

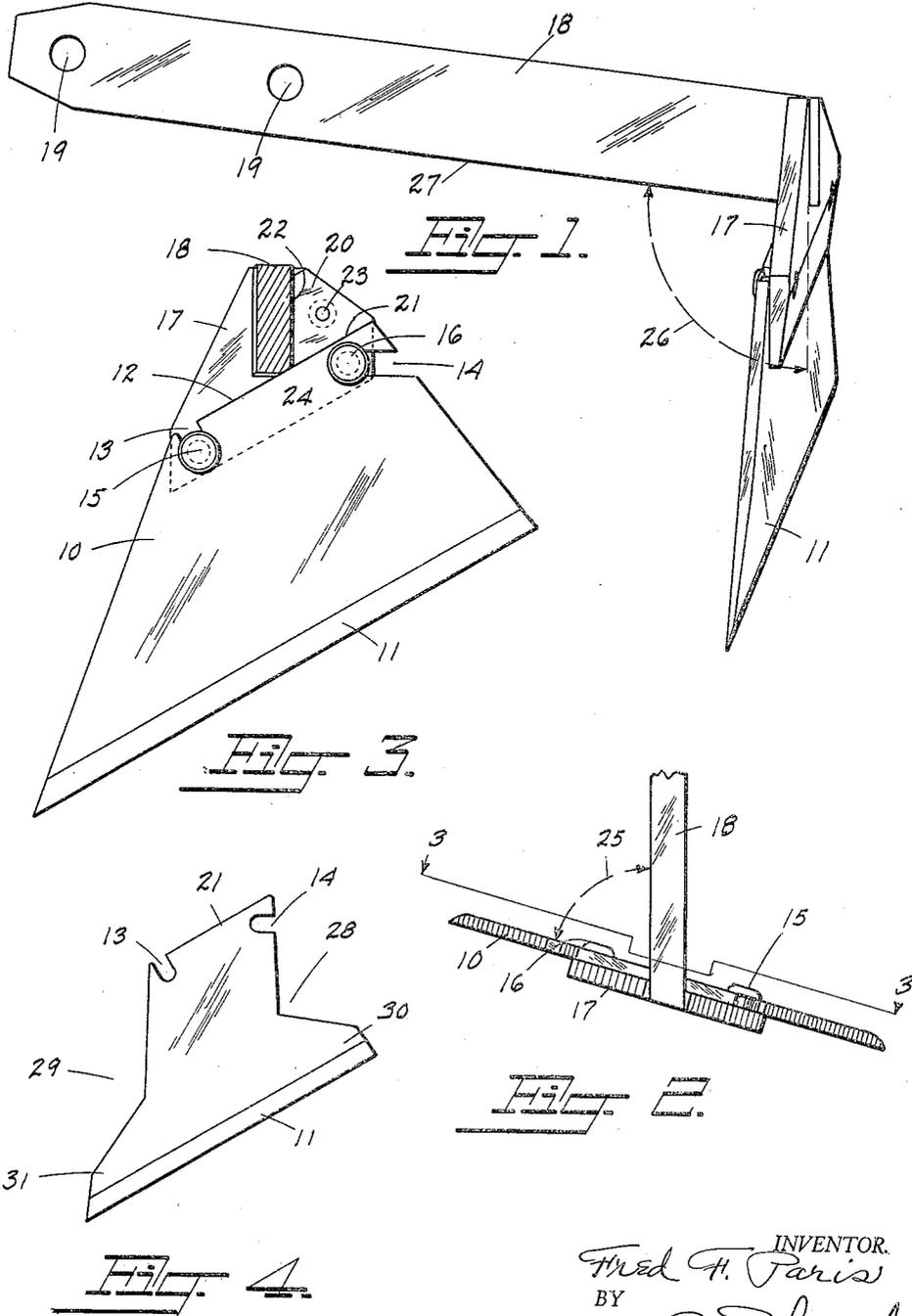
May 9, 1933.

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1,907,567

GRUBBER BLADE AND METHOD OF MOUNTING

Filed Nov. 29, 1932



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GRUBBER BLADE AND METHOD OF MOUNTING

Application filed November 29, 1932. Serial No. 644,766.

