

June 15, 1943.

C. A. COX ET AL

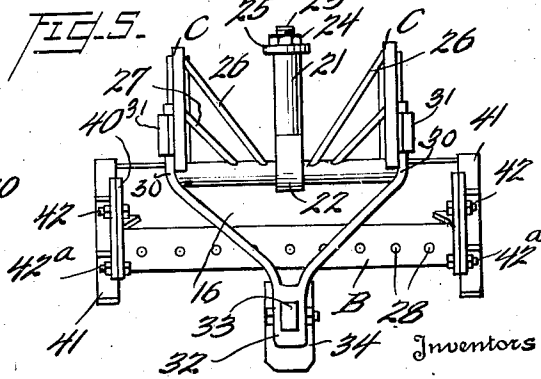
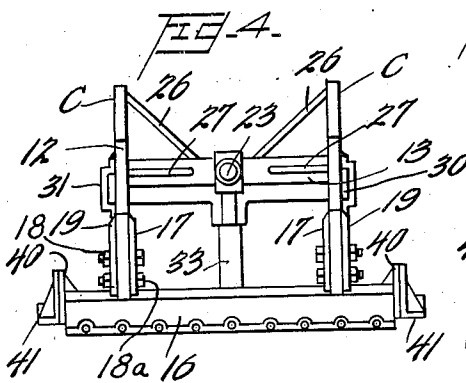
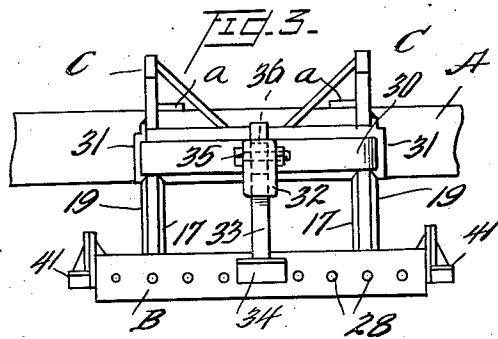
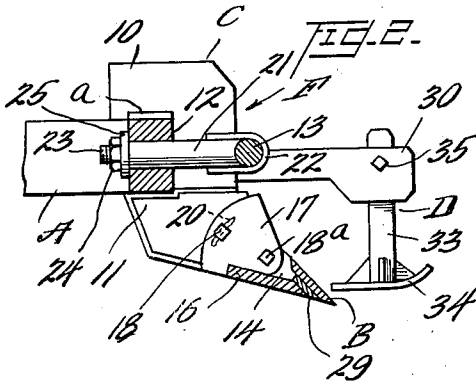
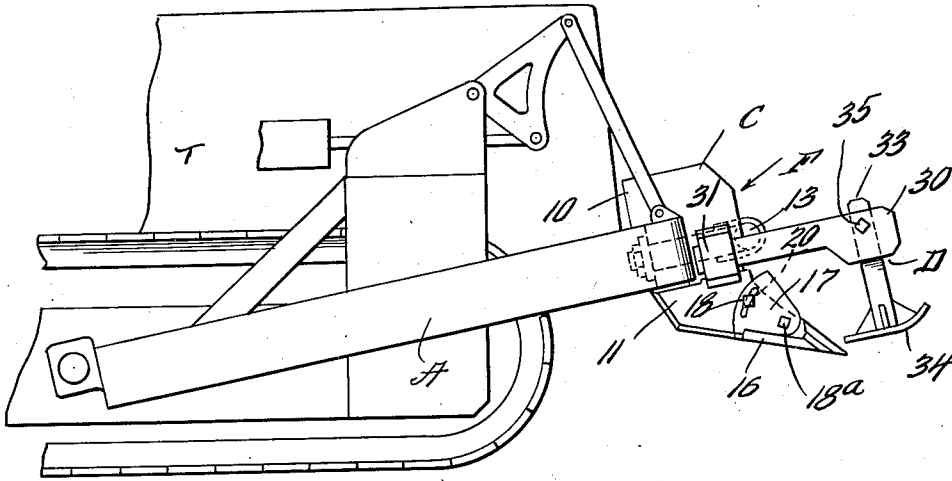
2,322,115

ROCK PLOW

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2 Sheets-Sheet 1

FIG. 1.



