Feb. 2, 1932. L. G. ARNOLD ET AL 1,843,260

ATTACHMENT FOR ROAD GRADERS

Filed Sept. 25, 1930 2 Sheets-Sheet 1

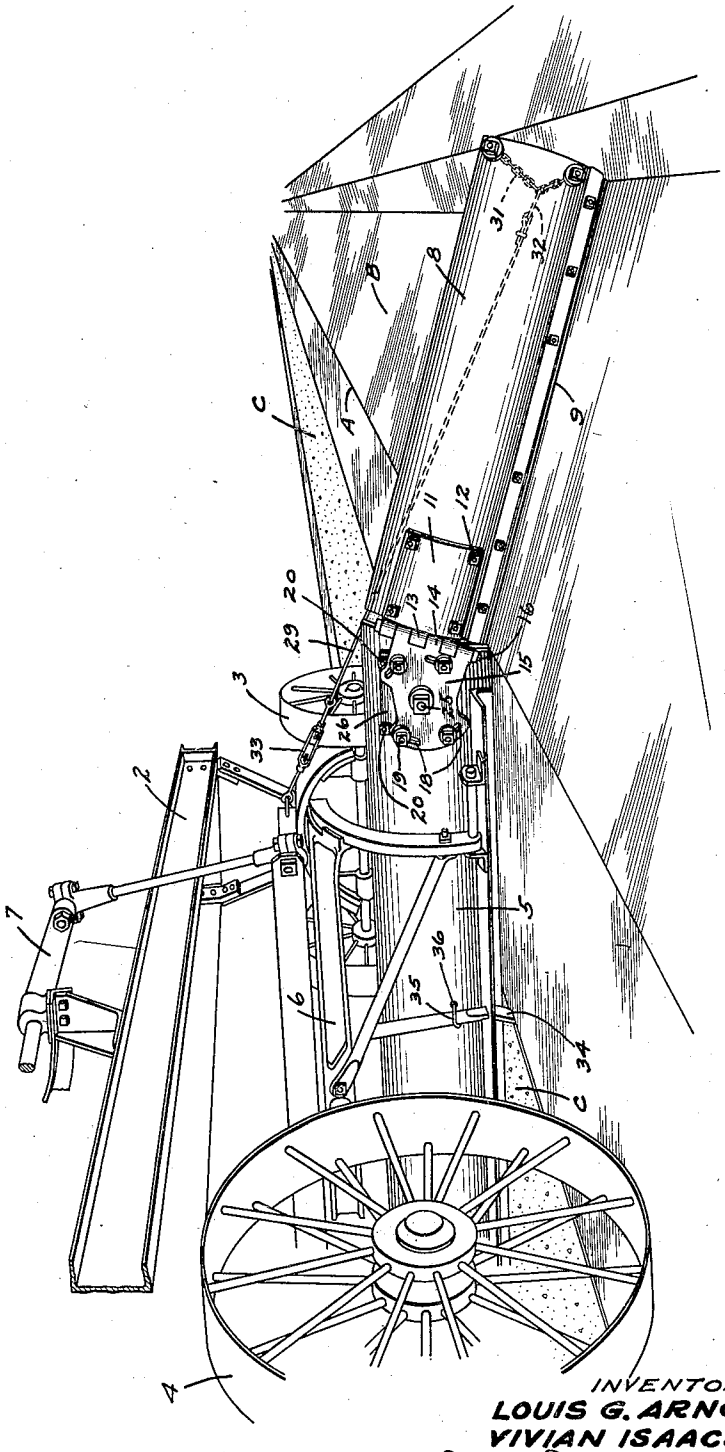



FIG. 1

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Filed Sept. 25, 1930 2 Sheets-Sheet 2

