Aug. 26, 1930. C. H. BROWN ET AL 1,774,469

TERRACING AND GRADING MACHINE

Filed Oct. 31, 1928 3 Sheets-Sheet 1

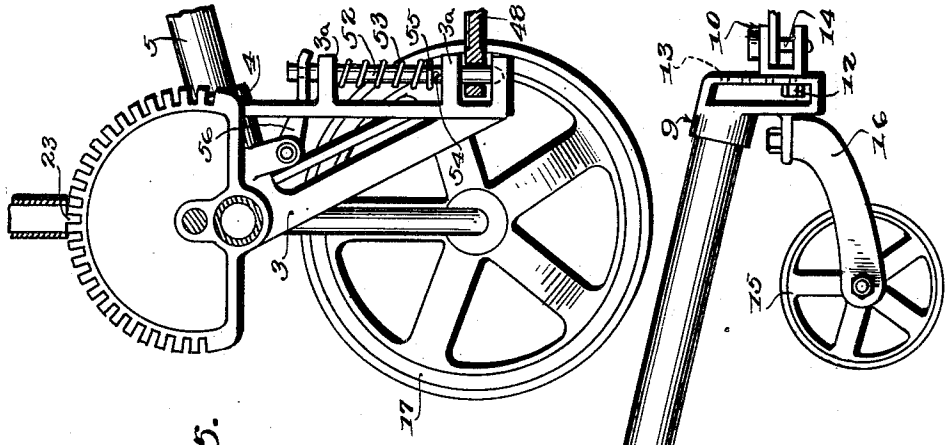


Fig. 5.

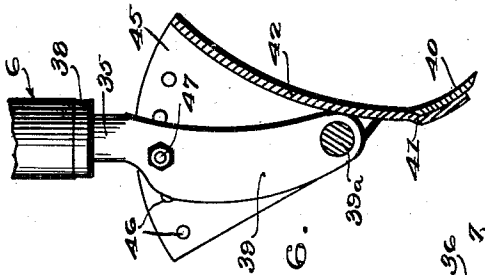


Fig. 6.

Fig. 1.