This invention is a grubber blade and method of mounting and is specially directed to a blade quick-detachably mounted on suitable arms, which arms are mounted on a rotating member for grubbing asparagus roots, the blades being so formed as to be practically self-clearing of soil, the usual grubber blade accumulating masses of soil on the rearward portion of the blade and which is obviated by my invention. This grubber blade may be used for many additional purposes, such as pulverizing the soil, loosening soil, or for other grubbing purposes.

In usual practice, the blades are made substantially rectangular in form, and as these blades are driven through the soil, soil accumulates on the rearward portion of the blade, causing a blocking action and materially increasing the load on the machine. In addition to this, the usual blade is provided with a substantially square edge, giving a direct slicing action to the soil.

In my grubber blade, the cutting edge is formed at such an angle that a shearing action is provided, this shearing action reducing the load on the machine and increasing the over-all efficiency. In addition to this, the blade is mounted at a specific angle both longitudinally and transversely as related to the radial arms of the rotary grubber, this specific angle increasing the efficiency of the blade over any other angle at which the blade may be set.

The main object of the invention is to provide a quick-detachable blade for grubbers and which blade is substantially self-cleaning, and which will substantially prevent the accumulation of soil thereon.

Another object of the invention is to provide mounting means for the grubber blade in which the blade is disposed at the most efficient and satisfactory cutting angle, so as to provide a shearing and agitating action to the soil.

Other objects and advantages of the in-

vention will become apparent as the following description is read on the drawing forming a part of this specification and in which similar reference characters are used to designate similar parts throughout the several views, of which:

Fig. 1 is a side elevation of the arm with the blade mounted thereon.

Fig. 2 is a fragmentary rear elevation, looking down from the top of Fig. 1.

Fig. 3 is a section taken on line 3—3 of Fig. 2.

Fig. 4 is a modified form of the invention.

This application is directed to an improvement over my application, Serial Number 613,189, filed May 24, 1932, and covering the grubber blade mounting means, and which application covers the specific quick-detachable mounting means for mounting the blade on the shoe.

The invention consists of a blade having a cutting edge 11, the rearward edge of the blade being provided with suitable quick-detachable mounting means such as that covered by my copending application, the blade being comparatively narrow at the back edge 12, the cutting edge 11 being comparatively broad, the blade preferably converging rearwardly from the cutting edge 11, the edges 11 and 12 being substantially parallel where my specific mounting means is used. One side of the blade is formed at a greater angle than the other side, so that when the blade is mounted on a shoe in such manner that the cutting edge is disposed at an angle as related to the transverse axis of the arm, the two sides of the blade will form equal angles to the sides of the arm, so that the cutting edge is actually centrally disposed relative to the arm. The rear edge 12 is blunt and has two angularly related slots 13 and 14 which are adapted to cooperate with the rivets 15 and 16, which rivets are fixedly secured in the shoe 17, this shoe being fixed to, or forming an integral part of the arm

18, this arm being provided with suitable mounting means such as holes 19 for attachment to the rotary element of a rotary grubber. The slot 13 is so formed as to permit
 5 by the rivet 16, to permit disengagement from this rivet, and slot 14 is so formed as to permit the blade to be swung about and to be disengaged after swinging through a substantially small angle.

10 The forward or cutting edge 11 of the blade is preferably made at least twice the length of the rearward edge, being so proportioned as to leave little surface for accumulation and retention of soil. The forward or cutting
 15 edge of the blade is preferably provided with a "stellite" facing or other relatively wear resisting metal, the sharpened edge of the blade being formed substantially parallel to the rivet centers and the rivets 15
 20 and 16 being so disposed in the shoe as to position the cutting edge 11 at an angle of substantially 30° relative to the transverse axis of the arm 18. The blade may be driven
 25 in place on the rivets by driving from the sides due to the relative arrangement of the slots, no driving being required on the sharp edge for complete mounting of the blade.

