July 26, 1938. R. C. THOMPSON 2,125,134

TERRACING DEVICE

Filed July 27, 1936 2 Sheets-Sheet 1

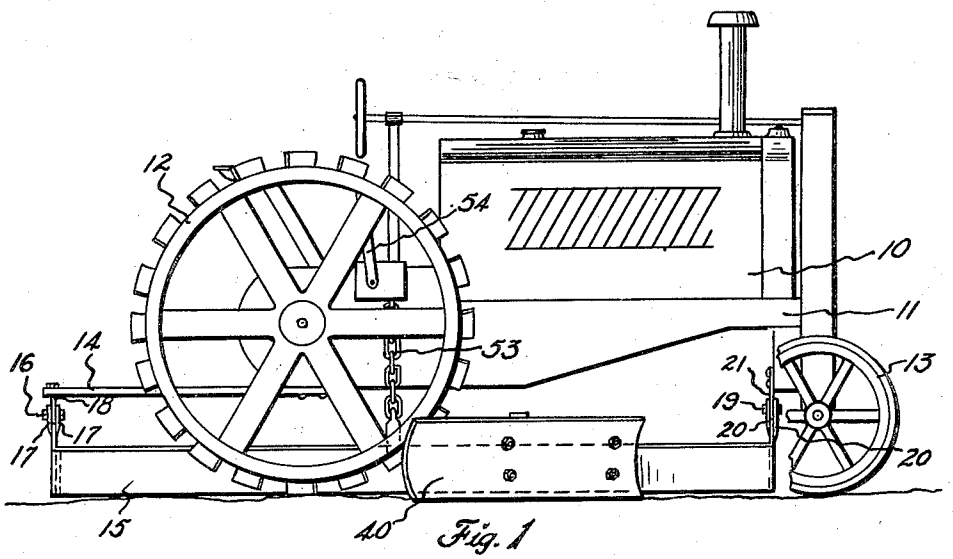


Fig. 1

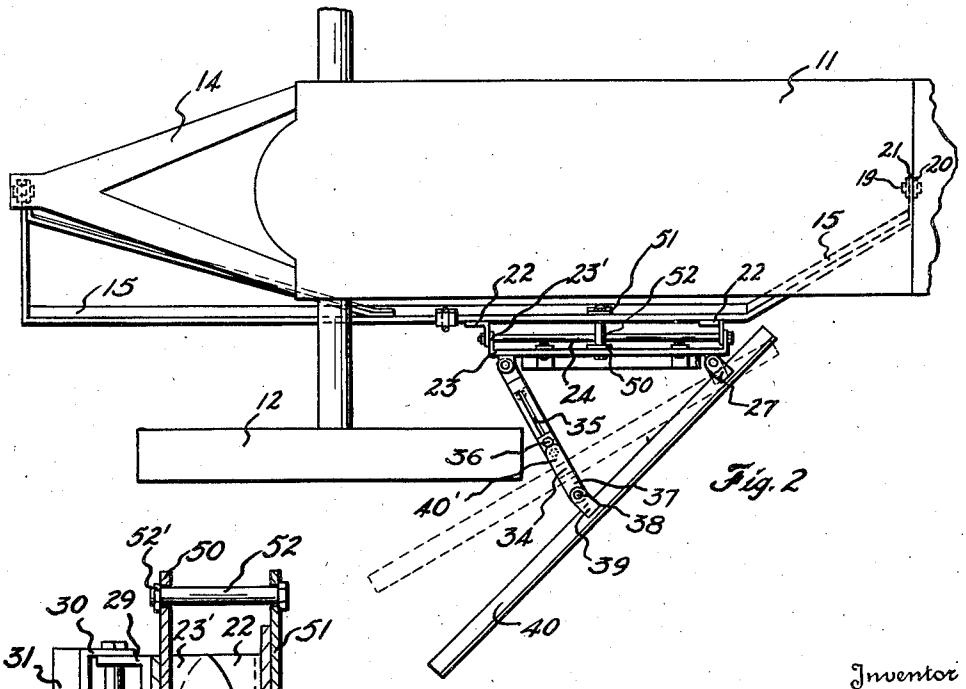


Fig. 2

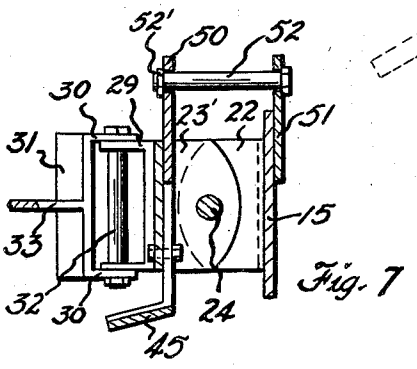


