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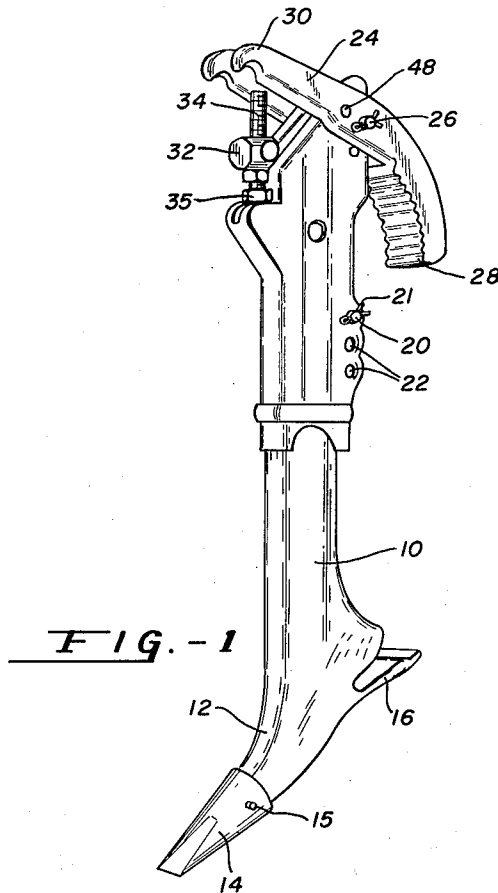
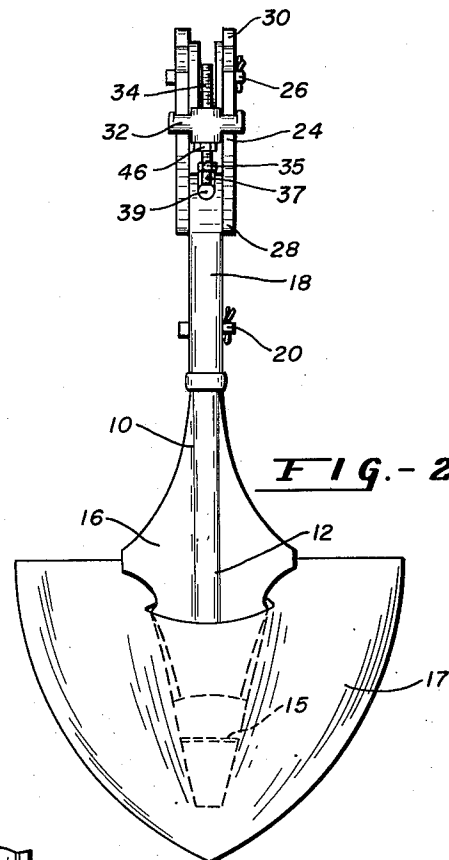
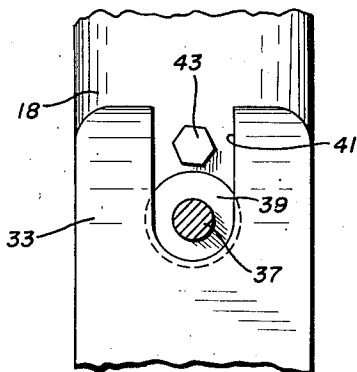
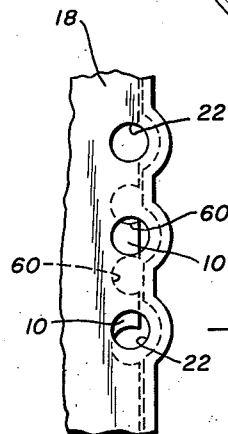
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2,797,505

