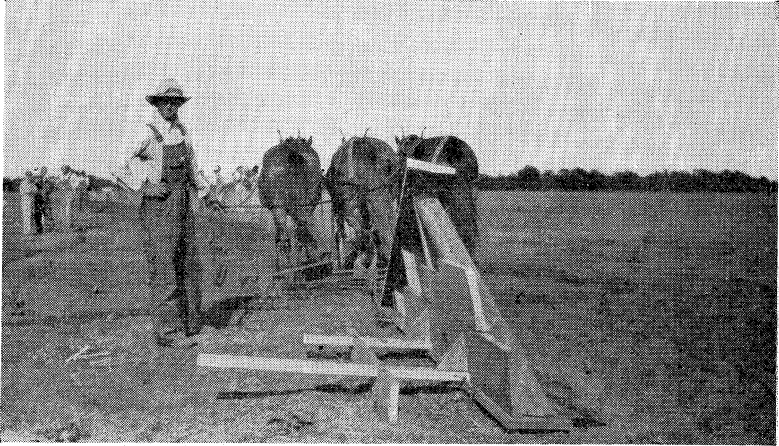
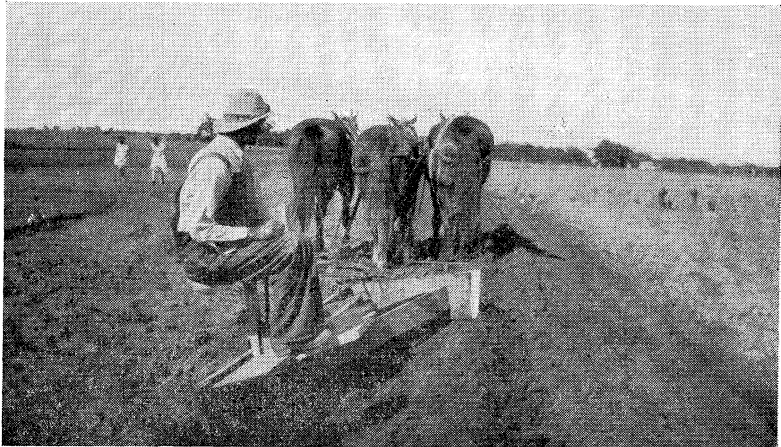


# How To Make and Use The McPheters Terracer



**Combination Sled and Seat Aids Moving**



**Rolls Dirt Up to Terrace Ridge**

W. H. McPHETERS, Extension Agricultural Engineer  
Oklahoma A. and M. College

COOPERATIVE EXTENSION WORK  
IN  
AGRICULTURE AND HOME ECONOMICS

STATE OF OKLAHOMA

ERNEST E. SCHOLL, Director

OKLAHOMA AGRICULTURAL AND  
MECHANICAL COLLEGE AND  
UNITED STATES DEPARTMENT OF  
AGRICULTURE, COOPERATING

EXTENSION SERVICE  
COUNTY AGENT WORK  
STILLWATER, OKLAHOMA

*Distributed in Furtherance of the Acts of Congress of May 8 and June 30, 1914*

---

TABLE OF CONTENTS

	Page
New Terracer vs. Old Type V-Drag.....	3
Size of Terracer.....	3
Tools Needed .....	3
Bills of Material .....	5
Making the Terracer.....	6
How to Build Terraces.....	14

# How To Make and Use The McPheters Terracer

## COMPARISON OF THE NEW V-TYPE TERRACER WITH THE OLD TYPE V-DRAG

The McPheter's Terracer is of the V-type and is a modification of the old type V-drag. Raising the end of the moldboard (as shown in Fig. 2) before fastening it to the landside, forms a long straight wing plow. This improvement permits the implement to be pulled along with less force and moves more dirt than the old type V-drag.

It will be noticed from Figs. 5 and 6 that when the terracer is flat on the ground, both moldboard and landside tip forward, but when the terracer is being used to move dirt the moldboard is raised up and is at about right angles to the surface of the terrace ridge. As a result, the dirt rolls forward and slips along the moldboard instead of laying on the moldboard and being dragged forward as was the case with the old type V-drag. When the terracer is in a working position and the moldboard raised, the landside is perpendicular to the ground and is pushing squarely against the furrow bank instead of having a tendency to slip out of the furrow. See Fig. 2 and 3. Another improvement over the old type drag is a three in one addition which serves as a seat, a sled runner for transporting it from place to place, and as a lever for throwing the moldboard in or out as desired. Fig. 5 and 6 show this addition. Anyone having used the old type V-drag will appreciate these improvements.

