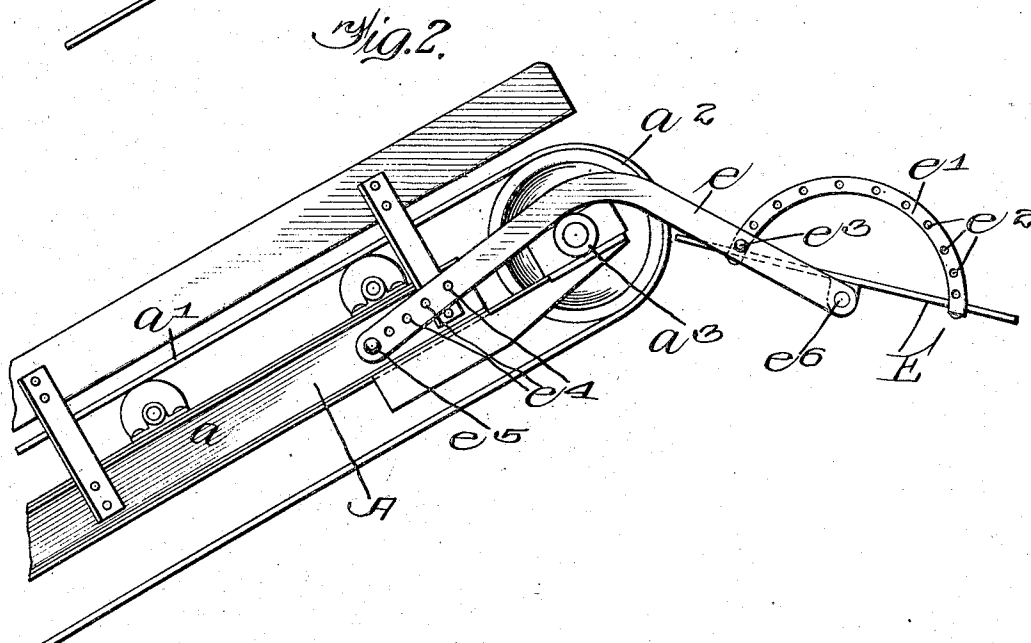
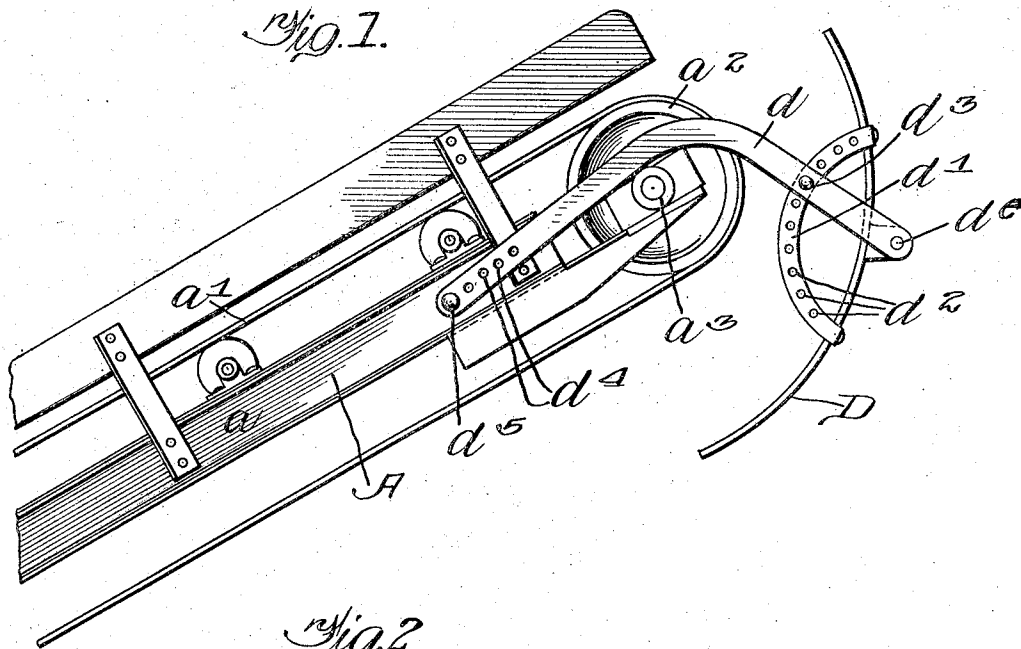


W. H. MORENUS.
 DEFLECTOR FOR DITCHING AND GRADING MACHINES.
 APPLICATION FILED AUG. 2, 1907.

923,064.

Patented May 25, 1909.
 4 SHEETS—SHEET 1.



