

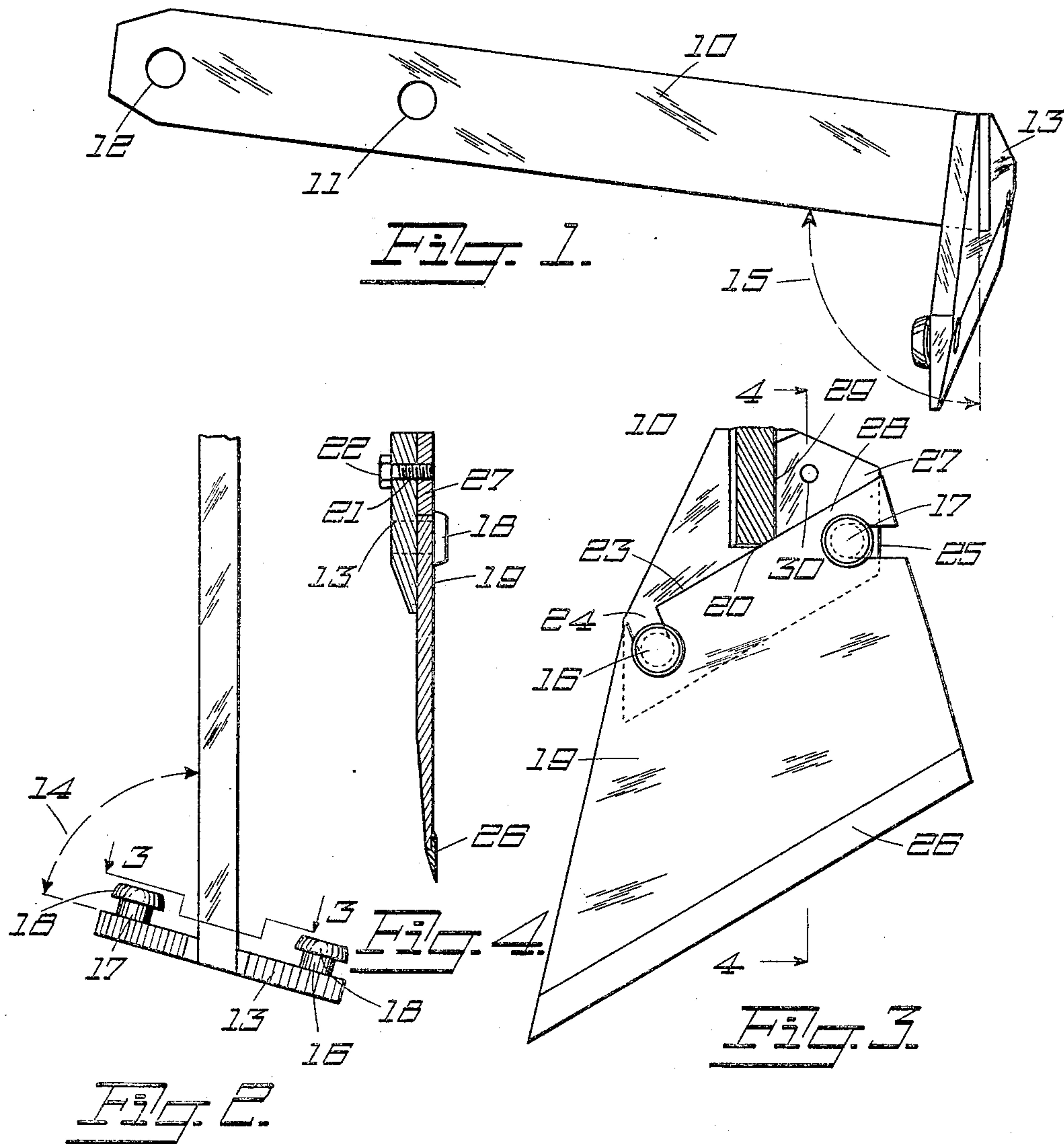
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GRUBBER BLADE MOUNTING MEANS

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## UNITED STATES PATENT OFFICE

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## GRUBBER BLADE MOUNTING MEANS

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This invention is a grubber blade and mounting means 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, although this grubber may be used for many additional purposes, such as pulverizing the soil, loosening soil, or for other grubbing purposes.

The main object of the invention is to provide a quick-detachable blade for grubbers.

Another object of the invention is to provide mounting means and an arm for grubber blades in which the blade is provided with the most satisfactory cutting angle, and the mounting means and the arm are provided with the most efficient angles relative to the axis of the rotating member on which they are mounted.

A further object of the invention is to provide mounting means for the blade in which the loosening of a single screw permits removal of the blade, and in which the mounting means is so disposed and formed as to make the blade self-retaining during operation.

Other objects and advantages of the invention 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 indicate similar parts throughout the several views, of which:

Fig. 1 is a side elevation of the arm and mounting means for the blade.

