

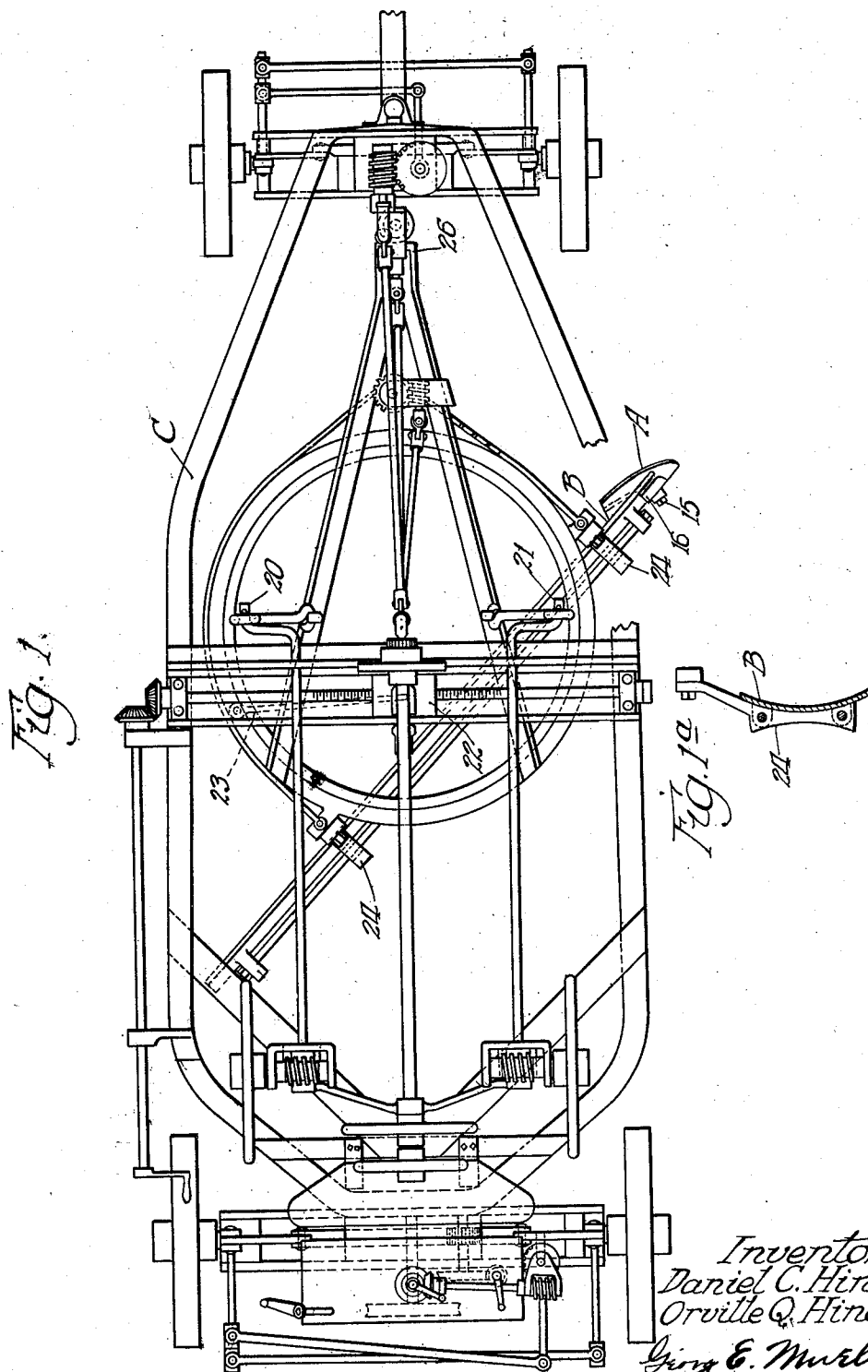
April 1, 1930.

D. C. HINDS ET AL
DITCH CUTTER FOR GRADERS

1,753,150

Filed April 23, 1926

2 Sheets-Sheet 1



Inventors:
Daniel C. Hinds.
Orville Q. Hinds.
Guy E. Mueller
Att'y.