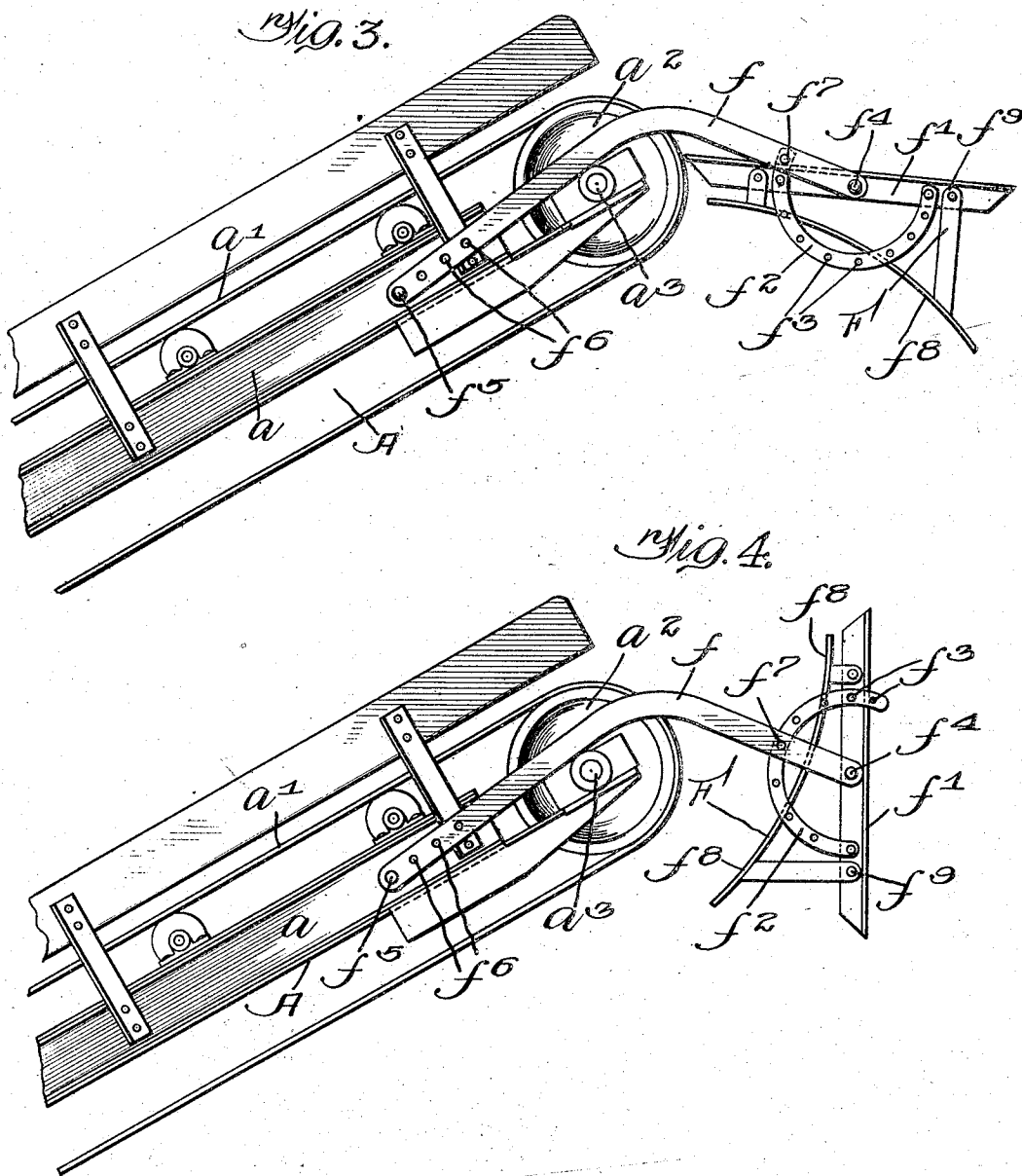
Witnesses:
 Albert J. Sauer.
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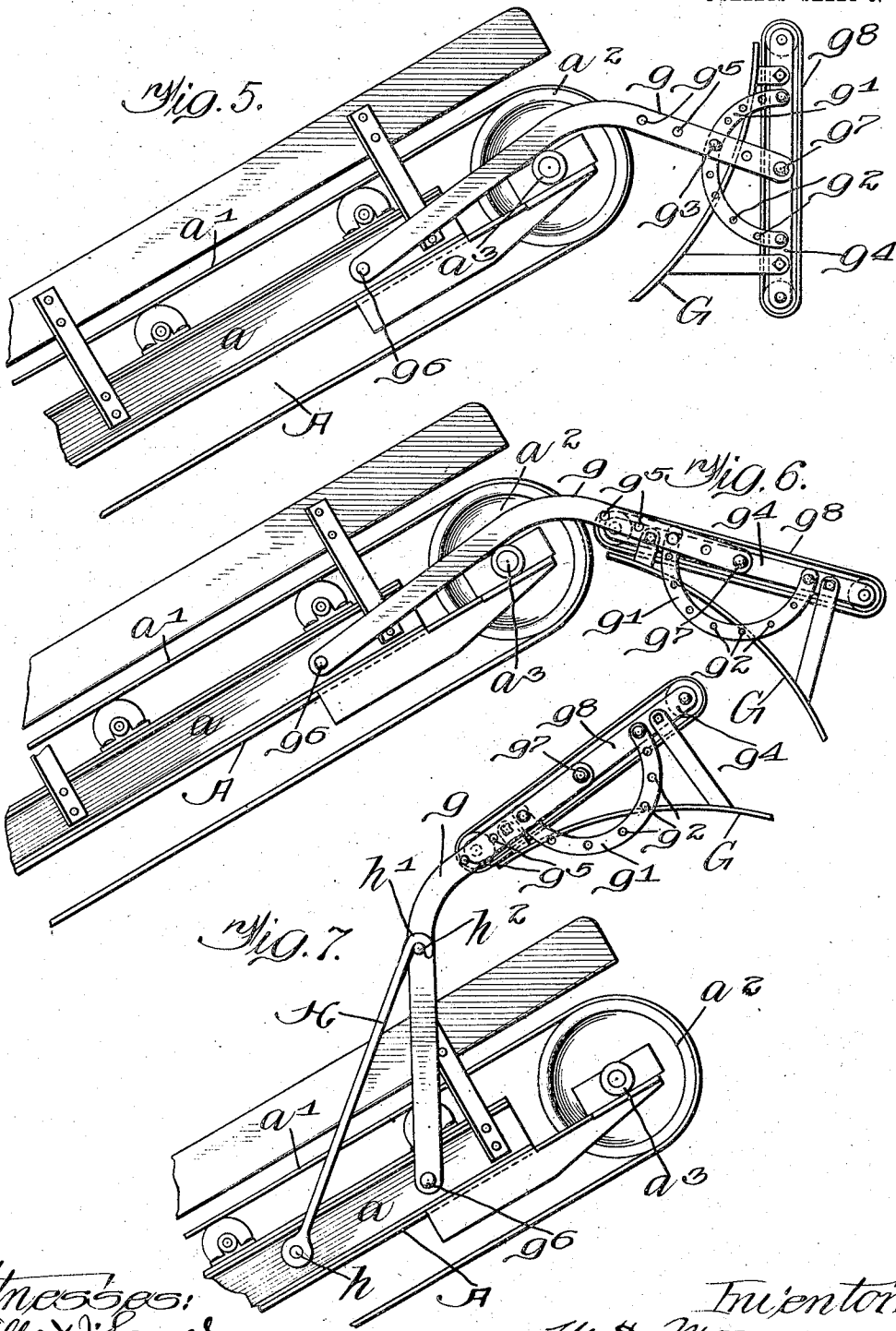
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4 SHEETS—SHEET 3.