The blade is locked in position on the
 30 rivets by means of a locking member 20 and which consists of a substantially triangular block, which fits between the rearward edge 21 of the blade and the side surface 22 of the arm 18, this block being provided with a
 35 tapped hole at 23 for cooperation with a screw 24 which is rotatable in the shoe 17. It will be noted that this locking member closely fits between the back of the blade and the side of the arm, and is retained in position
 40 by the screw 24 and prevents the blade from being swung about the pivot formed by rivet 16, therefore, cannot become disengaged from rivet 15. By unscrewing the
 45 bolt 24 sufficiently to allow the block 20 to be raised above the top surface of the rear edge of the blade 10, the blade can be swung about the pivot 16 to release the blade from rivet
 15, after which the blade may be drawn forwardly to release the blade from rivet 16.

50 This forms a very quick acting locking member and permits very rapid changing of blades which is a feature of great importance as the blades do not stand up for any great
 55 length of time under the type of work performed.

The specific relation of the arm and the blade obtain the most efficient and most satisfactory results that are possible, and decreased efficiency is clearly indicated when
 60 the angular relation of these two elements is varied by even a small angle over the angles set forth in the following:

65 The mounting shoe 17 is preferably mounted in such angular relation on the arm 18, that when the blade is mounted on the shoe,

the blade will be disposed at an angle of substantially 76° to one side of the arm 18 as indicated at 25 while the blade is angularly
 70 related to the front of the arm at an angle of 97° as indicated at 26, these angles with this specific type of blade providing the most efficient and satisfactory results such as that
 75 previously described. These specific angles actually give the blade an outward inclination in reference to the longitudinal axis of the arm, and, in addition, provide a side
 80 sweep by the angular side relation shown in Fig. 2. This method of mounting provides a truly horizontal cut with a shearing action which terminates in a twist or lift,
 85 causing complete breaking up of the soil and clearing the knives or blades of soil. With the projecting angle of 7° relative to the supporting arm as indicated at 26, the heel
 90 of the blade is retained out of contact with the soil during the cutting operation. Decrease of this angle permits contact of the shoe with the soil, and increase of the angle
 95 causes a blocking action and requires greater power to drive the blade through the soil. It will be noted that the angle indicated at 25 shows a transverse angle of the blade of 14°
 100 as related to the plane at right angles to the side of the arm.

The rivets 15 and 16 are provided with
 95 suitable heads, the space between the head and the shoe being just sufficient to slidably receive the rearward portion of the blade 10, the rivets being set at an angle of substantially 30° relative to the transverse axis or
 100 relative to the front surface 27 of arm 18. The aperture provided in the shoe for reception of the screw 24 is sufficiently large to permit free rotation of the screw therein.

The modification shown in Fig. 4 is similar
 105 in all respects to the blade shown in Fig. 3, the mounting slots being formed in the same manner, the cutting edge also being retained at a 30° angle relative to the transverse axis
 110 of the arm, the only difference being that instead of cutting the sides of the blade diagonally as shown in Fig. 3, the mounting portion of the blade is made with parallel
 115 sides and the cutting edge broadened so as to leave clear spaces 28 and 29 so that accumulation of material is entirely prevented on the cutting portions 30 and 31.

Having described an operative device and
 120 method of mounting, it will be understood that variations in the construction and arrangement of parts and method of mounting which are consistent with the appended claims may be resorted to without detracting
 125 from the spirit or scope of the invention or sacrificing any of the advantages thereof.

I claim:

1. A grubber blade adapted to be detachably mounted on a shoe, and having a slot formed transversely of the rearward edge,
 130 and a second slot in spaced relation thereto

formed diagonally from the side edge, whereby when the blade is mounted with pins within the slots, the blade is semi-self-retaining.

2. A grubber blade for rotary grubbers, said grubber blade converging from the cutting edge to the rearward edge to prevent accumulation of dirt backwardly of the cutting edge, and mounting means consisting of a transversely formed pin-receiving slot formed in the rearward edge, and a diagonally formed pin-receiving slot formed in one side edge, said slots being adapted to cooperate with pins secured in the mounting shoe, the relative arrangement of the slots providing semi-self-retaining means for the blade.