Fig. 7

Inventor

ROBERT C. THOMPSON

By Jack & Ashley

Attorney

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TERRACING DEVICE

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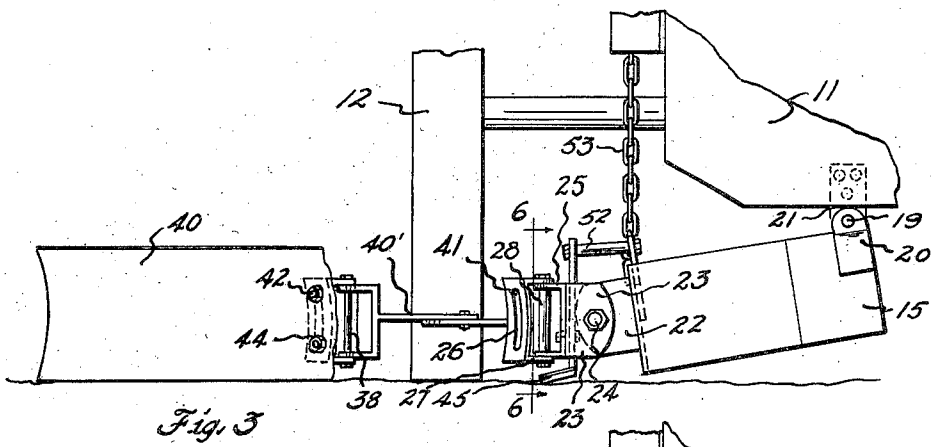