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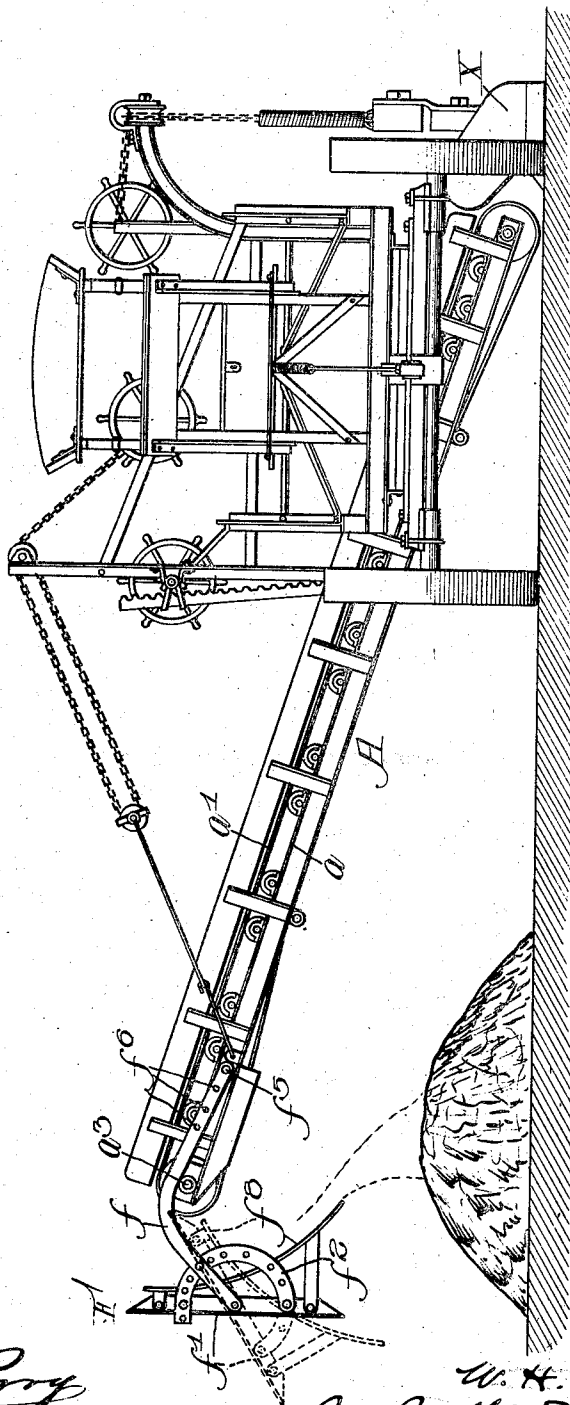
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4 SHEETS—SHEET 4.

Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM H. MORENUS, OF LAKEVIEW, IOWA, ASSIGNOR TO AUSTIN MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

DEFLECTOR FOR DITCHING AND GRADING MACHINES.

No. 923,064.

Specification of Letters Patent.

Patented May 25, 1909.

Application filed August 2, 1907. Serial No. 386,713.

To all whom it may concern:

Be it known that I, WILLIAM H. MORENUS, a citizen of the United States of America, and resident of Lakeview, Sac county, Iowa, have invented a certain new and useful Improvement in Deflectors for Ditching and Grading Machines, of which the following is a specification.

My invention relates to ditching and grading machines of that kind in which the soil is discharged from the upper end of an elevator that projects from one side of the machine. In ditching and grading machines of this particular character, it is often desirable to discharge or drop the soil close to the machine, depending on the character of the work. At other times it is desirable to throw or shoot the soil some distance away from the side of the machine. Prior to my invention, and so far as I am now aware, no satisfactory arrangement has ever been proposed for accomplishing this deflection of the soil either toward or away from the machine.

Generally stated, the object of my invention is to enable the machine to discharge the soil at a variable distance from the plow, without lengthening or shortening the elevator of the machine, as will hereinafter more fully appear.

Special objects of my invention are to provide a simple and inexpensive form of deflector for directing the discharge of soil from the upper end of the elevator of a ditching and grading machine; to provide a deflector for this purpose which can be easily adjusted or moved into different positions, and which can be easily applied to and removed from the upper end of the elevator; to provide a deflector which can be adjusted to discharge the soil either toward or away from the side of the ditching and grading machine; to provide a deflector for this purpose which can be easily thrown out of use—that is to say, which can be easily adjusted to and retained in a non-working position, without the necessity of removing the deflector from the machine; to provide a deflector of this general character which will give a free discharge of the soil from the outer end thereof, when the same is employed for delivering the soil some distance away from the side of the machine; to provide a deflector which can be supported entirely by the outer end of the elevator; to

provide different deflectors which can be used interchangeably on the same machine, to give a wide range of variation in the discharge; and to provide certain details and features of improvement and combinations tending to increase the general efficiency and serviceability of a device of this particular character.

To the foregoing and other useful ends, my invention consists in matters hereinafter set forth and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the upper end of the elevator of a ditching and grading machine, showing one form of my deflector applied thereto. Fig. 2 is also a view similar to Fig. 1, and illustrates another form of my invention. Fig. 3 is a view similar to Fig. 1, and shows another form of my invention. Fig. 4 illustrates the deflector shown in Fig. 3, adjusted to a different position. Fig. 5 is a view similar to Fig. 1, and illustrates still another form of my invention. Fig. 6 shows the deflector of Fig. 5 adjusted to a different position. Fig. 7 illustrates the deflector of Figs. 5 and 6, and shows the same raised out of use—that is to say, adjusted to and retained in a non-working position. Fig. 8 is a front elevation of a ditching and grading machine equipped with an elevator and a deflector therefor involving the principles of my invention. It will be observed that in this view the reversible deflector is shown, namely the one having oppositely disposed and outwardly facing interchangeable deflecting surfaces, whereby the soil can be thrown either toward or away from the machine, depending upon the distance that the machine is traveling from the levee or embankment.

