Jan. 17, 1928.

1,656,618

A. W. BANTON

RAILROAD SPREADER

Filed April 20, 1925

2 Sheets-Sheet 1

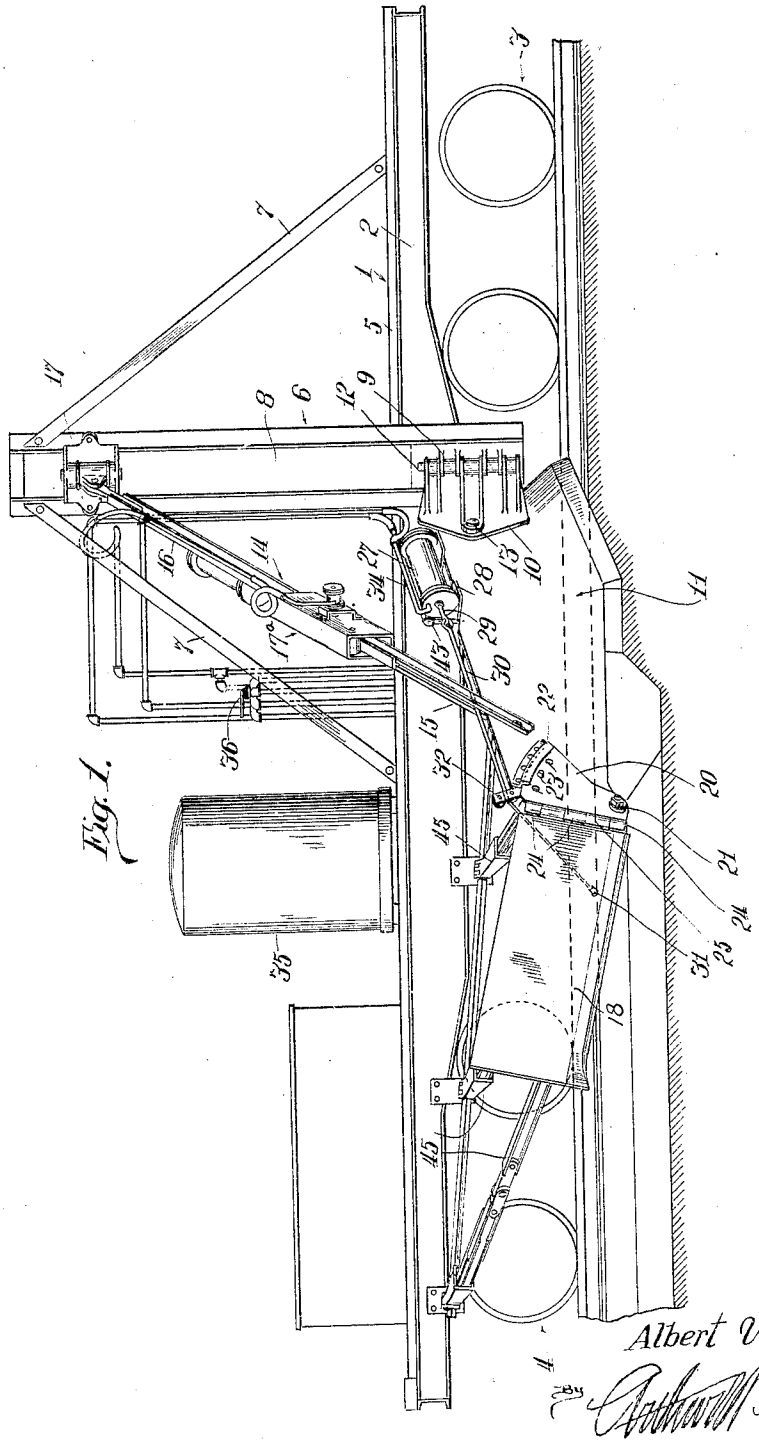


Fig. 1.

