

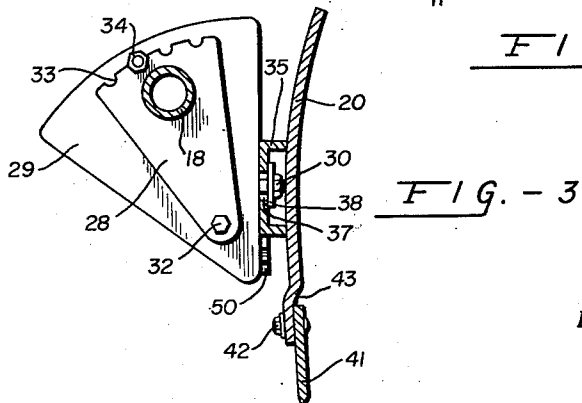
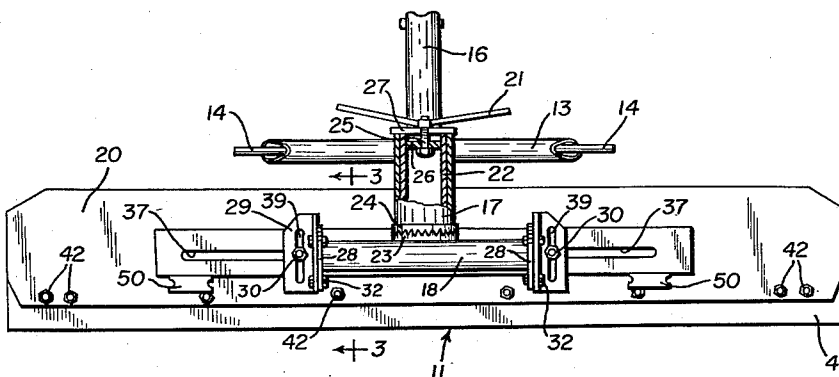
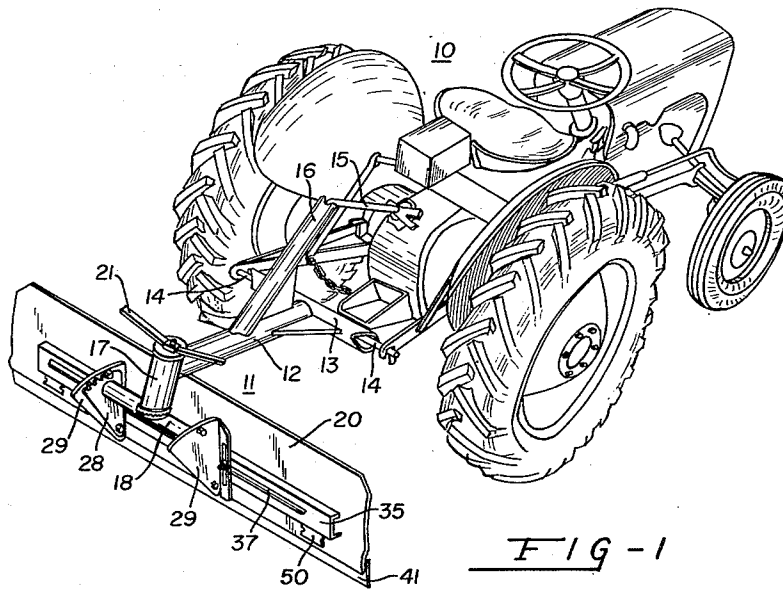
Dec. 10, 1957