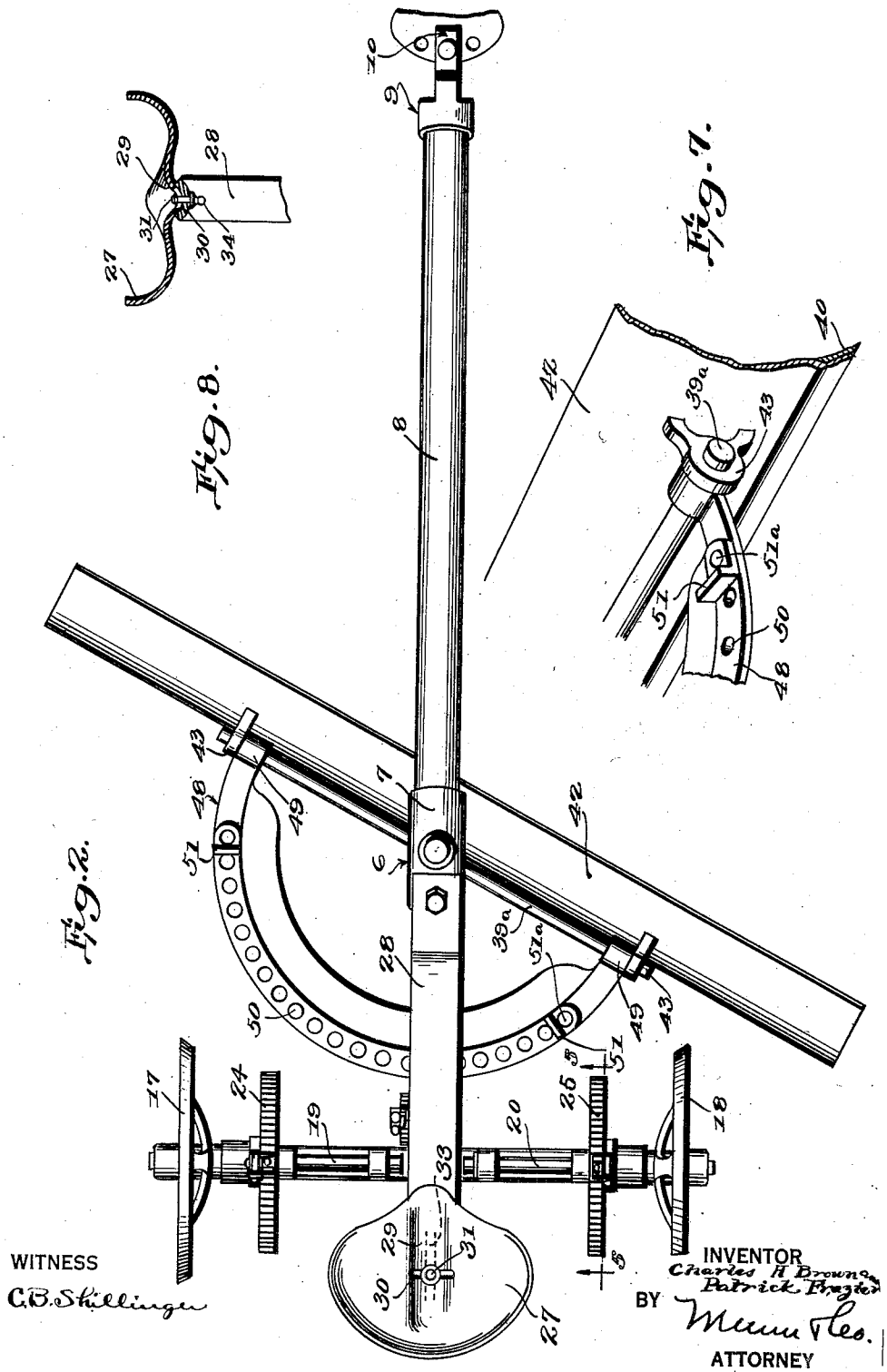
WITNESS
C.B. Skillington

INVENTOR
Charles H Brown and
Patrick Frazier
BY Munn & Co.
ATTORNEY

Aug. 26, 1930. C. H. BROWN ET AL 1,774,469

TERRACING AND GRADING MACHINE

Filed Oct. 31, 1928 3 Sheets-Sheet 2



Aug. 26, 1930. C. H. BROWN ET AL 1,774,469

TERRACING AND GRADING MACHINE

Filed Oct. 31, 1928 3 Sheets-Sheet 3

Fig. 3.

