

4

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Kabanyolo Toolbar

ITDG Agricultural Equipment and Tools No. 4

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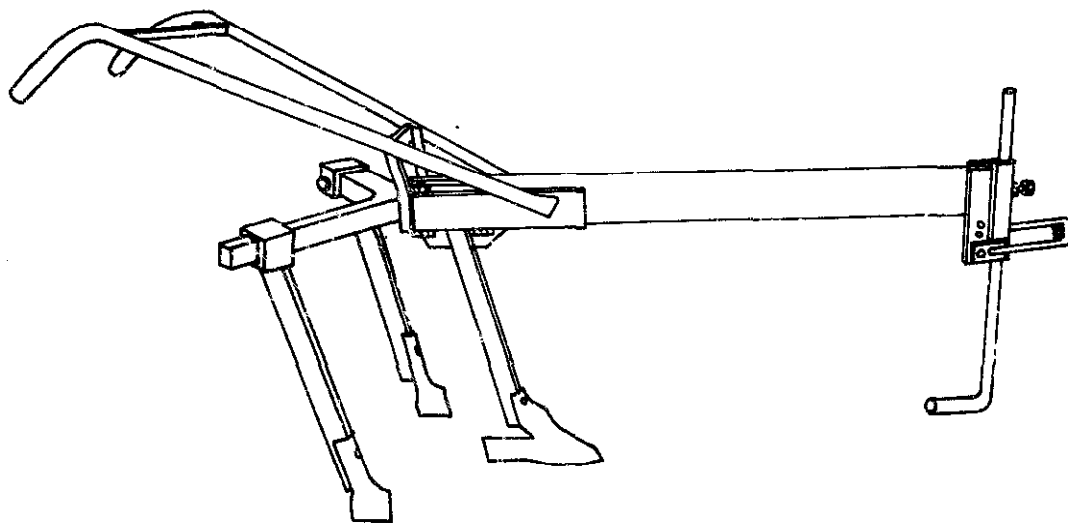
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"KABANYOLO" TOOLBAR

## "KABANYCLO" OX TOOLFRAME

DEVELOPED BY:

Based on the "UNIBAR" developed and made by A.R. STOKES, Project Equipment Ltd., Newton Tony, Salisbury, U.K., with local modifications by L.J. Clarke, Makerere University, Uganda.

DESCRIPTION:

This multi-purpose toolframe is shown in plan and side views with a plough stem attached. When fitted with the "Y" frame it can be used as an adjustable-width 3-tine cultivator/weeder.

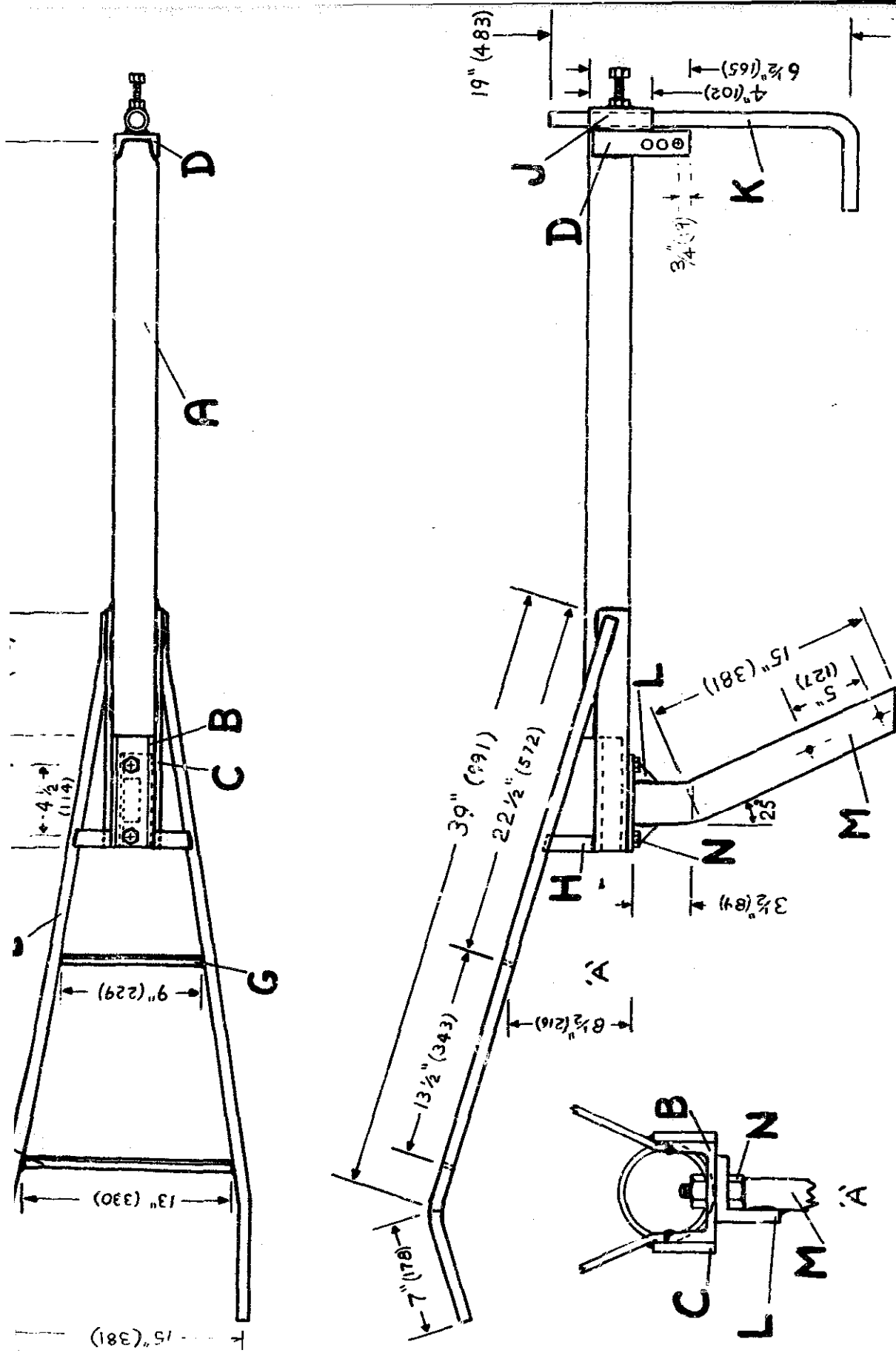
The toolframe is fabricated from mild steel flat, pipe, bar, channel, angle and box section materials. A simple skid is used instead of a depth wheel.

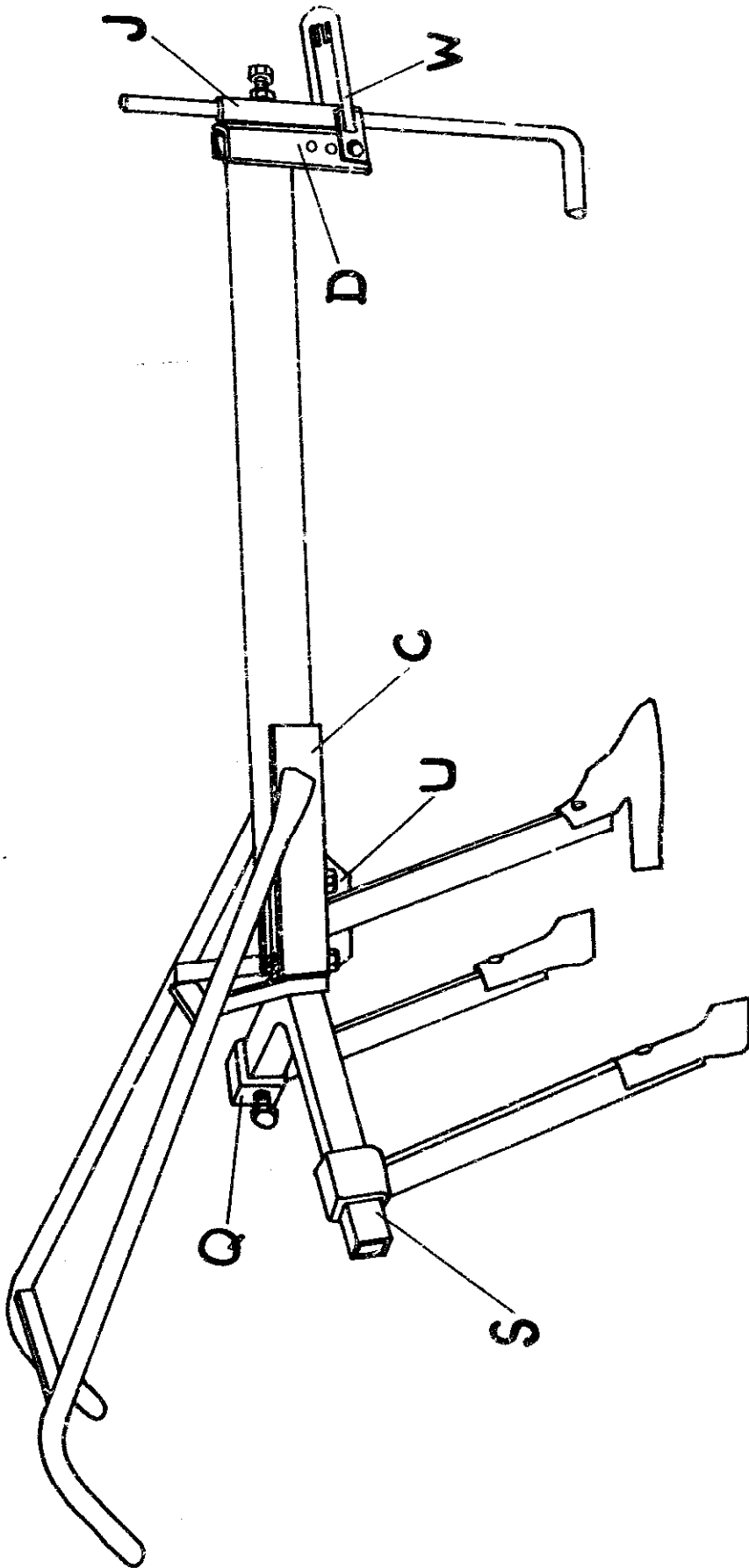
Note: Figures in brackets are in millimetres.