As shown in the drawings, the elevator A may be of any suitable known or approved construction. As illustrated, said elevator comprises a frame or body *a*, provided with a traveling belt or conveyer *a*¹, which latter runs over an upper roller or rotatable member *a*². Said rotatable member is mounted upon a shaft or journal which is supported in bearings *a*³, as shown in the drawings.

In Fig. 1 the elevator A has the frame *a* and the belt *a*¹ and the roller *a*² and the bearings *a*³, previously described. The deflector D is curved to catch the soil and dis-

charge the same inwardly and underneath the elevator. The arms d support the said deflector, a curved bar d^1 being provided with bolt openings d^2 for receiving the bolt d^3 , as shown in the drawing. The said bar d^1 is secured to the said deflector, and with this arrangement the deflector can be swung around and positioned at any desired angle to the arms d , and the bolt d^3 can then be inserted for securing the deflector in place. The arms d are provided with bolt openings d^4 , and with pivots d^5 adapted to be shifted from one bolt opening to the other, whereby the said arms can be adjusted to different positions on the elevator. In this way the said deflector D is adapted for adjustment bodily toward and away from the elevator, and is also, by reason of its pivot bearing d^5 , adapted for angular adjustment to suit the requirements of different kinds of work. Said deflector is adapted to be easily applied to and removed from the elevator.

In Fig. 2 the elevator A has the usual frame or body structure a , a belt a^1 , an upper rotary member a^2 , and the bearings a^3 , as previously described. The deflector E is straight—that is to say, not curved like the deflector D. Furthermore, this deflector E is disposed in position to deliver the soil outwardly and away from the elevator. The arms e are like the arms d of the previous construction. The said deflector E has a curved bar e^1 provided with bolt holes e^2 adapted to receive the bolt e^3 , whereby the said deflector may be given an angular adjustment relative to the said arms. In other words, it will be seen that the bolt e^3 is adapted to be inserted through the arm e and in one of the said bolt holes e^2 , in the manner shown. The swinging arms are preferably provided with bolt holes e^4 , adapted to receive the pivots e^5 , which latter are secured to the frame of the elevator. In this way the said arms e can be adjusted to different positions on the elevator. With this arrangement, it will be seen that the deflectors D and E are interchangeable, and adapted to be used in connection with the same kind of swinging arms on the elevator. In this way the said deflectors can be interchanged for the purpose of delivering the soil either under or outward and away from the elevator.

In Figs. 3 and 4 the elevator A has the previously described frame a , the belt a^1 , the upper roller or rotary member a^2 , and the bearings a^3 , all of which parts are well known. The deflector F is pivotally supported on the arms f , and is provided with a frame f^1 , and a curved bar f^2 having bolt openings f^3 . The pivots f^4 support the deflector on the ends of the arms f . The pivots f^5 swingingly support the arms f on the frame of the elevator. Said arms are pro-

vided with bolt holes f^6 , adapted to be engaged by the pivots f^5 , whereby said arms can be adjusted on the elevator to change the position of the deflector. A bolt f^7 is adapted to be inserted through any one of the bolt holes f^3 to secure the deflector to the arms f , in any desired position. Said deflector has a curved front plate f^8 , and a straight back f^9 , the latter adapted to throw the soil outwardly and away from the elevator. However, when the deflector is adjusted to the position shown in Fig. 4, then the curved front f^8 serves to throw the soil inwardly and below the elevator. In this way a single deflector structure is adapted for either purpose, having two interchangeable deflectors.

In Figs. 5, 6 and 7 the elevator A, as in the previous constructions, has the frame a , a belt a^1 , an upper roller or rotary member a^2 , and the bearings a^3 . A curved deflector G is swingingly or pivotally mounted on the arms g , and is provided with a curved bar g^1 having bolt holes g^2 . A bolt g^3 is adapted to be inserted through the arms g , and in one of the holes g^2 , to lock the deflector in any desired position on the said arms. A back frame g^4 is embodied in the structure of the deflector, and the arms g are provided with a series of bolt holes g^5 adapted to be engaged by the bolt g^3 . Pivots g^6 serve to swingingly secure the arms g to the side members of the elevator frame. The pivots g^7 are adapted to engage in one of the bolt openings g^5 , and serve to swingingly mount the deflector on the arms g . A free running belt or apron g^8 is suitably mounted on the back of the deflector, in the manner shown. With this arrangement, the deflector can be adjusted along the arms g , by shifting the bolt g^3 and the pivots g^7 to different holes in the said arms. It will also be seen that the said deflector may be given an angular adjustment relative to the said arms to suit the requirements of different kinds of work. The deflector G is adapted to throw the work under the elevator; but when the deflector structure is adjusted to the position shown in Fig. 10, then the free running belt or apron g^8 catches the soil and discharges the same outwardly and away from the elevator. The said free running belt or apron is readily removable from the deflector, so that it need not be retained in position while the said deflector is employed for throwing the soil under the elevator. Also the said deflector can be removed, leaving only the said belt or apron in position for use.