Inventor
Albert W. Banton
By Arthur W. Nelson
Attorney

Jan. 17, 1928. 1,656,618

A. W. BANTON

RAILROAD SPREADER

Filed April 20, 1925 2 Sheets-Sheet 2

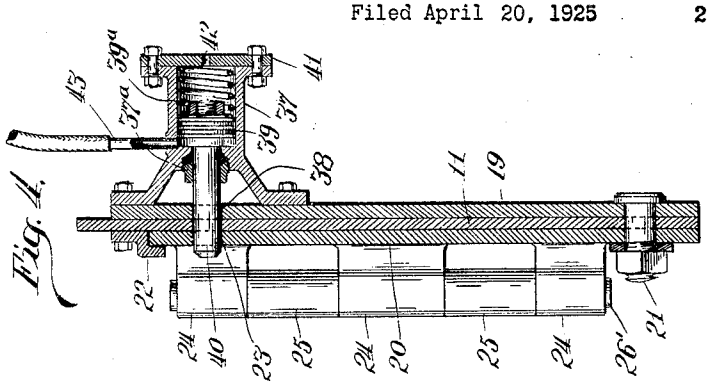


Fig. 4.

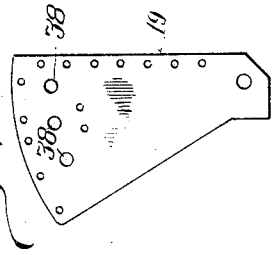


Fig. 5.

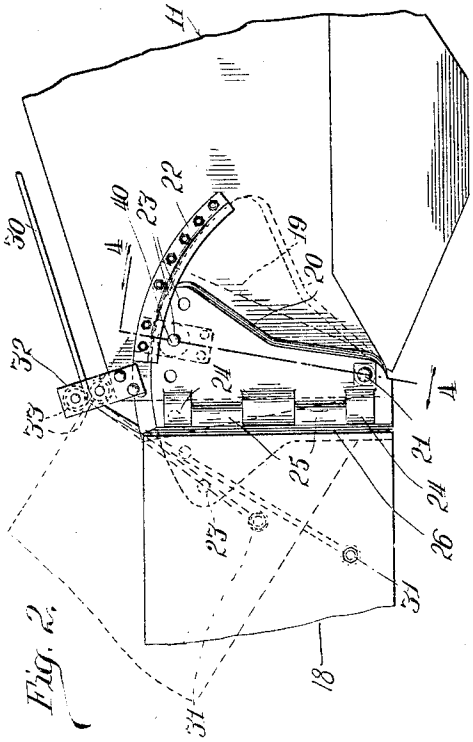


Fig. 2.

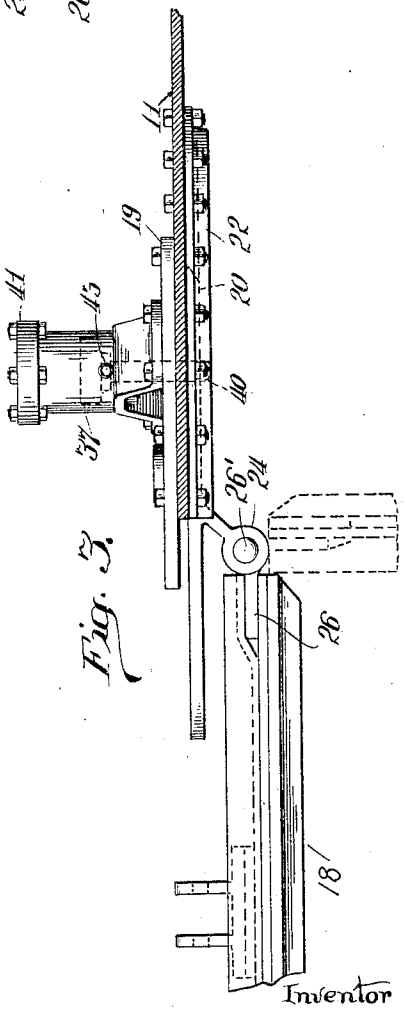


Fig. 3.