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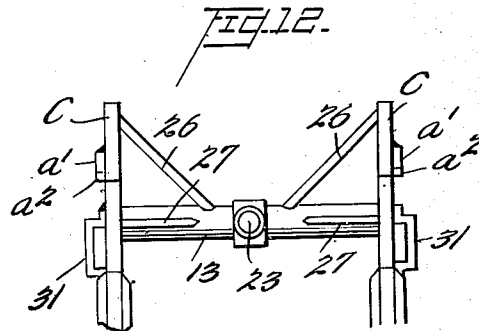
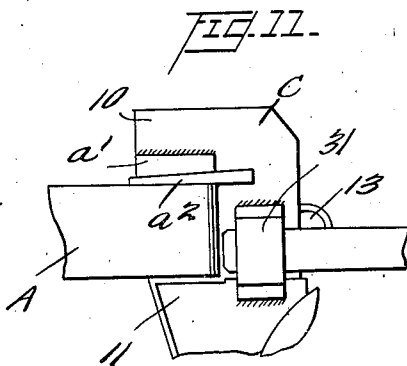
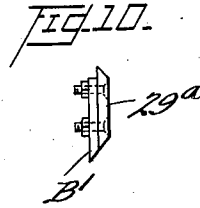
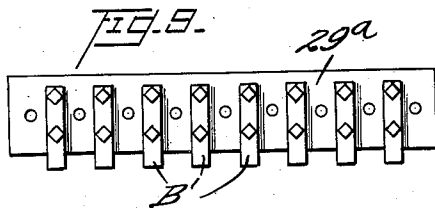
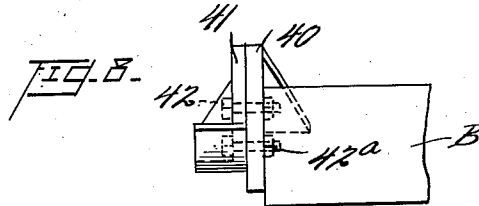
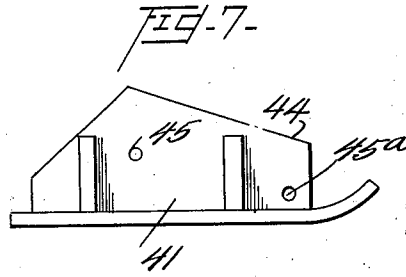
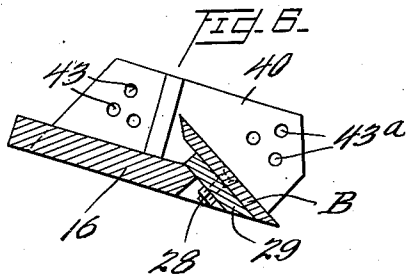
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2,322,115

ROCK FLOW

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2 Sheets-Sheet 2



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2,322,115

ROCK PLOW

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14 Claims. (Cl. 97—47)

This invention is a rock plow designed to penetrate rock-like surfaces and to break them up for future cultivation.

In certain localities, for instance in the State of Florida, there are areas in which the soil is covered with a rock-like surface, which must be penetrated and broken up as an initial step in cultivation of the soil. The present invention is a device primarily constructed and arranged to perform these functions but not limited in this particular use.

One of the objects of the invention is to produce a device which will penetrate a rock-like surface in such manner as to slice it off in layers, and to break up the sliced off portions to produce a soil condition in which all plants that require a strong lime soil will flourish. A further object is to provide a strong and durable cutter-blade supporting means, and means by which it may be readily secured to or disconnected from the plow frame at will, where a very rugged structure is provided, and one which is fully adapted to withstand all of the strains to which it will be subjected while in use. Another object of the invention is to provide adjustable means for regulating the depth of penetration of the cutter blade. A further object is to provide an inexpensive device of simple construction which may be readily attached to and operated by standard types of heavy tractors.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings:

Figure 1 is a side elevation illustrating a rock plow constructed in accordance with the invention. Figure 2 is a vertical sectional view of Figure 1. Figure 3 is a front view. Figure 4 is a rear view. Figure 5 is a top view of the plow detached from the tractor. Figure 6 is a detail sectional view. Figure 7 is a detail side view and Figure 8 is a detail end view illustrating a form of side depth gauge. Figures 9 and 10 are top and end views respectively illustrating a modified form of cutter. Figures 11 and 12 are side and rear detail views illustrating a modified means of securing the plow to the tractor arm.