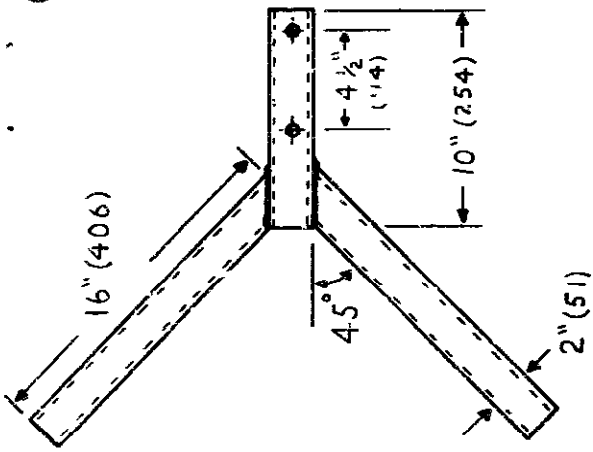
KEY:

<u>ITEM</u>	<u>NAME</u>	<u>QUANTITY</u>	<u>ITEM DESCRIPTION</u>
A	MAIN FRAME	1	Of 2 $\frac{1}{2}$ " (63) internal diameter, $\frac{1}{4}$ " (6.3) thick wall mild steel pipe, 38" (965) long.
B	REAR CHANNEL SECTION	1	Of 3" x 1 $\frac{1}{2}$ " x $\frac{1}{4}$ " (76 x 38 x 6.3) mild steel channel section, 7" (178) long.
C	SIDE PIECE	2	Of 2" x $\frac{3}{8}$ " (51 x 9.5) flat mild steel, 15" (381) long.
D	FRONT CHANNEL SECTION	1	Of 3" x 1 $\frac{1}{2}$ " x $\frac{1}{4}$ " (76 x 38 x 6.3) mild steel channel section, 6 $\frac{1}{2}$ " (165) long, 3 holes each $\frac{1}{4}$ " (19) diameter drilled 1" (25) apart.
E	HANDLE SIDE PIECE	2	Of $\frac{1}{2}$ " (19) internal diameter pipe, 46" (1168) long.
F	HANDLE BRACE	1	Of 1" x $\frac{3}{8}$ " (25 x 9.5) flat mild steel, 13" (330) long.
G	HANDLE BRACE	1	Of 1" x $\frac{3}{8}$ " (25 x 9.5) flat mild steel, 9" (229) long.
H	HANDLE SIDE BRACE	2	Of 1" x $\frac{3}{8}$ " (25 x 9.5) flat mild steel, 4 $\frac{1}{2}$ " (114) long.
J	SKID CLAMP	1	Of 1" (25) internal diameter pipe, 4" (102) long.
K	SKID	1	Of 1" (25) diameter mild steel round bar, 25" (635) long.
L	STEM BRACKET	1	Of 2" x 2" x $\frac{3}{8}$ " (51 x 51 x 9.5) mild steel angle, 6" (152) long.
M	PLOUGH STEM	1	Of 2 $\frac{1}{2}$ " x $\frac{1}{4}$ " (63 x 19) flat mild steel, 18 $\frac{1}{2}$ " (470) long.

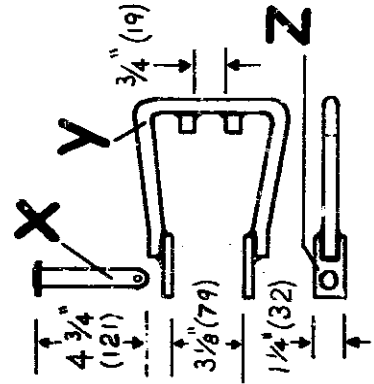
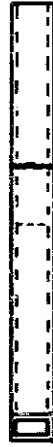
N	PLOUGH STEM/ CENTRE TINE BOLT	2	$\frac{5}{8}$ " (16) diameter mild steel bolt, $1\frac{1}{2}$ " (38) or $3\frac{1}{2}$ " (89) long as required.
P	SIDE TINE	2	Make one left hand tine and one right hand tine. Use shares of choice.
Q	SIDE TINE CLAMP	2	Each made from two 3" (76) length pieces of $2\frac{1}{2}$ " x $2\frac{1}{2}$ " x $\frac{1}{4}$ " (63 x 63 x 6.3) angle iron of section dimensions to ensure a sliding fit on the 'I' frame.
R	BOLT HOLE	1 per tine	$\frac{1}{8}$ " (9.5) diameter hole drilled through tine foot for share attachment bolt. Tine of $1\frac{1}{2}$ " x $\frac{1}{4}$ " (38 x 19) rectangular section mild steel.
<u>S</u>	'Y' FRAME	1	Made of 2" x 2" x $\frac{1}{8}$ " (51 x 51 x 3) square hollow section mild steel, two $\frac{5}{8}$ " (16) diameter holes drilled through the front end for bolting to item B.
<u>T</u>	CENTRE TINE	1	When used with the 'Y' frame the centre tine is attached to the main frame by two $\frac{5}{8}$ " (16) diameter bolts $3\frac{1}{2}$ " (89) long.
U	CENTRE TINE BRACKET	1	Of 2" x 2" x $\frac{1}{8}$ " (51 x 51 x 9.5) mild steel angle, 6" (152) long.
V	BOLT HOLE	1	$\frac{1}{8}$ " (9.5) diameter hole drilled through tine foot for share attachment bolt. Tine of $1\frac{1}{2}$ " x $\frac{1}{4}$ " (38 x 19) rectangular section mild steel.
<u>W</u>	HITCH ASSEMBLY	1	Made of mild steel, hitch height adjustment provided by holes in front channel section (item D).
X	HITCH PIN	1	Of $\frac{1}{2}$ " (19) diameter mild steel round bar.
Y	HITCH HOOK	1	Made of $\frac{1}{2}$ " (16) diameter mild steel round bar.
Z	HITCH PIVOT PIECE	2	Welded to hitch hook, each of $2\frac{1}{2}$ " x $1\frac{1}{4}$ " x $\frac{3}{8}$ " (63 x 32 x 9.5) flat mild steel.



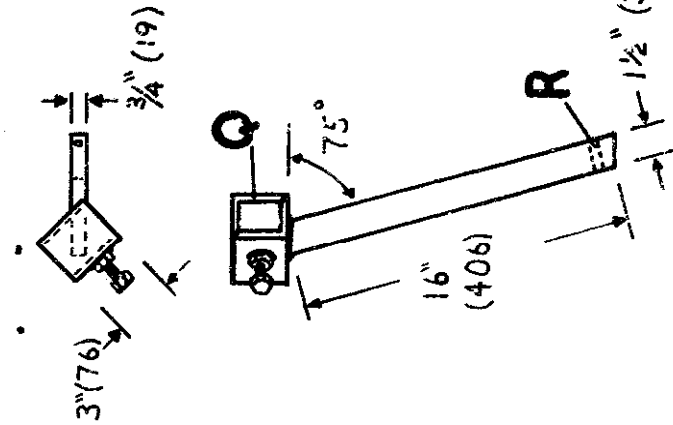




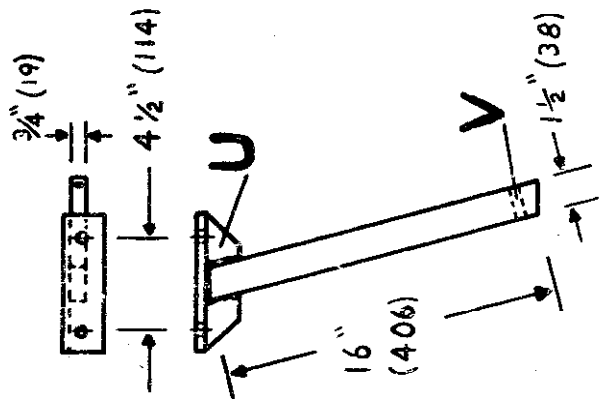
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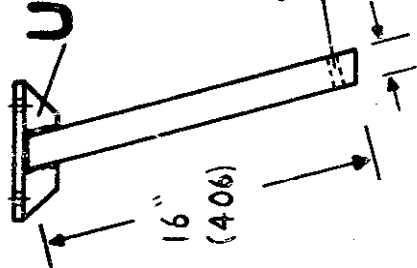
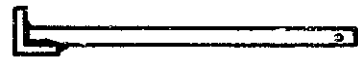
**W**



**P**



**T**



**U**

**V**



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5

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Chitedze Ridgemaster Toolbar

ITDG Agricultural Equipment and Tools No. 5

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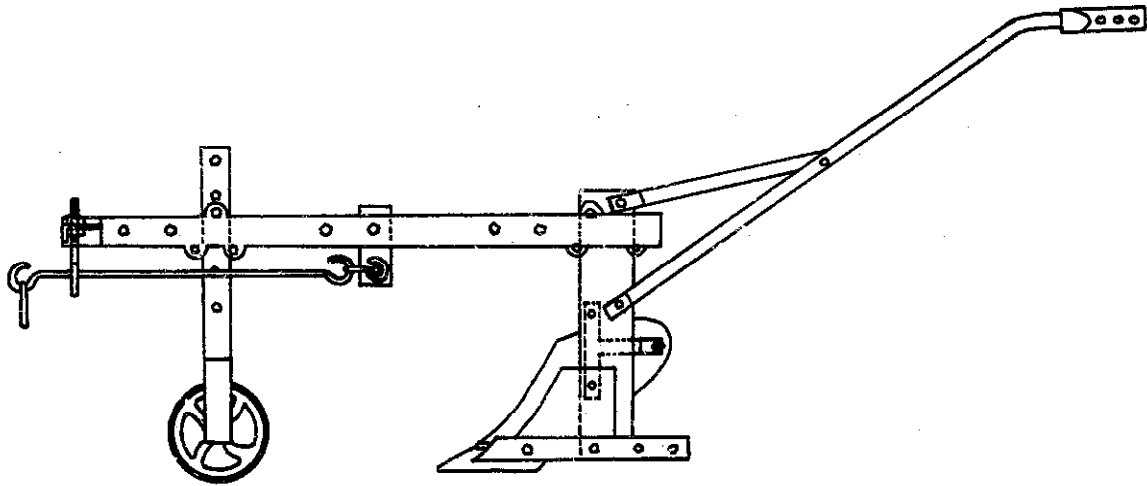
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"CHITEDZE RIDGEMASTER"  
TOOLBAR

"CHITEDZE RIDGEMASTER" TOOLBAR

DEVELOPED BY: G.D. Horspool, Chitedze Agricultural Research Station, Malawi.

DESCRIPTION: This multi-purpose toolbar is shown in side and plan views with a plough body attached, but a ridger or cultivator can also be fitted to the vertical beam.

The unique design feature of this toolbar is that it combines lightness with adequate structural strength, the main parts being fabricated from rectangular hollow section (R.H.S.) mild steel.

Note: Figures in brackets are in millimetres.

