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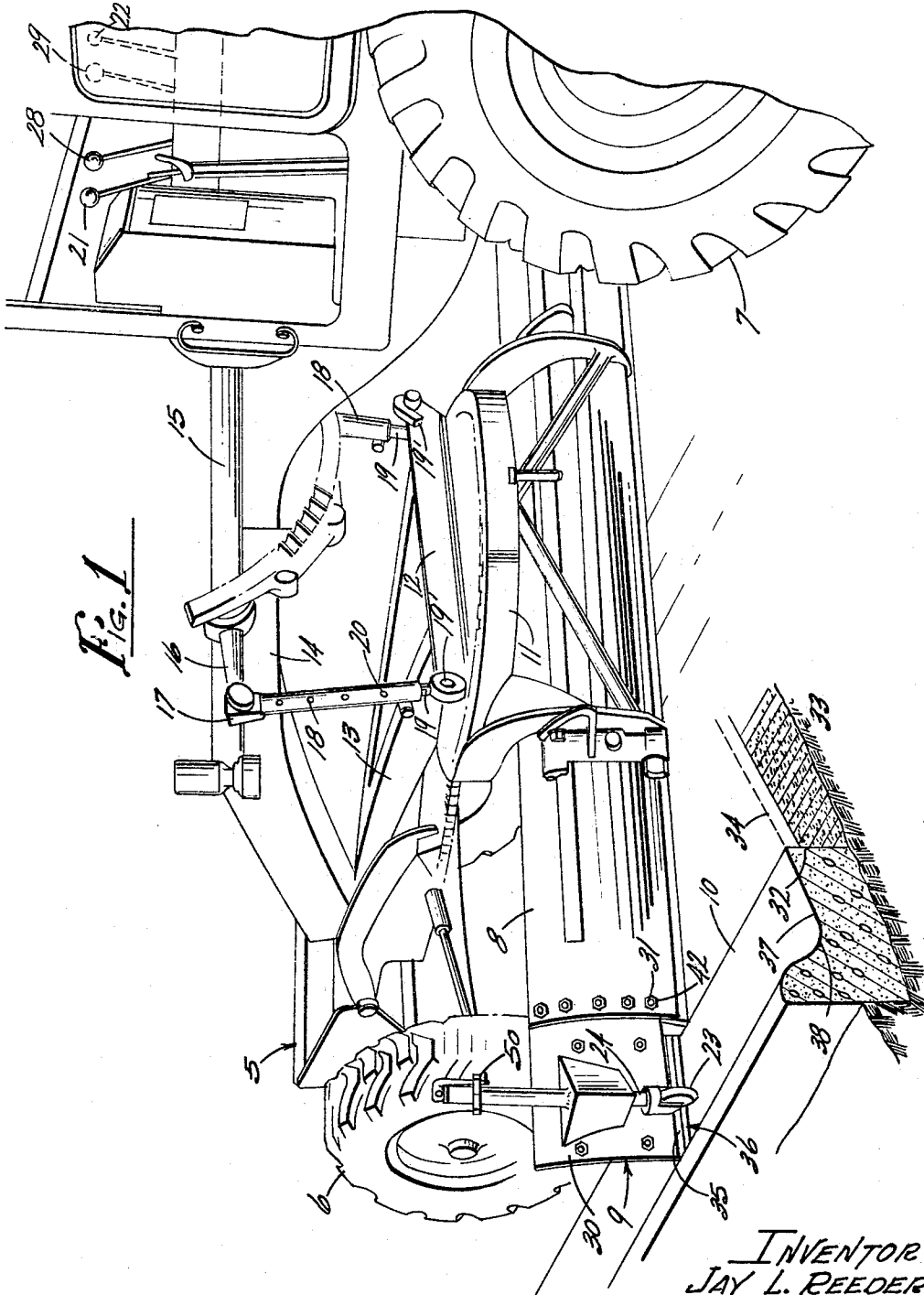
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3,266,050