### SIZE OF TERRACER

In order to meet the power requirements of different farmers the terracer may be made any desired size. Three sizes, shown in Fig. 1, range from two to six horses. The power requirement for the small terracer is two or three horses, depending on the size of the horses and is called the two-horse terracer. The power requirement for the second size is four or five horses, depending on the size of the horses. This is called the four-horse terracer. The power requirement for the large size is six horses or a farm tractor. This size is called the six-horse terracer.

It is possible to cut one foot from the end of the moldboard after the terracer is made if it is found to be a little too much load for the given team.

### TOOLS NEEDED

A saw, carpenter's square, hammer, brace,  $\frac{3}{8}$ " bit,  $\frac{1}{2}$ " bit, pair of pliers, wrench, chisel and draw knife. On most farms it will be necessary to have the hitch made and the holes bored in the blade and stinger at a blacksmith shop unless the farmer has a shop equipped for this type of work. It is hoped to have at least one place in each county where the farmers can have the entire terracer built. If there is such a place in the county, it will probably be advertised within the next year.

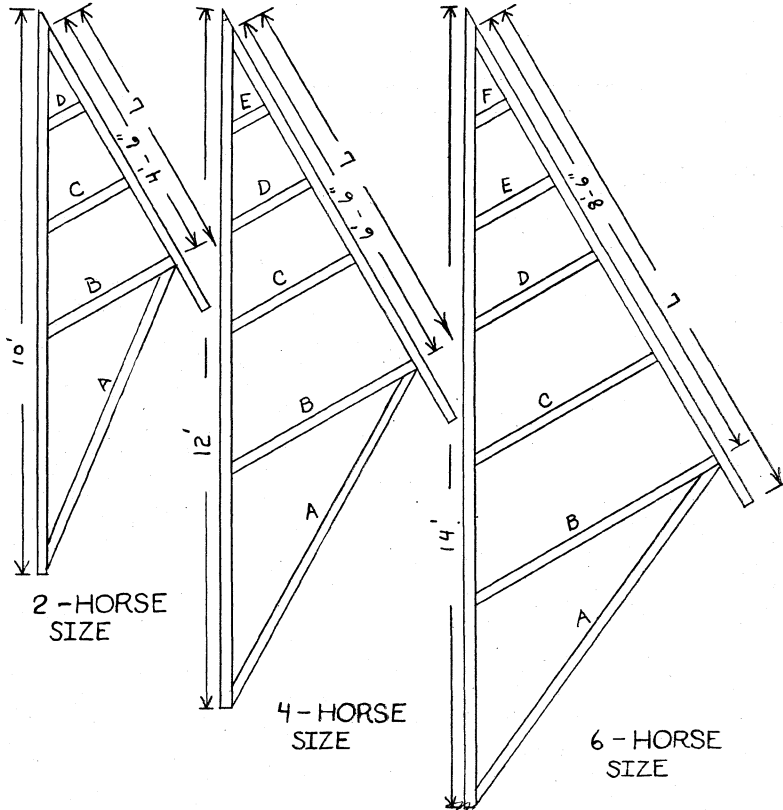


Fig. 1.—Three size terracers. Dimensions given on the moldboard show where the long braces "B" are to be put. The long brace "B" should always be put in first. The length of the moldboard "L" is 5½ feet for the two-horse size, 7½ feet for the four-horse size, and 9½ feet for the six-horse size. Length of braces are given in Step 3.

BILLS OF MATERIAL FOR THE THREE SIZE TERRACERS

No. Pieces	Dimensions	LENGTH FOR:			Use
		2 Horse Size	4 Horse Size	6 Horse Size	
1	2"x12" board	10' long	12' long	14' long	Landside
1	2"x12" board	5½' long	7½' long	9½' long	Moldboard
1	2"x12" board	12' long	18' long	20' long	Floor
1	2"x 8" board	6' long	6' long	6' long	Seat
1	2"x 6" board	12' long	16' long	22' long	Braces
1	2"x 4" board	8' long	8' long	8' long	Uprights for seat
1	1"x 4" board	6' long	8' long	10' long	Beveled piece for moldboard
1	door stop	6' long	8' long	10' long	Beveled piece for moldboard
1	¼"x3½" steel or Grader Blade	5½' long	7½' long	9½' long	Blade made of corn stalk cut- ter steel or old grader blade.
1	No. 9 wire	15' long	20' long	30' long	Braces
1	Rolling Coultter Disc	13" or 15" diameter	13" or 15" diameter	13" or 15" diameler	For stinger
2	Strips sheet iron 10" to 14" wide	8' long	8' long	8' long	Covering of moldboard and landside.
2	½" bolts	14" long	14" long	14" long	Seat braces
2	½" bolts	12" long	12" long	12" long	For short brace
2	½" bolts	8" long	8" long	8" long	Sled runner
1	½" bolts	6" long	6" long	6" long	Front end
2	½" bolts	3" long	3" long	3" long	Hitch, square head bolts
3	½" bolts	2" long	2" long	2" long	Stinger
6	¾" bolts	2½" long	2½" long	2½" long	*Blade, plow bolts
1	¾" bolts	4" long	4" long	4" long	*Front bolt on blade. Plow bolts.