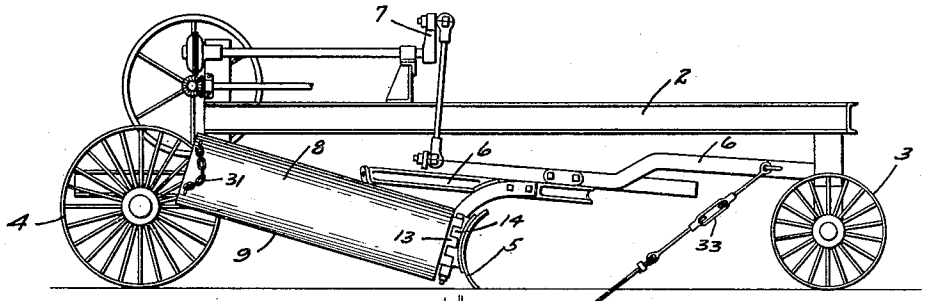



FIG. 2

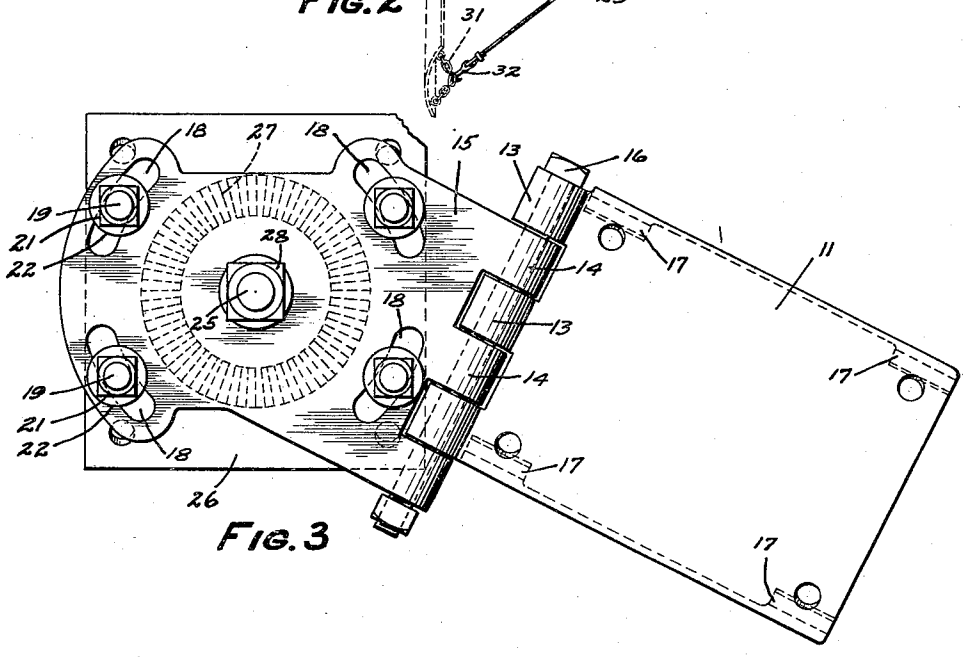



FIG. 3

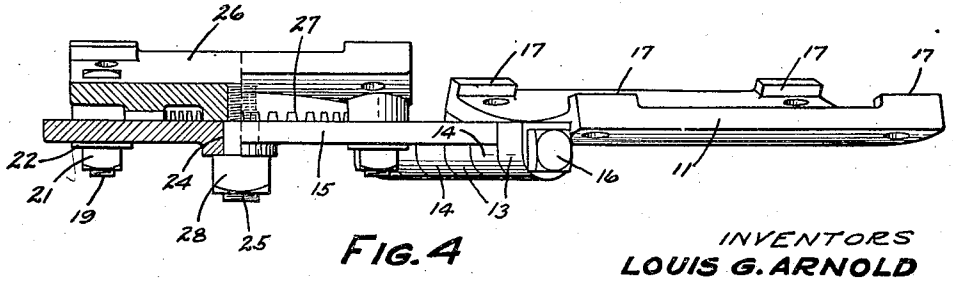



FIG. 4

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# UNITED STATES PATENT OFFICE

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## ATTACHMENT FOR ROAD GRADERS

Application filed September 25, 1930. Serial No. 484,310.

This invention relates to an improved attachment for a road working machine such as a grader including a main scraper blade, whereby the grader may be used for finishing the shoulders usually provided at each side of a highway.

An object of the invention is to provide in combination with a road grader, an auxiliary blade having means for adjustably securing it to one end of the scraper blade, whereby it may be adjusted to different positions to suit the slope of the shoulder to be formed.

A further object is to provide a shoulder sloper attachment for an ordinary road grader, whereby the latter may be used for finishing the shoulders usually provided at each side of a paved highway, and having a guide means for assisting the operator stationed upon the grader to guide the grader along the highway, so that the shoulder will be uniformly spaced from the edge of the pavement.