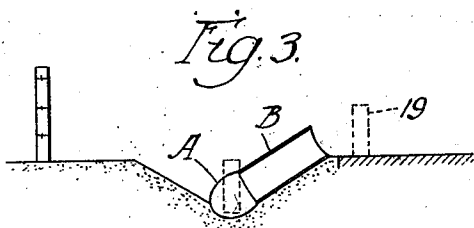
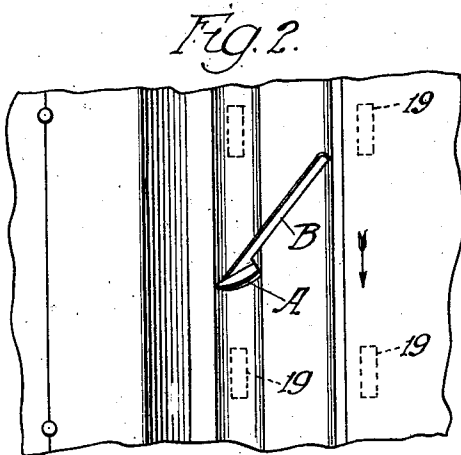
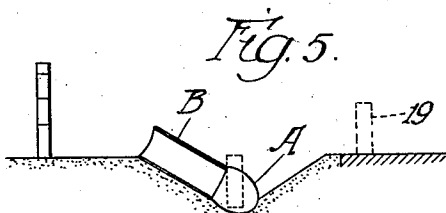
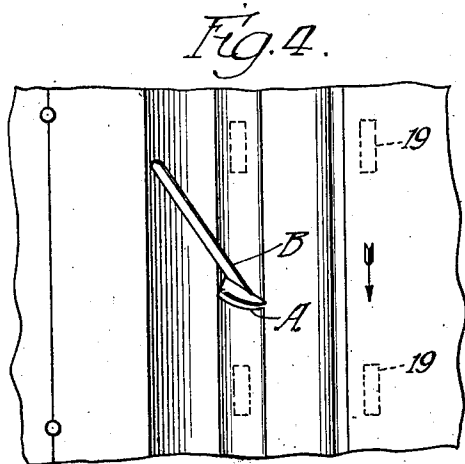
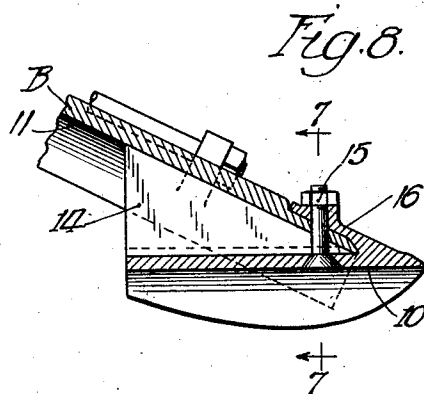
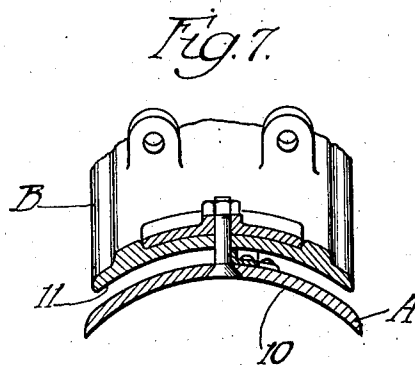
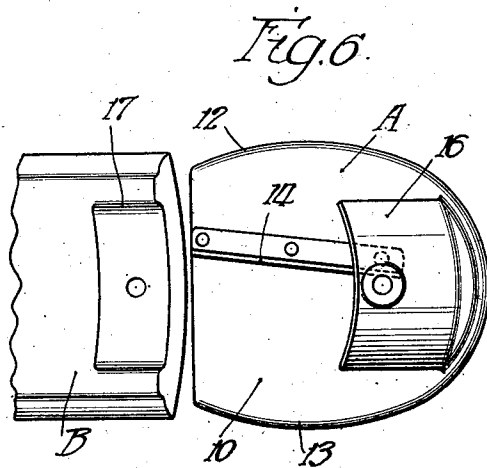
April 1, 1930.

D. C. HINDS ET AL
DITCH CUTTER FOR GRADERS

1,753,150

Filed April 23, 1926

2 Sheets-Sheet 2



Inventors
Daniel C. Hinds.
Orville Q. Hinds.
George E. Mueller *Att'y.*

UNITED STATES PATENT OFFICE

DANIEL C. HINDS, OF SIOUX FALLS, SOUTH DAKOTA, AND ORVILLE Q. HINDS, OF CHICAGO, ILLINOIS, ASSIGNORS TO RYAN MANUFACTURING CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

DITCH CUTTER FOR GRADERS

Application filed April 23, 1926. Serial No. 104,059.