J. W. MATTINGLY
EARTH MOVING DEVICE

2,815,591

Filed Feb. 26, 1954

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

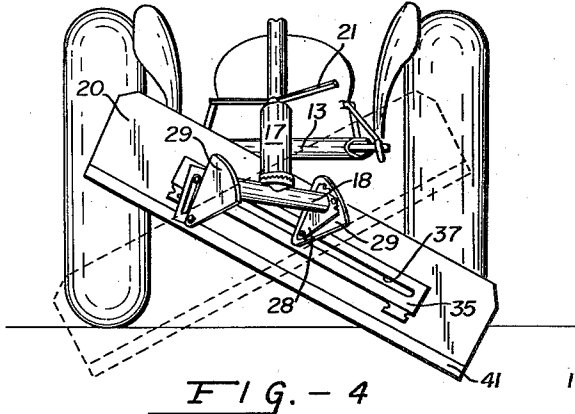


FIG. - 4

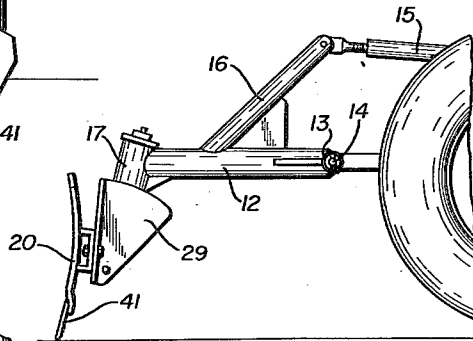


FIG. - 6

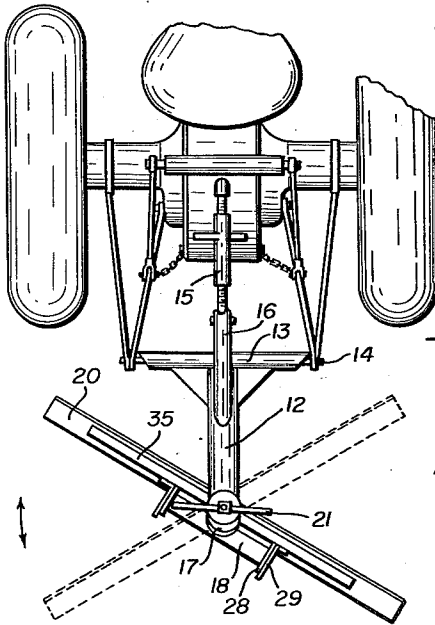


FIG. - 5

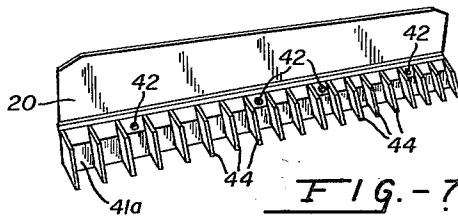


FIG. - 7

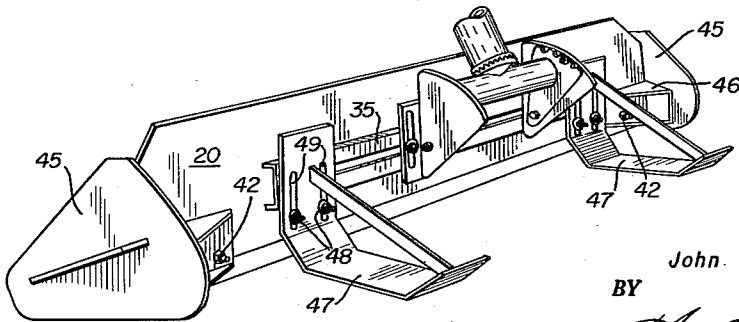


FIG. - 8

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2,815,591

EARTH MOVING DEVICE

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4 Claims. (Cl. 37—156)

This invention relates to earth moving equipment and particularly to an improved ditching and leveling device of the type employing an elongated scraping and cutting blade.

Various forms and arrangements of earth moving equipment have been designed and constructed for use in connection with farm tractors, and it is highly desirable that such devices be suitable for a wide range of operations about the farm and further that they should be readily adjusted, altered or reset to perform the different operations required. It is essential that the construction of such earth moving equipment be simple and rugged in order that it may best serve its intended purposes. Accordingly it is an object of this invention to provide an earth moving device including a moldboard or scraping blade and an improved arrangement for mounting the moldboard and adjusting its position to meet various working requirements.

It is another object of this invention to provide an improved moldboard and main draft beam assembly for tractor drawn terracing and ditching equipment which affords a wide range of angular adjustment and offsetting of the moldboard without displacing or tilting the main beam from the line of draft.