A further object is to provide an auxiliary blade for a road grader having means whereby it may be readily attached to the blade of any standard grader, said means consisting of an anchor plate secured to one end of the grader blade and a pair of hinged members, one of which is pivotally and adjustably secured to said anchor plate, and the other being secured to the auxiliary blade, said attaching means permitting the auxiliary blade to be adjusted vertically to adapt it to the slope of the shoulder, and also permitting lateral adjustment thereof whereby it may be swung rearwardly to a position adjacent to the side of the grader frame, out of the way of bridge supports or culverts located along the highway.

Other objects of the invention will appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

Features of the invention reside in the simple and inexpensive construction of the means for adjustably attaching the auxiliary blade to the usual scraper blade of a road grader; in the means adapted to be attached to the grader blade to assist the operator to accurately guide the machine along the highway so that the shoulder being formed by the auxiliary blade will be uniformly spaced from the edge of the concrete or paving; and the means provided for connecting the outer end of the auxiliary blade to the grader frame.

In the accompanying drawings there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown as various changes may be made within the scope of the claims which follow.

In the drawings:

Figure 1 is a perspective view illustrating a portion of a conventional type of road grader, and showing the invention attached to the scraper blade thereof;

Figure 2 is a diagrammatic side elevation of a road grader showing the auxiliary blade attached to one end of the scraper blade thereof and swung to an out-of-the-way position;

Figure 3 is an enlarged detail view showing the means for attaching the auxiliary blade to the scraper blade; and

Figure 4 is a top view of Figure 3 partially in section.

In the selected embodiment of the invention here shown, there is illustrated in Figure 1, a portion of a conventional road grader comprising a main frame 2, supported upon suitable carrying wheels 3 and 4, and having a scraper blade 5 adjustably supported thereon by means of a movable supporting frame 6, provided with the usual blade-adjusting means 7.

A feature of this invention resides in the means provided whereby the grader may be used to form or finish the usual shoulders provided at the sides of a paved highway. Such means consists of an auxiliary blade 8 provided with a cutting edge 9 and having a member 11 secured to one end thereof by suitable bolts 12, as shown in Figure 1. This bracket is provided with spaced lugs 13 adapted to interlock with similarly shaped lugs 14 provided upon a complemental bracket 15, to provide means for pivotally connect-

ing the auxiliary blade 8 to the scraper blade 5. The lugs 13 and 14 are apertured to receive a pivot pin or bolt 16, which provides means for operatively connecting together the member 11 and bracket 15. The member 11 is provided with suitable chipping strips 17 adapted to bear against the rear curved surface of the auxiliary blade 8, and whereby the member 11 may readily be fitted to the rear of said blade.

The bracket 15 is shown provided with a plurality of arcuately formed slots 18, each adapted to receive a clamping stud 19, each provided with a suitable nut and washer 21 and 22, respectively, as shown in Figures 4 and 5. The studs 19 are secured to an anchor plate 26 secured to a rear end portion of the scraper blade 5 by bolts 20, as best shown in Figure 1.

The bracket 15 is provided with a central aperture 24 adapted to receive a pivot pin or stud 25, secured to the anchor plate 26, as shown in Figures 4 and 5. A plurality of radially disposed cooperating teeth 27 are provided upon the adjacent surfaces of the bracket 15 and anchor plate 26 adapted for interlocking engagement to facilitate in securing the bracket 15 in adjusted position upon the anchor plate 26.

By thus securing the auxiliary blade to the scraper blade, it may be angularly adjusted in a vertical plane to adapt it to the slope of the shoulder to be formed. When the nut 28 mounted upon the pivot stud 25 and the nuts 21 are loosened, the bracket 15 may be relatively rotated upon the pivot pin 25 so as to change the angular position of the auxiliary blade 8. When this blade has been adjusted to the desired position, the bolts 21 and 28 are tightened, whereupon the auxiliary blade will be rigidly secured to the scraper blade so that downward pressure may be exerted thereon to cause the auxiliary blade to grade the bank and form the shoulder. The pivotal connection between the hinge member 11 and bracket 15 also permits the auxiliary blade 8 to be swung rearwardly to an out-of-the-way position, as shown in Figure 2, whereby the grader may pass by bridge supports and other obstructions, such as culverts, situated along the highway.