Our invention relates to ditch bottom cutters for graders and the like, being directed more particularly to a device of the above character adapted for use in connection with the mold board, an object being to provide an improved device of the above character adapted to be operated for cutting, shaping or cleaning ditch bottoms when attached to the mold board.

Another feature of our invention is the provision of such a device which may be so attached to the mold board that the old ditch bottom may be cleaned and which is so applied that it throws the dirt onto the mold board and permits the mold board following to move the dirt to either side out of the ditch. In this last feature we preferably arrange the mold board so that it may be used along the back slope, whereby the mold board simultaneously cleans the back slope while the ditch bottom is being cleaned.

Another feature of our invention is the provision of such a cutter or cleaner, which may be interchangeably applied to either end of the mold board and thus worked from either side of the grader, or the mold board reversed so the device may be operated from either side of the grader.

There are other features to our invention, and these will be more particularly pointed out in the ensuing part of the specification and the appended claims.

For a better understanding of our invention reference is to be had to the accompanying drawings, in which—

Fig. 1 is a plan view of the preferred application of our device;

Fig. 2 is a plan view of a section of ditch alongside a road, diagrammatically showing the device applied to the mold board which is being advanced along the shoulder of the road;

Fig. 3 is a cross sectional view through the ditch, showing the position of the mold board and ditch bottom cutter;

Fig. 4 illustrates diagrammatically the device being used for cleaning the ditch bottom and throwing the dirt up the back slope toward the fence;

Fig. 5 is a cross sectional view through the ditch of Fig. 4;

Fig. 6 is a segregated view of the back-side of one end of the mold board and the cutter or cleaner detached therefrom;

Fig. 7 is a sectional view through the device as it is attached to the mold board, the view being taken through the bolt which holds the parts together; and

Fig. 8 is a longitudinal or plan section through the center of the mold board and attached device.

Referring now more in detail to the preferred form of our invention, it is to be understood that the device itself may be applied to any mold board, but we preferably employ it in connection with the type of grader shown in Fig. 1 and which is claimed in the Patent to Daniel C. Hinds, No. 1,732,892, granted Oct. 22, 1929.

Referring first more in detail to the device as shown in Figs. 6 to 8, it includes a plate-like cutting and cleaning member A having a concave face 10 preferably corresponding to the concave face as 11 of the mold board B. The cutter A may have a cutting or shaping peripheral edge of the desired contour and depending upon the desired shape of the ditch bottom or the use to which it is put. Ditch bottoms are cut to various shapes, there being different requirements or laws as to this in different localities. In some places the ditch bottoms must be rounded and in other places flat. So it will be understood that the peripheral cutting or shaping edge of the cutter may vary according to conditions or requirements. Now as to the cutter as illustrated, this is preferably arranged for universal application so that it may be readily attached and detached to and from either end of the mold board. As herein shown, the opposite horizontal edges 12—13 of the cutter are similarly shaped so that it may be used from either side, as shown in Figs. 2 to 5.

Being preferably made in plate-like form, it is of concavo-convexo cross section as indicated in Fig. 7, so as to conform to the working face of the mold board B. In order to at-

tach it to the mold board we preferably apply it angularly to the mold board as indicated in Fig. 8, and to this end a separate or spacing web or brace 14 is secured to the rear face of the cutter and adapted to engage the face 11 of the mold board B as shown in Fig. 8. For the purpose of more positively securing the cutter to the mold board and taking the strain off the fastening bolt 15, we provide a rear clamping extension 16 which passes along the rear face of the mold board and then provide a hole through this rear clamping extension 16 and plate 10 of the cutter, so that the clamping bolt 15 may extend through said elements into the mold board and all securely clamp together as indicated in Fig. 8.

When the cutter is in use there is a considerable vertical strain thereon, and in order to positively hold the attachment without depending upon the clamping effect of the bolt 15 alone, we preferably provide a recessed or shouldered construction 17 on the back-side of the mold board as indicated in Fig. 6. This recessed or shouldered portion is adapted to receive the rear clamping plate 16 by sliding the attachment over the end of the mold board with the rear plate 16 in the recess to prevent displacement thereof. Each end of the mold board is preferably provided with such recessed construction so that the attachment may be centrally applied at either end.

Thus with the recess 17 centrally disposed in the ends of the mold board and with the attachment preferably of symmetrical outline, the same cutting or cleaning results may be secured with the attachment applied to either end of the mold board.

It will thus be seen that the attachment may be readily applied or removed at either end of the mold board and used from either edge at either end of the mold board. In other words, it has universal application.

