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drawings - the first link does not work - apologies - and then use BACK on your browser to return to this menu...; AND press F11 on your internet explorer to view 'theater' mode or full screen - the graphics quality is better....

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PBU ASSY, CYCLE TYPE, WELDED TO FRAME

1 MAN PEDAL MAIZE SHELLER

FLEXIBLE COUPLING, TYRE TYPE, SHAFT DRIVE SYSTEM

RIM CLAMPS + WHEEL SPOKES, PULLEY 600MM

PULLEY ASSY, 600MM DIA

RIM CLAMPS + WHEEL PLATE, PULLEY ASSY

BEARING BLOCKS, WOODEN BEARINGS

SHAFT DRIVE PEDAL UNIT WITH GRAIN MILL

PEDAL UNIT WITH CHAIN DRIVEN MAIZE SHELLER

PEDAL WINNOWER, 1978 MODEL

4 MAN PEDAL CENTRIFUGAL PUMP ASSY

LAYSHAFT, 4 MAN PEDAL CENTRIFUGAL PUMP

GENERAL DIMENSIONING, PEDAL UNITS

GENERAL DIMENSIONING, PEDAL UNITS

GENERAL DIMENSIONING, PEDAL UNITS

GENERAL DIMENSIONING, PEDAL DRIVE UNITS

PBU BEARING ASSY, HYBRID CYCLE/HOMEMADE

HYBRID PBU

HYBRID PBU ASSY

SADDLE PILLAR UNIT

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HANDLEBAR UNIT, HEIGHT ADJUSTABLE
PBU CLAMPING UNIT WITH TENSION ADJUSTMENT

GENERAL PEDAL FRAME DESIGN

4 MAN PEDAL THRESHER

4 MAN PEDAL THRESHER

4 MAN PEDAL THRESHER WITH 2 STAGE CHAIN DRIVE

TRACTOR POWERED THRESHER-DRUM ASSY

TRACTOR POWERED THRESHER

TRACTOR POWERED THRESHER

BILL OF MATERIALS-TRACTOR POWERED THRESHER

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WIND POWERED GRAIN MILL, SIDE VIEW

WIND POWERED GRAIN MILL, FRONT VIEW

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PHOTO-ONE MAN DYNAPOD,UGANDA 1972

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PHOTO-FLYWHEEL PRODUCTION,ONE MAN DYNAPOD

PHOTO-2 MAN DYNAPOD, UGANDA 1972

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[Index.htm pp010.htm](#) INTRODUCTION 1999 AND ACKNOWLEDGEMENTS

This report is 68 technical drawings plus 27 photographs of pedal powered equipment (threshers, water pumps, winnowers, grain mills and maize shellers), a tractor PTO thresher, and a wind powered grain mill which I worked on in Uganda 1972 and in Tanzania 1973 through 1978. Regrettably it takes up 6.3 Megabytes in total.

I have recently revamped reports on a 4 MAN PEDAL SORGHUM THRESHER AND GRAIN MILL, a 2 MAN TROLLEY WATER PUMP, and WOODEN BEARINGS - WEAR AND LUBRICATION. This report collects together a bunch of stuff which was not included in those reports, and has 2 purposes: the technical drawings and the photos should give ideas to people working or thinking of working on the same kind of stuff; and the other purpose I guess is nostalgia. There is some stuff here which is effectively obsolete, and other bits which are still to some extent valid. If it gives some people good ideas and/or saves 3 hours work then it has been worthwhile putting on the Web.

Recently while rewriting the THRESHER report, I realised that one can make significant design simplifications and cost savings by putting 2 riders face-to-face on the same pair of pedals, and operating in a reclining position - one of course will pedal 'backwards' while the other pedals conventionally. This opens up new designs for 2 man and 4 man configurations, using either 1 or 2 single pedal bearing units, or utilising crankshaft-based designs. I also recommend that where possible we eliminate 2 stage drives (especially 2 stage chain drives as used for the 4 man pedal thresher), and use if possible single stage belt drive if speeds over 200 rev/minute and less than 1000 rev/minute are required. Such a belt driven machine can use 2 belts per 600mm driver pulley if required. Enough rambling.