ROAD GRADER ATTACHMENT

Filed July 15, 1963

2 Sheets-Sheet 1



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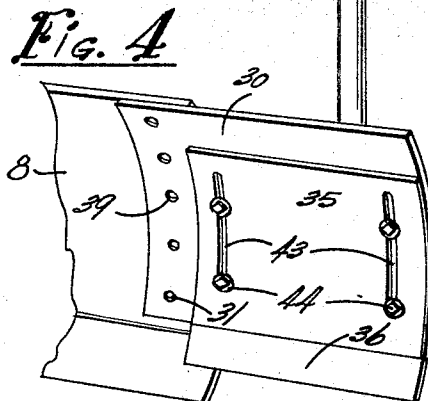
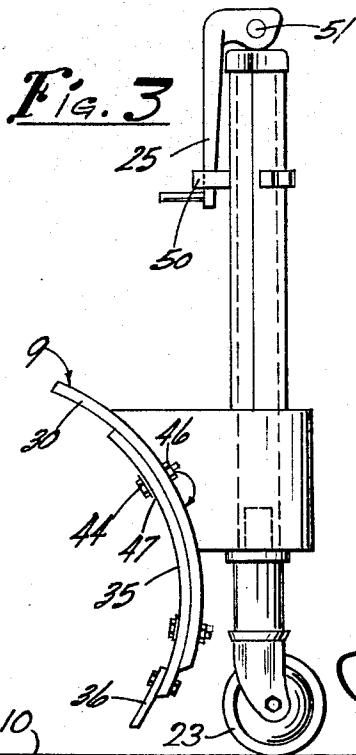
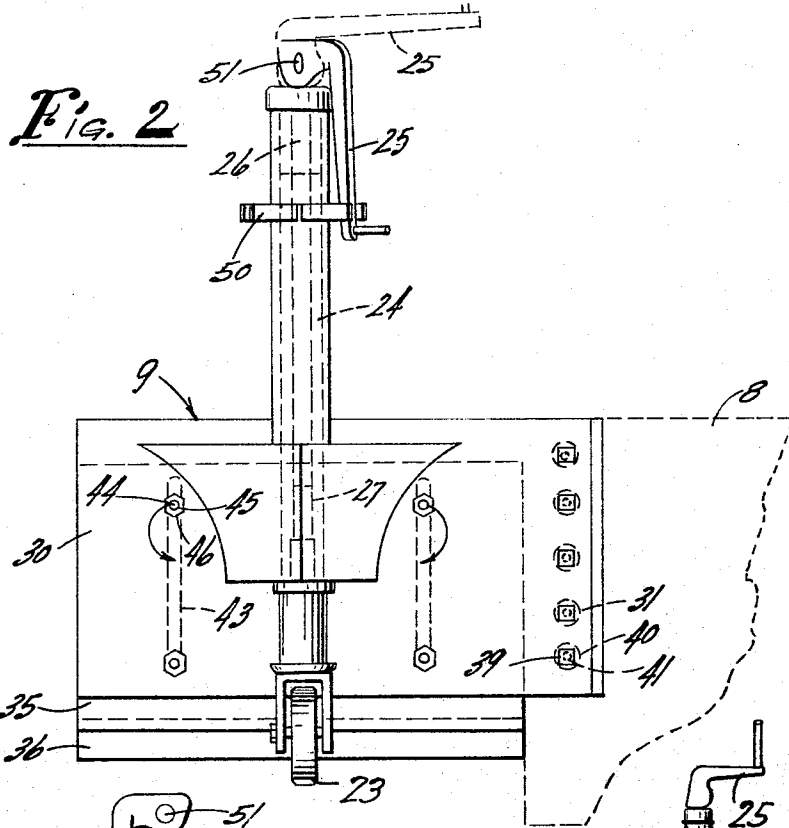
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ROAD GRADER ATTACHMENT

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2 Sheets-Sheet 2



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3,266,050
ROAD GRADER ATTACHMENT
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This invention relates to a road grader attachment especially intended for use in black top paving work to expedite the work of levelling the stone base, after rolling, in relation to the cement curb, my attachment, utilizing the curb as a guide and including a caster roller equipped support on an extension blade attached to one end of the grader blade, the roller running on the curb keeping the extension blade operating smoothly over the curb so that not only is one end of the grader blade supported at the right elevation with respect to the curb but any stones deposited on the curb in the filling and rolling are cleared off so as to save time and reduce cost, the operator running the grader having only to control the elevation of the other end of the grader blade, so that he can do a better job in less time. The bolt holes for a hardened end bit are used for fastening this extension. For other grading work requiring only the grader blade, the extension blade is removed and the end bit is replaced.

My improved attachment comprises a blade in the nature of a direct and rigid aligned extension of one end of the existing blade easily attachable and detachable by means of a few bolts entered in holes provided in one end of the extension blade and registering holes drilled in vertically spaced relation in the end of the grader blade, said extension blade carrying the roller on a vertically adjustable post mounted on the back thereof having a manually operable vertical screw adjustment operable from above the attachment, the crank for turning the screw being pivoted on a horizontal axis to permit swinging it is down a retracted out of the way position where it is locked releasably to maintain a given screw adjustment.