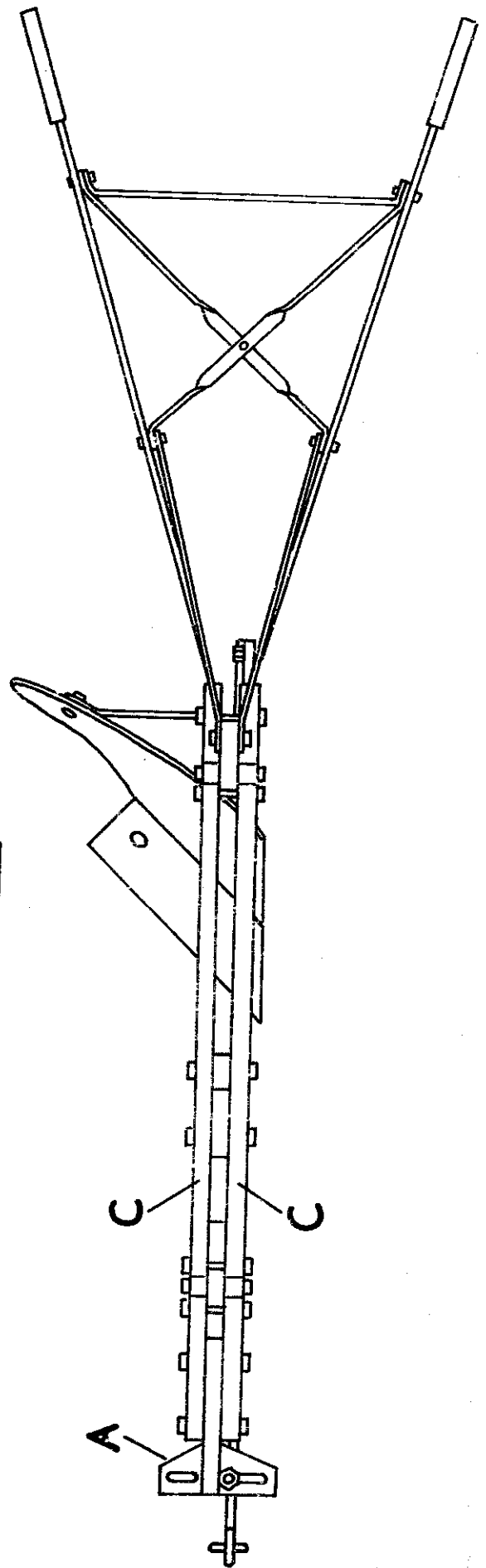
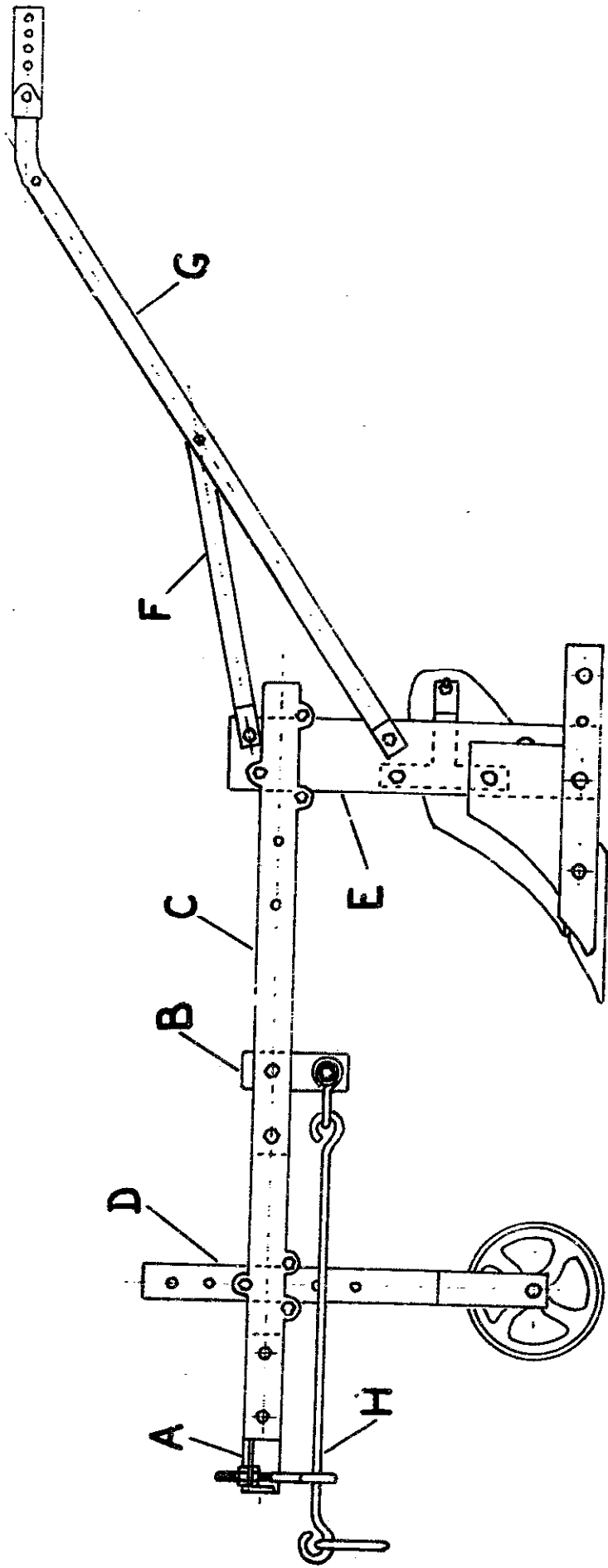
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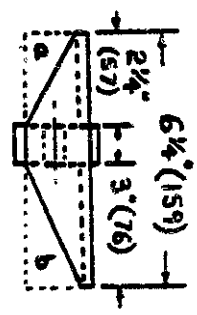
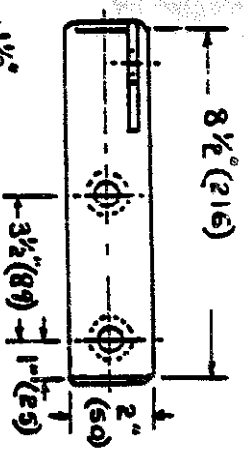
<u>ITEM</u>	<u>NAME</u>	<u>QUANTITY</u>	<u>ITEM DESCRIPTION</u>
A	HAKE PLATE	1	Plate of $\frac{1}{4}$ " x $1\frac{1}{2}$ " (6.3 x 38 x 38) mild steel angle iron, parts a and b cut off and welded on top, with plate support of 2" x 1" (50 x 25) R.H.S. steel.
B	CENTRE HITCH	1	Two pieces of 2" x 1" (50 x 25) R.H.S. welded together at right angles.
C	HORIZONTAL BEAM	2	Each of 2" x 1" (50 x 25) R.H.S. steel.
D	WHEEL ASSEMBLY	1	Of 2" x 1" (50 x 25) R.H.S. steel welded to 2" x $\frac{1}{4}$ " (50 x 6.3) 'U' shaped wheel support.
E	VERTICAL BEAM	1	Made from two pieces of 2" x 1" (50 x 25) R.H.S. steel welded together.
F	HANDLE STAY	2	Each of 1" x $\frac{1}{4}$ " (25 x 6.3) section mild steel.
G	HANDLE	2	Each of $1\frac{1}{4}$ " x $\frac{5}{16}$ " (32 x 8) section mild steel
H	HITCH ASSEMBLY	1	Of $\frac{3}{8}$ " (16) diameter mild steel rod.
J	WHEEL	1	7" (178) diameter cast iron wheel running on bush of $\frac{9}{16}$ " (14) internal diameter and $\frac{1}{2}$ " (12.5) diameter bolt.
K	BOLT HOLES		All bolt holes in R.H.S. steel formed by drilling 1" (25) through R.H.S., inserting bush of 1" (25) outside diameter x $\frac{3}{16}$ " (5) thick wall mild steel tube, welding into position and grinding flush.
L	BOLT HOLES		Formed by welding 1" (25) outside diameter x $\frac{3}{16}$ " (5) thick wall mild steel tube into position.

M R.H.S. CAPPING All open ends of R.H.S. steel capped with  $\frac{1}{8}$ " x 1" (3 x 25) mild steel flat, welded and ground to a bevel edge.

KEY 2:

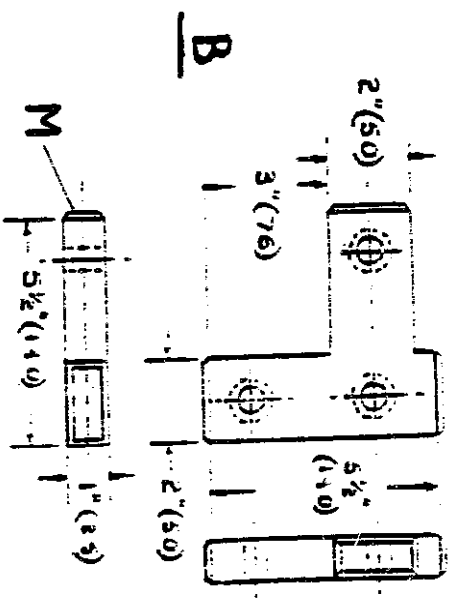
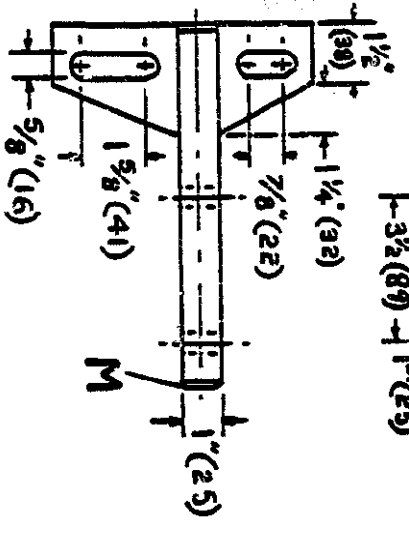
<u>ITEM</u>	<u>NAME</u>	<u>ITEM DESCRIPTION</u>
N	"CHITEDZE" MK III TOOLBAR	View showing design modifications and parts of cultivator attachment.
A2	HAKE PLATE	Plate made of $\frac{1}{2}$ " (12.5) thick flat mild steel instead of angle iron.
B2	CENTRE HITCH	Made of one piece of 2" x 1" (50 x 25) R.H.S. steel.
L2	BOLT HOLES	$\frac{1}{2}$ " (12.5) diameter bolt holes drilled through $\frac{3}{8}$ " (9.5) thick flat mild steel welded to horizontal beams.
P	CULTIVATOR MAIN FRAME	Made of 2" x 1" (50 x 25) R.H.S. steel.
Q	CULTIVATOR TINE BAR	Made of 2" x 1" (50 x 25) R.H.S. steel, 18" (457) long.
R	CULTIVATOR TINES	Fabricated of mild steel for front or rear fitting as required.



