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LANDSIDE END CONNECTION FOR BULLDOZER BLADES

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2 Sheets-Sheet 1

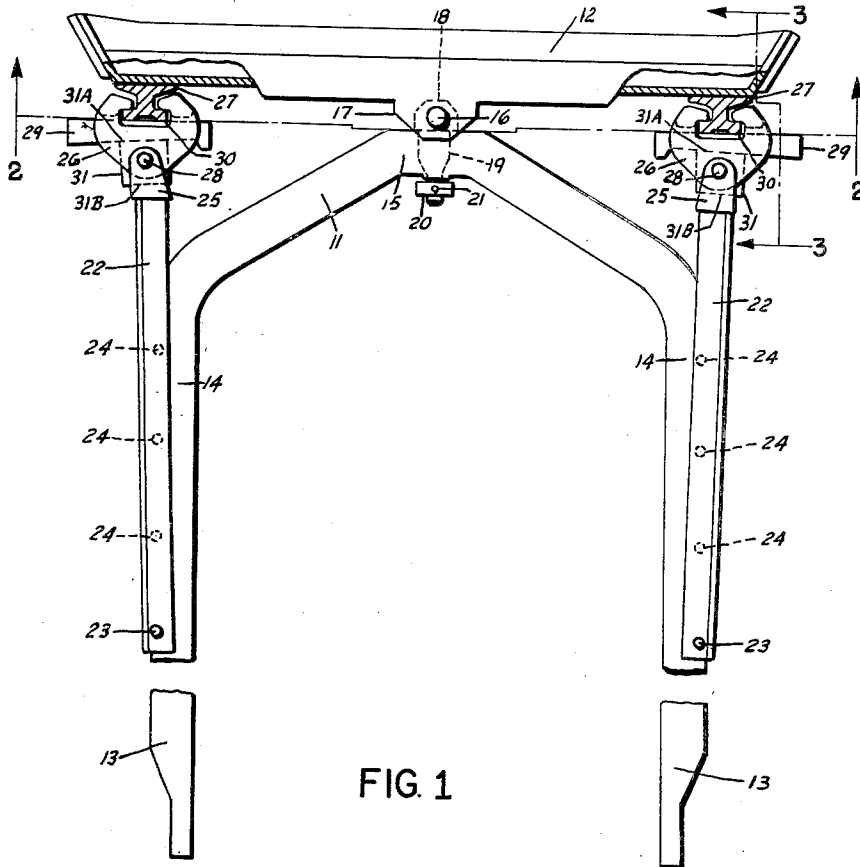


FIG. 1

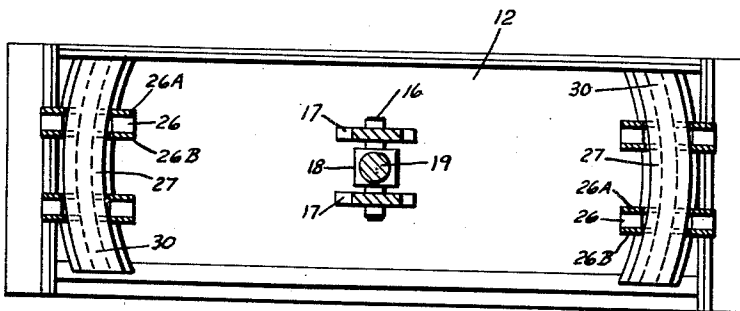


FIG. 2

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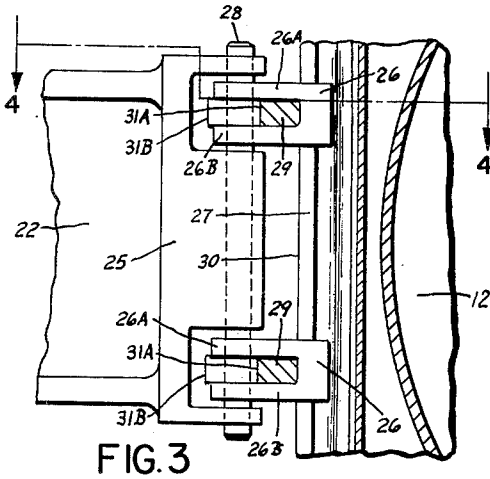


