Nov. 24, 1953 F. I. BRADEN ET AL 2,659,988

SLOPING ATTACHMENT FOR GRADERS

Filed Oct. 18, 1950 4 Sheets-Sheet 1

Fig. 1

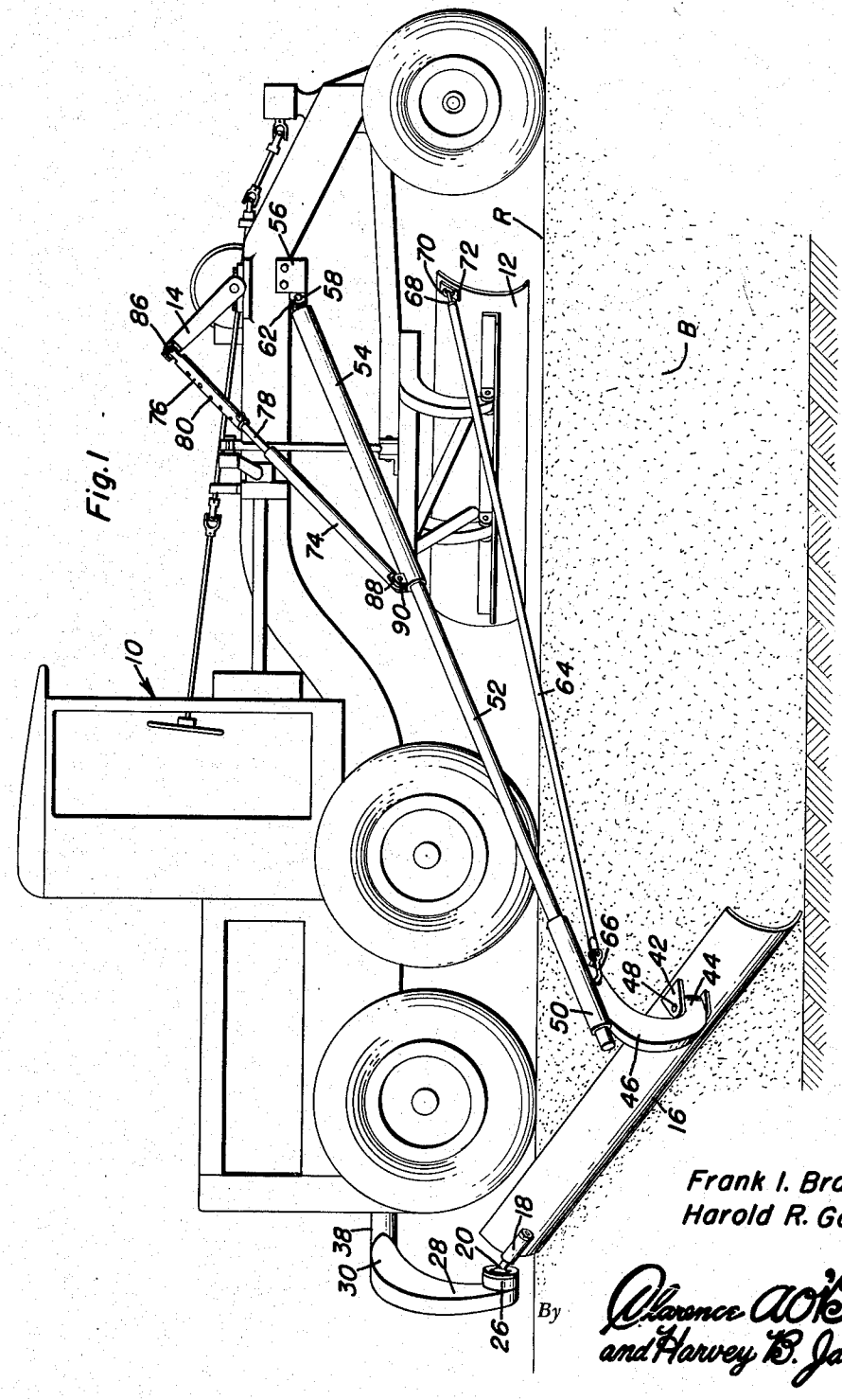