\* When an old grader blade is used instead of the stalk cutter steel, use ½" bolts instead of ¾" bolts. Use the regular beveled head plow bolts. If these cannot be had, use carriage bolts. The bolts for the hitch should be square head. All others may be either square head or carriage bolts, but the square head bolts are easier to countersink with a chisel.

## MAKING THE TERRACER

**Step 1.** By use of the carpenter's square, mark the ends of both pieces of 2"x12" planks, as shown in the upper left-hand corner of Fig. 5. Saw the ends off at the angle marked. Note that the square is adjusted on the edge of the plank so the 12-inch mark on the blade of the square touches one edge of the plank and the 7-inch mark on the other blade touches the same edge, and that the mark is made on the edge of the plank along the 12-inch side. Mark square across the plank from each end of the diagonal mark, then saw the marks out and the proper angle will result. When the two pieces are fastened together, as shown in Fig. 2, a "V" will be formed.

**Step 2.** Place the two pieces of 2"x12" plank together forming a "V." Before nailing together, place a block "H" inches high under the end of the moldboard as shown in Fig. 2, drive two spikes to hold it in place.

H= 8" for two horse model. (Length moldboard=5½ feet.)

H=10½" for four horse model. (Length moldboard=7½ feet.)

H=13" for six horse model. (Length moldboard=9½ feet.)

**Step 3.** Cut the braces, as shown in Fig. 2. The braces are made to fit at right angles to the moldboard and they will necessarily form an acute angle with the landside. The proper angles to cut the braces are shown laid out with the square in the upper left-hand corner of Fig. 2. A trial method is shown in the same figure. This trial method consists of having the landside resting on the floor and at right angles to it and the moldboard held up by a block of the proper height "H" under the end. The

value of "H" is given in Step 2. With the moldboard and landside in the proper position, as stated above, place the 2"x6" board across the top edges where the long brace belongs and mark with a square as shown in Fig. 2. The trial method may be used, but is not necessary when the terracer is being made according to specifications. The trial method may be used if one is not able to lay out the angles with the square as shown in the upper part of Fig. 2.

The length of the braces are as follows: (See Fig. 1.)

**Two-horse size:**

Length of brace A—5'-11" (approximately.)

Length of brace B—2'-8" on long side.

Length of brace C—1'-8" on long side.

Length of brace D—0'-9" on long side.

**Four-horse size:**

Length of brace A—6'-9" (approximately.)

Length of brace B—3'-7" on long side.

Length of brace C—2'-8" on long side.

Length of brace D—1'-8" on long side.

Length of brace E—0'-9" on long side.

**Six-horse size:**

Length of brace A—7'-6" (approximately.)

Length of brace B—4'-10" on long side.

Length of brace C—3'-7" on long side.

Length of brace D—2'-8" on long side.

Length of brace E—1'-8" on long side.

Length of brace F—0'-9" on long side.