Referring to the drawings, A designates an approximately U-shape "tractor arm" (sometimes referred to as a "bulldozer") which is pivotally connected at its rear ends to the frame of a heavy tractor T, the closed portion of the arm extending around the front of the tractor for the purpose of operating plows or similar articles. A tractor arm of this type is now in common use as special equipment attachment for heavy tractors.

In Figures 1, 2 and 3, the tractor arm A is shown as provided with thrust plates *a* welded, or otherwise secured thereto.

The rock plow of the present invention comprises a frame F constructed of two laterally spaced carrier members C, each having a pair of upper and lower, rearwardly extended arms 10 and 11, respectively, vertically separated by a space 12. Said space 12 provides a recess or cavity in the rear edge of each member C, which is complementary to the front portion of the tractor arm A, and engageable with the latter, arms 10 being engaged with the thrust plates *a*. The carrier members C are united by a brace-bar 13, preferably located contiguously to the front edges thereof. The arms 11 are each provided with a forwardly projecting portion 14.

The cutter blade carrier consists of a transverse bar 16 provided with relatively spaced attaching members 17, each of which is so positioned as to engage the inner face of the forwardly projected portion 14 of an arm 11, the under edges of each of said portions 14 being recessed to provide seats for said bar 16. The attaching members 17 are removably secured to the arms 11 in suitable manner. For purposes of illustration bolts 18 and 18^a are shown as extended through the arms 11 and engaging clamp plates 19, abutted against the outer faces of said arms 11. Arcuate slots 20 for the bolts 18 are provided, so that angular adjustment of the bar 16 may be obtained if desired.

The plow frame F is preferably secured to the tractor arm A by means of an anchor member 21 (see Figures 1, 2 and 3) which is provided with a stirrup 22 for removably engaging the transverse brace bar 13, and having a reduced portion 23 adapted to extend through a suitable hole in the tractor arm, and to be secured in position by a nut 24 and washer 25. The forward end of the anchor member 21 is shaped to conform to the curvature of the brace member 13. Instead of securing the plow to the tractor arm by means of the anchor member 21, wedge blocks *a*¹ may be welded or otherwise secured to the sides of arms 10, and wedges *a*² driven between said blocks and the tractor arm. See Figure 11. If desired, the carrier members C may be additionally braced by means of brace rods 26 extending from the brace member 13 to the upper portions of the carrier members C, and by other brace rods 27 extending from the bar 13 to the middle portions of the carrier members.

The cutter may be of any desired form, but in

Figures 1, 2, 3, 4 and 5 is shown in the form of a reversible two-edged blade B, removably secured to the transverse bar 16 in suitable manner, as by means of bolts 28, a base plate 29 being interposed between the blade and said bar 16. In lieu of a single blade B, the cutting element may consist of a plurality of teeth B' secured to a base plate 29^a. See Figures 9 and 10.