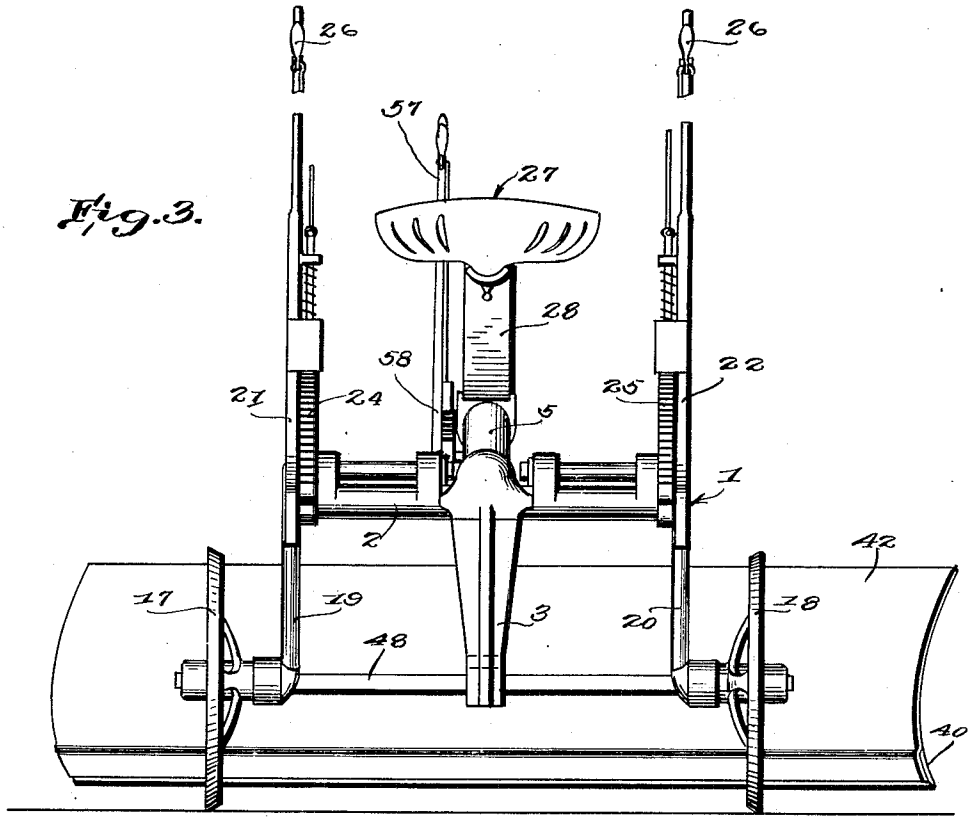
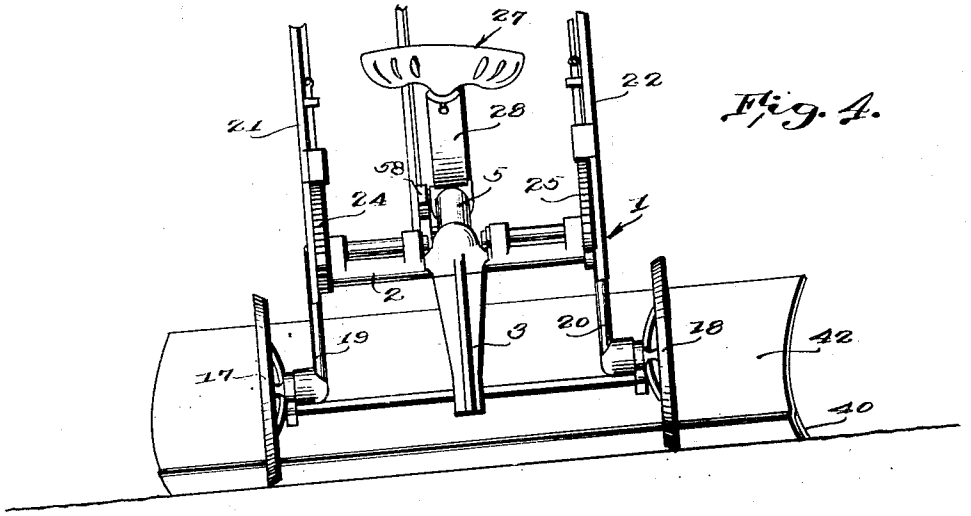


Fig. 4.



WITNESS
C.B. Stillinger

INVENTOR
Charles H. Brown and
Patrick Frazier
BY Munn & Co.
ATTORNEY

Patented Aug. 26, 1930 1,774,469

UNITED STATES PATENT OFFICE

CHARLES H. BROWN AND PATRICK FRAZIER, OF BRECKENRIDGE, TEXAS; SAID FRAZIER ASSIGNOR TO SAID BROWN

TERRACING AND GRADING MACHINE

Application filed October 31, 1928. Serial No. 316,186.

This invention relates to machines for terracing and grading land and more particularly farm land.

In farming lands which do not lie flat the heavy rains badly wash them and carry away the best soil.