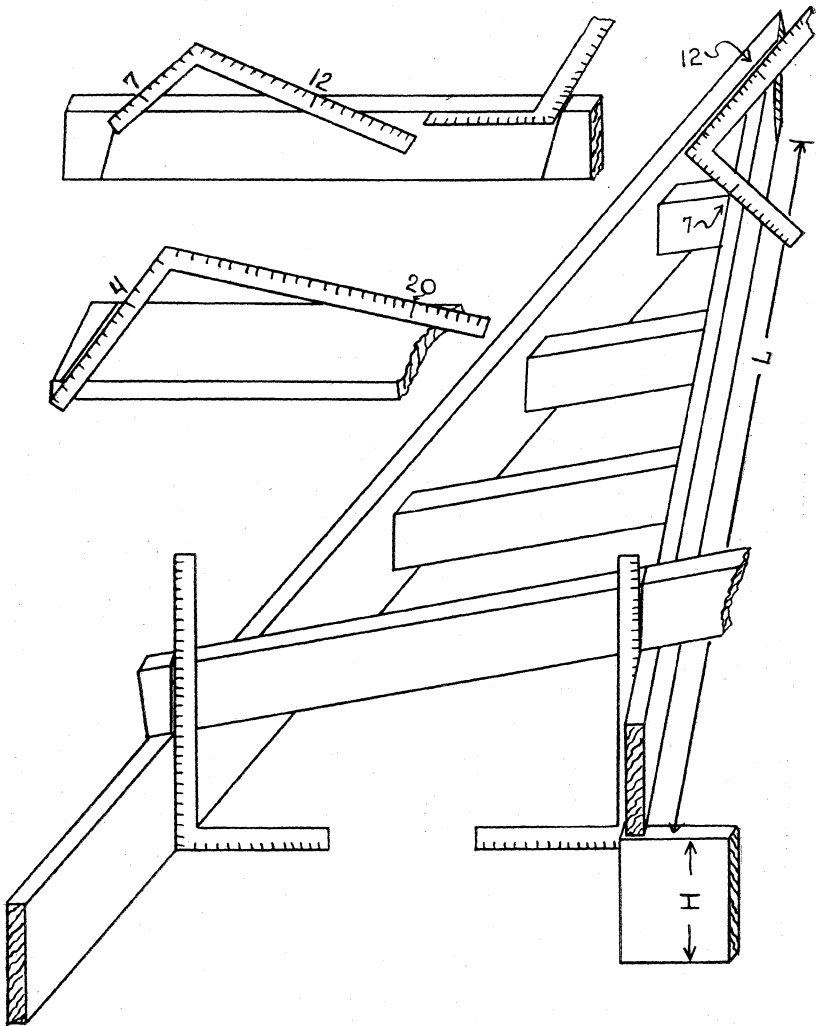
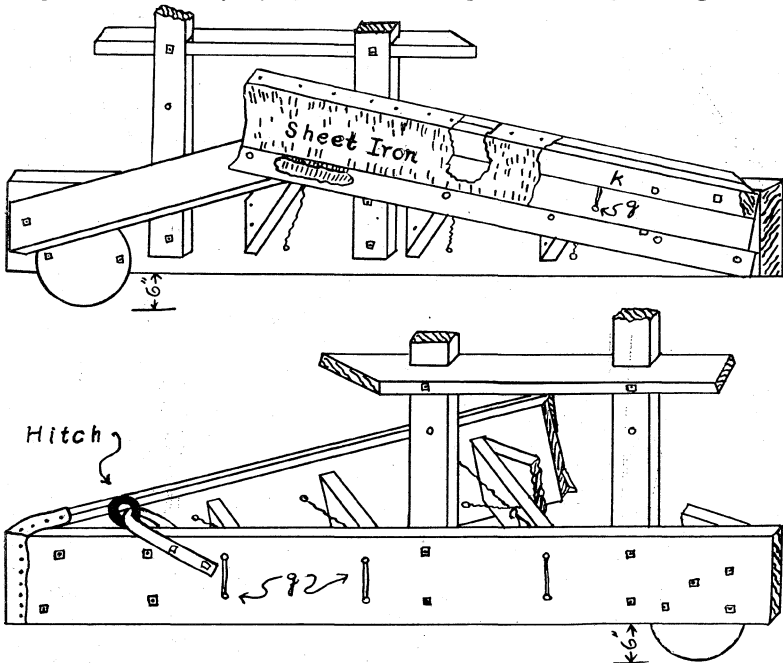


Fig. 2.—Method of marking the angles for sawing the braces. The block "H" inches high is shown placed under the end of the moldboard to hold it in the proper working position. H=8" for the two horse size, 10½" for the four-horse size, and 13" for the six-horse size.

**Step 4.** Nail the braces as shown in Fig. 5. The long brace "B" should be nailed in first. The proper length of braces are given in Step 3 and their positions are shown in Figs. 1 and 5. After the brace "B" is nailed, the other cross braces will fit in their proper places, provided they are cut to the lengths given. In fact, it makes very little difference if they are not in exactly the measured distances.

It will be noted from Figs. 1 and 5 that an extra long diagonal brace "A" is bolted to brace "B" against the moldboard and that the other end is bolted to the end of the landside. This brace is primarily for the purpose of holding the ends of the floor board, but at the same time it serves as a brace to stiffen the back end of the landside. This brace is cut in proper lengths and angles by laying it across the top and marking the angles.



**Fig. 3.**—Views from the landside and the moldboard sides when the terracer is in a working position. It is necessary to embed the wire in grooves as indicated at "g."

**Step 5.** Next, put in the No. 9 smooth wire ties about three inches in front of each of the longer braces. These wires should be twisted, as shown in Figs. 3 and 5 until they are tight and then nailed to the brace near the center. They are for the purpose of keeping the landside and the moldboard from spreading apart. Be sure to cut grooves between the holes on the outside of both moldboard and landside so the wire will be embedded below the surface of the plank. (See "g" Fig. 3.) If these grooves are not cut, the wire will project beyond the plank and when the sheet iron covering is placed over them, the dirt will wear the high ridges off, leaving holes in the sheet iron covering. The short brace is fastened by two  $\frac{1}{2}$ -inch



bolts 12 inches long instead of using the twisted wire. Rods may be used instead of wire for the braces.