Inventor
Albert W. Banton
By Arthur W. Nelson
Attorney

Patented Jan. 17, 1928. 1,656,618

UNITED STATES PATENT OFFICE.

ALBERT W. BANTON, OF EAST CHICAGO, INDIANA, ASSIGNOR TO O. F. JORDAN COMPANY, OF EAST CHICAGO, INDIANA, A CORPORATION OF INDIANA.

RAILROAD SPREADER.

Application filed April 20, 1925. Serial No. 24,365.

This invention relates to improvements in railroad spreaders which are machines for use in ballast shaping, bank shaping, ditching and operations incident thereto, and said invention consists of the matters hereinafter described and more particularly pointed out in the appended claims.

In constructing and maintaining railroad beds it is the practice to employ a car having a main material spreading wing at one side thereof and in some operations it is desirable to employ an additional member or extension wing by means of which material engaged by the main spreader wing and not at once needed on the road bed may be shifted to the end of the spreader wing and then passed on to the extension wing for disposal purposes. As is apparent great bodies of earth or other material are encountered in actual operation and these must be shifted about and disposed of to the best advantage. Some times it is desirable to gather some of the material from a cut and carry it along to fills and the like in the road bed adjacent the track under which conditions the extension wing is caused to assume a position substantially parallel with the car so that the material may be moved as before mentioned. Again in some operations it is necessary to shape up the sloping sides or banks outwardly from the ditch and the angle of the slope, of course, is different under varying conditions. As will be apparent to meet the many conditions and uses intended, an adjustable structure possessing great strength and weight is required. Heretofore the changing of the vertical angular position of the extension wing with respect to the main spreader wing was a manual operation requiring the services of many men to lift up the outer end of the said wing after the manual withdrawal of the usual locking pin between said wings. Such an operation is not only a tedious and laborious task but was also an expensive one. Again in some cases the car had to be moved to a location where this change could be more easily brought about.

One of the objects of the present invention is to provide a simple and efficient structure of the kind mentioned wherein the wing members may not only be quickly unlocked from each other but may thereafter be quickly changed in relative vertical angular position by powerful means operated from the car.

A further object of the invention is to provide power actuated mechanism mounted on the side wing and so connected to the extension wing that the desired vertical angular position between the two may be quickly brought about, and to provide in connection therewith, positive means mounted on the extension wing for quickly withdrawing the locking pin before the angular position has been changed and for then quickly inserting the locking pin to lock the two wing members in the newly adjusted position.

Still another object of the invention is to improve the hinge plate connection between the two wings by providing on one wing a guide to receive a portion of the hinge plate thereon so that said plate cannot bind in its operation.

These objects of the invention as well as others, together with the many advantages thereof will more fully appear as I proceed with my specification.

In the drawings:—

Fig. 1 is a view in side elevation of a railroad spreader embodying my invention.

Fig. 2 is a detail view in elevation on an enlarged scale of the adjacent ends of the spreader and extension wings and the hinge plate structures carried thereby.

Fig. 3 is a top plan view on a further enlarged scale of the parts shown in Fig. 2.

Fig. 4 is a vertical sectional view as taken on the line 4—4 of Fig. 2.

Fig. 5 is a view in elevation of a stiffener plate attached to the rear side of the main spreader wing at its outer end.

Referring now in detail to that embodiment of the invention illustrated in the accompanying drawings:—1 indicates a railroad flat car somewhat more narrow than the ordinary flat car so that the spreading wings may operate more closely to the rails. As shown herein said car has an underframe 2 mounted upon suitable front and rear trucks 3 and 4 and upon the under frame is the floor or deck 5 which extends from end to end of the car. At a point slightly to the rear of the front truck are provided upright columns 6—6, one at each side of the car which are suitably secured to the under frame and extend nearly to the rails, the top end of each column being braced from the car by the angularly disposed

brace bars 7—7. As the two sides of the car are exactly alike except that the parts occupy reverse positions, a description of the parts on one side will suffice for both.