A primary object of this invention is to provide simple and efficient means for preventing this washing away of the best part of the land and conserve the top soil.

To accomplish this object terracing of the land according to the level lines established in the field, giving only sufficient fall to carry away the water at a very slow speed so that the water will be allowed to soak into the ground instead of runing off, is necessary. This method conserves not only the soil but the moisture as well.

Since it is necessary that these terraces be farmed over during the season they must be made wide enough and high enough so that as they have been gradually worked down they will still be of a height sufficient to hold the water back. This entails the handling of a large amount of earth which must be accomplished rapidly and with a minimum expense. In terracing with machines heretofore used it has been found necessary to have the ground in fine condition to work, owing to the fact that the grader blades have been so shaped that they could not be adjusted far enough forward at the top and still maintain a cutting edge in contact with the soil. Hence as the farmer must do his other field work when the ground is in proper condition to be worked it is evident that a machine which would handle the earth when it was wet and could not be cultivated properly would save the farmer much time. It is to accomplish this working of the earth when wet that this invention has been primarily designed.

Another object of the invention is to so construct and mount the blades as to avoid the load being placed on the shank which holds the blade.

Still another object is the peculiar arrangement of the seat whereby the operator can, while riding, push the seat sidewise to compensate for the tilting of the machine when one end of the blade has been lowered into the ground and the other is delivering the earth on the dump.

Another object is to so construct and mount the seat of the driver that it can be adjusted forward or backward at the same time the sidewise adjustment is made.

In carrying out these objects, the invention is susceptible of a wide range of modification without departing from the spirit or sacrificing any of the advantages of the claimed invention; there being shown in the drawings for illustrative purposes a preferred and practical form, in which:

Figure 1 of the drawings represents a side elevation of a grader or terracer constructed in accordance with this invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is a rear elevation with the parts in the position assumed when working on level ground;

Fig. 4 is a similar view showing the parts as when working on a slope;

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 2;

Fig. 6 is a similar view taken through the blade and its support;

Fig. 7 is a detail perspective view of a portion of the blade and its mounting.

Fig. 8 is a detail transverse section through the seat.

In the embodiment illustrated the grader or terracer 1 comprises a supporting frame preferably constructed of tubular members to add to its strength and lighten its weight. This frame includes a substantially T-shaped chassis having an axle supporting cross bar 2 from the center of which depends a casting 3 shown more clearly in Fig. 5 and which has a tubular socket 4 at its front upper end to receive a longitudinally extending tubular frame member 5, the front end of which is mounted in a four-way casting or coupling 6, the front arm 7 of which receives and supports a longitudinally and forwardly extending tubular frame member 8, on the front end of which is mounted a casting 9 shown clearly in Fig. 1.

This casting 9 is designed to adjustably support a hitch member 10 here shown U

shaped in form with a rearwardly extending attaching threaded shank extending from the rear portion or cross bar near one end thereof so that when the hitch is connected with the casting 9 the body portion of the cross bar will abut against the front face of the casting as shown in Fig. 1 and on the tightening of the nut 12 will securely hold it in position. This casting 9 has a plurality of apertures 13 therein for the adjustable reception of the shank of the hitch and this hitch is reversible for quick adjustment by removing the pin 14 which connects it with a tractor or other draft means and then swinging the hitch downwardly on the shank or upward as the case may be which provides for the adjustment equal to one hole in the casting.

A crazy wheel 15 is swivelled to the casting 9 by a suitable arm 16 and when the machine is used in connection with a tractor this wheel is removed.

Ground wheels 17 and 18 which are mounted on individual crank axles 19 and 20 have their treads bevelled so that they will cut into the earth and take side thrusts. Each of these axles carries an operating lever shown at 21 and 22, said levers being welded or otherwise suitably fixed to the axles so that they may be operated to manipulate the respective wheels which are locked in adjusted position by means of spring pressed dogs such as that shown at 23 in Fig. 5 which are designed to engage with the teeth of segment racks 24 and 25 fixed to the cross bar 2 of the machine. These dogs 23 are carried by the usual rods and releasable by the usual trip levers 26.