DITCHER ATTACHMENT FOR BULLDOZER MOLDBOARDS

Filed April 14, 1954

2 Sheets-Sheet 1



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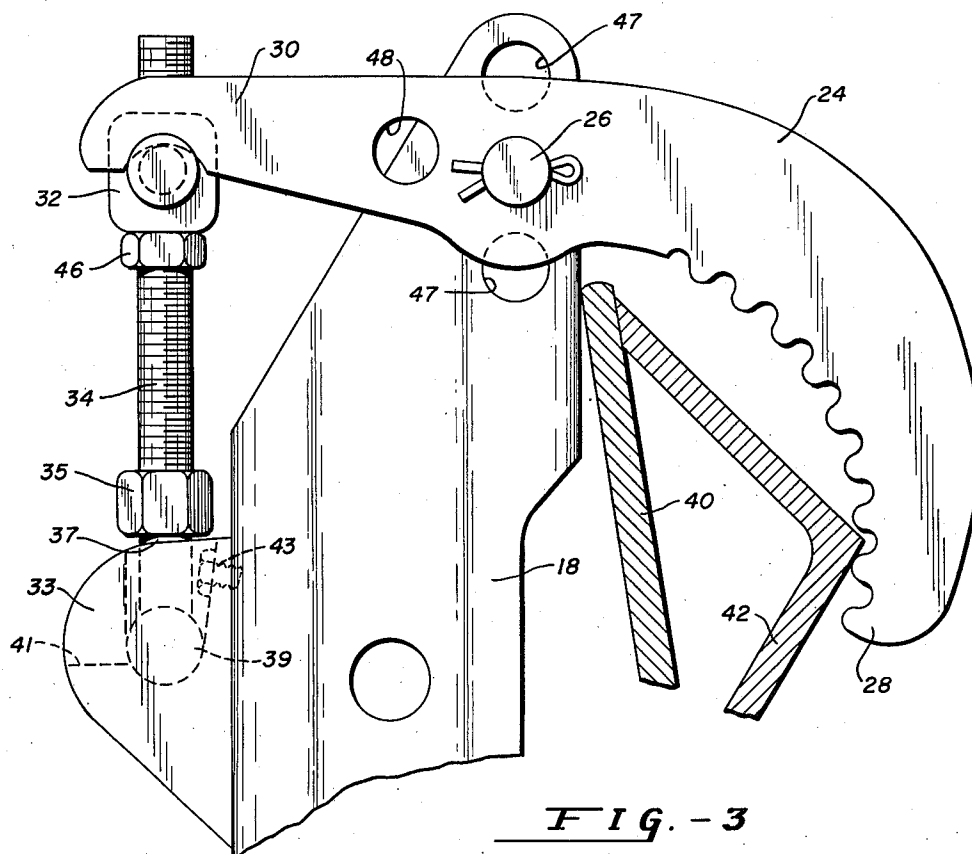
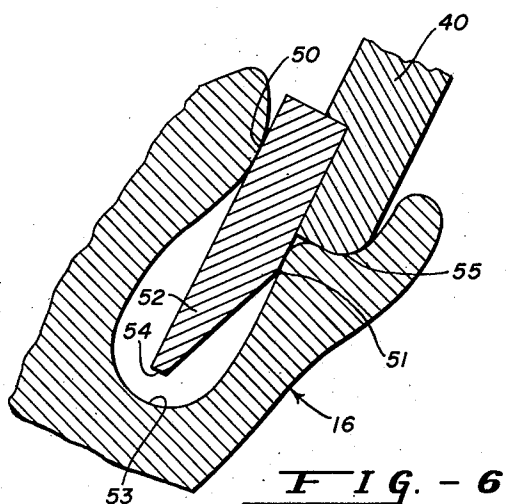
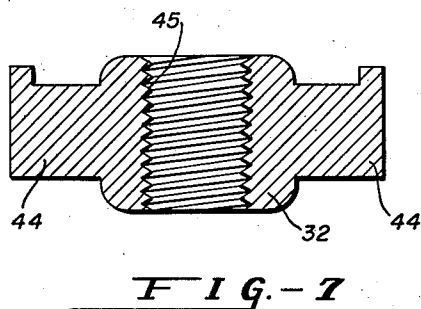
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2 Sheets-Sheet 2



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DITCHER ATTACHMENT FOR BULLDOZER MOLDBOARDS

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4 Claims. (Cl. 37—145)

This invention relates to bulldozer attachments, and more particularly to ditcher or ripper attachments adapted to be fitted to various sizes of dozer moldboards or blades, and which provide quick and easy attachment and detachment to such bulldozer moldboards. The present invention provides a substantial improvement of the ditcher unit described in my copending application, Serial No. 266,286, filed January 14, 1952, now Patent No. 2,726,463.