The invention is illustrated in the accompanying drawing, in which—

FIG. 1 is a perspective view of a grader, the transverse mold board or blade of which is shown in rear elevation with my improved attachment applied to one end and running on the curb during a stone base levelling operation;

FIGS. 2 and 3 are a rear elevation and end view, respectively, of the attachment, on a larger scale, and

FIG. 4 is a front perspective view on about the same scale.

The same reference numerals are applied to corresponding parts throughout these views.

Referring to the drawings, the reference numeral 5 designates a conventional grader generally, one of the two front steering wheels of which is seen at 6 and one of the rear drive wheels at 7, the attachment of my invention being shown as applied to the left end of the grader blade 8 and indicated generally by the reference numeral 9 and shown running along a conventional cement curb 10 in a levelling operation on a previously compacted stone base. The grader blade 8 is rotatable under manual control in the usual way about a substantially vertical axis, a part of the turntable provided for that purpose being shown at 11 and the rear cross-portion at 12 of the usual triangular turntable supporting frame 13 that is tiltable about a horizontal axis on its longitudinal center line to dispose the grader blade at the desired inclination with respect to a horizontal plane. The central longitudinally extending top beam of the grader frame is shown at 14 and has on its opposite sides power

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operable horizontal shafts 15 with laterally extending arms 16, which have universal joint connections 17 with the upper ends of sleeves 18 that telescope on rods 19 but can be connected by means of pins entered in registering holes 20 in these parts to transmit up and down movement to the rods 19 and thereby to the turntable 11 and blade 8 when the arms 16 are swung up and down, the rods 19 being pivotally connected at 19' to the turntable, the control lever 21 on the left-hand side in the operator's cab controlling raising and lowering of the left end of blade 8, and the control lever 22 on the right-hand side controlling raising and lowering of the right end. As will soon appear, due to the provision of the caster roller 23 oscillatable on the lower end of a vertically adjustable post 24 that is manually adjustable by means of hand-crank 25 turning a vertical screw 26 threaded in a vertical bore 27 in post 24, the pin entered in holes 20 can be removed on the left-hand side of the grader, taking control away from lever 21 and leaving that end of blade 8 under control of crank 25, while the other end is still under control of lever 22. Additional adjustments of blade 8 worth mentioning here are the lateral or endwise shift, which is under control of lever 28, and the fore and aft angling of the blade which is under control of lever 29. The other levers in the operator's cab are for other purposes not necessary to mention, as they are not in any way related to the blade 8 and, therefore, have no bearing on the present invention.

In accordance with my invention, a relatively short generally rectangular blade 30 bent on a horizontal axis to the same arc as the blade 8 is rigidly secured along one arcuate edge portion by means of five bolts 31 to the upper portion of the arcuate outer edge portion of blade 8 after the hardened end bit has been removed, the short blade 30 thereby serving as a rigid and directly aligned extension of blade 8 to extend over the curb 10 while blade 8 operates along the vertical inner edge 32 of the curb, as in levelling the compacted stone 33 in a predetermined relation to the curb to form the base for a two to three inch mat 34 of blacktopping, as shown in FIG. 1, while blade 30 forms a support for the vertically adjustable, arcuate, generally rectangular blade 35 with its replaceable hardened lower scraping edge part 36 to run along the top surface 37 of the curb, the blade 36 being conformed at the outer end, if desired, to fit the upward rounding of the curb at 38. Square holes 39 are preferably provided in blade 30 to fit the square shanks under the heads 40 of bolts 31, the bolts being entered through registering holes 41 already provided in vertically spaced relation in the end portion of the blade 8 for the bolts fastening the end bit and receiving nuts 42 on their protruding end portions. Blade 35 has parallel vertical slots 43 provided therein near opposite ends in which bolts 44 are entered in vertically spaced relation, two in each slot, the bolts passing through vertically spaced holes 45 in blade 35 and having nuts 46 threaded on their protruding ends, washers 47 being provided under the heads of these bolts to bear on opposite sides of the slots to insure a good clamping action. Bolts 48 entered through registering holes in the lower edge portion of blade 35 and in the upper edge portion of blade 36 receive nuts 49 to secure the replaceable hardened blade 36 detachably. Blade 35 can be adjusted vertically by loosening nuts 46 and sliding blade 35 relative to its supporting blade 30 to secure the desired upward offset of blade 36 relative to blade 8, as when levelling the previously compacted stone base 33 to a desired level below the top surface 37 of the curb. Then, assuming the operator has set the other end of the blade 8 at the right elevation for whatever slope or grade is to be provided from the middle of the road to the curb, all that remains to be

done at this time is to adjust roller 23 for operation on the curb 10 with the bottom edge of blade 36 at the correct operating clearance of about $\frac{1}{8}$ " for minimum drag and minimum wear on the blade and no damage to the curb.

