May 26, 1942. A. G. GURRIES 2,284,388

RIPPER

Filed June 21, 1940 2 Sheets-Sheet 1

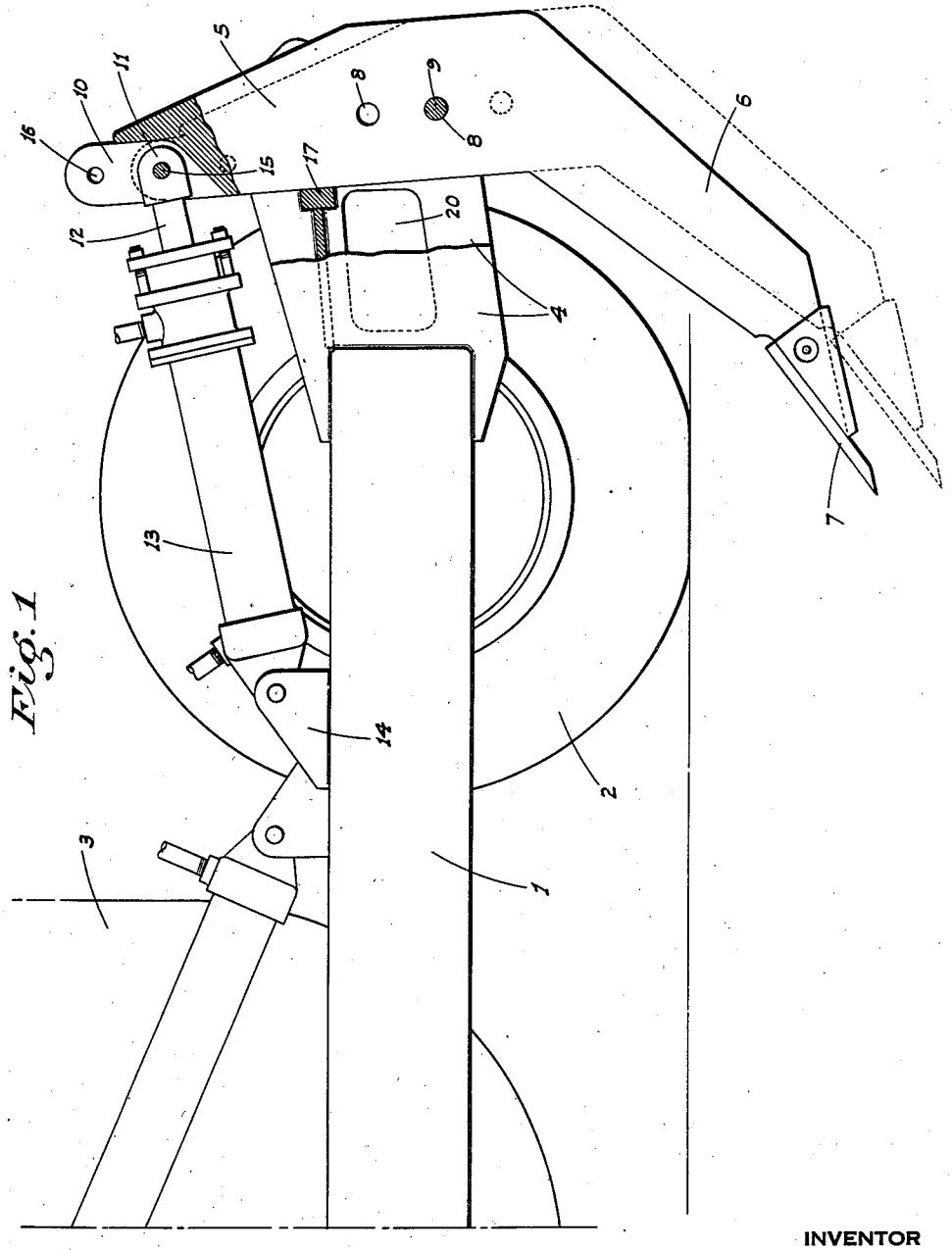

Fig. 1

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Fig. 3

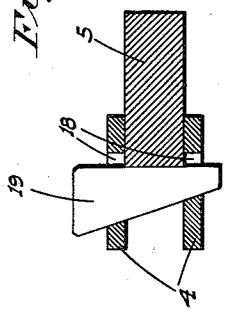

Fig. 2

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UNITED STATES PATENT OFFICE

2,284,388

RIPPER

Albert G. Gurries, Gilroy, Calif., assignor to Be-Ge Manufacturing Company, a copartnership comprising Albert G. Gurries and James A. Bussert, Gilroy, Calif.

Application June 21, 1940, Serial No. 341,650

2 Claims. (Cl. 262—8)

This invention relates to ground ripping tools. Such tools comprise rigid ground engaging teeth, customarily mounted rigidly on a frame so that to clear the teeth from the ground, the frame must be lifted.

The principal object of my invention is to improve the means for mounting the teeth on the supporting frame so that said teeth may be lifted and held clear of the ground without lifting the frame. This feature makes my improved structure particularly suited for mounting on the frame of a wheel supported scraper, in connection with the operations of which a ripper is frequently used.