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Fig. 2

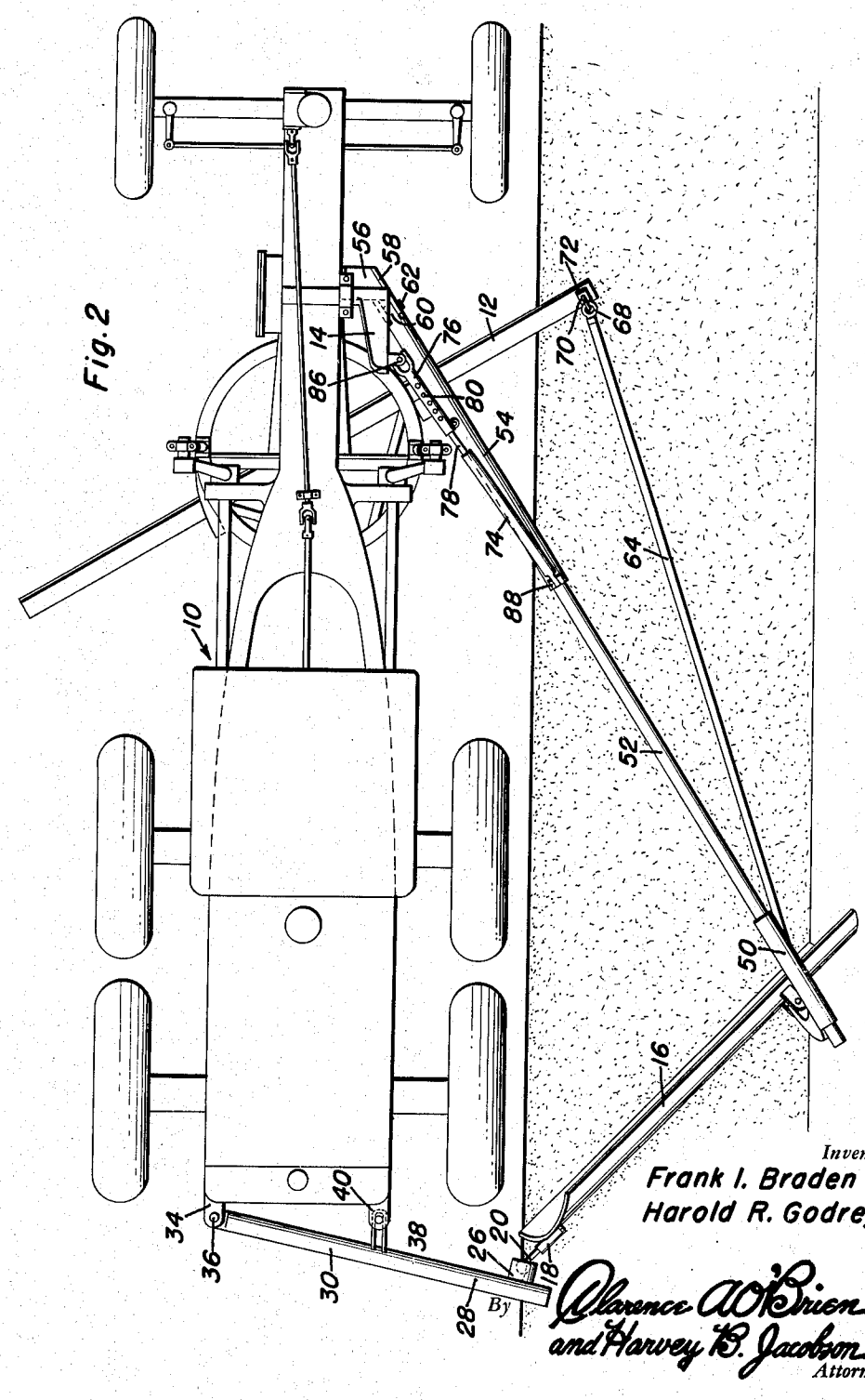

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Fig.3