Vertically movable in each column 6 is a post 8 carrying at its bottom a heavy hinge plate 9 and to said hinge plate is secured a heavy hinge section 10 of the main or side spreader wing 11. Said hinge plate and section are connected together by a vertical axis pin 12 and said side spreader wing is secured to the hinge section by a horizontally disposed pin 13. The two hinge pins being arranged at a right angle allow the wing to be swung in both a vertical and a horizontal plane. The horizontal movement occurs in the distending or retracting of the side wing away from and toward the car and the vertical movement of the wing occurs when it is desired to incline the same with relation to a horizontal plane for the purpose well known. The outer end of the main wing 11 is sustained by a brace bar 14 best shown in Fig. 1. Said brace bar is of the telescopic kind and its bottom part 15 is pivotally connected to said wing as shown, while its top part 16 is pivoted to a bearing plate 17 mounted on the top end of the post 8. The two parts may be locked together in their desired telescopic relation by means of a power operated locking device indicated as a whole by the numeral 17a. As this locking device forms no part of the present invention it is only referred to generally herein.

Associated with the main or side wing 11 is a secondary wing 18. Said wing may be used as a bank shaping or extension wing wherein it extends substantially parallel with the said main or side wing or it may be used as a material carrying wing wherein it extends substantially parallel with the car. Said secondary wing is pivotally connected to the outer end of said main wing so as to be capable of either a vertical or a horizontal swinging movement and power actuated means is employed for swinging said secondary wing in a vertical plane in one direction and other power actuated means is provided for manipulating the locking pin by which said secondary wing is locked in the desired vertical angular position.

Secured to the outer end of said main spreader wing, on its rear face is a stiffener plate 19 (see Figs. 3, 4 and 5). On the front face of the outer end of the main wing is a hinge plate 20 pivoted thereto at its bottom end so as to swing in the vertical plane of said wing by means of a horizontal pin 21. The top marginal portion of said hinge plate is of arcuate form and extends under an arcuate guide flange member 22 bolted to the front face of said wing so as to provide a sliding guiding bearing for the top portion of said hinge plate in which are formed a plurality of arcuately spaced holes 23. On the front face of said hinge plate is a plurality of outstanding, vertically spaced bearing sleeves 24 adapted to receive between them, coacting bearing sleeves 25—25 of a second hinge plate 26 rigidly secured to the inner end of the secondary or extension wing. A pin 26′ passes through said bearing sleeves to pivotally connect them together. The top portion of the hinge plate 20 is of such arcuate length as to project a suitable distance beyond the inner edge of the secondary wing as best shown in Figs. 2 and 3.

Upward swinging movement is imparted to the secondary wing about the pin 21 by means of a power actuated device which I find most convenient to mount on the main spreader wing. To this end I employ an air engine 27 in the form of a cylinder and associated piston which is mounted on a platform 28 secured to the top edge of the main spreader wing near its inner end. Connected to the piston head within said cylinder and projecting through the outer end thereof is a piston rod 29 to which one end of a flexible member 30 in the form of a cable is attached. The other end of said cable is secured to the secondary wing at a point spaced from its inner end and preferably near its bottom edge as best shown at 31 in Figs. 1 and 2. Said cable extends through a guide 32 arranged near the outer end of the main wing which guide includes sheaves 33 about which the cable trains itself when the secondary wing is being swung vertically upward by said engine. The engine 27 is preferably adapted for operation by compressed air and its outer end is connected by a pipe 34 with a compressed air tank 35 located on the car, a valve 36 being arranged in the pipe line for controlling the operation of said engine.