FIG. 3

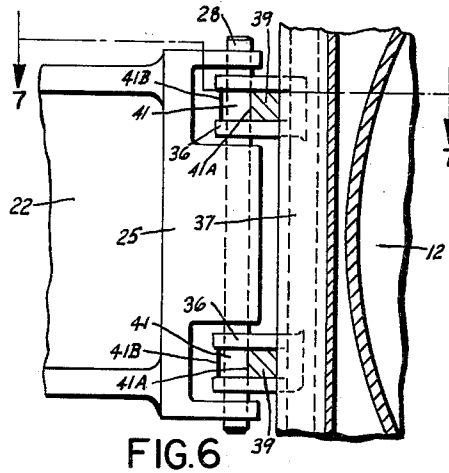


FIG. 6

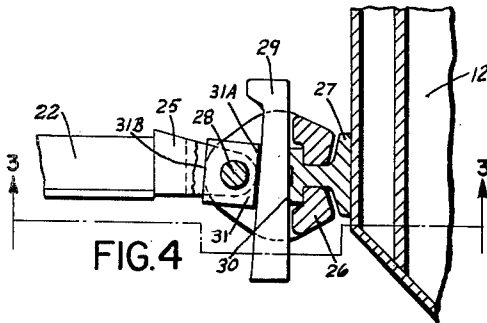


FIG. 4

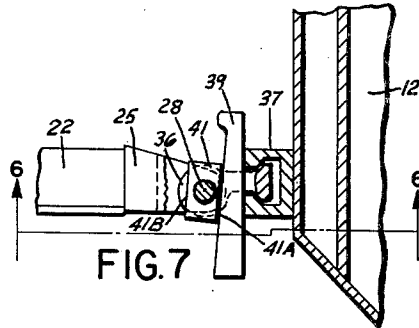


FIG. 7

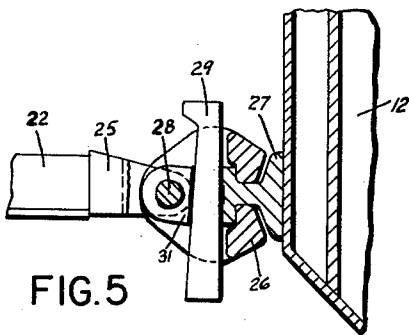


FIG. 5

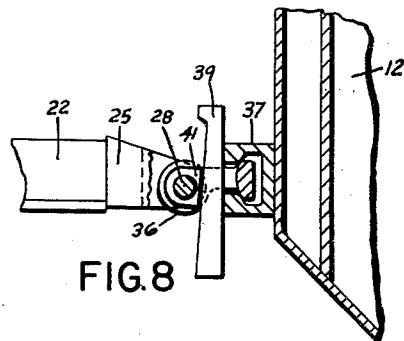


FIG. 8

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UNITED STATES PATENT OFFICE

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LANDSIDE END CONNECTION FOR
BULLDOZER BLADES

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3 Claims. (Cl. 37-144)

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My invention relates to new and useful improvements in tractor-operated bulldozers, more particularly to an improved means for connecting the ends of the bulldozer blade to the front ends of the landsides and for locking the blade to the landsides in selected positions of tilt about a fore-and-aft axis and angling about a vertical axis.

In bulldozers of the type to which the invention is adapted, namely angling bulldozers, a U-shaped frame surrounds the front end of a tractor, the ends of the two branches of the U being pivoted to the sides of the tractor, usually on or adjacent the rear axle thereof. The apex of the U is attached to the center of the rear of the blade by means of a joint, which permits the blade to be tilted in a vertical plane and angled in the horizontal plane. An adjustable brace, called a landside, extends from the sides of the U to each end of the blade, where the landside is attachable at various elevations to an arcuate guide on the blade, thus effecting tilting of the blade in a vertical plane. Attaching the rear ends of the landsides at various selective positions on the U effects angling of the blade in the horizontal plane.