Referring now to its use in combination with a grader of the character indicated in Fig. 1, the attachment is shown applied to one end and adjusted for use in cutting the ditch bottom and shaping the shoulder as indicated in Figs. 2 and 3.

The grader herein illustrated is of the tilting main frame type, in which the main frame C is pivotally carried by the front and rear axles and with a rotatable mold board circular frame pivotally suspended from the main frame. The circular frame has universal adjustment, being pivotally suspended from the arms 20—21, which preferably rotate through a complete circle and thereby give extreme lateral and vertical adjustment of the circle frame 23. Additional lateral adjustment of the circular frame is secured by the transversely adjustable block 22, which is connected to the circle frame by the link 23. Thus extremely wide transverse adjustment is secured and with the mold board reversibly secured to brackets 24 we are enabled to secure

the different positions of the mold board and cutter as indicated in Figs. 2 to 5. Also by vertical adjustment of the draw bar at its front end 26, we are enabled to secure advantageous adjustments in certain uses of the following member A. Furthermore when used in combination with tilting wheels other advantages in operation appear.

Referring now to the use of the grader for ditch and shoulder cutting, as indicated in Figs. 2 and 3, or for cleaning the ditch and shaping the shoulder as indicated in these two figures, the attachment is applied to the mold board as indicated in Fig. 1.

The grader is then drawn along with two of the wheels 19 on the road and the other two in the ditch as illustrated, thereby cutting or cleaning according to the work to be done and carrying the dirt up onto the road by the angularly disposed mold board.

In this connection the cutter or cleaner is angularly disposed relative to the mold board, so that the joining outer ends of the two are closely connected whereby the dirt as it is thrown up by the cutter is carried back to the mold board and up the shoulder without clogging.

In the preferred form of grader employed as shown in Fig. 1 and the said copending application, the mold board may be reversed relative to the axis of rotation of the circle frame 23 in any suitable manner. In the arrangement of Fig. 1 this is done by reversing it on its supporting brackets 24.

If the grader is to be used for cleaning the ditch and the back slope, or for shaping the ditch and back slope, it is used as indicated in Figs. 4 and 5 by reversing the mold board relative to the axis of the mold board circle frame as shown in Figs. 3 and 4 and swinging the mold board out beyond the tread of the grader and into proper position for the back slope. When thus arranged the dirt is thrown out of the ditch by the end cutter or cleaner and then carried up the back slope toward the fence by the mold board. When this is used for digging, cleaning or shaping the ditch, the wheels are adjusted so as to properly balance the main frame and also maintain the grader in its course and throw the dirt from the ditch, up the back slope toward the fence. This is an important operation not heretofore accomplished.

It will thus be seen that we have provided an arrangement whereby the ditch may be cut or cleaned with the mold board positioned along the shoulder or along the back slope, and doing the work without the clogging or breaking of the apparatus. The cutting or cleaning attachment by its rigid and solid connection is substantially a part of the mold board, being practically merged into one.

Although we have shown a particular and preferred form of our improvement, we con-

template constructing it and using it in other ways than that shown and described, and therefore do not desire to be limited to such use and construction but aim to cover all that which comes within the spirit and scope of the appended claims.

What we claim as new and desire to secure by United States Letters Patent is:—

1. A ditch shaper for graders including a plowing member of suitable marginal shape with upper and lower cutting edges, and means for detachably securing it against the front face of a reversible mold board at an end thereof so as to use either cutting edge.

2. A ditch shaper for graders including a plowing member of suitable marginal shape, means for detachably securing it against the front face of the mold board at the end thereof, and bracing means for angularly separating the plowing member from the face of the mold board.

3. A ditch shaper for graders including a plowing member of suitable marginal shape, means for detachably securing it against the front face of the mold board at the end thereof, and means for angularly separating the plowing member from the face of the mold board, said latter means including an angular web between said member and the mold board.

4. In combination with a mold board having a recessed rear face at an end thereof, of a plowing member positioned against the front face of the mold board at the recessed end and having a rear extension for insertion in the recess to prevent relative vertical movement of the parts.

5. In combination with a mold board having a recessed rear face at an end thereof, of a plowing member positioned against the front face of the mold board at the recessed end and having a rear extension for insertion in the recess to prevent relative vertical movement of the parts, and means for clamping said front and rear portions of the plowing member to the interposed mold board.

In witness whereof, we hereunto subscribe our names this 1st day of April, 1926.

DANIEL C. HINDS.
ORVILLE Q. HINDS.