**Step 6.** Place the stinger in proper position, as shown in Figs. 3 and 4, mark and bore the holes. The stinger should extend about 6 inches below the 2"x12" plank. A rolling coultter bolted on with three bolts is preferable. However, a thin flat piece of steel three to four feet long and eight inches to ten inches wide, such as an old fresno blade, serves very well. (See "c," Fig. 4.) Be sure the metal is less than  $\frac{1}{4}$  inch thick or it will cause trouble. Place the grader blade in proper position, mark and bore the holes. The edge of the blade should extend about  $\frac{1}{2}$  inch below the 2"x12" plank. (See "a," Fig. 4.)

**Step 7.** Bevel a piece 1"x4" and nail along the top edge of the moldboard, at "K" as shown in Figs. 3 and 5. It is advisable to pick a soft straight grain piece of board so that it can be beveled with a draw knife and plane. When the sheet iron is nailed on the face of the moldboard, this beveled piece causes it to have a curved surface.

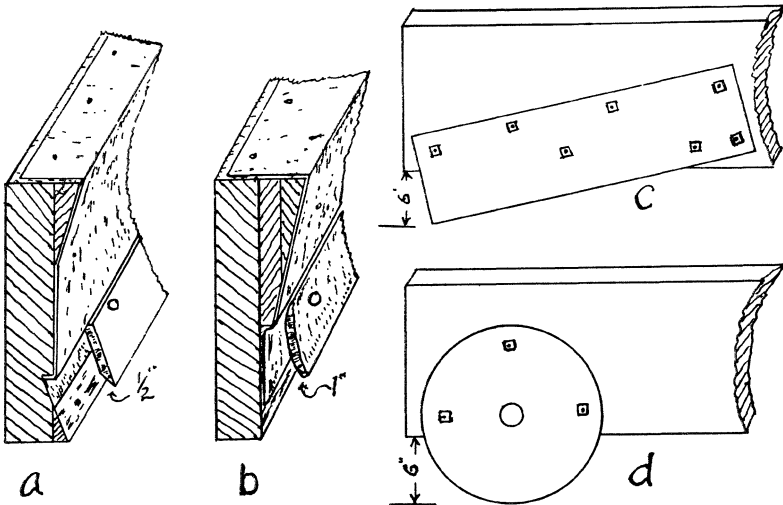


Fig. 4.—Detail drawings of how the blade and stinger are put on.

"a"—Method of putting on the corn stalk steel blade and sheet iron facing.

"b"—Method of putting on an old grader blade and sheet iron facing.

"c"—Method of putting on a flat piece of steel such as an old fresno blade for a stinger.

"d"—Method of putting on a rolling coultter for a stinger.

**Step 8-A.** The blade is made from a piece of stalk-cutter steel. This steel is  $3\frac{1}{2}$  inches wide and  $\frac{1}{4}$  inch thick with one edge beveled and is shown in the detailed drawing, Figure 4-a. Place this blade flat on the lower edge of the moldboard, letting it project  $\frac{1}{2}$  inch below the 2"x12" plank. Mark along the upper edge of the blade the full length. Then cut  $\frac{1}{4}$  inch deep along this mark with a chisel or power saw, if possible. Next, bevel a piece of door stop so that it is  $\frac{3}{4}$  of an inch on one edge and zero

inch thick on the other. Nail this along the bottom edge of the moldboard, then with a chisel placed flat on this beveled piece cut the wedge-shaped groove as shown in Fig. 4-a. This will form a flat surface for the blade to fit against and gives it a tilt outward at the bottom forming the curve on the lower edge of the moldboard. After the groove is cut, place the blade in position, mark and bore the holes. The sheet iron facing should be put on before fastening the blade on permanently.

**Step 8-B.** Where an old grader blade is used instead of a blade made from the stalk-cutter steel, it will be necessary to place the blade on the lower side of the moldboard letting it extend about one inch below the 2"x12" moldboard, then mark along its upper edge and mark the holes to be bored at the same time. Then nail a 1"x8" board to the 2"x12" moldboard above the mark. It will be necessary to bevel the lower side of the 1"x8" so it fits flush with the grader blade, then by nailing the beveled piece of the 1"x4" at the top, the curved surface of the moldboard will be formed and ready to place the sheet iron surface on. Figure 4-b shows a detailed cross section of this. The old grader blade used must not be warped and should be of a light maintainer type. A heavy blade does not work so well and if the surface is warped at one end more than the other, it causes the terracer to do unsatisfactory work. The light blade made from the stalk-cutter steel is preferable in most cases. When there is a lot of rock the old grader blade may be best for it will withstand more abuse than the lighter blade.