When it is desired to lift the secondary or extension wing 18 upwardly, certain means associated with the hinge plate 20 is actuated as will later appear to unlock said wings after which air under pressure is admitted to the outer end of engine cylinder. This will exert a pull on the piston rod and through the cable 30 will act to swing said secondary wing 18 about the pin 21 into the desired vertical angular position to be locked in this position as will later appear. When in lowering the wing, the same will swing downwardly under its own weight upon unlocking said wings and permitting the air to escape from the cylinder. As the air pipe connections with said engine may be of any well known construction, the same is illustrated herein only diagrammatically and not in detail.

The means for locking the wings in the desired vertical angular position is constructed as follows:—On the rear surface of

the stiffener plate 19 near its top end is provided a laterally extending cylinder 37 arranged in axial alignment with one of a plurality of holes 38 in said stiffener plate. Said holes are disposed arcuately in said plate so as to register with the holes 23 in the hinge plate 20. In said cylinder is a piston 39 having a taper ended rod 40 which has sliding bearing in a packing box 37ª arranged in the inner end of said cylinder. The outer end of said cylinder is closed by a head 41 having a vent 42 therein and in said cylinder between the piston head and cylinder head is arranged a helical expansion spring 39ª which normally urges the piston and its associated pin outwardly. A pipe 43 (see Fig. 4) connects the inner end of said cylinder with the air tank 35. As is apparent the piston rod or pin 40 bears substantially all of the weight of the secondary wing and is, therefore, subjected to great shearing strains and for this reason is made good and heavy. In changing the vertical angular position of the secondary wing, it is advisable to first admit a little air into the cylinder 27 so as to lift the said wing slightly and thus take the strain off the piston rod or pin 40. Air is then let into the inner end of the cylinder 37 to actuate the piston 39 to withdraw the piston rod from registering holes in the stiffener plate, main wing and hinge plate after which movement up or down may be imparted to said secondary wing as before described. In withdrawing the piston rod, the spring 39ª is compressed so that when the desired angular position of the secondary wing has been reached, air is shut off from the cylinder 37 and the spring 39ª will urge the piston 39 and rod 40 outwardly to enter that hole in the hinge plate now in register with the said piston rod which, of course, locks all parts in the desired position. The extra holes 38 are provided in the stiffener plate so that in case of shearing of the piston rod 40 or in case the cylinder 37 and parts associated therewith get out of order, while out on a job, any convenient member may be manually inserted in one of said holes and used to lock said wings together, the wing 11 having holes in line with said holes in the stiffener plate.

The wings 11 and 18 are normally held in their horizontal angular position with respect to the car by means of folding brace bars 45 such as for instance as those described in the Jordan Patent No. 996,256 of June 27, 1911. Should it be desired to use the wing 18 as a material carrying wing, it is swung about the pin 26 as an axis so as to extend parallel with the car, the flexible member 30 readily permitting such change and the front or free end of said wing is connected in any suitable manner with the car. In making such change, the brace bars 45 associated with the wing 18 are detached therefrom and folded upwardly against the car so as to be out of the way.

It is apparent that the vertical angular position of the wing 18 may be readily brought about by powerful means controllable from the car and that likewise the locking pin connection between the two wing members is also controllable from the car. The many advantages of such a construction are believed apparent to those familiar with the art. Changes may be quickly made and without the necessity of withdrawing a number of men of the car crew from their other duties as was heretofore necessary.

While in describing my invention, I have referred to certain details of mechanical construction and arrangement of parts, the same is to be taken by way of illustration only and I, therefore, do not wish to be limited thereto except as may be pointed out in the appended claims.

I claim as my invention:—

1. A railroad spreader comprising a car, a side wing hinged to the side of the car, an extension wing operatively connected to the side wing, and power actuated means carried on the side wing and controllable from the car for imparting a movement to said extension wing.

2. A railroad spreader comprising a car, a side wing hinged to the side of the car, an extension wing operatively connected to the side wing, power actuated means carried on said side wing and controllable from the car for imparting movement to said extension wing and means for locking said wings together.

3. A railroad spreader comprising a car, a side wing hinged to the side of the car, an extension wing operatively connected to the side wing, and a fluid pressure cylinder and piston carried on said side wing and operatively connected to said extension wing for imparting a movement thereto.