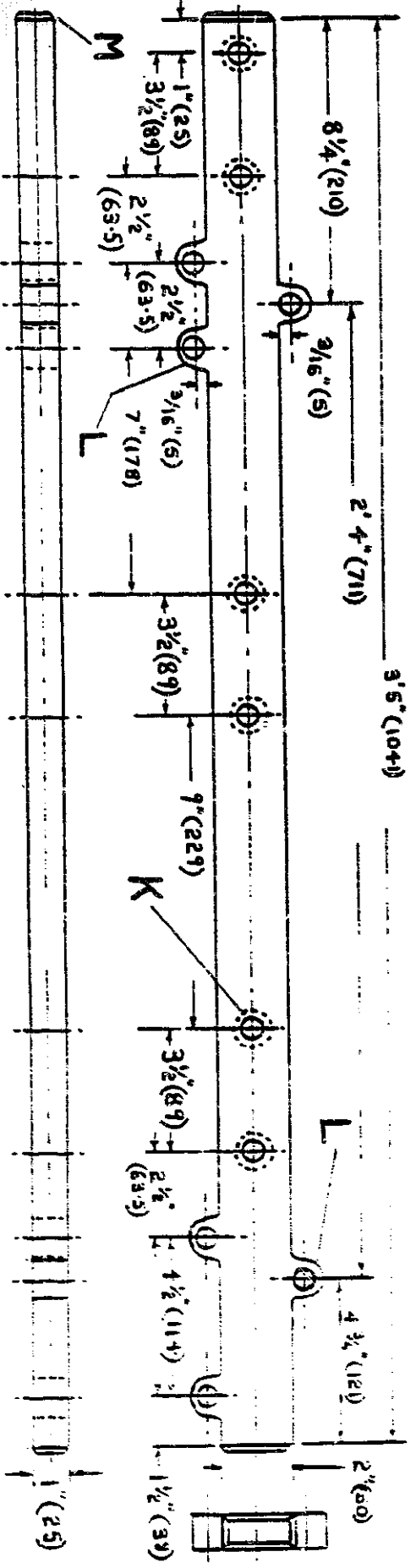


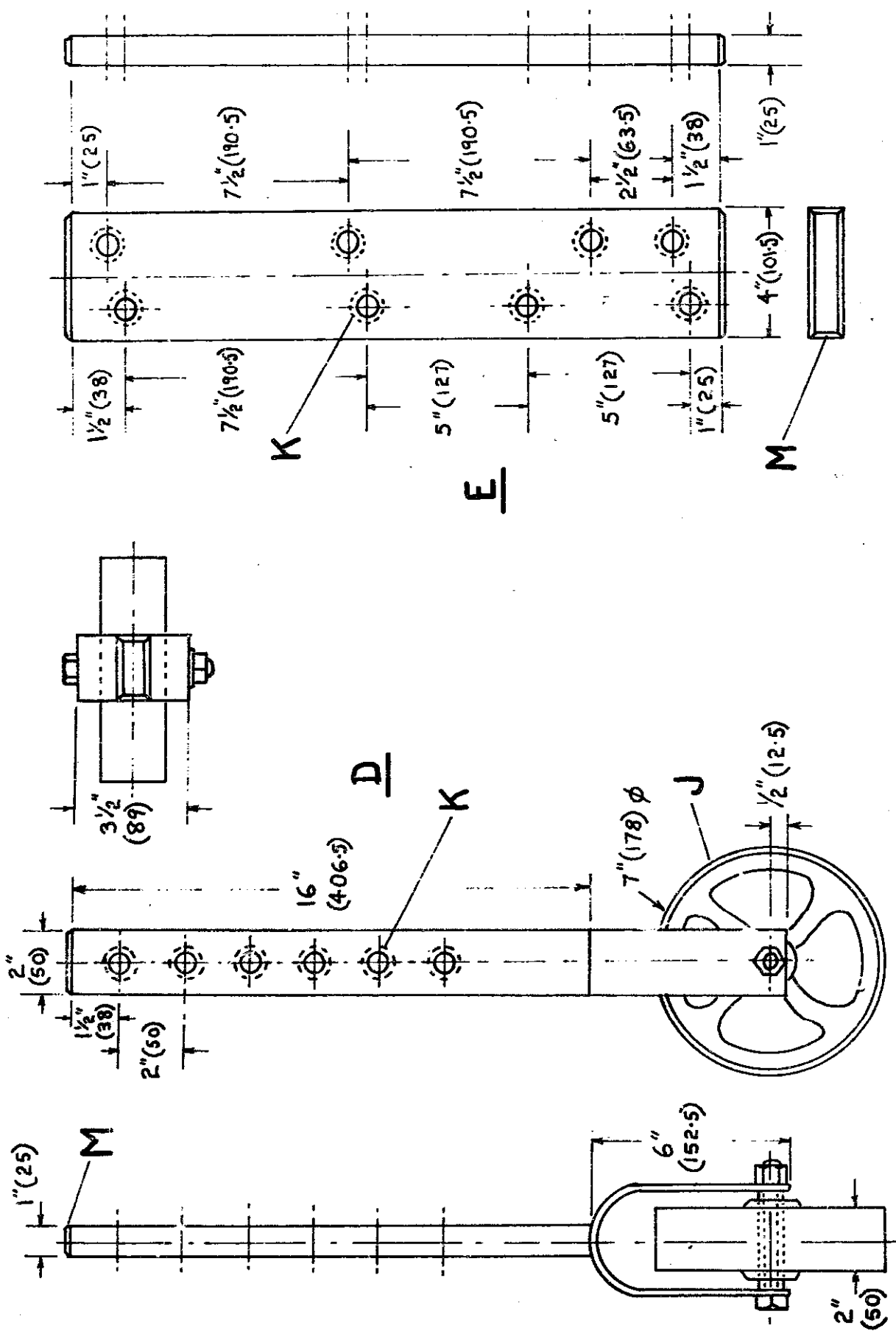
**A**

**B**

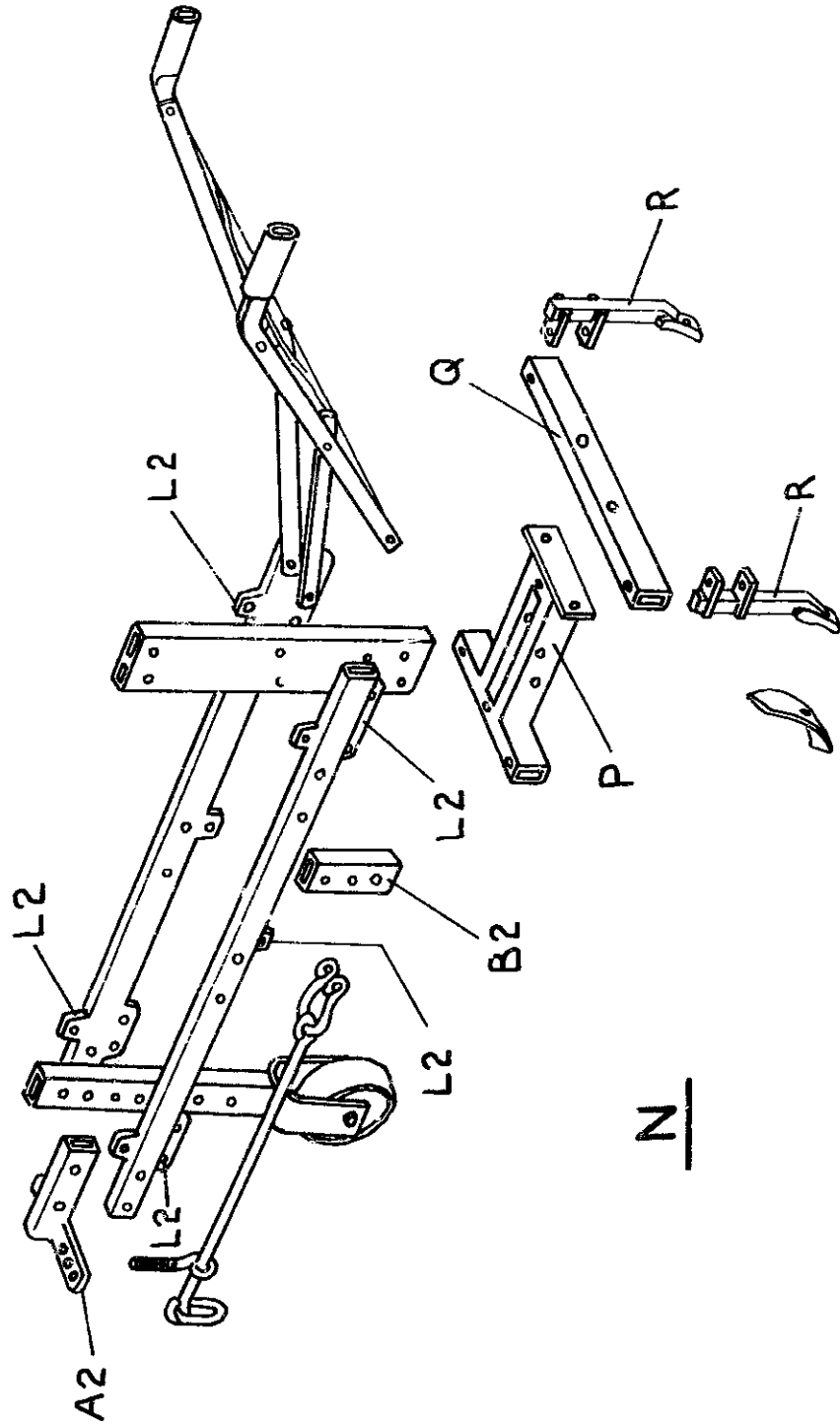


**C**









N

6

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Prototype Multi-Purpose Ox-Drawn Tool  
ITDG Agricultural Equipment and Tools No. 6

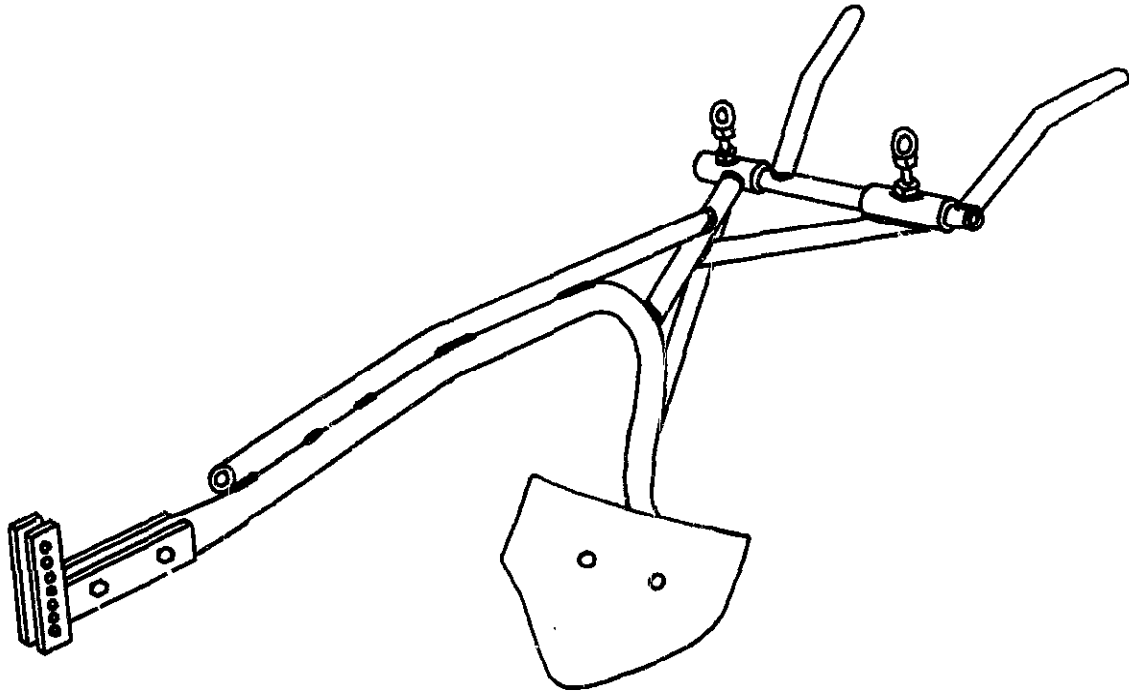
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PROTOTYPE MULTI-PURPOSE  
OX-DRAWN TOOL

PROTOTYPE MULTI-PURPOSE OX-DRAWN TOOL

DEVELOPED BY: A.R. Stokes, Northern Region Research Station, Samaru, Nigeria.

DESCRIPTION: This tool was one of a series built by the engineer, Mr. A.R. Stokes, in a research programme aimed at assisting the small farmers who grow their crops on ridges in Northern Nigeria.

The share is adjustable to allow different soil cultivation operations to be carried out. In the design shown, the share angle settings obtainable with the beam horizontal are  $40^{\circ}$ ,  $55^{\circ}$ ,  $70^{\circ}$  and  $85^{\circ}$  approximately.

On the comparatively heavy soils at Samaru, the multi-purpose share was used for ridging, splitting ridges, cross-tying, weeding and breaking capped soil in the furrows. The tool frame was designed with an offset beam to avoid blockage when lifting groundnuts.

This tool was a prototype but does show a considerable amount of ingenuity, and the fabrication methods illustrated should be of value to field extension personnel in promoting various ideas on local construction of agricultural equipment to assist farmers in developing areas.

