, a hinge member carried by said block, a wing connected with said hinge member, means for adjusting the position of said wing, means for raising said block to vary the height of said hinge member, and means for locking said lock against downward movement from its different positions of adjustment.

31. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a plurality of lateral braces each comprising a plurality of members, pivotally connected with the car and with said wing, said braces being adjustable to vary their effective length, means for locking the members of said braces in their different positions of adjustment, and means operable from the car for simultaneously releasing the locking means of the several braces.

32. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a plurality of extensible lateral braces each comprising a plurality of members, pivotally connected with the car and with said wing, means for locking the members of said braces in their different positions of adjustment, fluid pressure operated devices for releasing the locking means of the several braces, and a single valve mounted on the car for controlling the locking of the several braces.

33. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, a plurality of extensible lateral braces each comprising a plurality of members, pivotally connected with the car and with said wing, means for locking the members of said braces in their different positions of adjustment, fluid pressure operated devices mounted on said braces for controlling the operation of said locking devices, and a single valve mounted on the car for controlling the operation of said fluid pressure operated devices.

34. A machine of the class described, com-

prising a car, a wing pivotally connected therewith to swing laterally, a plurality of extensible lateral braces each comprising a plurality of members, pivotally connected with the car and with said wing, means for locking the members of said braces in their different positions of adjustment, fluid pressure operated devices mounted on said braces for controlling the operation of said locking devices, a single valve mounted on the car for controlling the operation of said fluid pressure operated devices, and means operable from the car for extending said braces to increase the angle of divergence of the wing with the car.

35. A machine of the class described comprising a car, a wing pivotally connected therewith to swing laterally, an extensible brace comprising a plurality of members, said brace being pivotally connected with the car and with said wing, means for locking the members of said brace in their different positions of adjustment, and means mounted on the car for controlling said locking means.

36. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, an extensible brace pivotally connected with the car and with said wing, means for locking the members of said brace in their different positions of adjustment, a diagonal brace pivotally connected with the car and with said wing, means mounted on the car for controlling said locking means, and means for swinging said wing laterally about its pivot.

37. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally, an extensible brace comprising a plurality of members, said brace being pivotally connected with the car and with said wing, means operable from the car for positively extending said brace to increase the angle of divergence of the wing with the car, means for locking the members of said brace in their different positions of adjustment, means operable from the car for controlling said locking means, a diagonal brace pivotally connected with the car and with said wing, and means mounted on the car for moving said wing laterally toward the car when said locking means is released.

38. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally and vertically, an extensible brace comprising a plurality of members, said brace being pivotally connected with the car and with said wing, means operable from the car for locking the members of said brace in their different positions of adjustment, means mounted on the car for moving said wing laterally and vertically, and a diagonal brace pivotally connected with the car and with said wing.

39. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally and vertically, an extensible brace comprising a plurality of members, said brace being pivotally connected with the car and with said wing, means for locking the members of said brace in their different positions of adjustment, means mounted on the car for moving said wing laterally and vertically, an extensible diagonal brace pivotally connected with the car and with said wing, means for locking the members of said diagonal brace in their different positions of adjustment, and means operable from the car for controlling the latter locking means.

40. A machine of the class described, comprising a car, a wing pivotally connected therewith to swing laterally and vertically, an extensible brace comprising a plurality of members, said brace being pivotally connected with the car and with said wing, fluid pressure controlled means for locking the members of said brace in their different positions of adjustment, fluid pressure operated mechanism mounted on the car for moving said wing laterally and vertically, an extensible diagonal brace pivotally connected with the car and with said wing, fluid pressure controlled means for locking the members of said diagonal brace in their different positions of adjustment, and means mounted on the car for controlling the operation of the locking means of said braces.

ROBERT E. BRESSLER.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,547,018, granted July 21, 1925, upon the application of Robert E. Bressler, of Aurora, Illinois, for an improvement in "Railway Spreader Cars," errors appear in the printed specification requiring correction as follows: Page 5, line 121, claim 4, for the word "grace" read *brace;* page 8, line 91, claim 30, for the word "lock" read *block;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 1st day of September, A. D. 1925.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.