**Step 9.** The hitch is made of a piece of flat steel at least ¼-inch thick and about 1½ inches wide. Bend this piece of metal into a narrow "U" clevice, making it 10 to 12 inches long. This clevice fits over the edge of the 2"x12" landside and is fastened by two ½-inch bolts as shown in Figs. 3 and 5. The hitch is shown placed two feet back from the front point of the terracer. This works nicely with a fairly high hitch with either team or tractor, but with a low hitch tractor, it would be better to move the hitch nearer the point of the "V," or the chain may be clamped down close to the landside with a clevice near the end which really causes the hitch to be nearer the end, thus raising the nose of the terracer when being pulled along. By making a few trial positions of the hitch, the proper position for the given condition can be found.

**Step 10.** After all bolts and wire braces are put in and tightened and the holes bored for the blade, the sheet iron covering should be put on the moldboard. This sheet iron covering should extend the full length of the moldboard and bend around the nose or "V" end to protect it. The lower edge of the sheet iron should project under the upper edge of the blade so that it will be held firmly in place. The upper side of the sheet iron should be bent over the top of the moldboard and nailed in place. Most of the nailing should be done along the edges of the metal. Put as few nails as possible in the sheet iron where it is to act as a scouring surface. An eight or ten foot piece of sheet iron should be nailed on the landside extending to the rear end. It is not necessary that it extend to the nose because most of the pressure on the landside is from the center back. Be sure that all bolt heads are countersunk before the sheet iron is nailed on. For extra protection of the lower side of the landside an angle iron should be put on the edge at the bottom or an old wagon tire may be bolted on the bottom of the landside. Otherwise the landside will have a tendency to have a round smooth corner instead of a square corner. Heavy sheet iron may be used but 28 or 30 gauge iron is easily put on and can be easily removed when worn out. This is probably better and cheaper than having a rusty blade.

The McPheters Terracer

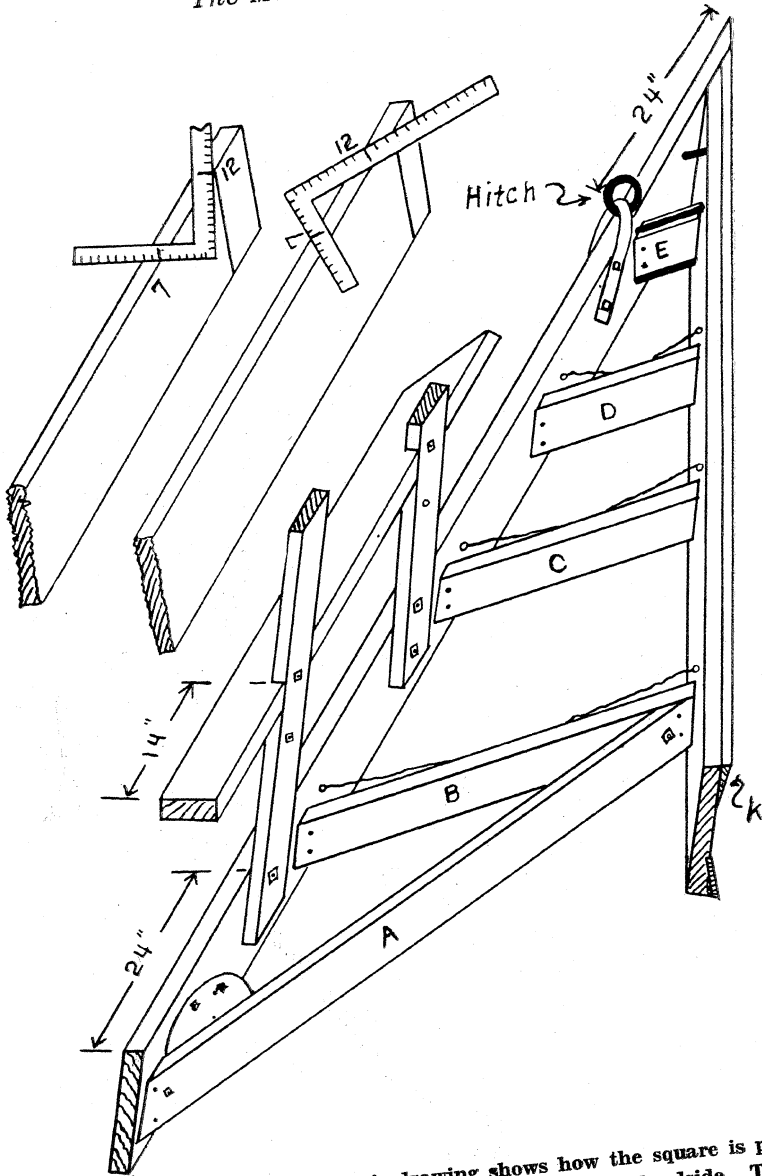


Fig. 5.—The upper part of this drawing shows how the square is placed to mark the angle to saw the 2"x12" moldboard and landside. The lower part shows the terracer completed with the exception of the floor boards. Notice how the seat and sled runner are fastened.