The principal object of my invention is to provide an improved means whereby the bulldozer blade may be locked in selected tilted positions by a simple wedge means between the landside end and the blade, the wedge means being so designed that the wedge member will fit tightly and will not jar loose with use, can be driven in tightly with a single blow, will not tend to spring back when being driven in, and will at all times bear uniformly on its seat.

In addition to the objects above stated, I have worked out a number of novel and useful details, which will be readily evident as the description progresses.

My invention consists in the novel parts, and in the combination and arrangement thereof, which are defined in the appended claims, and of which two embodiments are exemplified in the accompanying drawings, which are hereinafter particularly described and explained.

Throughout the description, the same reference number is applied to the same member or to similar members.

Referring now to the accompanying drawings, it will be seen that:

Figure 1 is a plan view of a bulldozer showing the blade, the U-shaped supporting frame, and the landsides and landside blocks connecting the ends of the blade to the sides of the U-frame.

Figure 2 is a rear elevation of the bulldozer

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blade and landside connecting means, taken along the line 2-2 in Figure 1.

Figure 3 is an enlarged side elevation, taken along the line 3-3 of Figures 1 and 4, and showing the first embodiment of my invention.

Figure 4 is an enlarged top plan view of the first embodiment of my invention taken along the line 4-4 of Figure 3.

Figure 5 is similar to Figure 4, but shows a variant of the wedge seat of Figure 4.

Figure 6 is an enlarged side elevation similar to Figure 3, except that it shows the second embodiment of my invention, and is taken along the line 6-6 of Figure 7.

Figure 7 is an enlarged plan view similar to Figure 4, but showing the embodiment of Figure 6, taken along the line 7-7 of Figure 6.

Figure 8 is similar to Figure 7, but shows a variant, similar to the variant of Figure 5, of the wedge seat of Figure 7.

Referring now to Figures 1 to 4, we see that 11 represents a conventional U-shaped bulldozer supporting frame which serves to mount the bulldozer blade 12 forwardly of a tractor (not shown). The rear ends 13 of the side arms 14 of the U-frame are usually pivotally connected to the sides of the tractor (not shown) so that the U-frame may be raised and lowered about the horizontal transverse axis of the tractor (not shown). The bulldozer blade 12 is disposed transversely of the frame 11 in advance of the front portion 15 of the U-frame. It is mounted to be swung in a normally-horizontal plane about the axis of the king pin 16 which extends vertically through rearwardly projecting spaced lugs 17 on the back of the bulldozer blade 12 and through a swivel block 18 positioned between said lugs 17. The swivel block 18 has formed integral therewith or otherwise secured thereto a rearwardly extending stud bolt or pin 19 which loosely fits in a hole in the front portion 15 of the frame 11, there being a retaining collar 20 and pin 21 (or other equivalent means) to hold the block 18 against the frame portion 15. Since the pin 19 is parallel to the longitudinal axis of the frame 11 and at a right angle to king pin 16, it serves as a pivot on which the bulldozer blade 12 may be tilted in a vertical plane about said longitudinal axis.

Accordingly it is seen that the bulldozer blade 12 may be swung in a horizontal plane into selected positions with respect to the longitudinal axis of the frame 11; and it may be tilted in a vertical plane into selected positions with respect to the horizontal transverse axis of said frame.

In order to retain the bulldozer blade in a given position in the horizontal plane, channel retaining bars 22, known to the trade as "land-sides," are provided between the side arms 14 and the ends of the bulldozer blade 11. The rear end of each landside 22 carries a pin 23 which is receivable in one of holes 24 longitudinally spaced along each side arm 14. The landside end casting 25 on the forward end of each landside 22 carries a pair of C-shaped adjusting blocks 26 which dovetail with and slide vertically over a T-shaped arcuate rail 27 (with center of curvature at the center of pin 19) secured to the back of the bulldozer blade at each end thereof. The C-shaped adjusting blocks 26 are pivotally mounted on the landside end casting 25 by means of the pin 28 (or other suitable means) to permit swinging about a vertical axis.