As shown in Fig. 7, a hook H has its lower end pivoted at h upon the body frame of the elevator. The upper end h^1 of said hook is adapted to engage a pin h^2 on the arm g , for the purpose of holding the deflector in a raised position. It will be readily understood that the other deflectors, previously

described, can be provided with similar hooks for holding them in raised positions. In this way the deflector can be readily thrown up and retained out of use, whenever
5 such is desirable.

From the foregoing, it will be seen that I provide an improved and highly efficient deflector for controlling the discharge from the upper end of the elevator of a ditching
10 and grading machine. The said deflector, when employed in any of the various forms above described, is easily applied to and removed from the elevator, and is susceptible of adjustment in various ways to meet the
15 requirements of different kinds of work, as well as the different kinds of soil. It will be seen, therefore, that I do not limit myself to any particular form or construction.

Thus in each and every form of my invention, as herein disclosed, the deflector is supported entirely by the outer end of the elevator, so that raising and lowering of the elevator is not interfered with, and does
20 not disturb the adjustment of the deflector, and the deflector in each case is easily and readily adjustable on the end of the elevator, to accomplish the desired result.

By my invention the soil can be discharged at a varying distance from the plow
30 of the machine, according to circumstances and the character of the work. The deflectors for throwing the soil out or away from the machine are interchangeable with the deflectors for throwing the soil in or
35 toward the machine, and thus a wide range of variation is given the distance of the discharge from the plow. This, it will be seen, is all accomplished without lengthening or shortening the elevator, as by adding or re-
40 moving sections, which was the common practice prior to my invention.

The machine has a clear space below the conveyer or elevator, whereby the soil may be discharged on to the ground either to-
45 ward or away from the side of the machine, thus insuring a wide range of variation in the distance of the discharge from the plow. Moreover, the deflector in every case has an axis for changing the angle of deflection, and another axis, such as d^5 , e^5 , f^5 or g^5 ,
50 about which said first axis is movable, and about which the deflector may be moved or revolved bodily. Means are provided for varying the distance between said axes, as
5 explained.

In Fig. 8 I have shown a well known form of ditching and grading machine equipped with my improved deflector, the form of the deflector in this case being the
6 one that has oppositely disposed and outwardly facing interchangeable deflecting surfaces, one surface for throwing the soil toward the machine, which surface is curved, and the other a flat surface adapted
7 for discharging the soil away from the ma-

chine. Thus it will be seen that the machine can first run close to the levee or embankment, and that the deflector can at this time be adjusted to throw the soil toward the machine. As the machine gradually works
70 away from the levee or embankment, the deflector can be adjusted to maintain the desired discharge of the soil. When the machine begins to travel still farther away from the said levee or embankment, then the
75 deflector can be reversed, as shown in dotted lines in Fig. 8, so as to still throw the soil on to the crest or top of the levee or embankment. In this way the discharge of the soil may be maintained along a fixed or pre-
80 determined line, and in so doing the machine will discharge the soil at a variable distance from the plow X at the other side of the machine. In other words, the discharge will be maintained along a fixed line
85 relative to the ground or territory over which the machine is traveling, but at a variable distance from the said plow, depending upon the distance which the machine is traveling from the levee or embank-
90 ment which is being built. In this way the desired discharge of the soil is, as already explained, obtained without lengthening or shortening the elevator. In other words, the length of the elevator remains fixed and in-
95 variable, notwithstanding that the discharge of the soil is at a variable distance from the plow. In this way much time and labor are saved and no provision is necessary for lengthening or shortening the elevator—
100 at least much more work can be done than heretofore with an elevator of a fixed or given length. I may lengthen or shorten the elevator for certain purposes, and do not preclude myself from so doing. With
105 my improved deflector, however, the necessity for lengthening and shortening the elevator is obviated, or at least greatly reduced.

What I claim as my invention is:

1. In a ditching and grading machine, an
110 elevator for discharging the soil from the side of the machine, disposed transversely of the line of travel of the machine, and a deflector pivotally supported entirely on the end of the elevator and positioned to divert
115 the soil back toward the machine after the same leaves the end of the elevator.