The present invention, in general, provides a ditcher or ripper attachment for bulldozer moldboards which is easily attached to various sizes of moldboards, and which may be secured to such moldboards so as to absorb the powerful forces to which it is subjected without loosening or breaking or damaging the moldboard itself. The invention includes a simplified arrangement for a rough adjustment for initially setting the size of the attachment and a fine adjustment for securing the device to the desired moldboard. The ditcher is quickly and easily mounted on or disengaged from a moldboard by a simple manipulation of a single bolt. Also, means are provided for the use of various sizes and types of digging points which may be required or found useful in connection with the attachment for the dozer blades. The attachment is adapted to grip the bottom and the top of the dozer moldboard for a secure fit, but means are also provided to prevent the unit from bearing on the cutting edge of the blade, utilizing instead surfaces of the moldboard at points remote from the cutting edge.

Included among the objects and advantages of the present invention is a simplified ditcher or ripper attachment adapted to fit various sizes of bulldozer moldboards. The attachment is easily adjusted to correct size and is then quickly mounted on or dismounted from a moldboard, and it further provides a ripping arrangement which is rugged and securely holds the attachment to the bulldozer blade. A lower grip is provided which has bearing surfaces on the blade itself and not on the blade cutting edge, thereby preventing damage to the cutting edge. A top grip is provided which is adapted to securely grip various sizes and shapes of moldboard tops including the various types of reinforcement thereof. The attachment, furthermore, provides means for interchanging various types of digging points, whereby a single unit may be utilized with various types and shapes of attachable digging points.

These and other objects and advantages of the present invention may be readily ascertained by referring to the following description and illustration, in which:

Figure 1 is a perspective of a device according to the invention;

Figure 2 is a front elevation of a modified attachment according to the invention, showing a broad ditching point secured thereto;

Figure 3 is an enlarged detail of the rocker arm top gripping assembly;

Figure 4 is an enlarged detail of the adjusting bolt holding socket;

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Figure 5 is an enlarged detail of the rough length adjustment device of the ditcher;

Figure 6 is a detail in cross section of the lower grip member showing the bearing surfaces remote from the moldboard cutting edge; and

Figure 7 is a cross-sectional view of the wing nut adjusting screw for the rocker arm assembly.

The ripper attachment for a bulldozer blade illustrated in Figure 1 comprises a shank 10 having an angle head 12 which is adapted to extend below a moldboard and to which is detachably secured a digging point 14. The digging point is secured to the head by means of a pin 15. On the back part of the head is a blade grip 16, which is adapted to grip the lower edge of the bulldozer blade for securing the device thereto. A sleeve 18 is telescoped over the shank 10, and a pin 20 in a hole 22 aligned with a notch in the shank, provides an extension of the shank which is adjustable to the size of the moldboard of the bulldozer on which the device is to be used. A rocker arm 24 is secured by means of a pin 26 to the top of the sleeve. The rocker arm includes an arcuate serrated rear portion 28 which is adapted to grip the top of a moldboard, and a bifurcate front portion 30 which engages a wing nut 32 on an adjusting screw 34. The ripper unit is adapted to be secured to a moldboard in substantially upright position by placing the lower grip 16 on the moldboard cutting edge and the serrated grip on the top of the moldboard, and by forcing the wing nut upwardly to squeeze the moldboard between the two grip surfaces 16 and 28.