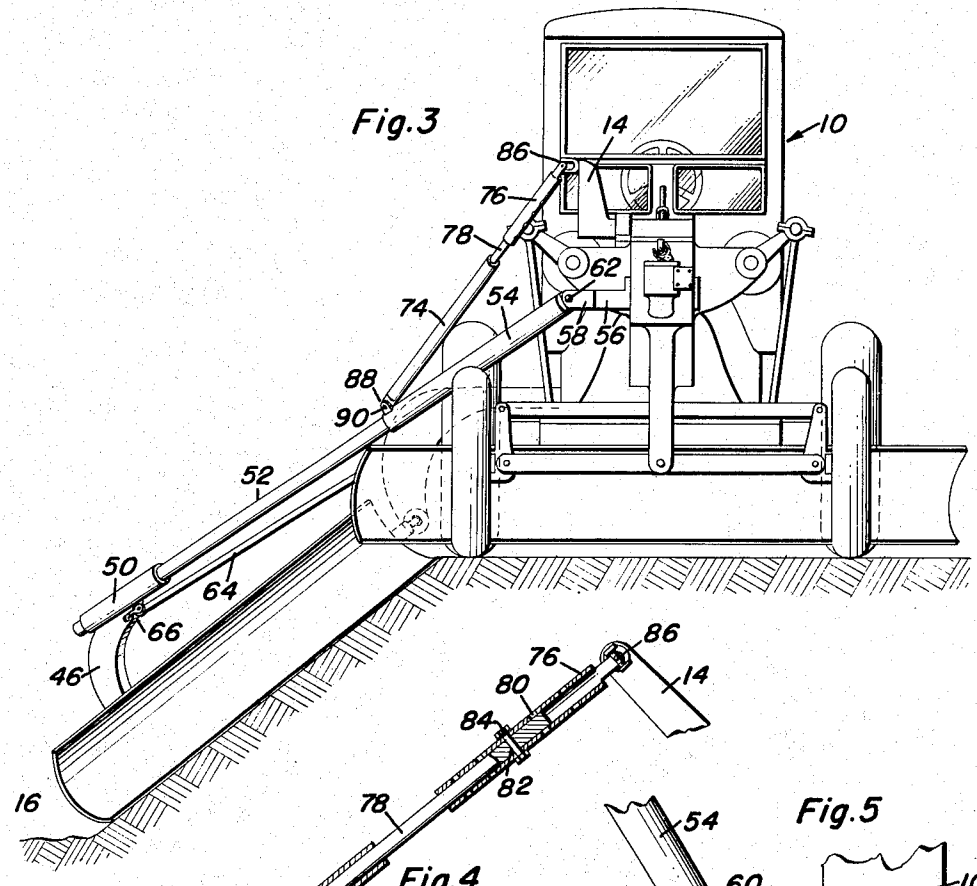


Fig.4

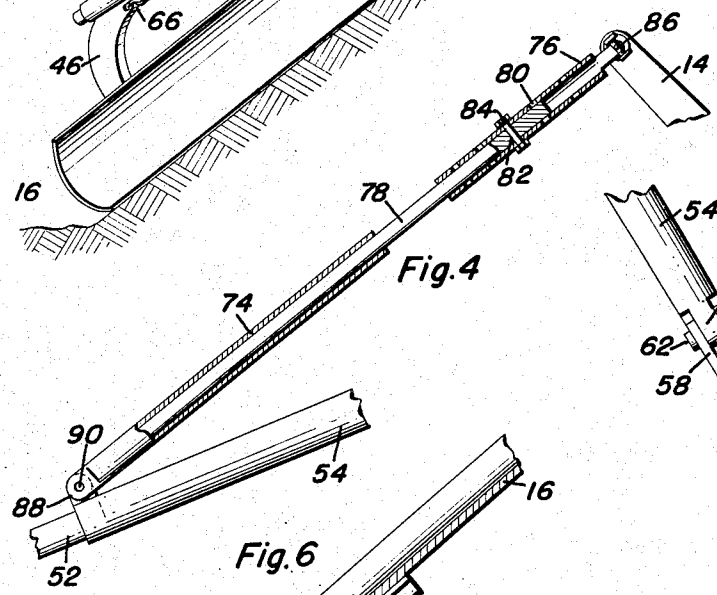


Fig.5

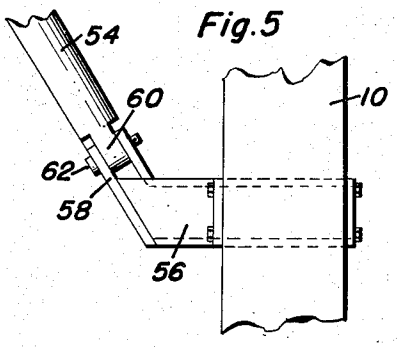
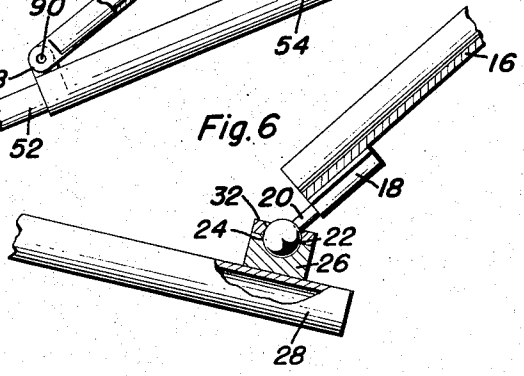