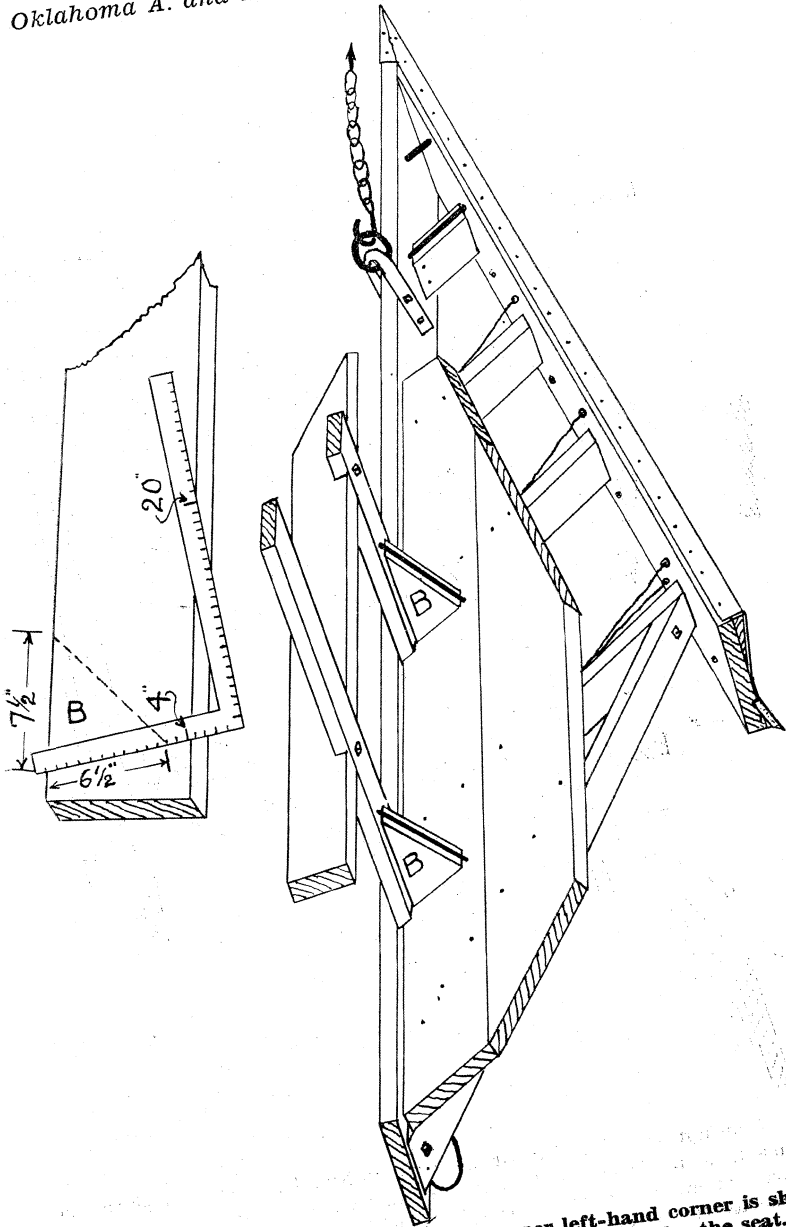


Fig. 6.—The completed terracer. In the upper left-hand corner is shown a detail drawing of how to cut the triangular braces for the seat.

**Step 11.** Figs. 5 and 6 show the three in one part of the terracer. This is made of two pieces of 2"x4" boards bolted vertically to the landside on which is a 2"x8" sled runner 16 inches above the landside. This serves for transporting the terracer and also serves as a seat. The 2"x4" near the rear end projects four feet above the landside and serves as a lever to raise the moldboard up when too much dirt is being carried by it. The sled runner or seat is fastened to the 2"x4"'s by two ½-inch bolts eight inches long. It will be necessary to cut notches in the 2"x12" floor piece where the 2"x4"'s are bolted on to the landside. The braces shown at "B," Fig. 6, are sawed from a piece of 2"x8" and are fastened on by ½-inch bolts 14 inches long. It will be necessary to bore these holes before the sled runner or seat is fastened on. It is also necessary that the holes be bored through the 2"x12" before it is nailed because the upright 2"x4" will be in the way of boring the holes at the proper angle. The sled runner is about five feet long. The 2"x4" uprights are placed just back of the braces as shown in Fig. 5 so the back end of the runner will serve as a seat and be just in front of the stinger.