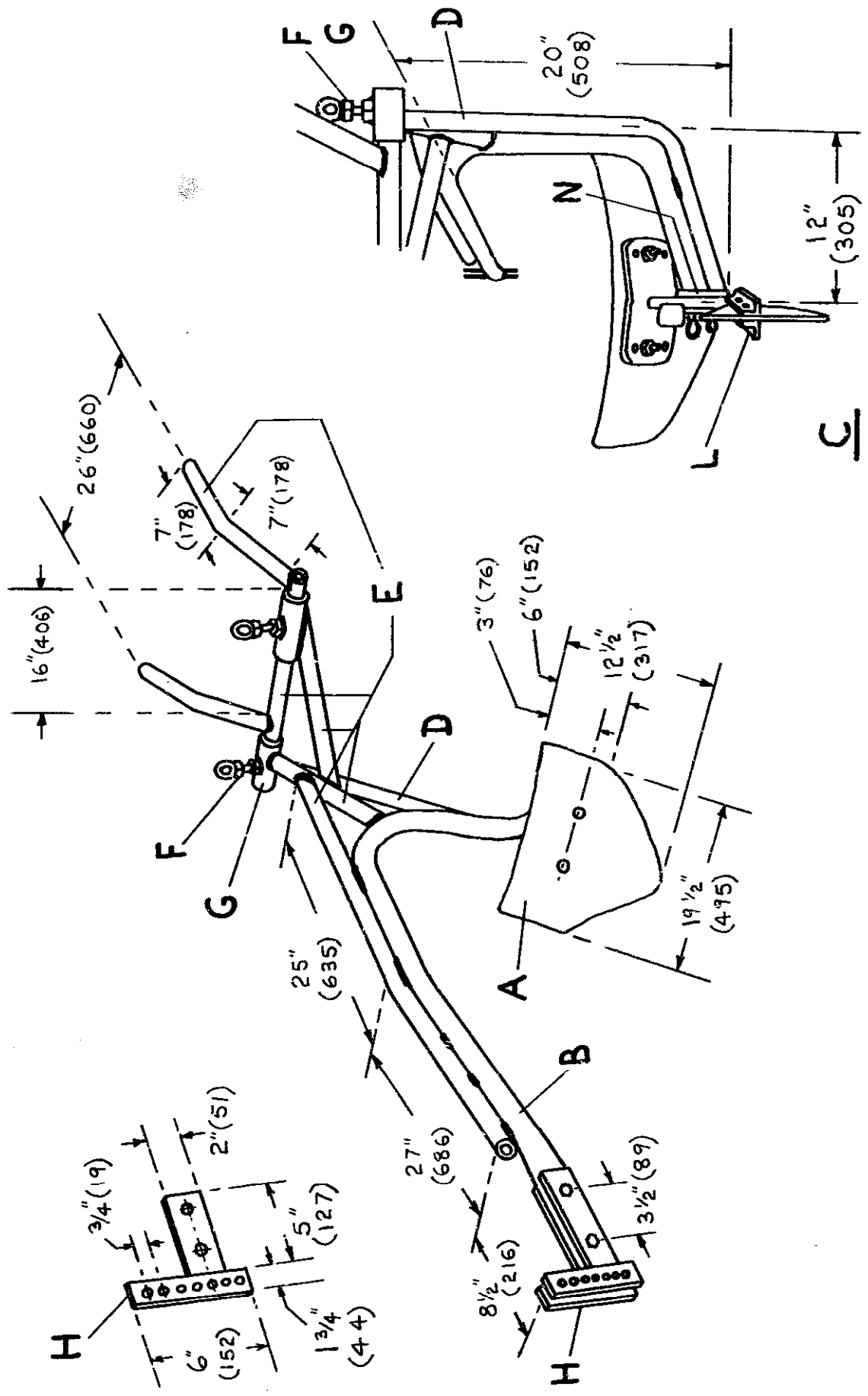
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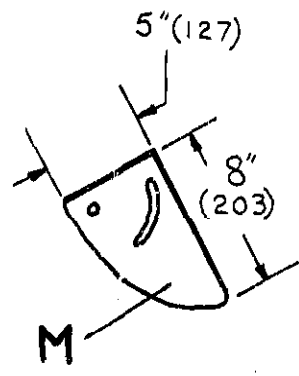
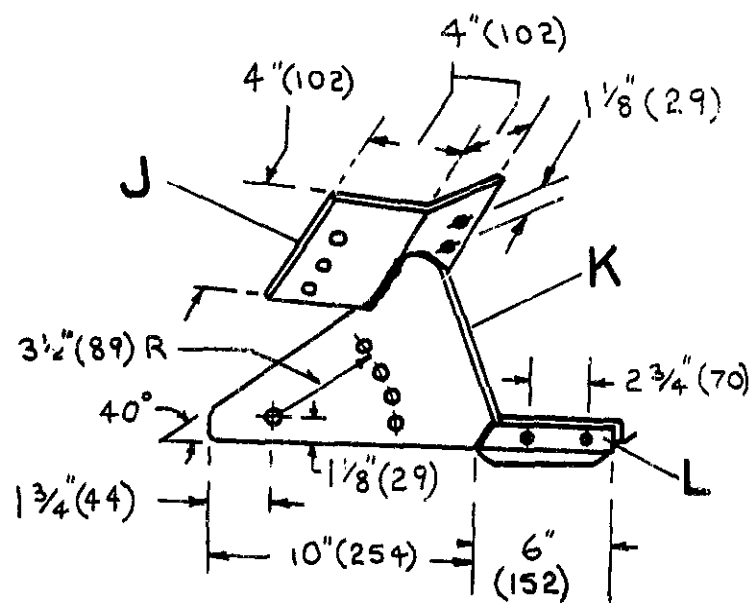
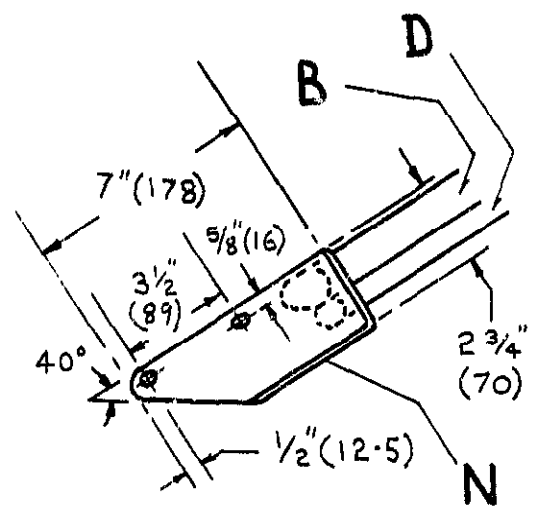
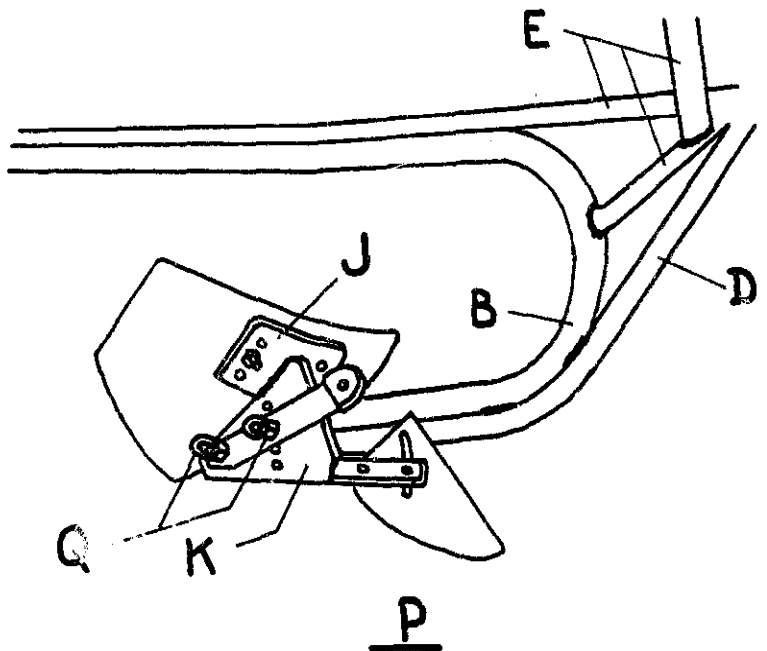
KEY:

ITEM

ITEM DESCRIPTION

- |   |  |
|---|--|
| A | Multi-purpose share cut from an old plough disc.   |
| B | Main beam of $1\frac{1}{4}$ " (32) nominal bore pipe, the front end of the pipe flattened to facilitate fitting the hitch bracket.       |
| C | Rear view of the tool showing the offset beam.   |
| D | Rear brace piece of $\frac{1}{2}$ " (19) nominal bore pipe.  |
| E | Handles and auxiliary frame pieces of 1" (25) nominal bore pipe.   |
| F | Handle-height adjustment clamp bolts.  |
| G | Handle bar clamp sleeves of $1\frac{1}{4}$ " (32) nominal bore pipe.   |
| H | Hitch brackets made of $\frac{3}{8}$ " (9.5) thick mild steel, bolted together through the main beam.                                    |
| J | Share attachment plate of $\frac{1}{4}$ " (6.3) thick mild steel.  |
| K | Share plate support of $\frac{1}{2}$ " (12.5) thick mild steel, with $\frac{1}{2}$ " (12.5) diameter holes for adjusting angle of share. |
| L | Rudder support made from two pieces of 1" x 1" x $\frac{3}{8}$ " (25 x 25 x 3) mild steel angle.   |
| M | Rudder of $\frac{3}{16}$ " (5) thick steel, secured with $\frac{3}{8}$ " (9.5) diameter bolts.   |
| N | Beam attachment plate of $\frac{1}{2}$ " (12.5) thick mild steel.  |
| P | Rear/side view of tool showing the share assembly.   |
| C | Bolts of $\frac{1}{2}$ " (12.5) diameter for securing beam attachment plate.   |





10



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Clod Crushers. Two Designs

ITDG Agricultural Equipment and Tools No. 10

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AGRICULTURAL EQUIPMENT  
AND TOOLS FOR FARMERS  
DESIGNED FOR LOCAL CONSTRUCTION

CLOD CRUSHERS ( TWO DESIGNS )

DEVELOPED BY: R.B. BROCKBANK, Bunda College of Agriculture, Malawi.

DESCRIPTION: These two simple and cheaply-constructed implements are used for reducing the size of clods in cultivated land prior to ridging up the soil. They are made principally of 'gum' (Eucalyptus species) poles.

Type 1

The roller gangs are built up from short pieces of pole, each drilled and grooved so that when fitted onto the steel bar axle they rest at an angle of approximately  $60^{\circ}$  to each other. The poles are mounted on their axles with sufficient play to provide a self-cleaning effect. This implement is provided with additional weight by either ballasting the frame or fitting a seat on the frame for the operator.

Type 2

This model consists of short pole pegs attached in a staggered formation around the circumference of a single heavy log roller. The pegs need to be drilled before nailing to avoid splitting. Steel bolts, sharpened at the ends, of  $\frac{1}{2}$ " (12.5) to  $\frac{3}{4}$ " (19) diameter are driven into the centre of each end of the roller, to which the draught chains are attached. A swingle tree is fitted to the roller draught chains.