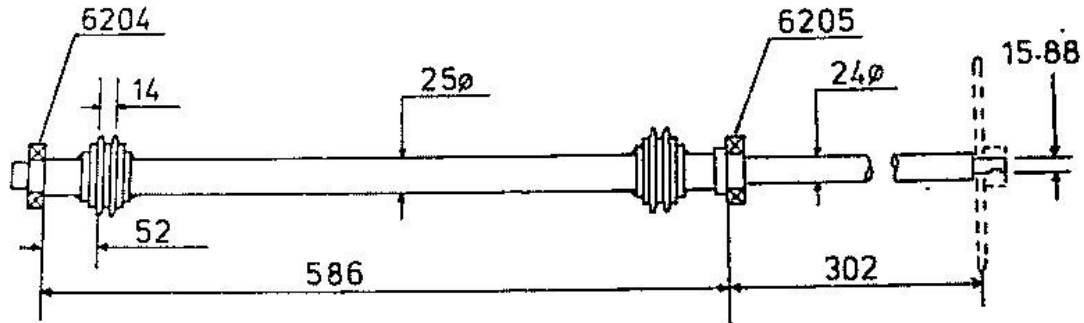
Thanks to so many people in Tanzania and outside for work related and non-work- related social interchange. It was a period not without work and personal frustrations, but one which was on balance a very rich and rewarding experience. Thanks particularly to the late Abdon Mwangota and his wife Kathy, to Hosea Kayumbo, to Monta Tshabalala, and to Roland Reichel. All the people of all levels over that long time period in Agricultural Engineering Department, and throughout the Faculty of Agriculture (now Sokoine University).

I did very little to the drawings and there is very little explanation. Anyone who wants such explanation just email alexweir@usa.net and we can get you what you need. Anyone who wants a complete package of this I can email the WinZip (TM) file to them and it will run off their hard disc.

Alex Weir, Harare Zimbabwe, 1999 December.

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[Index.htm](#) [pp020.htm](#) LAYSHAFT - 4 MAN PEDAL THRESHER



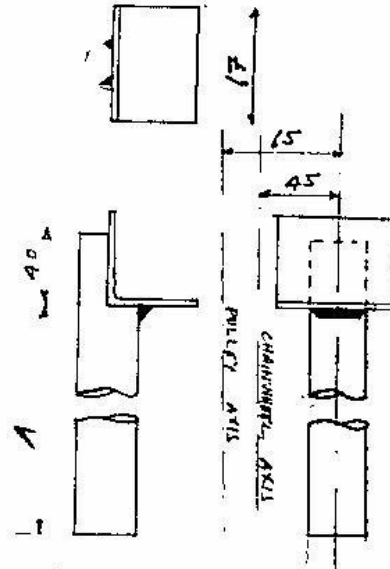
Leghaft - & Operator Pistol Throber - Mild Steel,
 Complete with 2 Driven sprockets, Driving Chainwheel,
 Ball Bearing 6204, and Ball Bearing 6205 -
 2 ϕ mm. Dura x 52 mm. ϕ x 15 mm. Width.

Scale 1 : 4

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[Index.htm](#) [pp030.htm](#) PEDAL BEARING UNIT SUPPORT STAND

PEDAL DRIVE UNIT SUPPORT



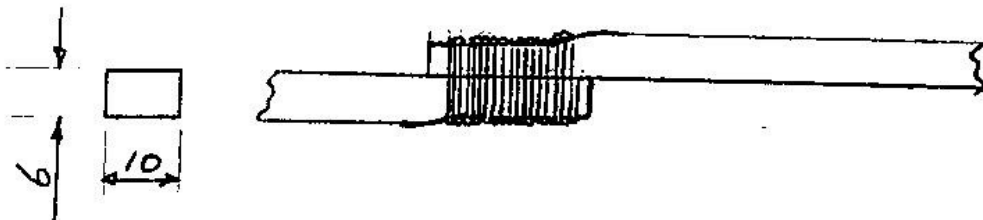
PEDAL DRIVE UNIT SUPPORT - 1 OFF,
3/4" BORE, MILD STEEL PIPE AND
MILD STEEL ANGLE, 50X50X6 mm.