To prevent rearward movement of the auxiliary blade 8, when in operative operation, a suitable connection 29 is secured to the outer end thereof by means of a chain 31 and hook element 32 terminally secured to the connection 29. The opposite end of the connection 29 is suitably secured to the forward portion of the scraper blade supporting frame 6 so that the thrust against the outer end portion of the auxiliary blade will be taken up by the connection 29, and the forward end portion of the scraper blade supporting frame 6. A suitable turn buckle 33 is provided in the connection 29 for longitudinally adjusting it.

Another feature of this invention resides in the means provided for assisting the operator stationed upon the grader to guide the machine along the highway so that the shoulder being formed by the auxiliary blade 8 will be uniformly spaced from the edge of the pavement. Such means is shown in Figure 1 and consists of a suitable guide member 34 secured to a rear intermediate portion of the main scraper blade 5 by such means as a suitable hook bolt 35, supported in an aperture 36 provided in the scraper 5. This guide member is adapted for vertical adjustment upon the scraper blade and is located so that the operator, usually stationed at the rear end portion of the grader, may view the guide 34, as the grader travels along the highway. In grading or forming the shoulder along the highway, as shown in Figure 1, wherein A indicates the shoulder and B the slope of the shoulder, the grader is preferably caused to travel along the highway with the guide 34 substantially following the edge of the paving, indicated by the letter C in Figure 1. By keeping the guide 34 in close proximity to the edge of the paving, the distance from the edge of the concrete to the shoulder A will be substantially uniform, as will readily be understood by reference to Figure 1.

The auxiliary blade 8 featured in this invention may be considered as an atachment to an ordinary grader, as the attaching means provides means whereby the auxiliary blade may be readily and quickly attached to the scraper blade of an ordinary grader in a comparatively short time, and without altering or changing the construction thereof. To attach the auxiliary blade to the scraper blade, it is only necessary to drill four holes in the scraper blade to receive the bolts 20 which secure the anchor plate 26 to the scraper blade 5. A fifth hole is preferably drilled in the intermediate portion of the scraper blade adapted to receive the hook bolt 35 which secures the guide member 34 to the scraper blade. The arcuately formed slots 18, provided in the hinge casting 15, provide means whereby the angular position of the auxiliary blade may be quickly adjusted to adapt the scraper blade to the particular angle of the slope of the shoulder, as will be understood by reference to Figure 1. When the nuts 21 and also the nut 28 of the pivot bolt 25, are tightened, the auxiliary blade will be rigidly secured to the scraper blade, whereby downward pressure may be exerted thereagainst to force the blade into the earth and thus cause it to properly form the slope of the shoulder along the highway.

By means of this novel shoulder sloper attachment for road graders, the work of forming the shoulders along the highway may be done by the grader without any additional manual labor, thereby greatly reducing the cost of building the highway.

We claim as our invention:

1. The combination with a road grader comprising a scraper blade, of an anchor plate secured to one end of said blade, an auxiliary blade having a plate secured to one end thereof, a bracket hinged to said plate and having a plurality of slots therein, a pivot pin secured to the anchor plate and traversing an aperture in said bracket, and a plurality of studs traversing said slots whereby the bracket may be secured to the anchor plate to retain the auxiliary blade in adjusted position, said slots permitting vertical adjustment of the auxiliary blade.

2. The combination with a road grader comprising a scraper blade, of an anchor plate fixedly secured to one end of said blade, an auxiliary blade having a plate secured to one end thereof, a bracket hinged to said plate and having a plurality of arcuately formed slots therein, a pivot pin secured to the anchor plate and traversing an aperture in said bracket, a plurality of studs traversing said slots whereby the bracket may be secured to the anchor plate to retain the auxiliary blade in adjusted position, and toothed means on said anchor plate and said bracket adapted for interlocking engagement to prevent relative movement of the bracket upon said anchor plate, when said studs are tightened, said slots and toothed means permitting vertical adjustment of the auxiliary blade.

In witness whereof we have hereunto set our hands this 22nd day of September, 1930.

LOUIS G. ARNOLD.
VIVIAN ISAACSON.