It is a further object of this invention to provide an earth moving device of the scraper blade type including an improved arrangement of simple and rugged construction for mounting and adjusting the position of the moldboard to secure effective operation and superior cutting action for a wide range of ditching and terracing operations.

Further objects and advantages of this invention will become apparent as the following description proceeds and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

In carrying out the objects of this invention in one embodiment, an earth moving machine is provided with a moldboard mounting assembly which comprises a main beam or boom arm and a mounting arrangement for securing the moldboard to the boom arm and which affords ready adjustment of the position of the moldboard with respect to the boom. The boom arm is provided with a mounting head and a yoke is mounted in the head and may be secured in selected positions about a complete circle. A pair of spaced angle brackets are secured to the moldboard and the yoke is pivoted to these brackets about an axis parallel to the face of the board. Yoke arms which engage the brackets may be adjusted angularly about the pivoted connection of the yoke in the brackets and may be locked in the selected positions. In order to secure the brackets to the moldboard in a manner such that they may be adjusted to varying positions, a channel bar or beam is secured to the moldboard with its bottom wall spaced therefrom and a slot is provided extending substantially the length of the channel so that bolts or other clamping devices may pass through the slot and through suitable slots in the brackets to secure

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the brackets to the moldboard. The slots in the brackets are arranged transversely of the moldboard and by this arrangement the brackets may be moved from one side to the other of the moldboard to secure an offset position of the moldboard with respect to the boom arm, and furthermore, the transverse slots make it possible to rotate the axis of the yoke with respect to the moldboard. Thus it is possible to locate the moldboard in any position with respect to the boom about a vertical axis and further to arrange the moldboard in any tilted position within the range of positions afforded by the slotted construction of the brackets and the channel member.

For a better understanding of the invention, reference may be had to the accompanying drawings in which:

Fig. 1 is a perspective view of a farm tractor provided with a moldboard assembly embodying this invention;

Fig. 2 is an enlarged rear elevation view of the moldboard;

Fig. 3 is an enlarged sectional view along the line 3—3 of Fig. 2;

Fig. 4 is a rear view of the tractor illustrating the moldboard in a tilted position;

Fig. 5 is a top plan view of the tractor and moldboard assembly showing the angular adjustment of the moldboard;

Fig. 6 is a side view of the moldboard assembly in reverse position;

Fig. 7 shows a set of scarifier teeth secured to the moldboard of Fig. 1; and

Fig. 8 is a perspective view of the moldboard provided with side wings and leveling skids attached thereto.

Referring now to the drawing as illustrated in Fig. 1 a tractor 10 has a moldboard assembly 11 hitched to be drawn by the tractor by means of a three point system. The moldboard in assembly includes a main frame or boom arm 12 having a crosshead 13 provided with shaft ends 14 which are secured in the tractor hitch. The angle of the boom 12 with respect to the horizontal may be adjusted by turning a turn buckle 15 to move an arm 16 toward or away from the tractor. The arm 16 being rigidly secured to the boom 12 near the center thereof. At the outer end of the arm 12 there is provided a hollow cylindrical head 17 within which is secured a mounting head of a yoke 18 for carrying a moldboard 20. The yoke 18 is angularly adjustable within a wide range of positions with respect to the moldboard 20 and the moldboard 20 may be moved to any desired position at selected intervals about the entire 360° of rotation within the cylindrical head 17. The moldboard may be locked in its position with respect to the boom arm by a rotatable locking handle 21.

The details of construction of the moldboard and the yoke assembly are clearly shown in Figs. 2 and 3. The yoke 18 is provided with a mounting head 22 fitted within the hollow cylinder 17 and complementary toothed circular locking members 23 and 24 are provided on the mounting heads 22 and 17 respectively. The locking members 23 and 24 are held in meshed relationship by a locking device comprising a bolt 25 mounted in a cross piece 26 rigidly secured to the upper end of the cylinder 22. The bolt 25 extends above the top of the head 17 through a circular locking plate 27 and the handle 21 is threaded on the bolt above the locking plate 27. When it is desired to change the angular position between the moldboard 20 and the mounting head 17 the handle 21 is loosened so that the locking elements 23 and 24 may be separated sufficiently to allow relative rotation to the desired position where upon the handle 21 is again tightened to lock the moldboard. The yoke 18 is provided with end plates 28 which engage mounting brackets 29 secured to the moldboard by locking bolts 30. The plates 28 are pivotally mounted on the brackets 29 by bolts 32