1	A
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FILLEY-DRIVEN MACHINE	320
CHAIN-DRIVEN MACHINE	260

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CAR TYRE BELTING CUT FROM
CIRCUMFERENCE OF TYRE, AND
FASTENED BY BINDING WITH 1 mm-DIA
ALUMINIUM OR COPPER WIRE

MEISTER 10 STEEL WIRE

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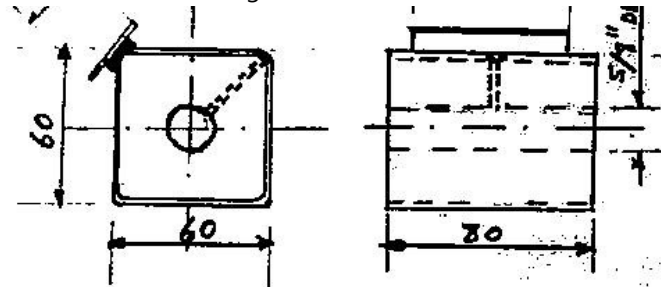
[Index.htm](#) [pp050.htm](#) WOODEN BEARING ASSEMBLY, MODULAR, STEEL ENCLOSED

30

60

MEISTER

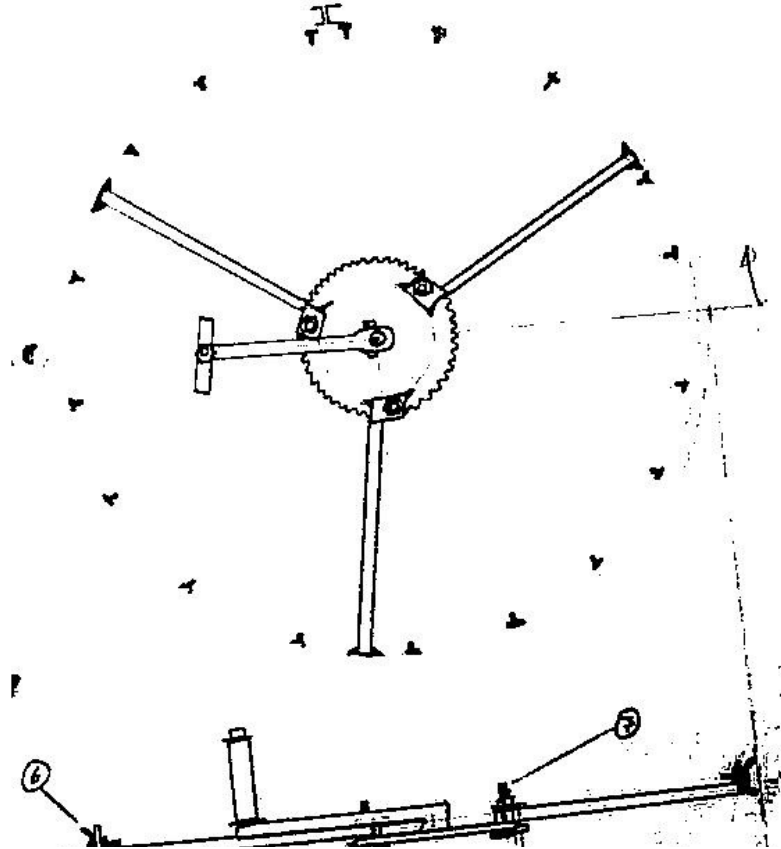
Acknowledgements



WOODEN BEARING ASSEMBLY, 1 OFF,
HARDWOOD 1/4" PRESSFIT INTO 2 BOXES AND
MILD STEEL SQUARE HOLLOW SECTION,
WITH HOLE FOR GREASE OR OIL.
ALSO SCREW BEARING PLATE OF 30X3 MILD
STEEL STRIP.

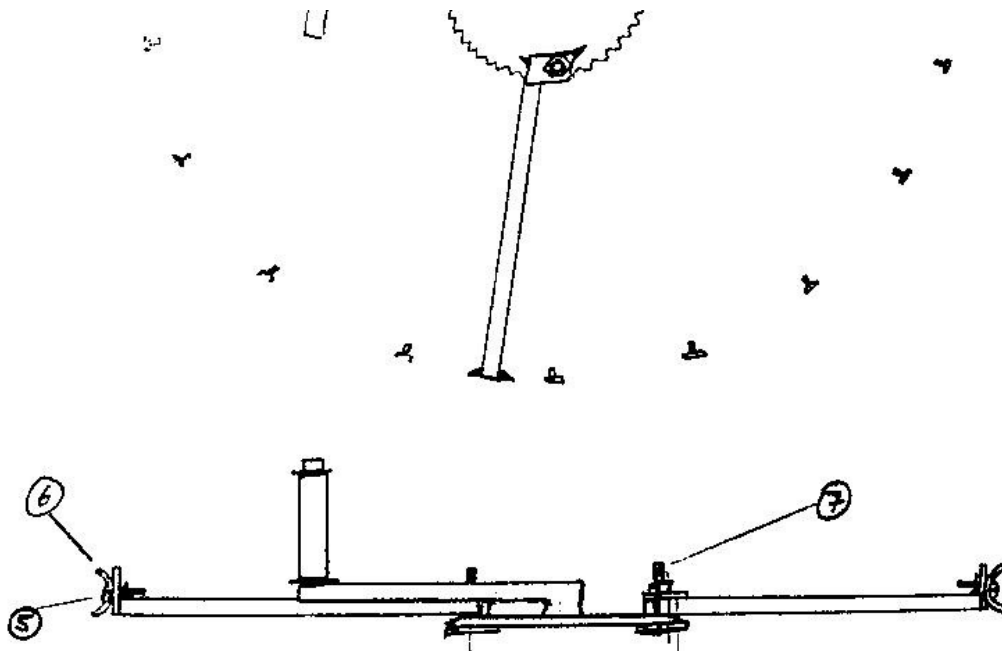
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[Index.htm](#) [pp060.htm](#) PULLEY WHEEL ASSEMBLY-600MM DIAMETER FOR BELT DRIVE