Fig. 3

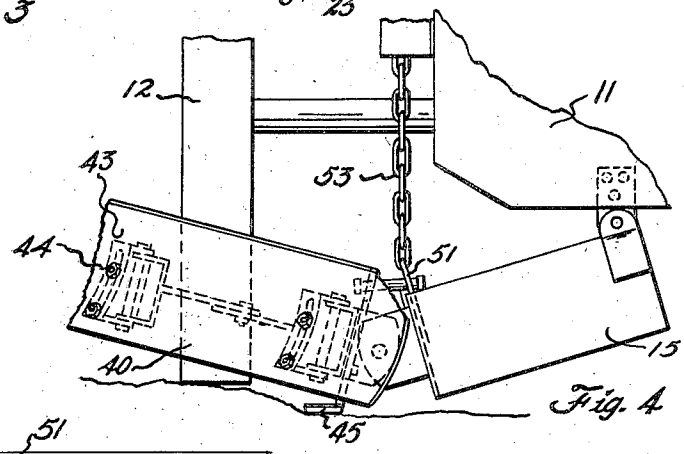


Fig. 4

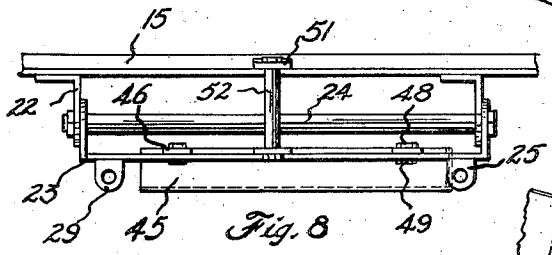


Fig. 8

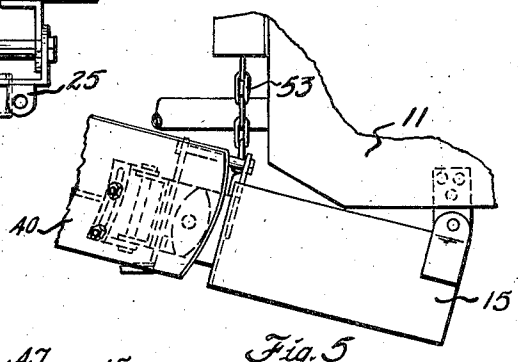


Fig. 5

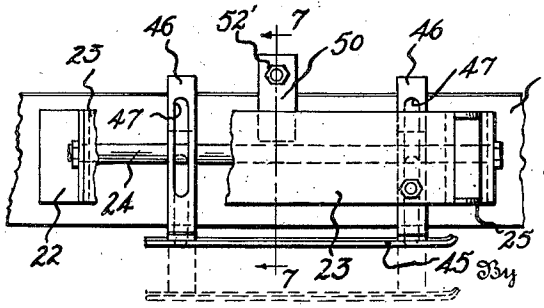


Fig. 6

Inventor

ROBERT C. THOMPSON

By Jack A. Ashley

Attorney

Patented July 26, 1938 2,125,134

UNITED STATES PATENT OFFICE

2,125,134

TERRACING DEVICE

Robert C. Thompson, Brownwood, Tex.

Application July 27, 1936, Serial No. 92,853

12 Claims. (Cl. 37—155)

This invention relates to new and useful improvements in terracing devices.

One object of the invention is to provide an improved device for terracing land which is arranged to be readily attached to an ordinary tractor, or other movable support.

An important object of the invention is to provide an improved device for terracing land which is so constructed that the blade thereof automatically adjusts itself to the contour of said land, whereby manual adjustment of the blade is eliminated and the terracing operation simplified.

Another object of the invention is to provide an improved terracing device having a blade which is so mounted that upon overloading, said blade is automatically raised, and similarly, is automatically lowered to operating position when the overloaded condition is remedied, whereby the blade handles the proper amount of dirt at all times.

Still another object of the invention is to provide an improved terracing device adapted to be mounted on a tractor, or other machine, and having its blade offset out of alignment with the supporting wheels of said tractor, whereby the tractor may be driven on the harder ground and its wheels will not engage the terraced land.

A further object of the invention is to provide an attachment for a tractor, or similar machine, which is adapted to terrace land, and which is constructed of a few number of parts, whereby its manufacturing costs are reduced to a minimum; the construction of the attachments being such that it may be readily operated by a single operator.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, in which an example of the invention is shown, and wherein:

Figure 1 is a side elevation of a tractor having a terracing device, constructed in accordance with the invention, attached thereto,

Figure 2 is an enlarged partial plan view of the parts shown in Figure 1,

Figure 3 is a front elevation of the terracing device in operating position, and showing a portion of the blade broken away,

Figure 4 is a partial front elevation showing the blades swung upwardly,

Figure 5 is a view, similar to Figure 4, with the entire assembly raised from the ground,

Figure 6 is a longitudinal vertical, sectional view, taken on the line 6—6 of Figure 3,

Figure 7 is a transverse, vertical sectional view, taken on the line 7—7 of Figure 6, and

Figure 8 is a plan view of the assembly shown in Figure 6.

In the drawings, the numeral 10 designates a tractor which may be of any desired construction. The tractor includes the usual frame 11, rear drive wheel 12 and front wheel 13, as well as the draw bar 14 which extends from the rear end of the frame. The draw bar usually has the plows (not shown) or other farm machinery attached thereto. The particular construction of the tractor forms no part of the present invention and, therefore, any desired tractor, which may be purchased on the open market may be employed. Also, it is pointed out that the invention may be applied to the usual disk plow, or other farm machinery, and the particular movable support to which the invention is attached makes no particular difference.