In operation, the material for the stone base 33 is usually filled in between the curbs about level with the top surface 37 and then rolled for compaction, and, it is inevitable that there will be low places and high places, and it is also inevitable that a certain amount of material will be spilled over onto the curbs during the filling operation. In accordance with my invention, the hardened end bit on blade 8 is removed from the blade 8 on the grader and blade 30 of my attachment 9 is bolted in place and blade 35 of the attachment is then adjusted in relation to the lower edges of blade 8 according to how thick the mat of blacktopping is to be, a 2" mat being fairly common but mats up to 3" in thickness being provided some times. If it is to be a 2" mat the adjustment of blade 35 will be such as to provide approximately $2\frac{1}{8}$ " spacing of the lower edge of the hardened blade 36 relative to the lower edge of blade 8, inasmuch as roller 23 is usually adjusted for about a $\frac{1}{8}$ " clearance for blade 36 with respect to the top surface 37 of the curb 10. Then the grader is operated along the curb 10 in the manner shown in FIG. 1, blade 8 scraping the stone base 33 to level it off 2" below the level of the curb while blade 36 clears off most of whatever material was previously deposited on the curb, the small amount of fine material that might be left on the curb by reason of the $\frac{1}{8}$ " clearance being unobjectionable, as it will be washed away with the first rain fall before or after the blacktopping operation. Thus, my attachment not only saves a lot of work in clearing off the curbs but at the same time insures levelling of the compacted stone base quite uniformly in relation to the curb so that in the final blacktopping operation the finished mat will be of uniform thickness and a saving in cost of blacktopping to widely varying thicknesses as was heretofore quite common with the old methods, is also realized, and the contractor has the satisfaction of knowing that there never can be a legitimate complaint on account of the blacktopping being too thin in spots. After the levelling of the stone base 33 along the curbs on both sides of the roadway in the manner described, attachment 9 is removed and the hardened end bit is replaced on blade 8 and the grader 5 is again usable in the regular way.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. In a road grader, comprising a mobile supporting frame, an elongated upright scraper blade mounted on said frame crosswise relative thereto and substantially horizontally and movable with the grader to scrape material with which it is brought into contact to level the same accordingly as the blade is set as to elevation and longitudinal inclination with respect to a horizontal or ground level, and separately operable manually controlled means on said grader connected with said blade at two longitudinally spaced points for raising and lowering the blade relative to the grader at either or both ends, at least one of said connections being disconnectible, whereby to

make the end remote from the other connection vertically shiftable independently of said connections, the improvement which consists of an extension blade detachably but rigidly secured to and extending longitudinally from the independently shiftable end of said scraper blade in substantially coplanar relation therewith but in upwardly offset relation to the lower edge thereof and defining with said lower edge a shouldered end on the blade assembly to ride along the top and inner surfaces of a curb along which the scraper blade is operated, whereby to scrape a fill material to a predetermined level below the top of the curb and at the same time also clear off any of such material deposited on the curb, and roller means mounted for vertical adjustability on the back of said extension blade to run on the top surface of the curb for adjustable support of the outer end of the first blade and extension blade with the latter scraping with slight operating clearance relative to the top surface of the curb.

2. A road grader structure as set forth in claim 1 including a secondary scraper blade in surface to surface abutment with one face of said extension blade and adjustable vertically relative thereto to project downwardly therefrom and scrape on the top surface of the curb.

3. In a road grader comprising a main scraper blade of elongated generally rectangular form adapted to operate along the inner edge of a curb to scrape and thereby level previously compacted fill material to a predetermined level below the level of the top surface of the curb, the improvement comprising a relatively short extension blade also of generally rectangular form and less height than the main scraper blade which is detachably but rigidly secured to and extends longitudinally from the curb end of said main scraper blade in substantially coplanar relation therewith but in upwardly offset relation to the bottom edge thereof so as to define with the bottom edge a shouldered end on the blade assembly to ride along the top and inner surfaces of a curb along which the scraper blade is operated, whereby to scrape a fill material to a predetermined level below the top of the curb and at the same time also clear off any of such material deposited on the curb, and roller means mounted for vertical adjustability on the back of said extension blade to run on the top surface of the curb for adjustable support of the outer end of the first blade and extension blade with the latter scraping with slight operating clearance relative to the top surface of the curb.

4. A road grader structure as set forth in claim 3 including a secondary scraper blade in surface to surface abutment with one face of said extension blade and adjustable vertically relative thereto to project downwardly therefrom and scrape on the top surface of the curb.

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