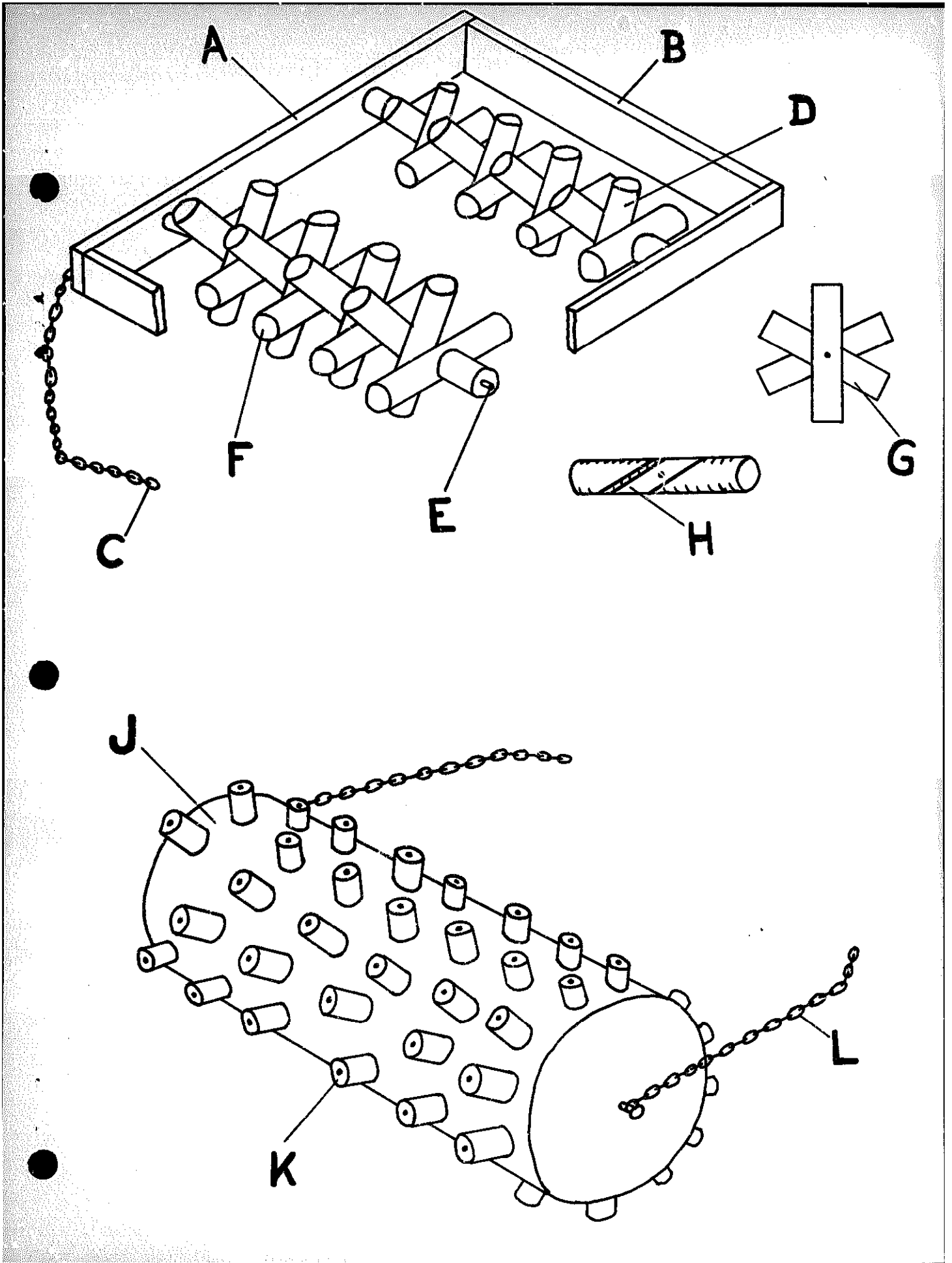
Note: Figures in brackets are in millimetres.

KEY:            TYPE 1.

<u>ITEM</u>	<u>NAME</u>	<u>QUANTITY</u>	<u>ITEM DESCRIPTION</u>
A	FRAME SIDE MEMBER	2	Wooden plank 4" x 1" (102 x 25), 40" (1016) long.
B	FRAME END MEMBER	2	Wooden plank 4" x 1" (102 x 25), 30" (762) long.
C	DRAUGHT CHAIN	1	Mild steel link chain of convenient length.
D	REAR ROLLER PEGS	As required	Eucalyptus poles each 9" (229) long.
E	ROLLER AXLE	2	$\frac{3}{4}$ " (19) diameter mild steel bar.
F	FRONT ROLLER PEGS	As required	Eucalyptus poles each 12" (305) long.
G	-----		Diagram showing roller pegs mounted at 60° to each other.
G	-----		View showing a roller peg. Each peg has grooves cut at 60° on both sides.

KEY:            TYPE 2.

<u>ITEM</u>	<u>NAME</u>	<u>QUANTITY</u>	<u>ITEM DESCRIPTION</u>
J	ROLLER	1	Eucalyptus log, 15" - 18" (381 to '457) in diameter, 36" - 48" (914 to 1219) long.
K	ROLLER PEGS	As required	Eucalyptus pegs, 2" - 3" (51 to 76) in diameter, 3" (76) long.
L	DRAUGHT CHAIN	1	Mild steel link chain of required length.





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Ox-Drawn Tie-Ridger/Weeder Implement  
ITDG Agricultural Equipment and Tools No. 11

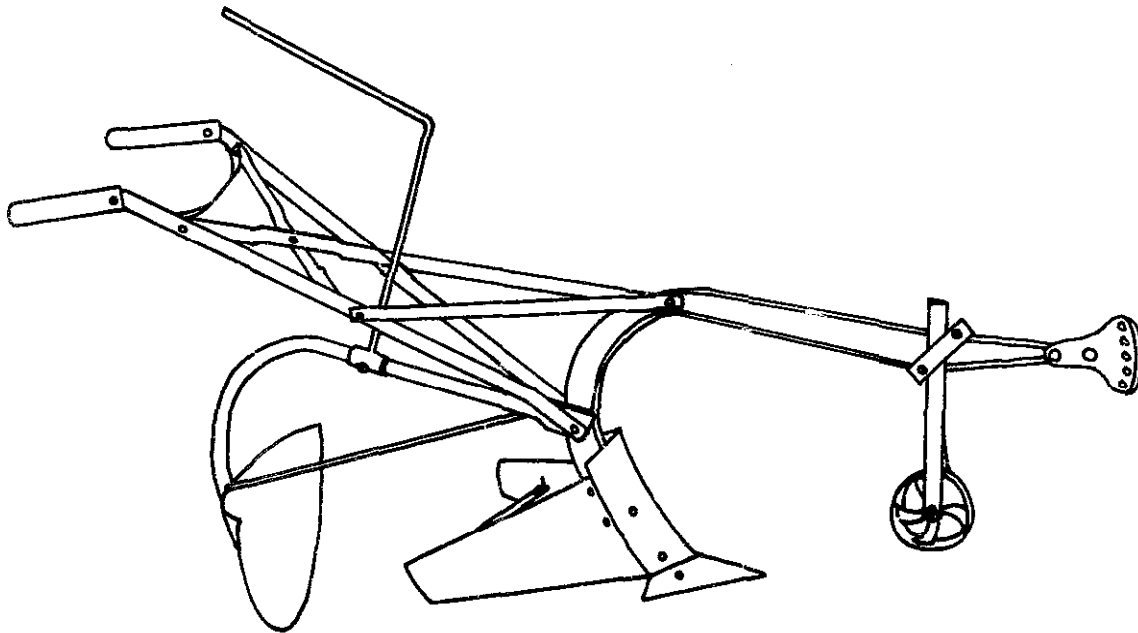
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OX-DRAWN TIE-RIDGER/WEEDER  
IMPLEMENT



OX-DRAWN TIE-RIDGER, WEEDEE IMPLEMENT  
(FOR ATTACHMENT TO "EMCOT" RIDGING PLOUGH)

DEVELOPED BY: A.R. STOKES, Northern Nigeria.

DESCRIPTION: This implement is designed for attachment to the "Emcot" ox-drawn ridging plough, a  $\frac{1}{2}$ " (12.5) diameter bolt (of sufficient length) with lock nuts being used to hold the ridger handles to the plough beam, allowing the attached implement to pivot freely.

This attachment can be used for crosstying when ridging is carried out, and for crosstying and/or weeding after the ridging operation. During field use the implement handle is raised, then quickly dropped, every 6' to 9' or as required, leaving a crosstie of earth and/or weeds in the furrow.

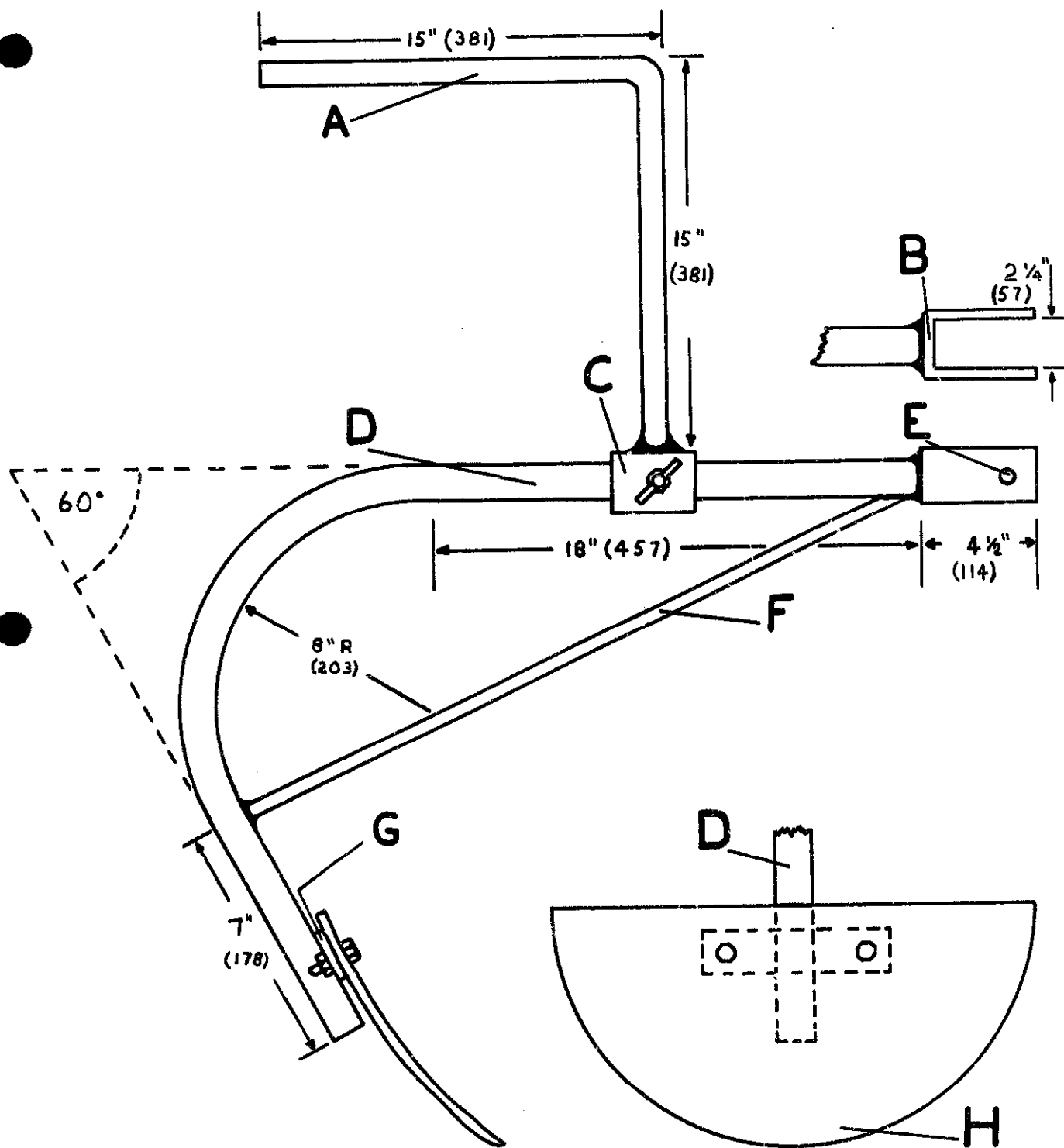
On certain free-draining soils in Africa, the use of this implement has:

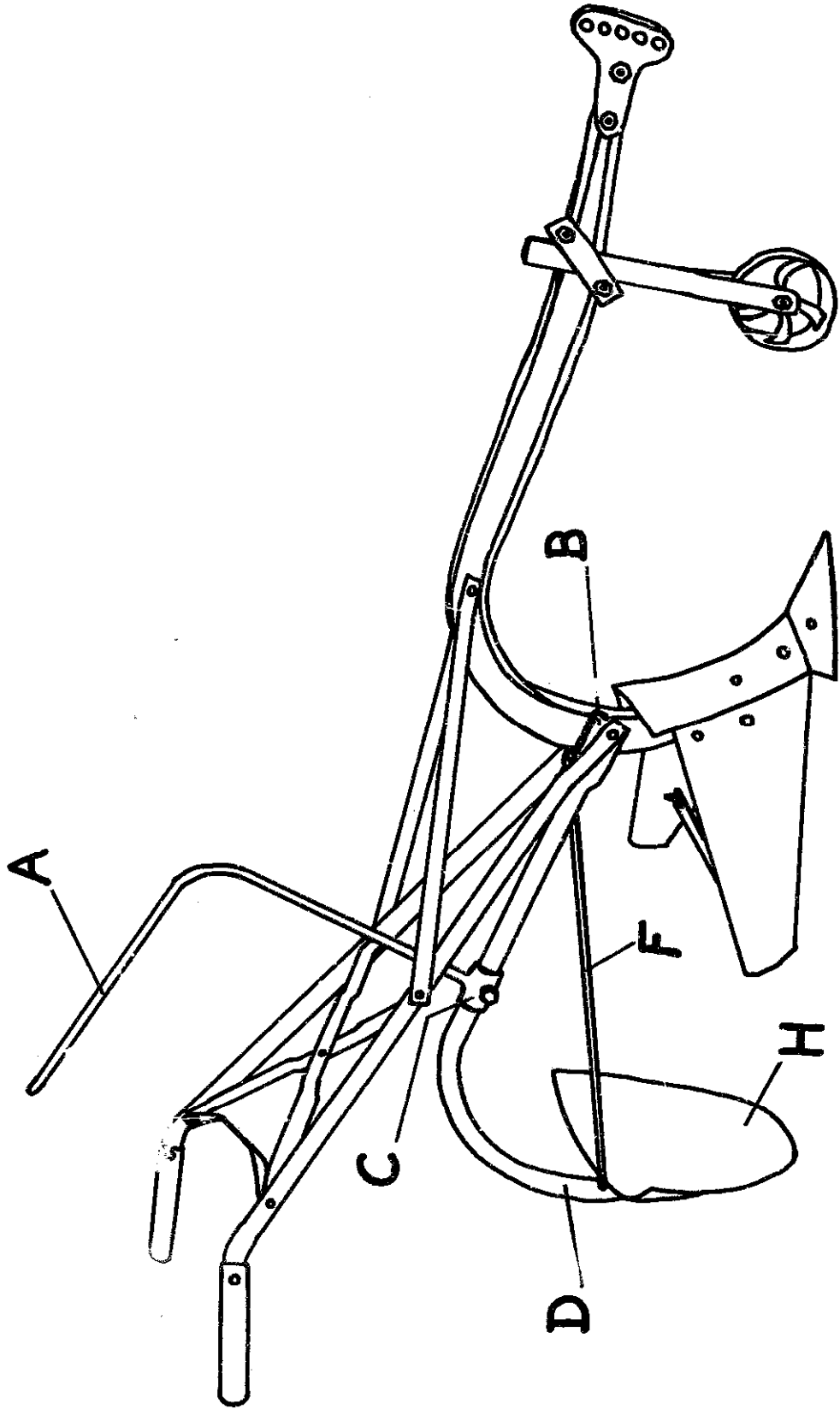
- (1) increased crop yields by up to 100% where planting on tied-ridges was compared with planting on the flat;
- (2) reduced the labour requirement for the combined land preparation and weeding operations by 60% when compared with cultivation by hand.

Note: Figures in brackets are in millimetres.

KEY:

<u>ITEM</u>	<u>NAME</u>	<u>QUANTITY</u>	<u>ITEM DESCRIPTION</u>
A	HANDLE	1	Of $\frac{1}{2}$ " (12.5) internal diameter mild steel pipe.
B	ATTACHMENT BRACKET	1	Made of one piece 2" x $\frac{1}{4}$ " x 11" (51 x 6.3 x 279) mild steel.
C	SLEEVE	1	Of $1\frac{1}{2}$ " (38) internal diameter mild steel pipe 3" (76) long, fitted with $\frac{1}{2}$ " (12.5) diameter locking bolt.
D	BEAM	1	Of 1" (25) or $1\frac{1}{4}$ " (32) internal diameter mild steel pipe.
E	PIVOT BOLT HOLE	1	$\frac{1}{2}$ " (12.5) diameter hole to take pivot/attachment bolt.
F	BRACE	1	Of $\frac{3}{8}$ " (9.5) diameter mild steel round bar.
G	SHARE SUPPORT PLATE	1	Of 7" x 2" x $\frac{1}{4}$ " (178 x 51 x 6.3) mild steel.
H	SHARE	1	An old plough disc of 22" to 24" (559 to 610) diameter, cut in half for share.
J	REAR VIEW OF SHARE		Showing method of securing the beam D to share support plate G.
K	BRACKET	2	Each of 1" x 1" (25 x 25) mild steel angle iron, 2" (51) long, welded to D and G.





12

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A project of Volunteers in Asia

IDC Weeding Attachment for Emcot Plow  
ITDG Agricultural Equipment and Tools No. 12

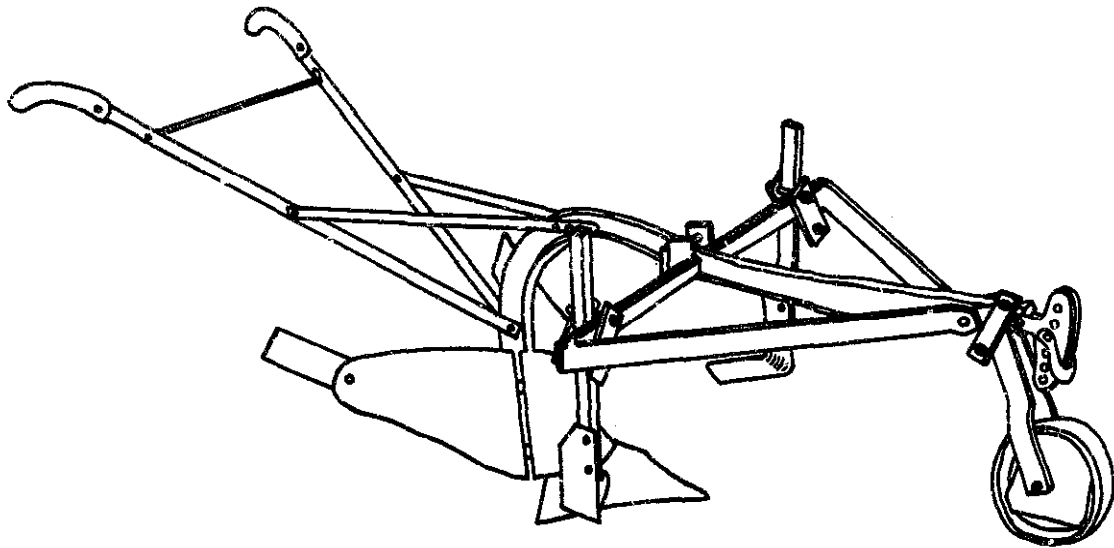
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"I.D.C." WEEDING ATTACHMENT  
FOR "EMCOT" PLOUGH

"I.D.C." WEEDING ATTACHMENT

(FOR USE ON "EMCCT" RIDGING PLOUGH)

DEVELOPED BY: Industrial Development Centre, Zaria, Nigeria.

DESCRIPTION: This attachment enables weeding in ridged row crops to be carried out by animal power instead of by hand.

The plough, with weeding attachment, can be pulled by a single ox or two oxen.

The tool standards can be adjusted for height, and also for width according to the row spacing. The weeding knives should be positioned to run close to the plants without damaging the roots, and should dig deep enough to cut down the sides of the ridges. The sides of the ridges are remade by the ridger body following behind.