In carrying out the invention, an elongate frame member 15 is located at one side of the tractor frame 11 and extends substantially throughout the length of said tractor. The member 15 is preferably constructed of a flat bar which has its rear end bent inwardly, as shown in Figure 2, while its forward end is also directed inwardly toward the center of the tractor frame. The rear end of the member 15 is pivotally mounted on a pin 16 which passes through ears 17 formed on said member and a depending ear 18 which extends downwardly from the outer end of the draw bar 14. The forward end of the member 15 is similarly pivoted on a pin 19 which passes through ears 20 on the member 15 and through a depending lug 21 on the tractor frame 11. With this arrangement, it will be obvious that the frame member 15 may be swung vertically on its pivot pins 16 and 19 and, therefore, the position of the member 15 with relation to the ground level may be readily varied.

Nearer its forward end the frame member 15 is provided with a pair of outwardly extending ears 22, which ears are spaced a substantial distance from each other. A blade supporting plate 23 having its ends directed inwardly to form lugs 23' is disposed between the ears 22 as is clearly shown in Figure 2. An elongate pivot pin 24 passes through the ears 22 on the frame member 15 and also through the lug 23' on the blade supporting plate 23, whereby said bar is pivotally secured to the frame member 15. Therefore, it will be seen that the frame member 15 may be

swung on its pivot, while the blade supporting plate 23 may be swung independently of the frame member 15.

The forward end of the plate 23 is provided with a pair of outwardly extending ears 25 which are located at the top and bottom of said plate, as clearly shown in Figure 3. A curved hanger plate 26 having substantially the same height as the plate 23 is provided with outwardly extending lugs 27 at its upper and lower end. These lugs are arranged to lie adjacent to the ears 25 at the forward end of the plate, whereby a pivot pin 28 may pass through said lug and ears, whereby a pivotal connection or hinge is provided between the hanger plate 26 and the forward end of the plate 23. The rear end of the plate 23 is provided with similar ears 29 located at the upper and lower end thereof. These ears are arranged to be engaged by the arms 30 of a yoke 31 and a pivot pin 32 passes through these ears and the arms of the yoke to pivotally secure the yoke to the plate 23. The yoke is preferably made integral with the rear end of a bar 33 which extends outwardly from the side of the tractor at an inclination thereto (Figures 2 and 3). A bar 34 overlies the bar 33 and each of these bars is provided with an elongate slot 35 through which an adjusting bolt 36 extends. It will be obvious that due to the arrangement of the bolt passing through the slots of the bars 33 and 34, said bars may be moved with relation to each other and locked in any position. Therefore, the two bars 33 and 34 provide an adjustable extension arm. The outer end of the bar 34 has a yoke 37 preferably made integral therewith and this yoke is pivoted by a pin 38 to a curved hanger plate 39, which plate is similar to the plate 26.

A curved blade 40 is arranged to be attached to and carried by the curved hanger plate 26, whereby the blade is disposed or positioned at an angle with relation to the longitudinal axis of the tractor frame (Figure 2). For securing the curved blade to each hanger plate, each plate is provided with an elongate slot 41 through which bolts 42 extend. These bolts also pass through openings 43 provided in the blade 40 and receive nuts 44 on their outer ends. It is obvious that by tightening the nuts on the bolts 42, the curved blade may be rigidly fastened to the hanger plates 26 and 39. By loosening the bolt and moving the blade 40, it is obvious that the curvature of the blade with relation to the ground may be varied, and rigidly fastened in any desired position.

From the foregoing, it will be obvious that the blade supporting assembly comprises the elongate plate 23 which is pivotally secured to the frame member 15. The forward or inner end of the blade 40 is pivoted to the plate 23 by the pin 28, while the opposite portion of the blade is supported by the retractible arm 40' which is formed by the adjustable bars 33 and 34. It will be obvious that by adjusting the arms 33 and 34 to expand or retract the arm 40', the outer or rear end of the blade may be moved with relation to the tractor. In other words, with the arrangement of the retractible arm 40', it is possible to change the angle of the blade with relation to the longitudinal axis of the tractor and the blade may readily be moved to the position shown in dotted lines in Figure 2. By retracting the arm 40' the angle of the blade with relation to the longitudinal axis of the tractor is reduced, while by expanding said arm such angle is widened.