If desired, means may be provided for regulating the depth of the cut of the blade, although the same is not essential. For instance, a depth gauge arm D may be provided, preferably consisting of a member having rearwardly extended arms 30 extended through straps 31 on the outer faces of the carrier members C, the forward portions of said arms being extended inwardly to provide a loop-like guide portion 32. The shank 33 of the depth gauge shoe 34 is vertically slidable in said guide portion 32, and is engaged by a suitable bolt 35, which extends through a slot 36 in said shank. By loosening the bolt the shank may be vertically adjusted to the extent permitted by the slot 36, to such position that as the shoe 34 travels over the surface being plowed, the depth of penetration of the blade B will be regulated. Side depth gauges for the cutter blade may be provided to operate in conjunction with or independently of the gauge shoe 34 and its adjuncts. For instance, as shown in Figures 5, 6, 7 and 8, the bar 16 may be provided with brackets 40 positioned to overlap the ends of the cutter bar, and gauge shoes 41 secured thereto by bolts 42, 42^a. It will be observed that each bracket 40 is provided with two sets of bolt holes 43, 43^a and that the supporting flange 44 of each shoe 41 is provided with two bolt holes 45, 45^a. By means of this arrangement the cutting depth of the blade will be determined by which bolt holes in the brackets are in register with the respective bolt holes of the shoes. This adjustment may be accomplished without necessitating any initial adjustment of the blade at 18. It is to be understood that either or both of the depth gauges above described may be omitted without departing from the spirit of the invention.

In practice, the arms 10 and 11 of the carrier members provide recesses which are complementary to the transverse portion of the tractor arm A. To secure the plow in position, it is only necessary to engage the arms of the carrier members C with the tractor arm, and then the frame to the tractor arm by either of the methods above described. In this manner the plow is securely attached to the tractor arm, and will be prevented from vertical or horizontal play by reason of the engagement of the arms 10 and 11 with said tractor arm at laterally spaced positions along the latter. If the depth gauges are to be used, they are then adjusted to insure the desired depth of cut, and the plow is ready for use. It is operated in a well known manner, i. e. by causing the tractor to push the plow ahead of it, so that as the latter travels forwardly, the cutting blade is forced through the regular rock surface in such manner as to slice it off in layers of two to three inches at a time. As the plow travels forwardly, the sliced off material will pass over the blade carrier 16 and readily clear the latter between the members C. In this way the soil is broken up and pulverized, so as to produce a soil condition in which all plants that require a strong lime soil will flourish. By repeating the process over the same area, it has been found possible to plow to a depth of as much as eigh-

teen inches. It will be particularly noted that during these operations the full force of the motive power of the tractor is applied to the cutter, through the tractor arm A and the shoulders 15 of the frame F.

The advantages of the invention will be readily apparent to those skilled in the art to which it belongs. An important advantage of the present plow is that it can be readily attached to a standard type farm tractor and operated without difficulty, and in such manner as to break up and pulverize a rock-soil for cultivation, which otherwise could not be used. A further important advantage is attained as a result of the ability to plow to a greater depth than is now possible with plows now on the market, designed to accomplish the same kind of work.

Having thus explained the nature of the invention and described an operative manner of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the forms of its use, what is claimed is:

1. A rock plow of the character described comprising a frame provided with two relatively spaced carrier-members, each of the last members having upper and lower rearwardly extended arms which are vertically spaced to engage a transversely disposed tractor arm, bracing means connecting said carrier-members, cutter means supported by said carrier-members, and means for connecting the bracing means with said tractor arm while the latter is engaged with said carrier members.

2. A rock plow of the character described comprising a frame provided with a pair of laterally spaced carrier-members connected by intermediate brace bar, said carrier-members having recesses in their rear edges shaped to engage a transversely disposed tractor arm, a securing member having portions to engage the brace bar means and the tractor arm respectively, and cutter means supported by the lower ends of said carrier-members.

3. A rock plow of the character described comprising a frame provided with a pair of transversely spaced carrier-members connected by an intermediate bracing bar, the rear edges of said carrier-members having portions to engage a tractor arm, the lower portions of said carrier-members having forwardly projected portions, a cutter blade, means for mounting said cutter blade on said forwardly projecting portions of the carrier-members, there being an open space above said cutter blade and between said carrier members and securing means connected with said bracing means and having means for engaging said tractor arm.

4. A rock plow of the character described comprising a frame provided with a pair of laterally spaced rigidly connected carrier-members, having portions to engage a tractor arm, a transverse blade-carrier-member provided with relatively-spaced attaching members engageable with the lower portions of the carrier-members, means for securing said attaching members to said carrier-members, and means for securing said frame to said tractor arm.