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so that the yoke 18 may be rotated about the axis of the bolts 32 on the plates 28 as arms. The plates 28 are in a form of sectors of a circle and are provided with a plurality of notches 33 at their peripheries so that bolts 34 mounted in the brackets 29 may be employed to lock the end plates 28 in any desired one of the positions determined by the notches. Thus the yoke 18 may be rotated about the axis of the bolts 32 extending longitudinally of the moldboard 20 and near the moldboard so that the angle of the face of the moldboard with respect to the mounting head 17 may be adjusted.

Each of the brackets 29 comprises a main body portion extending transversely of the longitudinal axis of the moldboard and normal to the face of the moldboard, and a flange which is secured by the bolt 30 in face engagement with the bottom wall of a channel beam 35. The channel has the top of its side walls welded or otherwise suitably secured to the moldboard 20. The bolts 30 fit in a longitudinal slot 37 in the bottom wall of the channel 35 and are provided with washers 38 which bear on the bottom wall of the channel adjacent the slot 37. It will thus be apparent that the brackets 29 may be moved along the moldboard so that the moldboard may be offset to either side with respect to the mounting head 17. Each of the flanges of the brackets 29 is provided with an elongated slot 39 extending parallel to the body portion of the bracket so that the position of the bracket may be adjusted transversely of the moldboard and further so that the brackets may be rotated within the limits determined by the length of the slots 39. This arrangement makes it possible to tilt the moldboard to desired angular positions with respect to the mounting head 17.

The tipped position of the moldboard with respect to the mounting head 17 is illustrated in Fig. 4. This figure also illustrates the offsetting of the moldboard by movement along the slot 37 in the channel 35. The full line position of Fig. 4 shows the moldboard moved to its extreme righthand position and tilted downwardly in a clockwise direction about the axis of the boom arm. The dotted line position of the moldboard indicates its extreme lefthand position rotated or tilted downwardly in a counterclockwise direction. These tilted positions of the moldboard are employed for ditching and terracing operations. When the moldboard is moved to a side position as shown it extends beyond the wheel of the tractor and may be used effectively near fences or other objects without interference because of the tractor wheels. In this tilted position of the moldboard, the boom arm is initially lifted to raise the head 17 so that the depth of cut may be adjusted as desired. For cutting purposes a scraper blade or cutter 41 is attached to the moldboard by bolts 42 clearly shown in Figs. 2 and 3. It will be noted in Fig. 3 that the lower end of the moldboard is offset as shown at 33 in order to receive the scraper blade 41 and maintain a continuous or flush surface on the cutting side of the moldboard, the face of the moldboard and the face of the scraper blade 41 being in alignment.

In Fig. 5 the moldboard has been shown in full lines in a position rotated clockwise as viewed from above about the axis of the mounting head 17. The dotted lines illustrate a similar position corresponding to rotation by an equal angle in a counter-clockwise direction. It will be noted that the construction of the interfitting mounting head 17 and 22 is such that the moldboard 20 may be rotated throughout 360° within the mounting head 17 and may be locked in any of a plurality of selected positions determined by the number of the teeth of the locking elements 23 and 24. Fig. 6 illustrates the moldboard 20 in its position for back filling, this being a reverse position obtained by rotating the moldboard 180° about the mounting head 17. This reverse position of the moldboard may be employed effectively in back filling and in

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other operations where it is desired to avoid the pressure of the tractor wheels on the ground in front of the blade.