For positioning the blade supporting bar 23 and also the outer end of the frame member 15 which is pivoted to said bar, a proper distance from the ground so as to properly position the blade, said blade is provided with an elongate foot or runner 45 which is attached to said plate. As clearly shown in Figures 6 and 7, the runner 45 is provided with a pair of upwardly extending arms 46 which lie contiguous to the inner face of the bar 23. Each arm 46 is provided with a vertical slot 47 and a bolt 48 which projects through an opening in the plate 23 passes through this slot and receives a nut 49 on its outer end. By tightening the nut 49 on the bolt 48 it is obvious that the arms 46 may be clamped to the plate in any desired position. By raising and lowering the runner 45 with relation to the plate 23, it will be obvious that the runner engaging the ground will position the plate 23 a desired distance from said ground. Since the plate 23 carries the blade 40, it will be obvious that adjustment of the plate will adjust the blade with relation to the ground level. The plate 23 is, as has been explained, pivoted directly to the frame member 15 and, therefore, by raising the member 15 the pivot point between the plate and member 15 will be raised, thereby raising said member 15. For limiting the swinging movement of the plate 23 with relation to the member 15, said plate is provided with an upwardly extending bracket 50 which is located at its central portion. The frame member 15 is provided with a similar bracket 51 (Figure 7) and each of these brackets is provided with an opening through which a bolt 52 extends. The head of the bolt will, of course, prevent disengagement of said bolt from the bracket 51 while a nut 52' received by the outer end of the bolt prevents disengagement of said bolt from the bracket 50. By adjusting the nut on the bolt, it is obvious that the space between the brackets 50 and 51 may be varied and thus the swing of the plate 23 with relation to the member 15 may be limited.

In the operation of the device, the runner 45 is adjusted with relation to the plate 23 in such a manner so as to space the plate from the ground level a distance substantially as shown in Figure 3. With such adjustment of the runner 45, the member 15 will be disposed at an angle since it is hung from a pivot at its inner ends, whereby the lower edge of the frame member 15 is as shown in Figure 3. With the frame member 15 and the plate 23 in this position, the lower longitudinal edge of the blade 40 is an engagement with the surface of the ground.

As the tractor moves forwardly, it will be obvious that the blade 40 will pick up the loose dirt on top of the ground and due to the angular disposition of the blade with relation to the longitudinal axis of the tractor, this dirt will be moved rearwardly along the face of the blade and will escape at the rear outer end of said blade. Thus, it will be seen that the blade serves to pile up the dirt at a point adjacent the rear outer edge of said blade. It is noted that the outer end of the blade is offset or out of vertical alignment with the rear drive wheel of the tractor and, therefore, it will be obvious that the tractor wheels will not pass over the terraced ground. This is important because with such arrangement, the tractor may be driven over the hard ground without effecting or destroying the terraced land.

In the event that the blade strikes a hollow or dip in the ground it is obvious that since it is carried by the plate 23 which, in turn, is pivoted to the frame member on the elongate pin 24, that

said blade may be swung downwardly on the pin 24 so as to remain in contact with the ground surface. Similarly, if there is a slight rise in the ground the blade will automatically swing upwardly so as to remain in contact with the surface thereof. Therefore, it is not necessary to manually adjust the blade by raising and lowering the same as the contour of the ground changes. The mounting of the blade permits it to automatically adjust itself so as to remain on the surface and in engagement therewith at all times.