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[Index.htm](#) PULLEY WHEEL ASSEMBLY, 600MM DIAMETER [pp070.htm](#)



PULLEY WHEEL BOLTED TO STANDARD
BICYCLE CHAIN WHEEL, COMPLETE WITH
DIAMETER

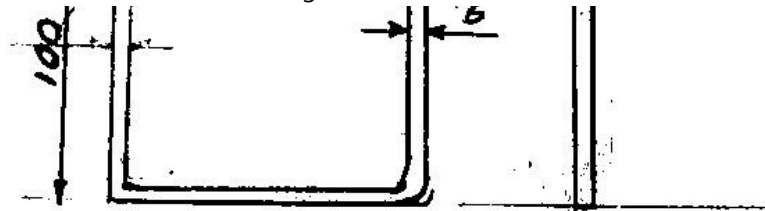
PLASTIC DRIVE BELT RETAINER

5. DOME-HEAD MILD STEEL SCREWS, $\frac{1}{4}$ " DIA X 1" LONG, 18 OFF
6. $\frac{3}{4}$ " BORE PLASTIC WATER HOSE, 2m LONG, CUT IN HALF
7. $\frac{5}{16}$ " DIA HTS BOLTS, 35mm LONG.

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[Index.htm](#) [pp080.htm](#) BEARING CLAMPS, PEDAL BEARING UNIT





BEARING CLAMPING FRAMES, 2 OFF,
MILD STEEL SQUARE HOLLOW SECTION
SAWN OUT SQUARE IN TWO OPPOSITE CORNERS.

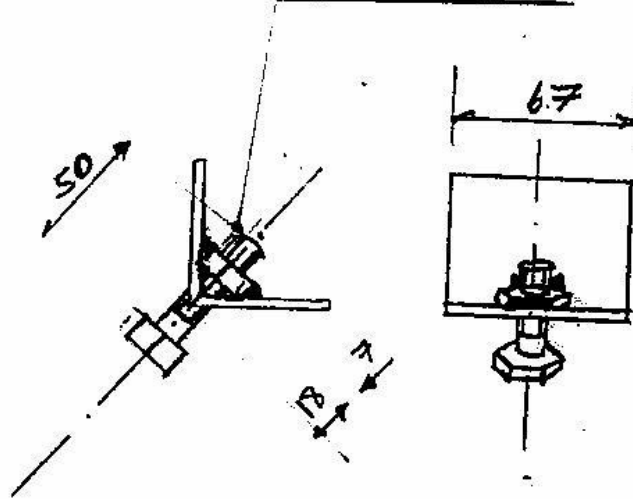
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[Index.htm](#) [pp090.htm](#) BEARING CLAMP ASSEMBLY



Acknowledgements

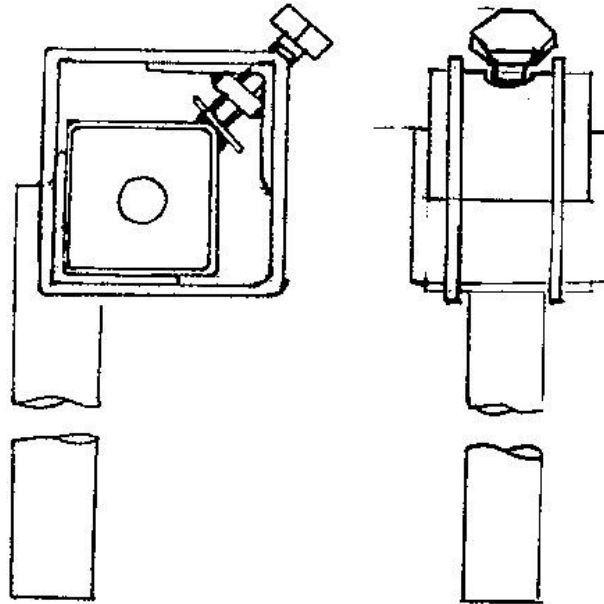
$\frac{1}{2}$ UNF OR MFG-12.