4. A railroad spreader comprising a car, a side wing hinged to the side of the car, an extension wing operatively connected to the side wing, a fluid pressure cylinder carried on said side wing, a piston in said cylinder, and a flexible member operatively connecting said piston with said extension wing for imparting a movement thereto.

5. A railroad spreader comprising a car, a side wing hinged to the side of the car, an extension wing operatively connected to the side wing, a fluid pressure cylinder mounted on the top edge of the side wing near one end thereof, a piston in said cylinder, a cable connecting said piston and extension wing, and a guide means on said side wing through which said cable passes.

6. A railroad spreader comprising a car, a side wing hinged at its inner end to one side of said car, an extension wing hinged to the

outer end of said side wing for movement about both a vertical and a horizontal axis, power means controllable from the car and operable to impart movement to said extension wing about said horizontal axis, said means including parts permitting movement of said extension wing about said vertical axis.

7. A railroad spreader comprising a car, a side wing hinged at its inner end to one side of said car, an extension wing hinged to the outer end of said side wing for movement about both a vertical and a horizontal axis, power means mounted on said side wing and controllable from the car, and a means connecting said power means and extension wing for imparting a movement thereto about said horizontal axis, said last mentioned means permitting movement of said extension wing about said vertical axis.

8. A railroad spreader comprising a car, a side wing hinged at its inner end to one side of said car, an extension wing hinged to the outer end of said side wing for movement about both a vertical and a horizontal axis, a fluid actuated cylinder mounted on said side wing, a piston arranged in said cylinder, a flexible member connecting said piston and extension wing and by means of which movement is imparted to said extension wing about said horizontal axis, said member permitting said extension wing of being swung about its vertical axis.

9. A railroad spreader embodying therein a car, a side wing hinged to the side of the car, an extension wing, means providing a hinged connection between said wings so that the extension wing is capable of at least a vertical movement with respect to said side wing, a stiffener plate fixed to the rear side of said side wing, a fluid pressure cylinder fixed on said plate and carrying a locking pin adapted for locking said wings together.

10. A railroad spreader embodying therein a car, a side wing hinged thereto, an extension wing, means including coacting hinge plates providing a connection between said wings so that said extension wing is capable of both a horizontal and a vertical swinging movement with respect to the side wing, power actuated means on said side wing for imparting a vertical movement to said extension wing and power actuated means also on said side wing for locking said wings together in the desired angular position.

11. A railroad spreader embodying therein a car, a side wing hinged thereto, an extension wing, a hinge plate on the front face of said side wing and pivoted thereto about a horizontal axis, a coacting hinge plate on said extension wing, a vertical pin connecting said hinge plates, a stiffener plate on the side wing in line with the hinge plate thereon, said hinge plate and stiffener plate having holes adapted to register with each other, and a power operated cylinder mounted on said stiffener plate and including a piston adapted to be projected through and withdrawn from the registering holes in said first mentioned hinge plate and stiffener plate.

12. A railroad spreader embodying therein, a car, a side wing and an extension wing, a hinge plate pivotally mounted on said side wing for movement in the plane of said side wing, a second hinge plate fixed to said extension wing and connected to said first hinge plate for a movement about a vertical axis, a guide flange fixed to said side wing to receive and guide a portion of the hinge plate thereon, and means for locking said wings together.

13. A railroad spreader comprising a car, a side wing hinged to the side of the car, an extension wing connected to the side wing for swinging movement with respect thereto, and power actuated means carried by the side wing for imparting swinging movement to said extension wing.

14. A railroad spreader comprising a car, a side wing hinged to the side of the car, an extension wing connected to the side wing for swinging movement with respect thereto, and power actuated means carried by the side wing for imparting swinging movement to said extension wing, together with means for locking said wings together.

In testimony whereof, I have hereunto set my hand, this 16 day of April, 1925.

ALBERT W. BANTON.