5. A rock plow of the character described comprising a frame provided with two laterally spaced, rigidly connected, carrier-members, each carrier-member having upper and lower rearwardly extended arms so positioned as to provide recesses to receive a transversely disposed tractor arm, said carrier-members also having for-

wardly projected lower portions, means for connecting said frame with said tractor arm, a transverse blade-carrier-member, means for securing said blade-carrier-member to the forwardly projecting lower portions of the carrier-members, there being an open clearance spaced above said blade carrier and between said carrier members and cutting means carried by said blade-carrier-member.

6. A rock plow of the character described comprising a frame provided with a pair of rigidly connected, laterally spaced carrier-members, said carrier-members having portions to engage a tractor arm, the lower portions of said carrier-members having forwardly projected portions, a transverse blade-carrier-member provided with relatively spaced attaching members positioned to engage the inner faces of said forwardly projected portions, abutment plates engageable with the outer surfaces of said forwardly projected portions, means for securing said attaching members and said abutment plates in clamped relation to said forwardly projected portions, and means for securing the frame to said tractor arm.

7. A rock plow of the character described comprising a frame provided with two relatively spaced, rigidly connected carrier-members, each carrier-member having upper and lower rearwardly extended arms so positioned as to be engageable with a tractor arm, a transverse cutter-blade-carrier provided with attaching members positioned to engage said forwardly projected portions, abutment plates, means for securing said carrier plates and said abutment plates to the lower portions of said carrier arms in clamped relation, and means for securing the frame to said tractor arm.

8. In a rock plow of the character described, the combination of a blade-carrier having relatively spaced means for attachment to a plow frame, means providing for angular adjustment of said blade carrier, brackets carried by the ends of said blade-carrier, and depth shoes secured to said brackets.

9. A rock plow of the character described comprising a frame provided with a pair of laterally spaced, rigidly connected carrier-members, having portions to engage a tractor arm, a transverse blade-carrier-member provided with relatively-spaced attaching members engageable with the lower portions of the carrier-members, end brackets on said blade-carrier-member, depth shoes provided with attaching flanges, and means for adjustably connecting said flanges with said brackets.

10. A rock plow the character described comprising a frame, two laterally spaced carrier

members, cutter means supported by said frame, a depth gauge member secured to said carrier members and extending forwardly therefrom, said gauge member having a guide portion at its forward end, and a depth shoe having a shank adjustably engaging said gauge member.

11. A rock plow of the character described comprising a frame provided with two laterally spaced carrier members rigidly connected by an intermediate transverse member, each carrier member having a recess in its rear edge to receive a transversely disposed tractor arm, and means for removably securing said intermediate member to said tractor arm while the latter is engaged with said recesses.

12. A rock plow of the character described comprising a frame provided with two laterally spaced carrier arms rigidly connected by a transverse brace bar, each carrier arm having means to engage a transversely disposed tractor arm, cutter means supported by the carrier members at the lower ends of the latter, and means for connecting said brace bar with said tractor arm while the latter is engaged with said recesses.

13. A rock plow of the character described comprising a frame constructed with two laterally spaced rigidly connected carrying members each provided with a lower forwardly and downwardly inclined member, a transversely arranged blade carrier member connecting said forwardly and downwardly inclined portions, there being an open space between said carrier members above the blade carrier to provide clearance for plowed material, and depth shoes secured to the ends of said blade carrier at positions outside of the carrier members.

14. A rock plow of the character described comprising a frame constructed with two laterally spaced rigidly connected carrying members each provided with a lower forwardly and downwardly inclined portion, a transversely arranged blade carrier member connecting said forwardly and downwardly inclined portions, there being an open space between said carrier members above the blade carrier to provide a clearance for plowed material, brackets secured to the ends of the blade carrier at positions outside of the carrier members, and depth shoes carried by said brackets.

15. In a rock plow of the character described, a frame constructed with two laterally spaced rigidly connected carrier members, a transversely disposed blade carrier member having its ends removably attached to said carrier members, and side depth gauges adjustably connected to the respective ends of said blade carrier member.

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