An important feature of the invention is that the mounting is arranged so that the blade 40 cannot be overloaded by picking up too much dirt. Assuming the parts to be in the operating position, as shown in Figure 3, it will be seen that the outer edge of the frame member 15 is lower than the inner edge thereof whereby the frame member is disposed at an angle as shown. The outer edge of this member is, of course, prevented from engaging the ground level or surface by the foot or runner 45 which is riding on the ground. As the tractor is moved forwardly and dirt is scooped or picked up by the blade 40, it will be seen that due to the angular disposition of the blade with relation to the longitudinal axis of the tractor and also to the disposition of the frame member 15 that the thrust or pressure of this dirt is more or less toward the frame member 15. If the pressure of this dirt becomes excessive due to too great an amount thereof being picked up, it will be seen that the pressure exerted against the frame member 15 will cause said member to be depressed or moved to a further angle. This is true because since the frame member 15 is disposed at the angle shown in Figure 3, an inward pressure against the side of the frame member will tend to move said member so that it assumes the position shown in Figure 4, that is, the outer edge of said member 15 will be moved toward the ground. When this occurs, the pivot pin 24 will be moved downwardly with relation to the ground because it is fixed in the ears 22 secured to the frame member 15. Downward movement of the pivot pin 24 will cause the plate 23 to be swung upwardly with relation to the member 15 because as the pin 24 moves downwardly the runner 45 which is engaging the ground becomes the fulcrum point and thus, the outer end of the plate 23 is moved upwardly, as shown in Figure 4. As the outer end of the plate is swung the ears 25 and 29 carried thereby are, of course, swung upwardly and since the hangers 26 and 39 are carried by these ears said hangers are swung upwardly, which will cause the blade 40 to be also swung upwardly clear of the ground.

This upward swinging of the blade will permit the blade to drop some of the dirt which has served to overload the same and as soon as the overloaded condition is remedied the weight of the blade will immediately return it to its normal operating position as shown in Figure 3. Therefore, the mounting of the blade is such that it not only permits said blade to accurately follow the contour of the ground level but it also prevents overloading of the blade and is arranged to automatically take care of all of these conditions, which eliminates the necessity of providing manually operable adjustments for controlling the blade. It is further pointed out that since the device may be mounted on an ordinary tractor, it is very cheap in manufacture. Since this operation is entirely automatic, the operator after originally adjusting the foot or runner 45 need pay no further attention to the device. Also, since there are no manual adjustments the tractor may be run at any desired speed which permits the terracing to be done in less time.

When the device is inoperative and it is desired to raise the same from the ground, this may be done by means of a vertical chain 53 which is attached to the frame member 15. A suitable hand lever 54 may be provided for raising and lowering this chain so that the frame member, as well as the plate 23 and blade 40 may be entirely raised off the ground as shown in Figure 5.

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

1. A terracing device including, a frame adapted to be pivoted on a field machine so as to swing vertically, supporting means pivoted to swing vertically on said frame, a blade carried by said means and disposed at an angle with relation to the longitudinal axis of the field machine, and means carried by said pivoted means and engaging the ground for spacing said means and frame from the ground.

2. A terracing device including, a frame adapted to be pivoted on a field machine so as to swing vertically, supporting means pivoted to swing vertically on said frame, a blade carried by said means and disposed at an angle with relation to the longitudinal axis of the field machine, a blade pivoted to swing horizontally on said means, a retractible arm for swinging the blade to a desired position, means for locking said blade in its various positions, and means carried by said pivoted means and engaging the ground for spacing said means and frame from the ground.

3. A terracing device including, a frame adapted to be pivoted to swing vertically on the underside of a field machine frame being offset to one side of said field machine and extending parallel to the longitudinal axis thereof, a bar pivoted to swing vertically on the outer side of said frame, a blade carried by said bar, and an elongate runner mounted on the bar and engaging the ground for spacing the bar and frame from the ground, the blade being disposed at an angle with relation to the bar and frame, whereby the thrust or pressure of the dirt picked up by the blade is directed downwardly against the outer end of the frame, so that overloading of said blade causes swinging of the frame and the bar which raises the blade to automatically relieve the load.

4. A terracing device including, a frame adapted to be pivoted to swing vertically on the underside of a field machine frame being offset to one side of said field machine and extending parallel to the longitudinal axis thereof, a bar pivoted to swing vertically on the outer side of said frame, a blade pivoted to swing horizontally on the bar, means for holding said blade in various positions to which it has been swung, and an elongate runner mounted on the bar and engaging the ground for spacing the bar and frame from the ground, the blade being disposed at an angle with relation to the bar and frame, whereby the thrust or pressure of the dirt picked up by the blade is directed downwardly against the outer end of the frame, so that overloading of said blade causes swinging of the frame and the bar which raises the blade to automatically relieve the load.