BEARING CLAMP ASSEMBLY, 1 OFF,
MILD STEEL ANGLE 50X50X6 AND
HIGH TENSILE STEEL BOLT

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[Index.htm](#) [pp100.htm](#) PEDAL BEARING UNIT SUPPORT ASSEMBLY

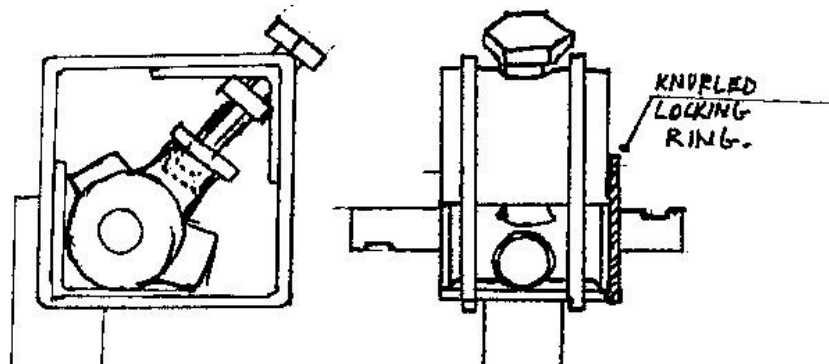


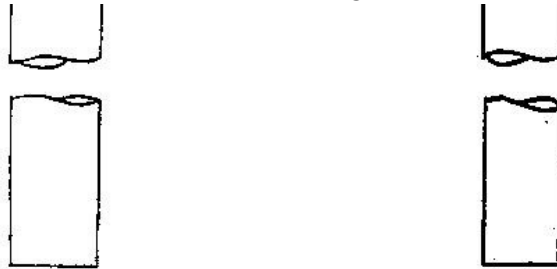
PEDAL DRIVE UNIT SUPPORT

WITH WOODEN BEARING AND CLAMPING ASSEMBLY.

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[Index.htm](#) [pp110.htm](#) PEDAL BEARING UNIT ASSEMBLY, CYCLE TYPE



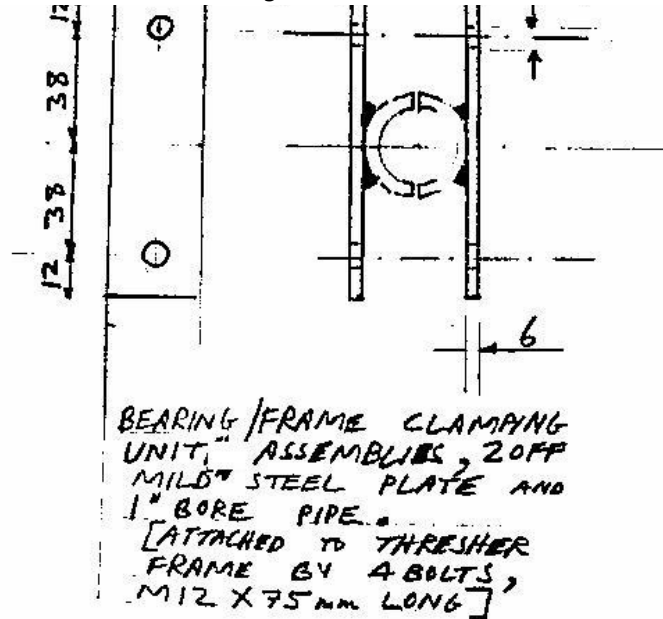


PEDAL DRIVE UNIT SUPPORT WITH
STANDARD BICYCLE BOTTOM BRACKET
AND SPINDLE ASSEMBLY AND CLAMPING
ASSEMBLY, SHOWING CORRECT POSITION
WITH KNURLED LOCKING RING JUST