2. In a ditching and grading machine, a suitable elevator, disposed transversely of the line of travel of the machine, and a de-
120 flector pivotally supported entirely on the end of the elevator and positioned to divert the soil back under the elevator.

3. In a ditching and grading machine, a suitable elevator, a pair of arms mounted on the frame of the elevator, and embracing the upper roll thereof, a deflector pivotally se-
125 cured to the outer ends of said arms, and a curved bar secured to the deflector and provided with a series of bolt openings for se-
130

curing it to one of the arms in any one of a plurality of different positions, whereby the angularity of the deflector is varied at will.

4. In a ditching and grading machine, a suitable elevator, a pair of arms pivotally and adjustably secured to the frame of the elevator, and embracing the upper roll thereof, a curved deflector pivoted upon the outer ends of said arms, and means for varying the angularity of said deflector, whereby the soil discharged from the upper end of the elevator is diverted or turned back under the same.

5. In a ditching and grading machine, a suitable elevator, a pair of arms pivotally and adjustably secured to the frame thereof, and embracing the upper roll thereof, a deflector pivoted to the outer ends of said arms, and a curved bar provided with means for securing the deflector to one of said arms in any one of a plurality of different positions, said deflector adapted to discharge the soil outwardly and away from the machine.

6. In a ditching and grading machine, a suitable elevator, a deflector having one surface adapted to throw the soil back under the elevator, and having its other surface adapted to discharge the soil outwardly and away from the machine, and means for holding the deflector in different positions.

7. In a ditching and grading machine, a suitable elevator, a pair of arms pivotally and adjustably secured to the frame of the elevator, and embracing the upper roll thereof, a deflector pivotally mounted on the outer ends of said arms, means for securing the deflector in position to either turn the soil back under the elevator or discharge the same outwardly and away from the machine.

8. In a ditching and grading machine, a suitable elevator, and a free-running apron deflector positioned to be operated by the weight of the soil thereon and a pivotal mounting for the said deflector, as set forth.

9. In a ditching and grading machine, a suitable elevator, a deflector for turning the soil back under the elevator, and a free-running apron deflector on the back of said deflector, said apron adapted to be positioned for receiving the soil from the elevator and discharging the same outwardly and away from the machine, said deflectors facing outwardly in opposite directions.

10. In a ditching and grading machine, a suitable elevator, a pair of arms suitably secured to the frame of the elevator, and embracing the upper roll thereof, said arms each provided with a series of bolt holes, and a deflector entirely supported by said arms and adjustable along said series of bolt holes for the purpose of giving the soil a variable discharge from the outer end of said elevator.

11. In a ditching and grading machine, a suitable elevator extending transversely of

the line of travel of said machine, a deflector provided with a horizontal axis which is adjustable toward and away from the upper end of the elevator, and supported entirely thereby, to vary the discharge of soil from the upper end of the elevator, and means for holding the deflector in different positions.

12. In a ditching and grading machine, a suitable elevator extending transversely of the line of travel of said machine, a deflector swingingly mounted on the frame of the elevator, at the upper end thereof, and means for holding the deflector above the elevator and out of use when it is not required for controlling the direction of the discharge of soil from the upper end of the elevator.

13. In a ditching and grading machine, and in combination with the essential elements thereof, the improved deflector for controlling the direction of the discharge of soil therefrom, supported entirely by and at the outer end of the elevator thereof, substantially as shown and described.

14. In a ditching and grading machine, an elevator, a pivoted deflector therefor, means on one side of the deflector for throwing the soil under the elevator, and means on the other side of the deflector for delivering the soil outwardly and away from the elevator.

15. In a ditching and grading machine, an elevator, a pair of arms swingingly and adjustably mounted on said elevator, and a couple of interchangeable deflectors adapted to be mounted on said arms, one deflector for throwing the soil under the elevator, and the other deflector for delivering the soil outwardly and away from the elevator.

16. In a ditching and grading machine, an elevator, a pair of arms secured to the upper end of the elevator, and a couple of interchangeable deflectors adapted to be mounted on the outer ends of said arms, one deflector being adapted for adjustment to throw the soil under the elevator, and the other deflector being adapted for adjustment to deliver the soil outwardly and away from the elevator.

17. A ditching and grading machine provided with an elevator, a pair of swinging arms pivoted on the frame thereof and resting on the bearings of the upper end of said elevator, the pivotal points of said arms being back of the points where the arms rest on said bearings, and a deflector pivoted to and between the ends of said arms.