A driver's seat 27 is mounted on a rearwardly extending supporting bar 28 bolted to the casting 7 and which is positioned for convenient manipulation by the driver of the various levers controlling the parts of the terracer.

This seat 27 has a longitudinally extending trough-like central portion 29 which trough is slotted transversely as shown at 30 to receive a bolt 31 having a square shoulder to prevent its turning in the slot and which extends through a longitudinal slot 33 formed in the upper end of the supporting spring bar 28 which end is made concave or trough-shaped to receive the trough-shaped portion of the seat as is shown clearly in Fig. 8. A wing nut 34 is carried by the lower end of the bolt 31 whereby the operator can while riding reach under the seat loosen the wing nut on the bolt and due to the semi-circular shape of the trough-like portion 29 of the seat and the corresponding shape of the supporting spring he may tilt the seat sidewise to compensate for the slant of the machine when one end of the blade hereinafter described has been lowered into the ground while the other end is delivering dirt on the dump. The seat may also be adjusted longitudinally, that is, forward or backward at the same time, owing to the slotted construction of the spring member 28.

Mounted in the upright socket member 6ª of the casting 6 is a blade supporting swivelled post 35 which extends through the casting and projects thereabove equipped with a collar 36 resting on the upper end of the casting 6 and which has a pin 37 extending therethrough to hold the post in operative position. A collar 38 is mounted on the post 35 and abuts the lower end of the casting 6 operating to take the upward pressure and hold the blade 40 in the ground.

The blade engaging portion of this post 35, shown at 39, is made flat and is pivotally connected at its lower end as shown at 39ª to a segment 45 carried by the rear face of the mold board 42 which supports the cutting blade 40.

This blade or mold board carrying segment 45 is provided at its upper end with a plurality of transversely spaced apertures 46 to receive a bolt 47 which adjustably connects the mold board with the post.

A reversible cutting blade 40 is bolted on the lower portion of the transversely curved mold board 42 the concave face of which extends forwardly and has its lower edge offset rearwardly to form a seat 41 to receive the cutter 40. The upper portion of the mold board is circular or arc shaped. The cutter 40 has a different radius from the upper portion of the mold board so that the top of the mold board may be thrown forwardly a proper distance to handle very wet dirt and yet provide a proper cutting angle for the blade 40. This adjustment of the blade is as above described accomplished through means of the segment 45 and its connection with the member 39 of the swivelled post 35. In the operation of this machine the earth does not slide on the mold board 42 like a plow but rolls over and over advancing rapidly up the dump.

The blade carrying mold board 42 which is swivelled by the post 35 and the center casting 36 may be of any suitable or desired length and is equipped with longitudinally spaced bearings 43 on its rear face in which is mounted the rod 39ª on which the swivelled post is pivoted. This rod also forms a pintle for a segmental adjusting plate 48 for the swivelled mold board 42. This plate 48 is shown substantially semi-circular with bearings 49 at its ends engaged with the pintle 39ª adjacent the bearing lugs 43 as is shown clearly in Fig. 2. This plate 48 is provided with a plurality of spaced apertures 50 extending vertically therethrough and which are designed to receive a spring pressed locking pin 52 mounted to reciprocate vertically in the casting 3 which is provided with forwardly extending apertured arms 3ª to form supports for the pin. A coil spring 53 sur-

rounds the pin between two of the bearings and bears at one end against the upper bearing and at its lower end against a washer 54 held in position on the pin by a transversely extending pin or stud 55. The locking pin 52 projects above the uppermost bearing and has a reduced neck to receive the bifurcated end of an actuating lever 56. This lever 56 is in the form of a bell crank with the long arm 57 thereof extending vertically upwardly into convenient position for manipulation by the driver. A latch 58 is mounted on the frame for holding the lever 56 in the position it assumes when the pin 52 is withdrawn from the aperture in the segment 48 thus releasing said segment and permitting the mold board 42 to be swivelled and after it has been so swivelled it may be again locked in adjusted position by release of the lever 56 which permits the pin 52 to drop into another aperture 50 and hold the board in position.