**Step 12.** Nail a 2"x12" plank on top of the braces against the landside, then another piece of 2"x12" nailed adjacent to it will serve as a floor. (See Fig. 6.) The floor should not be solid all over the top of the terracer because there should be at least 10 or 12 inches of open space next to the moldboard so dirt can fall through, rather than pile up, in case the moldboard does not scour well. Under ordinary conditions, the soil rolls forward and slips backward along the moldboard.

The operations shown in Fig. 8 are those necessary to complete a terrace 18 feet wide and from 12 to 15 inches high by using the four-horse terracer when the type of soil is good and in good condition. With the two-horse terracer, it will be necessary to go more rounds and it will also be necessary, as the terrace gets wider, to move the dirt three times instead of two in order to get it to the top. With the six-horse terracer, the terrace may be completed in probably two rounds less than the four-horse terracer. When the soil is extra hard or where there are rocks and stumps, it may



**Fig. 7.**—The terracer moving dirt. Notice the dirt rolling forward.

## HOW TO BUILD TERRACES

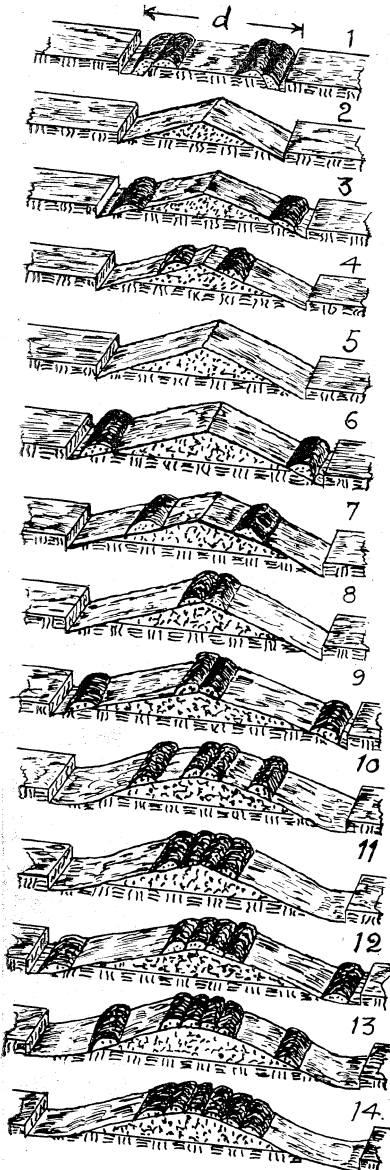


Fig. 8.—Steps in building the terrace.

1. Plow two rounds. "d" should be such width that first round of terracer will just lap dirt in middle.
2. Round with terracer laps dirt in middle. Stand between seat and moldboard so terracer carries full load.
3. Round with plow. Cut a wide, deep, furrow.
4. Round with terracer, stand in front of seat to make moldboard carry full load. (See Fig. 7.)
5. Round with terracer. Sit on rear end of seat. Float dirt to top.
6. Round with plow. Cut extra wide, deep furrow.
7. Round with terracer. Stand in front, if necessary, so blade will carry full load.
8. Round with terracer. Stand on the rear end just over the stinger. Float dirt to top. (See Fig. 9.)
9. Round with plow. Extra wide, deep furrow.
10. Round with terracer. Stand or sit so that blade carries full load.
11. Round with terracer. Stand or sit on rear end over stinger to float dirt to top.
12. Plow extra wide, deep furrow.
13. Round with terracer. Stand or sit so as to carry full load of dirt. (See Fig. 7.)
14. Round with terracer. Stand or sit on rear end. Float dirt up.
15. If terrace is to be higher and wider, continue these processes.

take a few more rounds to complete a terrace than where the soil is in good condition. This is not only true of this terracer, but is true of all types of terracers. It is possible for a good driver of either tractor or team to complete a terrace in a few rounds less than a poor driver.



**Fig. 9.—Floating the dirt to the top with the V-terracer. Stand or sit on the rear end just over the stinger.**

In starting the terrace, the center needs not be broken up with a plow. The distance between outside furrows should be such that the first round with the terracer laps the dirt in the middle. For the larger terracer, this should be about 9 feet; for the four-horse terracer, it should be 8 feet; and for the two-horse terracer, it should be about 6 feet. To save extra rounds with the plow always plow wide furrows, that is, you can cut 15 to 18 inches wide with a 12-inch plow after the first two rounds. The terracer will cut the little ridge left. This reduces the total number of rounds with the plow by one or two. It will sometimes be necessary to make a double depth with the plow where the ground is not in good condition in order to loosen the dirt to sufficient depth. This, however, is not necessary in most cases. After studying Fig. 8 and the descriptions, one can take the terracer to the field and with a little practice learn to build terraces with the least possible number of rounds.