The rocker arm assembly shown in more detail in Figure 3, includes a pivotally connected arm 24. The serrated gripping edge 28 is adapted to grip the top of a moldboard 40 which is usually strengthened by various reinforcements, such as an angle reinforcement 42 welded on the back of a moldboard 40. The arcuate form of the grip provides means for gripping various sizes and various types of the tops of moldboards. The rocker arm is forced onto the top of the moldboard by means of the wing nut 32 pushing against the bifurcate front 30 of the rocker arm. The adjusting bolt 34 includes a bolt head 35, which is preferably hexagonal or other common type bolt head easily fitted with a wrench. An extension 37 extends beyond the bolt head. A ball head 39 is secured to the extension 37 of the bolt, and provides for free rotation of the bolt within a socket 33 secured to the sleeve 18. The socket provides for free rotation of the adjusting bolt therein, and a slot 41 permits the bolt to lay forward out of the way of pivotal movement of the bifurcate arms. A small bolt 43 attached to the sleeve 18 above the ball 39 prevents accidental removal of the bolt. The enlarged detail Figure 4 shows the bolt lying forward in a slot 41 out of the way of the rocker arm. For illustration, the bolt is shown in section across the extension 37. The wing nut 32, which includes a pair of lateral extensions 44 and a threaded passage 45 through the center thereof, is adapted to engage the arms of the bifurcate section 30, and by rotating the bolt the wing nut moves up and down the adjusting bolt to tighten or loosen the rocker arm against the top of the moldboard. A lock nut 46 is provided below the wing nut 32 to prevent accidental loosening of the bolt during operation of the bulldozer.

The rocker arm 24 is pinned to the sleeve 18 by means of a pin 26, and in certain instances the sleeve may be provided with a series of holes 47 along the top thereof to give another vertical or length adjustment for the bulldozer attachment. An offset hole 48 in the rocker arm provides still another adjustment; the adjustment providing a lengthening of the rear portion of rocker arm by moving the rocker arm either forward or back,

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The combination of the holes in the sleeves and the holes in the rocker arm combined with the arcuate gripping surface permits the attachment of the device to substantially any type of moldboard. This is an important feature to provide substantially universal use of a ripper unit, since each manufacturer of moldboards makes a different type or size, utilizing different types of reinforcements, etc. Furthermore, the owner of the bulldozer may modify the moldboard to suit the particular job for which the moldboard is being used, for example, increasing the reinforcement of the moldboard for certain types of very heavy work. The present invention is adapted to fit all kinds and sizes of moldboards, and thereby provide a substantially universal device.

The lower grip 16 of the ripper attachment includes a front bearing surface 50 and a rear bearing surface 51, and a bulldozer moldboard cutting blade 52 is adapted to fit between the two surfaces 50 and 51. A slot 53 in the grip 16 is made long enough to prevent the cutting edge 54 of the moldboard from touching any part of the ripper unit. A ledge 55 provides a seat for the lower edge of the moldboard 40, which, also, prevents penetration of the cutting edge into the slot. The thrust forces of the ripper unit is therefore carried on the front and the back surfaces of the blade rather than on the cutting edge thereof.

The rocker arm and adjusting bolt combination provides for a fine length adjustment of the ripper unit, and provides a simple manipulation for attaching and detaching the device to a bulldozer moldboard. By turning the bolt 34 to tighten or loosen the rocker arm on top of the moldboard, the unit is subject to quick and easy attachment or detachment. The rough length adjustment is provided between the sleeve and the shank to initially determine the length of the device for the particular moldboard on which the unit is to be attached. The rough adjustment is shown in Figure 5. A series of notches 60 are spaced along the back edge of the shank 10, and are adapted to singly register with one of the holes 61 in the sleeve. The sleeve is locked in place on the shank by means of a pin 20 which is held in place by a cotter key 21. Usually the ripper is used with a single bulldozer for a period of time so that it is possible to roughly adjust the length thereof by registering one of the holes 61 with a notch 60 to give the desired length to fit the particular moldboard. The ripper may then be quickly and easily attached merely by rotating the bolt 34 to loosen or tighten the rocker arm on the top of the moldboard. When it is desired to use the ripper on a different size of moldboard, the length of the ripper is very easily adjusted by moving the pin 20 to a new location to give the desired size. The further adjustment of the position of the rocker arm aids in the initial adjustment of the unit.