Mounted on the segmental plate 48 near the opposite ends thereof are two upstanding stops 51 which are designed to engage the casting 3 when the tongue or draft bar 8 is swung laterally in one direction or the other so that the swivelling of the mold board may be accomplished by this means without necessitating manual manipulation thereof. These stops 51 will hold the blade when the machine has been swivelled to a predetermined position so that all that is required of the driver is to release the locking pin 52 and the blade will return to its place without further effort.

It is of course understood that these stops 51 which are adjustable are previously set at the predetermined position that the blade is desired to be swivelled and they save much time and annoyance to the operator when adjusting the cutting blade.

As shown these stops 51 are made L-shaped in form and are mounted in one of the apertures 50 by means of a pin 51ª extending therethrough.

Owing to the transverse curvature of the mold board 42 with the top thereof setting far forward in what might be termed overhung position this board will not load up and draw into the ground as does the ordinary grader blade, because when it gets as much dirt in front of it as it can handle, the cutting edge of blade 40 is raised from the ground. It simply has no tendency to overload. The mold board and blade 40 rolls the earth and wet earth over and over in front of the blade and the dirt or earth falling each time from its contact with the mold board actually ascribes a spiral whose pitch is as the angularity of and rise of the blade.

In the use of this machine a tractor or horses are hitched by the hitch member 10 to the casting 9 and the blade carrying mold board 42 is swivelled until one end sets in front of the other generally at an angle of about thirty or forty degrees. The forward end of the blade as shown in Fig. 2 is lowered into the earth by throwing the lever which controls the wheel 18 causing the wheel 18 to swing forward and thereby occupy a position close to the end of the blade so that the blade is supported and prevented from entering the ground too deeply. The other wheel controlling lever is pulled backward to cause its corresponding wheel to lower its end of the mold board 42 according to the desired position. The mold board is then pitched forward and held in place in its desired position by means of the bolt 47 clamping through one of the apertures 46 in the segment 45, the blade being so set that the dirt is given a rolling motion and thrown forward and towards the dump. An important feature of the invention is the making of the upper part of the mold board 42 and the reversible cutter blade 40 of different radii to provide for the throwing of the top of the mold board to handle wet earth and to position the cutting blade 40 at a proper angle in regard to the soil.

It will thus be seen that any reasonable adjustment for depth of the cutter on the one side and height of delivery on the opposite side of the machine can readily be made by means of the segment racks 24 and 25 and the levers 21 and 22 with their usual locking latches or dogs. It will be obvious that the swivelling segment 48 not only provides for change in the slant of the blade with relation to the direction of motion, but also operates as a brace for the ends of the blade.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will, of course, be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention or its scope as claimed.

We claim:

1. In a grading machine, a supporting structure, a depending swivelled post mounted on said structure, a transversely curved cutting blade carried by said post, a segment connected at its ends to said blade, cooperating means carried by said segment and said supporting structure to lock the blade in adjusted position, and stops carried by said segment and adapted to engage said structure when the machine has been swivelled to a predetermined position and thereby locate the blade at the desired angle.

2. In a grading machine, a supporting structure, a depending swivelled post mounted on said structure, a transversely curved cutting blade carried by said post, a segment connected at its ends to said blade, cooperating means carried by said segment and said supporting structure to lock the blade in ad-

justed position, stops carried by said segment and adapted to engage said structure when the blade has been swivelled to a predetermined position and thereby locate the blade at the desired angle, and means under the control of the driver for releasing said segment locking means.

CHARLES H. BROWN.
PATRICK FRAZIER.