Fig.6



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SLOPING ATTACHMENT FOR GRADERS

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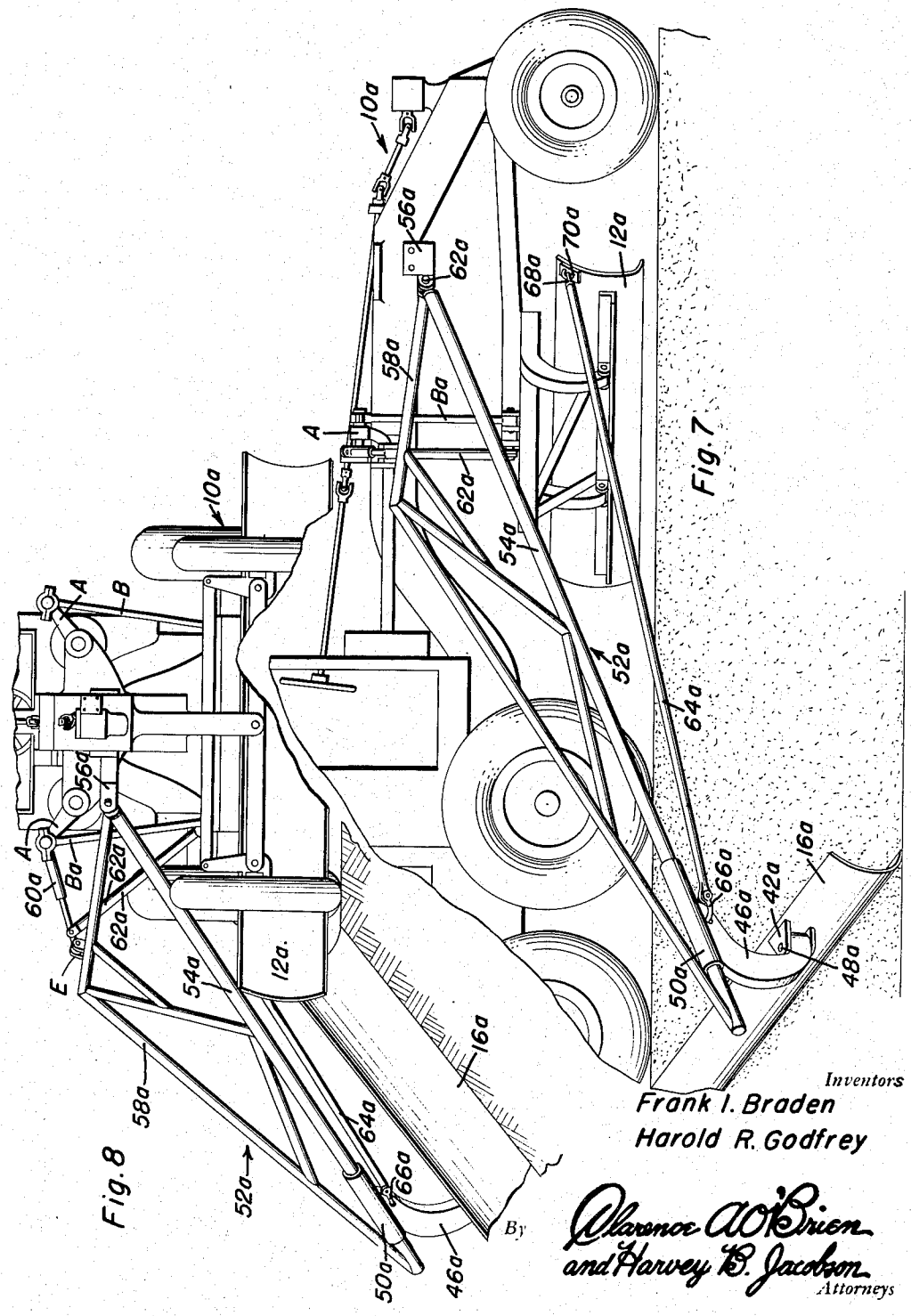

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UNITED STATES PATENT OFFICE

2,659,988

SLOPING ATTACHMENT FOR GRADERS

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Application October 18, 1950, Serial No. 190,768

5 Claims. (Cl. 37—155)

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This invention relates to new and useful improvements in road graders and the primary object of the present invention is to provide a road bank sloping attachment for graders that will in no way harmfully effect the normal and intended use of a road grader.