3. A grubber blade having a cutting edge and a rearward edge and converging from the cutting edge to the rearward edge, to minimize the soil adherent area of the rearward portion of the blade, and means for mounting said blade, said means comprising a pin-receiving slot formed in and at a right angle to the rearward edge adjacent one side of the blade and a second pin-receiving slot formed in the other side adjacent the rearward edge whereby the blade is made semi-self-retaining on a shoe provided with headed pins for cooperation with the slots.

4. A grubber blade having a cutting edge and a rearward edge and converging from the cutting edge to the rearward edge, to minimize the soil adherent area of the rearward portion of the blade, the rearward edge of the blade being substantially one-half the length of the cutting edge to provide ample support for the widened cutting edge, and means for mounting said blade, said means comprising a pin-receiving slot formed in and at a right angle to the rearward edge adjacent one side of the blade and a second pin-receiving slot formed in the other side adjacent the rearward edge whereby the blade is made semi-self-retaining on a shoe provided with headed pins for cooperation with the slots.

5. A grubber blade having a cutting edge and a rearward edge and converging from the cutting edge to the rearward edge, to minimize the soil adherent area of the rearward portion of the blade, the rearward edge of the blade being substantially one-half the length of the cutting edge to provide ample support for the widened cutting edge, said cutting edge and said rearward edge being substantially parallel, the sides of the blades being diagonally formed, and means for mounting said blade, said means comprising a pin-receiving slot formed in and at a right angle to the rearward edge adjacent one side of the blade and a second pin-receiving slot formed in the other side adjacent the rearward edge whereby the blade is made semi-self-retaining on a shoe pro-

vided with headed pins for cooperation with the slots.

6. A grubber blade having a cutting edge and a rearward edge and converging from the cutting edge to the rearward edge, to minimize the soil adherent area of the rearward portion of the blade, the rearward edge of the blade being substantially one-half the length of the cutting edge to provide ample support for the widened cutting edge, and means for mounting said blade, said means comprising a pin-receiving slot formed in and at a right angle to the rearward edge adjacent one side of the blade and a second pin-receiving slot formed in the other side adjacent the rearward edge whereby the blade is made semi-self-retaining on a shoe provided with headed pins for cooperation with the slots, one side of the blade being formed at a greater angle to the cutting edge than the other side, whereby, when the blade is mounted with the cutting edge in angular relation to the path of movement of the mounting means, the angles of both sides will be equal as related to the path of movement.

7. A grubber blade having a cutting edge and a rearward edge and converging from the cutting edge to the rearward edge, to minimize the soil adherent area of the rearward portion of the blade, the rearward edge of the blade being substantially one-half the length of the cutting edge to provide ample support for the widened cutting edge, said cutting edge and said rearward edge being substantially parallel, the sides of the blades being diagonally formed, and means for mounting said blade, said means comprising a pin-receiving slot formed in and at a right angle to the rearward edge adjacent one side of the blade and a second pin-receiving slot formed in the other side adjacent the rearward edge whereby the blade is made semi-self-retaining on a shoe provided with headed pins for cooperation with the slots, one side of the blade being formed at a greater angle to the cutting edge than the other side, whereby, when the blade is mounted with the cutting edge in angular relation to the path of movement of the mounting means, the angles of both sides will be equal as related to the path of movement.

8. A grubber blade for a rotary grubber having a radial arm terminating in a mounting shoe provided with two spaced apart, headed rivets, the heads of the rivets being spaced from the shoe and arranged in diagonal relation to the plane of travel of the arm comprising a plate having two parallel edges, one of said edges being a cutting edge and the other edge a mounting edge, the two sides of the blade being diagonally formed at such different angles as related to the cutting edge as to form the same angle as related to the path of travel of the arm when

the blade is mounted on the diagonally arranged rivets, a first slot formed in the mounting edge and transversely thereto and adjacent one side and a second slot formed in⁵ the other side and in diagonal relation thereto and extending toward the mounting edge, whereby cooperation of the second slot with one rivet permits rotation of the blade for cooperation of the first slot with the other rivet¹⁰ and forming thereby a semi-self-retaining blade when both slots cooperate with their respective rivets.

In testimony whereof I affix my signature.

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