From the foregoing, it will now be apparent that a simple and rugged arrangement has been provided for mounting the moldboard of an earth moving machine of the scraper or blade type, the mounting being universal within practical limits as determined by the length of the slots 39 in the brackets 29. The adjustment of the position of the moldboard 30 with respect to the yoke 18 is accomplished simply by loosening the two bolts 30 for lateral adjustment or for tilting of the moldboard with respect to the head 17 and by loosening the bolts 34 for adjusting the angular position of the arms 28 with respect to the face of the moldboard. Both of these operations are easily accomplished in the field with a wrench and no special tools are required. The moldboard is readily adapted for securing various accessories or attachments, and in Fig. 7 it has been illustrated with a scraper blade 41a provided with scarifier teeth 44. In Fig. 8 the moldboard has been illustrated with additional accessories including end wings 45 secured on right angle brackets 46 which are attached to the moldboard by bolts 42. In addition to the end boards two broad skids 47 have been provided in order to carry the weight of the moldboard over soft spots in the earth. The skids 47 are secured to the moldboard in face engagement with the channel 35, the moldboard being provided with bolts 48 fitted in slots 49 and engaging notched lugs 50 welded to the bottom of the channel 35 in alignment with the outer bottom wall thereof, these lugs being clearly shown in Figs. 1, 2 and 3. The slots 49 allow adjustment of the elevation of the skids 47 to determine the riding position of the moldboard over the ground.

From the foregoing it is readily apparent that this invention provides a simple rugged and easily adjusted moldboard assembly for earth moving machines. The construction provides a universal mounting so that the position of the moldboard may easily be adjusted within a wide range which affords flexibility and makes the equipment available for a wide range of uses where a farm tractor can be employed.

While a particular embodiment of the invention has been illustrated and described, various modifications will occur to those skilled in the art. Therefore it is not desired that the invention be limited to the specific details of construction illustrated and described and it is intended by the appended claims to cover all modifications falling within the spirit and scope of the invention.

I claim:

1. A moldboard mounting assembly for earth moving machines and the like comprising a moldboard, a mounting yoke having a mounting head extending therefrom, a pair of mounting brackets attached to said moldboard, means including a pair of complementary bracket engaging members on said yoke for pivotally and adjustably securing said yoke to said brackets about an axis extending longitudinally with respect to said moldboard and at predetermined angular positions of said head with respect to the face of said moldboard, and means for adjusting the position of each of said brackets laterally with respect to the face of said moldboard and also about axes normal to said face whereby the angle between the longitudinal axis of said moldboard and the pivotal axis of said yoke in said brackets may be changed.

2. A moldboard assembly for earth moving machines and the like comprising an elongated moldboard, a channel member having a longitudinal slot in its bottom wall and having its side walls secured to said moldboard longitudinally thereof, a mounting yoke having a mounting head and a pair of arms extending therefrom, a pair of brackets extending in planes normal to the surface of the moldboard and having flanges provided with slots parallel to the faces of the brackets and arranged to lie in face engagement with the bottom wall of said channel, means for

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mounting said yoke arms pivotally between said brackets on an axis extending longitudinally of said yoke, and releasable locking members for each of said brackets extending through the slot in said channel and through the respective slot in the bracket for affording adjustment of the axis of said yoke with respect to the longitudinal axis of said moldboard and further affording adjustment of the position of said yoke longitudinally of said moldboard.

3. A moldboard mounting assembly for earth moving machines and the like comprising an elongated moldboard, a mounting yoke having a mounting head extending therefrom, means providing a slot extending longitudinally of said moldboard, a pair of spaced mounting brackets attached to respective ends of said yoke and having flanges lying substantially parallel to the surface of said moldboard, each of said flanges having a slot opening toward said moldboard and extending transversely of the slot therein, and means passing through the slot in said moldboard and respective ones of the slots in said brackets for securely clamping said moldboard to said yoke at selected positions longitudinally of said moldboard and at selected angles with respect to said mounting head.

4. A moldboard mounting assembly for earth moving machines and the like comprising a moldboard, a mounting

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yoke having mounting means extending therefrom, a pair of mounting brackets attached to said moldboard, means for securing said yoke to said brackets with said yoke extending longitudinally of said moldboard, and means for adjusting the position of each of said brackets laterally with respect to the face of said moldboard and also about axes normal to said face whereby the angle between the longitudinal axis of said moldboard and the longitudinal axis of said yoke between said brackets may be changed.

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