Another important object of the present invention is to provide a sloping attachment for road graders that will bring the dirt on a bank up and on top of a fill and which will leave the ditches free from loose dirt and which will also line up the shoulders in one operation.

Yet another object of the present invention is to provide a sloping attachment for road graders that will direct the loose dirt on a bank on top of the fill so that the dirt so moved on top of the fill can be used for finishing the top of the road.

A further object of the present invention is to provide a sloper attachment for graders or auto-patrols that includes a blade mounted at the rear of a grader, causing all the pull to come from the rear of the driving wheels of the grader, and thereby eliminating any side draft.

A still further aim of the present invention is to provide a bank sloper including a novel and improved means for mounting the sloper on a grader, so that the sloper may be quickly and readily applied to or removed from a grader in a convenient manner to cooperate with the normal earth moving blade of the grader.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of a well-known type of grader and showing the present invention mounted therein;

Figure 2 is a plan view of Figure 1;

Figure 3 is a front elevation view of Figure 1;

Figure 4 is an enlarged fragmentary view showing the means, in section, for attaching the invention to the left arm of a grader;

Figure 5 is an enlarged detail view showing the manner in which the forward portion of the main connecting means is attached to the forward end of a grader;

Figure 6 is an enlarged detail view, partly in section, showing the manner in which the sloper blade is attached to a beam at the rear of the grader;

Figure 7 is a view similar to Figure 1 but showing the invention in modified form; and,

Figure 8 is a front elevational view of Figure 7.

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Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents a conventional well known type of road grader having the usual earth moving blade 12 mounted beneath its forward portion and below a vertically swingable lift arm 14 which also forms a usual part of the grader.

The present invention does not attempt to claim the above well known structure but is merely an attachment therefor that will properly slope the bank of a road as the blade 12 is leveling a road or fill.

In order to accomplish the desired results, there is provided an elongated sloper blade 16 whose inner end supports a tube 18 in which a longitudinally extending bolt 20 is mounted. A ball member 22 is fixed to the outer end of the bolt or rod 20 and enters a ball seat or socket 24 in a block 26 that is welded to the depending end portion 28 of a beam 30. The ball member 22 is confined in the seat 24 for universal movement by a retaining ring 32 that is secured to the block 26.

The end of the beam 30 remote from the block 26 is secured to the rear end of the grader by a pair of horizontal plates 34 and a vertical pin 36 to permit removal of the beam 30 from the grader. An arm 38 projects laterally and forwardly from the beam 30 and is secured between upper and lower plates 40 at the rear of the grader.

An upper and lower pair of enlarged ears 42 are fixed by welding or the like to the outer end of the sloper blade 16. The eye end 44 of an upstanding arm 46 is held between the ears 42 by a vertical pivot 48 that extends through the ears 42 and the eye end 44. An inclined tube 50 is fixed by welding or the like to the arm 46 and receives the rear end of a rear tubular member 52. The forward end of the member 52 is slidably mounted in a forward tubular member 54. The rear end of an elongated pitman or rod 64 is attached to the arm 46 by a ring 66 carried by the rear end of the pitman and which ring is slidable in an aperture in the arm 46. Another ring 68 at the forward end of the pitman engages a ring member 70 on a holding plate 72 that is welded or otherwise fixed to the blade 12.

Means is provided for connecting the member 54 to the lift arm 14 of the grader. This means comprises a pair of elongated tubes 74 and 76 that are connected by a rod 78. The tube 76 is provided with a plurality of longitudinally spaced

openings 80 that will selectively register with a transverse opening 82 in the rod 78 and a bolt 84 extends through the opening 82 and a selected one of the openings 80 to adjust the rod 78 longitudinally within the tube 76. The uppermost end of the tube 74 is pivoted between a pair of ears 88 on the rear end of the member 54 by a pivot 90.

In practical use of the invention, the blade 16 will extend downwardly and forwardly from the rear of the grader as shown in Figure 1 so that as the grader is moved forwardly loose dirt from the bank B will be moved to the road R. The location of the blade 16 at the rear of the grader and behind the driving wheels of the grader is quite important and aids in reducing side draft.

The blade 16 may be raised sufficiently by the arm 14, to clear fences and the like obstructions and the inclination of the blade 16 may be varied by actuation of the arm 14 and through longitudinal adjustment members or tubes 74 and 76 relative to each other.