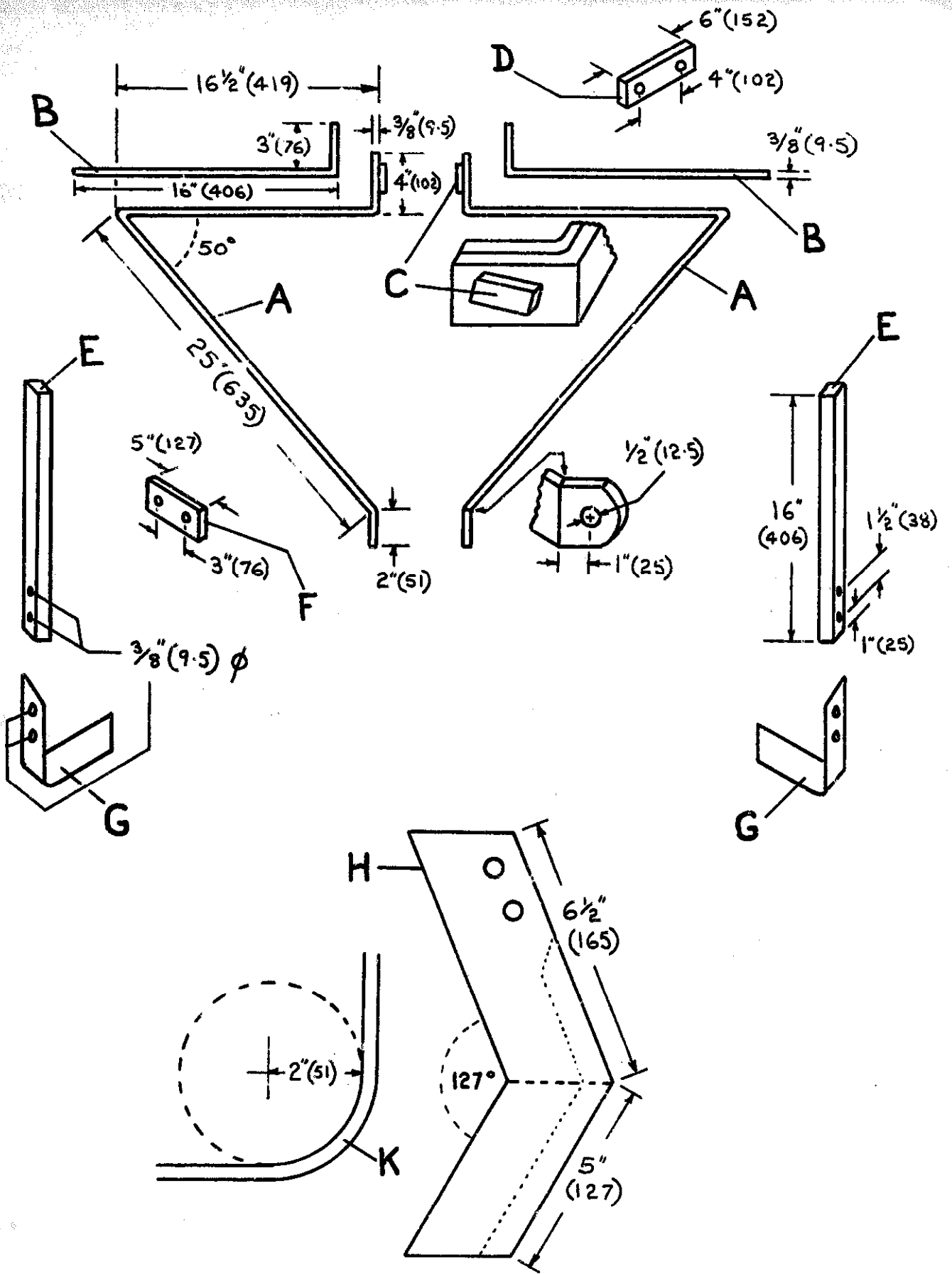
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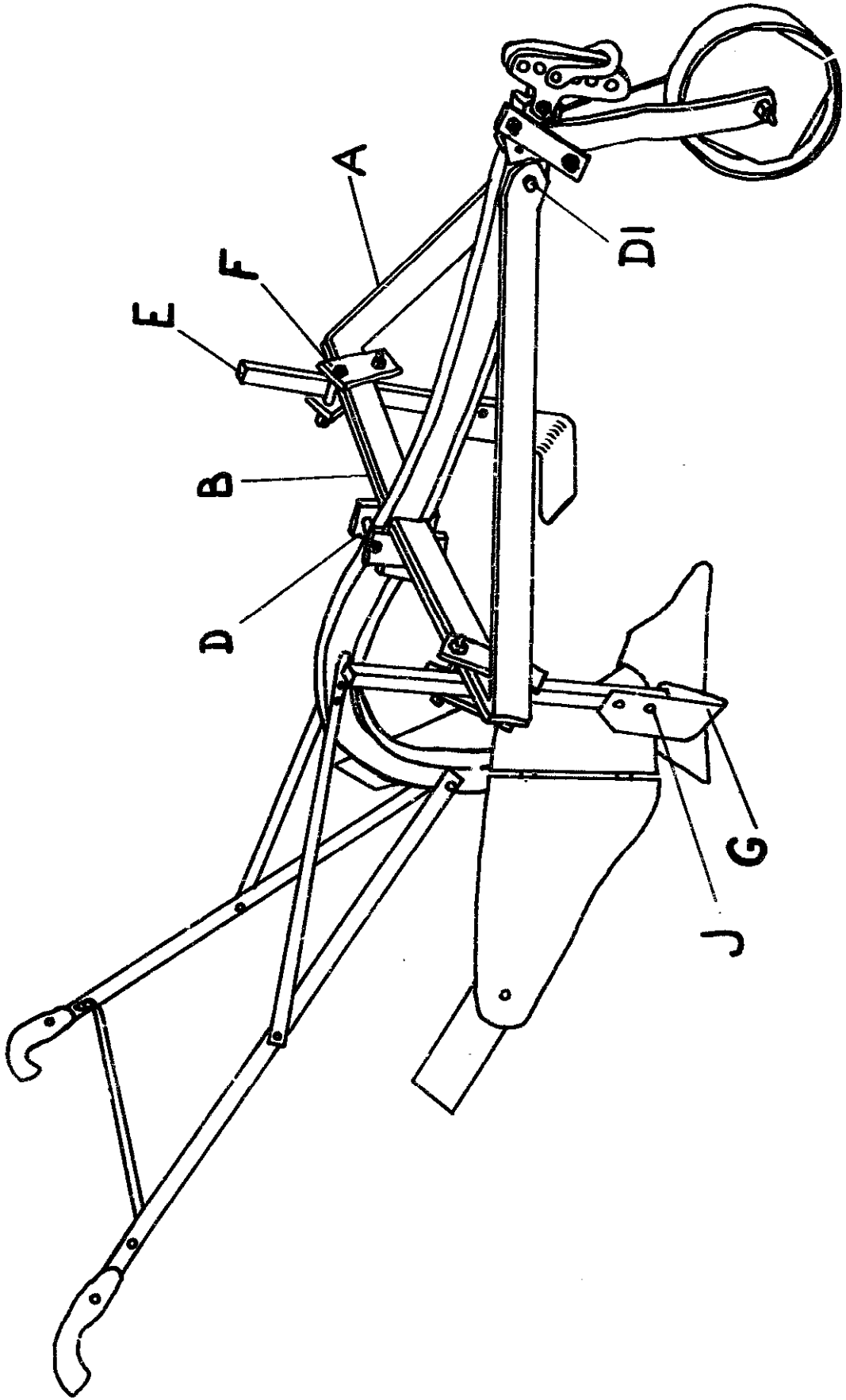
<u>ITEM</u>	<u>NAME</u>	<u>QUANTITY</u>	<u>ITEM DESCRIPTION</u>
A	MAIN FRAME	2	Each made from one piece of $\frac{1}{8}$ " x 2" x 48" (9.5 x 51 x 1219) mild steel.
B	MAIN FRAME BRACKET	2	Each of $\frac{1}{8}$ " x 2" x 20" (9.5 x 51 x 508) mild steel, riveted or welded to main frame.
C	POSITIONING BLOCKS	2	Each of $\frac{1}{8}$ " x 1" x 2" (9.5 x 25 x 51) mild steel, welded or riveted inside rear part of main frame to fit on I-beam of the plough.
D	MAIN FRAME CLAMP PLATE	2	Each of $\frac{1}{8}$ " x 2" x 6" (9.5 x 51 x 152) mild steel, held together by two $\frac{1}{2}$ " (12.5) diameter mild steel bolts $3\frac{1}{2}$ " (89) long.
D1	FRAME BOLT	1	Of $\frac{1}{2}$ " (12.5) diameter mild steel, $2\frac{1}{2}$ " (63) long.
E	TOOL STANDARD	2	Each of 1" x 1" (25 x 25) mild steel square bar, 16" (406) long.
F	TOOL STANDARD CLAMP PLATE	4	Each of $\frac{1}{8}$ " x 2" x 5" (9.5 x 51 x 127) mild steel. Each pair of plates held together by two $\frac{1}{2}$ " (12.5) diameter mild steel bolts, 3" (76) long.
G	WEEDING KNIFE	2	Made of $\frac{1}{4}$ " (6.3) thick high grade steel; light car spring or old railway sleeper is suitable.
H	KNIFE TEMPLATE	1	Make one full size in sheet metal and use as a pattern for cutting out the knives.
J	KNIFE BOLT	4	Each of $\frac{1}{8}$ " (9.5) diameter mild steel, 2" (51) long.

Note on making the weeding knives:

- (1) Cut out a piece of metal to the shape of the template H.
- (2) Draw out the leading edge, as indicated by the dotted line in H, to make it sharp.
- (3) Bend the knife material to a right angle, with the corner rounded (as shown at K) as this will help to avoid damage to roots when cultivating close to the plants.







13

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Adjustable-Width V-Drag Ditcher/Bund Former  
ITDG Agricultural Equipment and Tools No. 13

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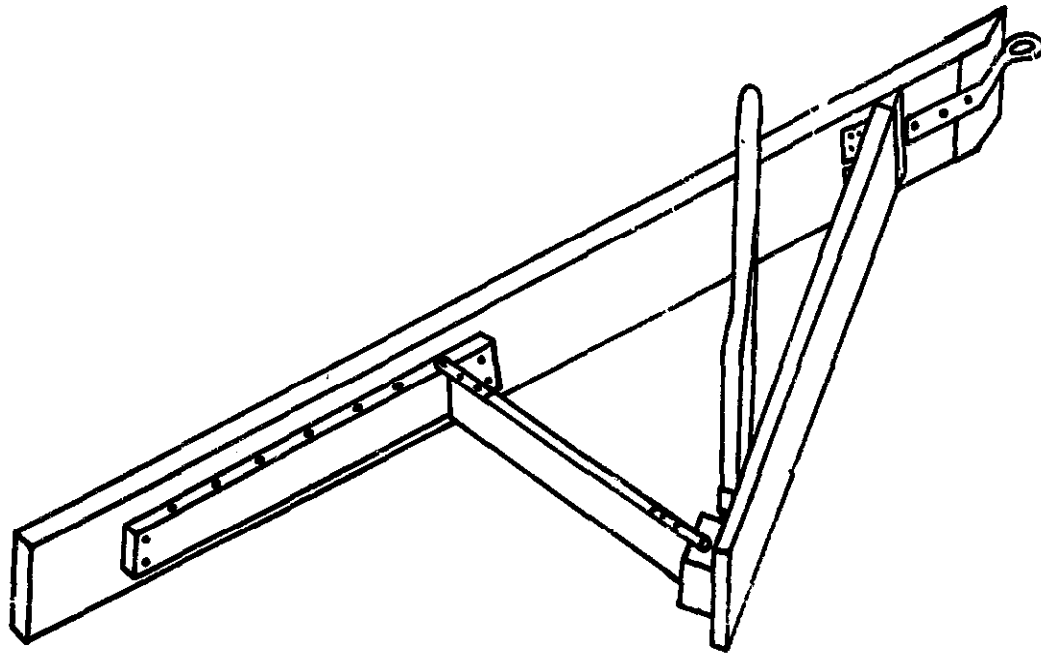
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ADJUSTABLE-WIDTH 'V-DRAG'  
DITCHER/BUND FORMER

ADJUSTABLE-WIDTH 'V-DRAG' DITCHER/BUND FORMER

SOURCE: United States Department of Agriculture, Soil Conservation Service.

DESCRIPTION: This implement is used for making irrigation ditches, and can also be used to construct low-height contour bunds for border irrigation.

When making earth ditches for conveying water to crops or drainage channels, a furrow is first opened with a plough (running down and back the required number of times according to the depth required) along the line of the ditch. The V-drag is then used with the runner board riding in the furrow bottom, the crowder board deflecting the soil sideways. Weight can be added by the operator standing on the runner board. The depth of cut can be increased by placing additional weight towards the front of the implement and/or lengthening the hitch.

When using the 'V-drag' to construct contour bunds for irrigation, a plough is run down and back twice, throwing the soil into the border line. The implement is then run down the line, the crowder board pushing the soil into a ridge.

Several passes are made in each direction until the required size of ditch or border has been formed.

Note: Figures in brackets are in millimetres.

KEY:

<u>ITEM</u>	<u>NAME</u>	<u>QUANTITY</u>	<u>ITEM DESCRIPTION</u>
A	METAL CUTTING POINT	1	12" (305) x 12" (305) heavy sheet metal.
B	HITCH	1	$\frac{3}{8}$ " x 2" x 36" (9.5 x 51 x 914) strap iron, with $\frac{1}{4}$ " (19) round $2\frac{1}{2}$ " (63) diameter hitch ring.
C	HINGES	2	3" (76) surface hinges.
D	HANDLE	1	$1\frac{1}{2}$ " x $2\frac{1}{2}$ " x 54" (38 x 63 x 1372) hardwood.
E	CROWDER BLOCK	1	12" x 2" (305 x 51) triangular section hardwood.
F	CROWDER BOARD	1	2" x 12" x 72" (51 x 305 x 1829) wooden board.
G	SPREADER BOARD	1	2" x 6" x 36" (51 x 152 x 914) wooden board.
H	SPREAD ADJUSTER BOARD	1	2" x 6" x 48" (51 x 152 x 1219) wooden board with holes drilled at 6" (152) intervals for implement-width adjustment.

J	SPREADER BLOCK	1	4" x 6" x 6" (102 x 152 x 152) wooden block.
K	RUNNER BOARD	1	2" x 12" x 132" (51 x 305 x 3353) wooden board. Bottom edge may be protected with 2" x 2" (51 x 51) angle iron if desired.
L	HANDLE SUPPORT	2	$\frac{3}{8}$ " x 2" x 10" (9.5 x 51 x 254) strap iron.
M	SPREADER BOARD END END PIECES	4	$\frac{3}{8}$ " x $1\frac{1}{4}$ " x 8" (9.5 x 44 x 203) strap iron.

BOLTS AND SCREWS.

<u>QUANTITY</u>	<u>SIZE</u>	<u>PURPOSE</u>
3	$\frac{3}{8}$ " x 3" (9.5 x 76)	Hitch ring to runner board.
3	$\frac{1}{4}$ " x 4" (6.3 x 102)	Crowder block to runner board.
16	$\frac{1}{4}$ " x $2\frac{1}{2}$ " (6.3 x 63)	For surface hinges.
8	$\frac{1}{8}$ " x $2\frac{1}{2}$ " (6.3 x 63)	For handle supports.
4	$\frac{3}{8}$ " x 7" (9.5 x 178)	For spreader block.
2	$\frac{1}{2}$ " x 7" (12.5 x 178)	For spreader board pivots.
4	$\frac{3}{8}$ " x 7" (9.5 x 178)	For spreader board end pieces.
6	$\frac{1}{2}$ " x 5" (12.5 x 127)	For spread adjuster board to runner.