5. A terracing device including, a frame adapted to be pivoted to swing vertically on the underside of a field machine frame being offset to one

side of said field machine and extending parallel to the longitudinal axis thereof, a bar pivoted to swing vertically on the outer side of said frame, a blade carried by said bar, an elongate runner mounted on the bar and engaging the ground for spacing the bar and frame from the ground, the blade being disposed at an angle with relation to the bar and frame, whereby the thrust or pressure of the dirt picked up by the blade is directed downwardly against the outer end of the frame, so that overloading of said blade causes swinging of the frame and the bar which raises the blade to automatically relieve the load, and manually operable means for lifting the frame, bar and blade from the ground.

6. A terracing device including, a frame adapted to be pivoted to swing vertically on the underside of a field machine frame being offset to one side of said field machine and extending parallel to the longitudinal axis thereof, a bar pivoted to swing vertically on the outer side of said frame, a blade carried by said bar, and an elongate runner mounted on the bar and engaging the ground for spacing the bar and frame from the ground, means for varying the position of the runner on the bar to vary the space between the bar and frame and the ground, the blade being disposed at an angle with relation to the bar and frame, whereby the thrust or pressure of the dirt picked up by the blade is directed downwardly against the outer end of the frame, so that overloading of said blade causes swinging of the frame and the bar which raises the blade to automatically relieve the load.

7. A ground displacing device including, a support adapted to be pivoted on a portable field machine and having a portion offset from its pivots free to swing upwardly and downwardly, a ground displacing blade, means pivoted on the support for carrying said blade at an angle to the line of travel of the machine on which the support is mounted and so mounted on the support and co-acting therewith to cause the blade to be displaced upwardly with relation to the surface of the ground being worked when said blade is overloaded, and a ground engaging element carried by the support and forming a fulcrum point when the blade and its carrying means are swung.

8. In a ground displacing device, the combination of a support arranged to be pivoted on a portable field machine so as to be free to swing in an upright arc, a ground-engaging element supporting the swinging side of said support, a blade mounting pivoted to the support, and a blade carried by said mounting, the ground-engaging element forming a fulcrum on which said support and blade mounting may rock.

9. In a ground displacing device, the combination of a support arranged to be pivoted on a portable field machine so as to be free to swing in an upright arc, a ground-engaging element supporting the swinging side of said support, a blade mounting pivoted to the support, a blade carried by said mounting, the ground-engaging element forming a fulcrum on which said support and blade mounting may rock, and the support and mounting being disposed at such an angle to each other by said ground-engaging element as to cause the blade mounting to swing upwardly and lift the blade when the latter becomes overloaded.

10. A ground displacing device including, a frame having means at one side to pivot it to the side of a portable field machine, whereby the opposite side of the frame is free to swing in a vertical arc, a blade mounting pivoted on the swinging side of said frame, a ground-engaging member carried by said mounting adjacent the swinging side of the frame and forming a fulcrum on which the frame and mounting may rock, and a blade carried by said mounting at angle to its line of travel, the inclination of the frame and the disposition of the blade being controlled by the relative position of the ground-engaging element.

11. In a ground displacing device, the combination of a support arranged to be pivoted on a portable field machine so as to be free to swing in an upright arc, a ground-engaging element supporting the swinging side of said support, a blade mounting pivoted to the support, a blade carried by said mounting, the ground-engaging element forming a fulcrum on which said support and blade mounting may rock, and means for limiting the downward swing of the blade mounting.

12. In a ground displacing device, the combination of a support arranged to be pivoted on a portable field machine so as to be free to swing in an upright arc, a ground-engaging element supporting the swinging side of said support, a blade mounting pivoted to the support, a blade carried by said mounting, the ground-engaging element forming a fulcrum on which said support and blade mounting may rock, means for limiting the downward swing of the blade mounting, and means for supporting and lifting the swinging support, whereby the blade mounting and blade are also supported and lifted.

ROBERT C. THOMPSON.