Attention is now directed to Figures 7 and 8, wherein there is disclosed the present invention in modified form. In this embodiment, the auxiliary blade 16*a* is attached to the rear of the tractor by the same means described in Figures 1–6 inclusive. The outer end of the blade 16*a* is secured to the grader frame 10*a* by a framework 52*a* consisting of an elongated member 54*a* whose inner end is pivoted as at 62*a* to an anchor plate 56*a* mounted on the grader 10*a*. The framework 52*a* also includes bracing members 58*a* that are welded together and to the member 52*a*.

The grader 10*a* being of conventional structure is provided with the usual blade lift arms A from which hanger rods B*a* depend. One of these lift arms A is connected to ears E on the framework 52*a* by a telescoped connector 60*a*. The connector 60*a* is also secured to the grader by a pitman 62*a*.

Through the structure above described, the framework 52*a* and the outer end of the blade 16*a* may be selectively raised or lowered as the lift arms A of the grader are raised and lowered by the usual operating mechanism of the tractor.

The lower end of an arm 46*a* is pivoted between a pair of ears 42*a* fixed on the outer end of the blade 16*a* by a vertical pivot 48*a* and to the upper end of the arm 46*a* there is fixed a sleeve 50*a* that embraces the member 54*a*. The arm 46*a* is connected to the blade 12 of the grader by a rod 64*a* whose ends support rings 66*a* and 68*a*. The ring 66*a* extends through an aperture in the arm 46*a* and the ring 68*a* engages another ring 70*a* secured to the blade 12*a*.

Having described the invention, what is claimed as new is:

1. In a road grader including forward and rear portions, an earth moving blade mounted beneath the forward portion and a vertically swingable arm mounted upon the forward portion, a bank sloper comprising an elongated sloper blade, means swiveling one end of the sloper blade to the rear portion of the grader, means connecting the other end of the sloper blade to the forward portion of the grader, a connecting member between said connecting means and said arm, and a pitman connecting said sloper blade and said earth moving blade.

2. In a road grader including forward and rear portions, an earth moving blade mounted beneath the forward portion and a vertically swingable arm mounted upon the forward portion, a bank sloper comprising an elongated sloper blade, means swiveling one end of the sloper blade to the rear portion of the grader, means connecting the other end of the sloper blade to the vertically swingable arm, and a pitman connecting the sloper blade to the earth moving blade of the grader, said means swiveling one end of said sloper blade to the rear portion of the grader including a horizontal beam attached to and projecting laterally from the rear portion of the grader, a socket carried by said beam, and a ball member secured to the sloper blade and mounted in said socket for universal movement.

3. In a road grader including forward and rear portions, an earth moving blade mounted beneath the forward portion and a vertically swingable arm mounted upon the forward portion, a bank sloper comprising an elongated sloper blade, means swiveling one end of the sloper blade to the rear portion of the grader, means connecting the other end of the sloper blade to the forward portion of the grader, a connecting member between said connecting means and said arm, and a pitman connecting said sloper blade and said earth moving blade, said connecting means including a pair of telescoped members, means pivotally securing one of said telescoped members to the forward portion of the grader and additional means pivotally securing the other of said telescoped members to the sloper blade.

4. In a road grader including forward and rear end portions, an earth moving blade mounted beneath the forward end portion and a vertically swingable lift arm mounted on the forward portion, a bank sloper comprising a sloper blade having inner and outer ends, an attaching arm mounted on the rear end portion of the grader and projecting laterally from the grader, a universal connection between the arm and the inner end of said sloper blade, a swingable attaching arm mounted on and rising from the outer end of said sloper blade, forward and rear elongated and slidably connected members, means securing the forward member to the forward end portion of the grader for vertical swinging movement of the members, means carried by the swingable attaching arm receiving the rear member, a pair of slidably and adjustably connected tubes terminally pivoted to the lift arm and the forward member, and a pitman terminally pivoted to said attaching arm and one end of said earth moving blade.

5. A road bank sloping attachment for road graders comprising a blade having inner and outer ends, an anchor beam swiveled to the inner end of said blade for attaching the blade to a grader, an attaching arm swingably mounted on and rising from the outer end of said blade, a pair of elongated members carried by the arm and adapted for attachment to a grader and grader blade respectively, and a connector branching from one of the members and adapted for attachment to a lift arm on the grader.

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