A further object is to provide means to enable the digging depth of the teeth to be easily altered, without changing the level of the supporting frame. All operations and manipulations of the ripper teeth may therefore be carried out without moving the supporting frame and which movement, with a scraper bowl also supported thereon, would detrimentally affect the operation of the scraper.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a fragmentary view side elevation of a wheel supported frame, showing my improved ripper teeth mounting, partly in section and with the teeth in ripping or digging position.

Figure 2 is a similar view showing the teeth raised or folded.

Figure 3 is a fragmentary sectional plan on line 3—3 of Fig. 2.

Referring now more particularly to the characters of reference on the drawings, the supporting frame of the structure includes, on each side, a longitudinal beam 1 mounted in connection with a ground engaging wheel 2 disposed laterally inward of the beam. In the present instance, a scraper bowl 3 is indicated as being mounted in the frame ahead of the wheel, the type of scraper and its control being preferably that shown in my copending application for patent No. 226,501, filed August 24, 1938.

Secured on and projecting rearwardly from the beam 1 are transversely spaced bracket plates 4, between which the shank 5 of a ripper tooth 6 is disposed. The tooth is disposed at a forward angle to the shank and on its lower end carries a wear and point shoe 7. The shank between the plates is provided with a pair of vertically spaced holes 8 disposed in a line parallel to the forward edge of the shank, to alternately receive a pivot pin 9 supported by and extending between the plates.

The shank at its upper end and above the bracket plates is bifurcated to form spaced ears 10 to receive the head 11 of a piston rod 12 therebetween. This rod projects from the rear end of a hydraulic cylinder 13 of the type commonly used to control implement movements, the cylinder being pivoted at its forward end in connection with ears 14 mounted on top of beam 1 ahead of plates 4.

The head 11 is pivoted on the ears 10 by means of a transverse pin 15 removably projected through said head and through either one of a pair of holes 16 in the ears, the holes being spaced the same as holes 8 and disposed in a line parallel thereto. In operation, it is intended that when the pin 9 is in the lower hole 8, the pin 15 is in the upper hole 16, and vice versa. Changing of pin 9 to the upper hole 8 will obviously lower the shank and tooth relative to the frame, and correspondingly changing the position of pin 15 will leave the cylinder and piston with the same leverage on the tooth as before.

When the tooth is in a digging position, it is disposed at a forward angle to the ground, the shank is substantially vertical and the piston rod is retracted in the cylinder, as shown in Fig. 1. In order to prevent the horizontal digging pressure exerted against the tooth from swinging the same back from proper position, I mount a rigid stop bar 17 between the plates 4 to engage the forward edge of shank 5, whether the bolt 9 is engaged with the upper or lower hole 8.

When the use of the tooth is not desired, the piston rod 12 is advanced, swinging the shank 5 rearwardly and the tooth upwardly until point 7 engages the under side of beam 1, as shown in Fig. 2. Since the teeth are alined with the frame beams 1, while the bowl and wheels are obviously between said beams, the teeth will act on the earth laterally out from the wheels and bowl. By this arrangement the teeth, if digging at the same time that the bowl is loading, will not interfere with the operations of the teeth.

The plates 4 are formed with slots 18 in front of the shank when the blade is in the above

named position and extending at right angles to the forward edge of the shank. These slots are arranged to removably receive a retaining wedge 19 to engage said edge of the shank and prevent forward movement of the latter. It will therefore be seen that whether the tooth is in working or raised positions, all strains are taken off the hydraulic unit, which is only needed to actually raise and lower the tooth. It will also be seen that the tooth may be raised and relatively folded against the frame irrespective of which hole 8 engages pin 9, and that the wedge 19 will serve to retain the shank in either case. Since a certain amount of dirt may be lifted with the tooth, the inner plate 4 is preferably cut out ahead of the shank as at 20 to discharge such dirt, the outer plate being left uncut for the sake of appearances.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. In a ripper which includes a longitudinal frame beam disposed above ground level, transversely spaced supporting members projecting rigidly from one end of said beam, a ripper tooth unit including a shank disposed between said members, a pivot pin removably supported by said members, the shank having vertically spaced holes to selectively receive the pin, a hydraulic cylinder mounted lengthwise on said beam and operatively connected with the shank to swing the latter about said pin, and a rigid stop element mounted between the members engaging the forward edge of the shank above the pin when the tooth is in ground engagement; said holes being centered on a line parallel with said shank edge, whereby the digging angle of the tooth remains the same, and the shank engages said stop, irrespective of any change in the digging depth.

2. In a ripper which includes a longitudinal frame beam disposed above ground level, transversely spaced supporting members projecting rigidly from one end of said beam, a ripper tooth unit including a shank, the shank extending between said supporting members, means pivoting the shank intermediate its ends on said members, and a hydraulic cylinder applied to the shank to swing the latter about the pivot; the tooth depending at a forward angle from the shank below said members whereby when the shank is swung in one direction, the tooth moves forwardly and upwardly to a position clear of the ground, and a removable element rigidly supported by and extending transversely between said members in a plane to engage the forward edge of the shank above the pivot when the tooth is in said position and to prevent forward movement of the shank and accompanying lowering movement of the tooth.

ALBERT G. GURRIES.