In order to retain the bulldozer blade 12 in a given tilted position in its normally vertical plane, I secure the T-rail 27 against sliding through the C-shaped adjusting blocks 26 by inserting a horizontally-driven wedge 29 between the head 30 of T-rail 27 and a wedge seat 31 which freely pivots about pin 23 independently of and intermediate the upper and lower lugs 26A and 26B of landside end adjusting block 26. Wedge seat 31 is preferably rectangular in horizontal section with two bearing faces 31A and 31B which may be selectively used as a seat for wedge 29 by rotating the wedge seat 180 degrees about vertical pin 23, the hole in the wedge seat through which pin 23 passes being preferably eccentric with respect to bearing faces 31A and 31B so that when a face of the wedge seat becomes worn the other face may be used to provide a tight fit. Since wedge seat 31 is free at all times to pivot about vertical pin 23, independently of the angled position of the landside end casting 25 or the position of the C-shaped adjusting block 26 on the T-rail 27, it is seen that the contact between the wedge 29 and the adjacent face of wedge seat 31 will be at all times uniform, resulting in a tight fit, regardless of minor irregularities in the surfaces of the wedge, the rail, or the wedge seat due to wear, dirt, sloppy assembly, or slight inaccuracies in machining of the surfaces. In other words, the pivoted wedge seat equalizes the bearing pressure between the wedge 29 and wedge seat 31 so that the pressure along the contact surface is substantially uniform regardless of the position of the wedge as determined by the surface of the head 30 of T-rail 27. Hence it will be seen that any tendency of the wedge to spring back when it is driven in is eliminated, and the wedge can immediately be driven in to a tight and lasting fit with little effort.

Figure 5 is similar to Figure 4, except that the wedge seat 31 has only one bearing face.

Referring now to Figures 6 and 7, these show a second embodiment of my invention in which the adjusting block 36 is T-shaped (instead of C-shaped) and dovetails with an arcuate rail 37 which is C-shaped (instead of T-shaped). This arrangement provides more bearing surface on the rail for the wedges 39 and permits the adjusting blocks 36 to be somewhat smaller.

Figures 6 and 7 show an eccentrically-mounted wedge seat 41 with two wedge bearing surfaces

41A and 41B, whereas in Figure 8 the seat has only a single bearing surface.

Having now described and illustrated a number of forms of my invention, I wish it to be understood that my invention is not to be limited to specific forms or arrangements of parts herein described and shown.

I claim:

1. In a bulldozer of the type which includes: a supporting frame, a blade pivotally mounted thereon to tilt about an axis central and longitudinal with respect to the frame, two arcuate tracks rigidly mounted on the back of the blade and having their center of curvature on the tilting axis, two landsides each connected at its rear end to one side of the frame, a connecting member pivotally mounted on the front end of each landside to swing about a vertical axis with respect to the landside and adapted to engage the corresponding one of the two arcuate tracks for sliding along the track as the blade is tilted, and means to lock each connecting member to its arcuate track at selective points so as to lock the blade in selective tilted positions with respect to the frame; such locking means, further characterized by the fact: that each arcuate track has a vertical wedge-bearing surface on its rearward face, and two opposed undercut portions; that each connecting member has two opposed undercut portions adapted to slide along the undercut portions of one of the tracks; that there is on the front end of each landside a forwardly projecting wedge-seat, pivotally mounted independently of the connecting member, to swing with respect to the landside about a vertical axis, and having at its forward end a vertical wedge-bearing surface; and that there is on each side a horizontally-driven wedge, adapted to engage and force apart the opposed wedge-bearing surfaces of the track and the wedge-seat, to force the undercut portions of the connecting member against the undercut portions of the track, and thereby to lock the blade in selected tilted positions.

2. Landside-end locking means for a bulldozer, according to claim 1, further characterized by the fact that each connecting member and the corresponding wedge-seat pivot about the same vertical axis on the landside.

3. Landside-end locking means for a bulldozer, according to claim 1, further characterized by the fact that each connecting member has a pair of rearwardly projecting vertically-spaced lugs pivotally mounted on the corresponding landside, and that the corresponding wedge-seat is pivotally mounted on said landside intermediate said lugs.

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