The ditcher attachment of Figure 1 is shown with a small sharp-pointed digger point 14 which is pinned to the head 12 by means of a pin 15. Such a point is useful for digging hard surfaces, rooting, etc. Where it is desired to dig a ditch or wide swath, a ditching blade 17 may be pinned on the unit in place of the digging point 14. Various shapes of diggers may be utilized in conjunction with the ripper unit to dig various sizes of ditches or for various types of digging jobs.

While the invention has been described by a specific embodiment, there is no intention to limit the invention to the precise details so illustrated, except insofar as defined by the following claims.

I claim:

1. A ditcher or ripper for quick and easy attachment to a bulldozer moldboard comprising a shank adapted to be secured along a moldboard face in substantially upright position having a portion extending below said moldboard, a digging point detachably secured to said extending portion of said shank, a moldboard edge grip integral with said shank adapted to seat on said mold-

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board and provide bearing surfaces remote from the cutting edge thereof, plural notches in said shank, a sleeve extending downwardly along the upper portion of said moldboard adapted to telescope over the upper portion of said shank, means in said sleeve cooperative with said notches for adjustably determining the length thereof, a rocker arm grip secured to said sleeve and adapted to engage the top of said moldboard, said rocker arm having a bifurcated front portion and an arcuate serrated moldboard gripping portion extending rearwardly, and an adjusting screw inclusive of a winged nut for engaging said bifurcated front portion to secure the device on said moldboard.

2. A ditcher or ripper for quick and easy attachment to a bulldozer moldboard comprising a shank adapted to be secured along a moldboard face in substantially upright position having a portion extending below said moldboard, a moldboard edge grip including laterally extending flanges integral with said shank adapted to seat on the lower portion of said moldboard and provide bearing surfaces on the face and back of said moldboard remote from the cutting edge thereof, a ditching point detachably secured to said extending portion of said shank, plural spaced notches along one side of said shank, a sleeve extending downwardly along the upper portion of said moldboard adapted to telescope over at least the upper portion of said shank, plural spaced holes along one edge of said sleeve adapted to register one at a time with said notches in said shank, pin means cooperative with said holes and said notches for adjustably determining the length of said shank and telescoped sleeve, a rocker arm grip for engaging the top of said moldboard, said rocker arm having a bifurcated front portion and an arcuate serrated moldboard gripping portion extending rearwardly, and an adjusting screw inclusive of a winged nut for engaging said bifurcated front portion to secure the device on said moldboard.

3. In a ditcher or ripper attachment for a bulldozer moldboard having a digging extension below the moldboard and a portion extending to the top of the moldboard and having a grip engaging the moldboard bottom, the improvement which comprises a rocker arm secured to the upper end of said portion, said rocker arm having an arcuate serrated rear portion for hooking over a moldboard top and a bifurcated front portion on said rocker arm, an adjusting bolt having a ball and socket connection with said attachment adjacent said rocker arm for free rotation of said bolt, and a winged nut on said bolt for engaging said bifurcated portion to hold said rocker arm securely against said moldboard top.

4. In a ditcher or ripper attachment for a bulldozer moldboard having a digging point extending below the moldboard and a portion extending adjacent the top of the moldboard and having a grip engaging the moldboard bottom, the improvement which comprises a rocker arm pivotally secured adjacent the top of said portion, said rocker arm having an arcuate serrated rear portion for hooking over a moldboard top and a bifurcated front portion on said rocker arm, an adjusting bolt having a ball and socket connection with said attachment adjacent said rocker arm for free rotation of said bolt, and a winged nut for engaging said bifurcated portion to hold said rocker arm securely against said moldboard top.

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