Fig. 2 is a rear elevation of Fig. 1.

Fig. 3 is a section taken on line 3—3 of Fig. 2 and showing the blade mounted and locked in position.

Fig. 4 is a section taken on line 4—4 of Fig. 3.

The invention consists of an arm 10 provided with suitable fastening holes 11 and 12 which are provided for the purpose of bolting the arm to spiders or a rotary member, these holes being placed adjacent the inner end of the arm in spaced relation.

A blade mounting shoe 13 is suitably secured or formed integral with the outer end of the arm 10 and is angularly related to the

arm as indicated at 14, the most efficient and satisfactory angle at this point being substantially  $76^\circ$ , while the front of the arm is angularly related to the blade as indicated at 15, the most satisfactory angle in this case being substantially  $97^\circ$ , so that the blade is actually given an outward inclination in reference to the longitudinal axis of the arm and, in addition, given a side sweep by the angular side relation shown in Fig. 2. This method of mounting provides a truly horizontal cut with a shearing action and terminates in a twist or lift, causing complete breaking up of the soil and clearing the knives of dirt.

The shoe 13 is provided with two pins 16 and 17 which are provided with suitable heads 18, the space between the head and the shoe being just sufficient to slidably receive the rearward portion of the blade 19, the blade being set in angular relation to the transverse axis of the arm 10 as shown in Fig. 3, the rivets being set at an angle of substantially  $30^\circ$  relative to this transverse axis or relative to the front surface 20 of the arm. An aperture is provided in the shoe at 21 for reception of a screw 22, which aperture is sufficiently large to permit free rotation of the screw therein.

The blade is rearwardly converging and has a blunt rear edge 23 and two angularly related slots 24 and 25, which are adapted to receive the rivets 16 and 17. The slot 24 is so formed as to permit the blade to be swung about the pivot formed by the rivet 17, to permit disengagement from this rivet, and slot 25 is so formed as to permit the blade to be swung about and to be disengaged after swinging through a small angle. The forward or cutting edge of the blade is preferably made approximately twice the length of the rearward edge, being so proportioned as to leave little surface for accumulation and retention of dirt. The forward or cutting edge of the blade is sharpened as indicated at 26 and 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 or at an angle of substan-



tially 30° relative to the transverse axis of the arm 10. The blade may be driven 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 locking member consists of a substantially triangular block 27, which fits between the rearward edge 28 of the blade and the side surface 29 of the arm 10 and has a tapped hole at 30 to receive the screw 22.

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 by the screw 22 and prevents the blade from being swung about the pivot formed by rivet 17, therefore, cannot become disengaged from rivet 16. By unscrewing the bolt 22 sufficiently to allow the block 27 to be raised above the top surface of the rear edge of blade 19, the blade can then be swung about the pivot 17 to release the blade from rivet 16, after which the blade may be drawn to the side to release the blade from the rivet 17.

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 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 to obtain, and decreased efficiency is clearly indicated when the angular relation of these two elements is varied by even a small angle over the angles set forth in the preceding disclosure.

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

I claim:

1. A grubber element comprising an arm having an integral shoe angularly related thereto, said shoe being provided with two spaced apart rivets having heads, and a grubber blade provided with angularly related slots, one of said slots being adapted to tangentially engage one of the rivets with the other rivet used as a pivot in cooperation with the other slot, and a locking element adapted to prevent rotative movement of the blade about the other pivot.

2. A grubber blade provided with one slot angularly related to the rear edge and extending from the side of the blade and a second slot formed from the back of the blade tangentially relative to the center of the one slot, and a releasable element cooperating with the rear edge of the blade adjacent the one slot for preventing said blade from ro-

tating about the center of the one slot when the slots are in cooperation with headed elements.

3. Means for removably securing a blade to a shoe having an arm comprising two spaced apart rivets in said shoe, a slot formed in said blade pivotally and slidably cooperating with one rivet, the other slot slidably cooperating with the other rivet and a locking element cooperating between the back of the blade and the side of the arm for preventing rotative movement of said blade about said one rivet.

4. Locking means for a blade on a mounting element comprising two spaced apart rivets adapted to slidably receive a blade under the heads thereof, two slots formed in said blade, one of said slots being formed from the side of the blade and the other of the slots being formed from the back, the side slot cooperating with one rivet to form a pivot for swinging the other slot to span the other rivet and locking means consisting of a block releasably secured to the shoe and engaging the rear edge of the blade adjacent to the one slot.

5. A mounting shoe and arm for a grubber blade comprising an arm, and a shoe integral therewith, said shoe having two spaced apart headed pins projecting from the inner face, for receiving a grubber blade, and a bolt receiving aperture formed in said shoe rearwardly of one of the pins at one side of the arm, whereby a retaining block may be secured rearwardly of the blade when mounted.

In testimony whereof I affix my signature.

FRED F. PARIS.