18. A ditching and grading machine provided with an elevator, and a reversible deflector for the upper end of said elevator, one side of said deflector being adapted for throwing the soil outwardly, and the other side being adapted to divert the soil back under the elevator, the said two sides facing outwardly in opposite directions.

19. A ditching and grading machine pro-

vided with an elevator, a pair of arms supported upon the sides of the elevator and embracing the upper end thereof, means on the elevator frame for holding the arms rigid therewith, and a deflector pivoted upon and between the outer ends of said arms.

20. A ditching and grading machine provided with an elevator, a pair of swinging arms pivoted on the elevator frame at points some distance back from the outer end thereof, said arms resting at points between their ends on the bearings of the upper and outer end of said elevator, and a deflector adjustably pivoted to and between the ends of said arms.

21. In a machine of the class set forth, an elevator extending transversely of the line of travel of the machine, adapted to be raised and lowered, means for raising and lowering said elevator, and a deflector carried entirely by the outer end of said elevator, whereby the elevator can be raised and lowered without disturbing the relation between the same and said deflector.

22. A ditching and grading machine comprising an elevator, a deflector for and beyond the outer end of the belt of said elevator, means on said elevator for supporting said deflector, and means carried by the outer end of the elevator for securing said deflector in different positions relatively thereto.

23. In a ditching and grading machine, an elevator, a deflector for and beyond the upper end of the belt of the said elevator, and means carried by the outer end of the frame of the elevator for securing said deflector in different positions without disturbing the elevator.

24. In a ditching and grading machine, an elevator, a reversible deflector for the upper end thereof, said deflector having oppositely disposed outwardly facing interchangeable deflecting surfaces, and means for holding either surface in position to receive the soil from the end of the elevator.

25. In a ditching and grading machine, an elevator, a deflector on the outer end of said elevator, and means by which the deflector can be raised bodily and brought over the elevator, and by which the deflector is supported in working position when in use.

26. In a ditching and grading machine, an elevator, a pivoted deflector for the upper end thereof, said deflector having a flat surface at one side and a curved surface at the other side, said surfaces facing outwardly in opposite directions, and means for holding either surface in position to receive the soil.

27. A ditching and grading machine provided with an elevator for carrying the soil away from the side of the machine, an implement for throwing the soil onto said ele-

vator, and means for receiving the soil from the upper end of the elevator, disposed in position to discharge the soil on to the ground and back toward the side of the machine as the latter moves along.

28. A ditching and grading machine provided with an elevator for carrying the soil away from the side of the machine, an implement for throwing the soil onto said elevator, and interchangeable deflectors for the upper end of said elevator, one for directing the soil back toward the side of the machine, and the other for discharging the soil away from the machine, as the latter moves along.

29. A ditching and grading machine provided with an elevator for carrying the soil away from the side of the machine, an implement for throwing the soil onto said elevator, means on the upper end of the elevator for discharging the soil either toward or away from the side of the machine, as the latter travels along, comprising outwardly and oppositely facing interchangeable deflecting surfaces, and means for holding either surface in position to deflect the soil.

30. A ditching and grading machine having an elevator provided with means for throwing the soil back toward the side thereof and on to the ground, as the same travels along, whereby the soil is discharged nearer the machine without shortening the elevator thereof, and means on the side of the elevator for varying the angle of deflection.

31. A ditching and grading machine having an elevator provided with means for throwing the soil either toward or away from the side thereof and on to the ground, as the same travels along, whereby the soil is discharged either nearer or farther from the machine without varying the length of the elevator thereof, and means on the side of the elevator for varying the angle of deflection.

32. A ditching and grading machine comprising a laterally projecting conveyer or elevator, with a clear and unobstructed space below the same, whereby the soil can be discharged onto the ground either toward or away from the side of the machine, means for thus deflecting the soil from the outer end of the elevator on to the ground, and means on the elevator for varying the angle of deflection.

33. A ditching and grading machine comprising a conveyer or elevator extending from the side thereof, means for deflecting the soil from the end thereof on to the ground, adjusting mechanism including a horizontal axis for changing the angle of deflection, and means whereby said deflecting means is movable bodily about a horizontal axis parallel with said other axis.

34. A ditching and grading machine comprising a conveyer or elevator extending from the side thereof, adapted to be raised and lowered means carried on the outer end
5 of said conveyer or elevator for deflecting the soil from the end thereof on to the ground, and means carried by the said conveyer or elevator and movable up and down

therewith for changing the angle of deflection.

Signed by me at Chicago, Illinois, this 15th day of July 1907.

WILLIAM H. MORENUS.

Witnesses:

SARAH LEWIS,

ALBERT JOHN SAUSER.