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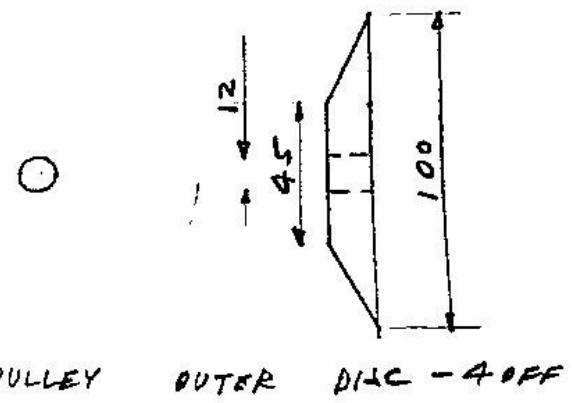
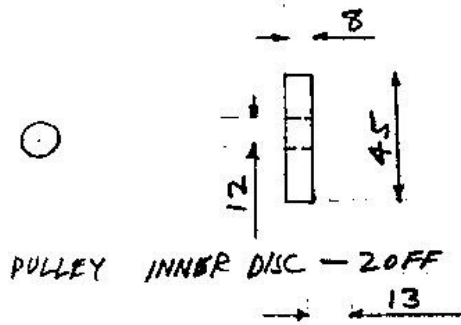
[Index.htm](#) [pp120.htm](#) BEARING / FRAME CLAMPING UNITS





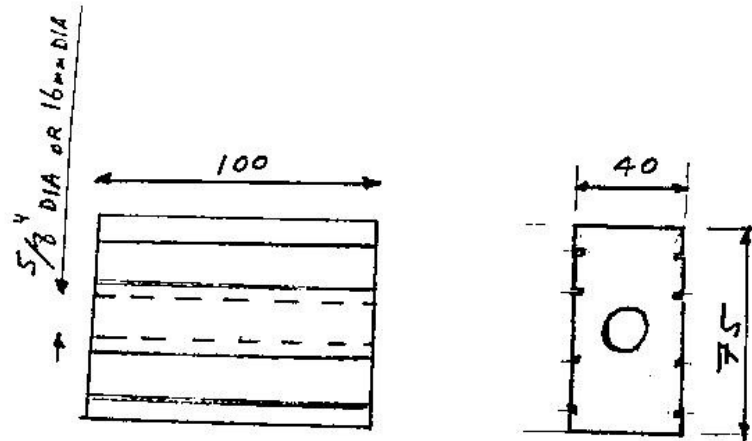
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[Index.htm](#) [pp130.htm](#) WOODEN PULLEY



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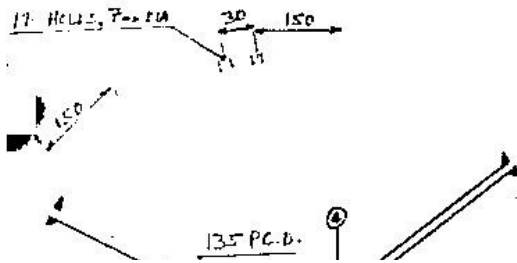
[Index.htm](#) [pp140.htm](#) WOODEN PEDALS



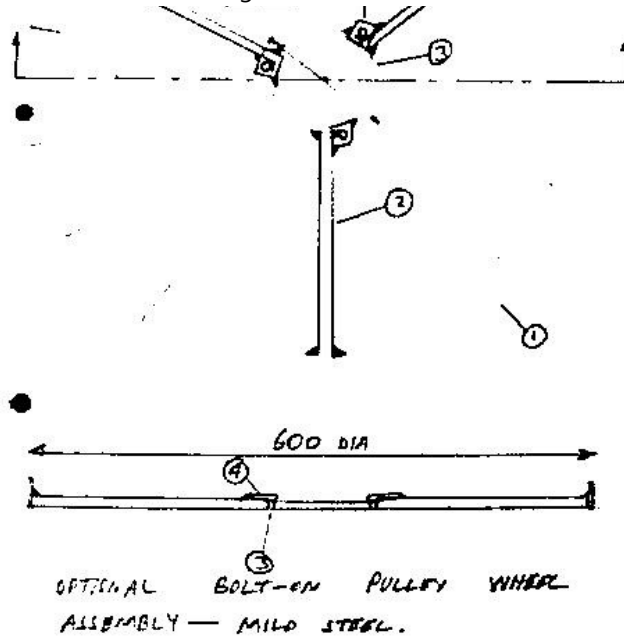
WOODEN PEDALS, 2 OFF, COMPLETE WITH
- ANTI-SLIP GROOVES CUT USING
- CIRCULAR SAW

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[Index.htm](#) [pp150.htm](#) PULLEY WHEEL ASSY, BOLT-ON TYPE

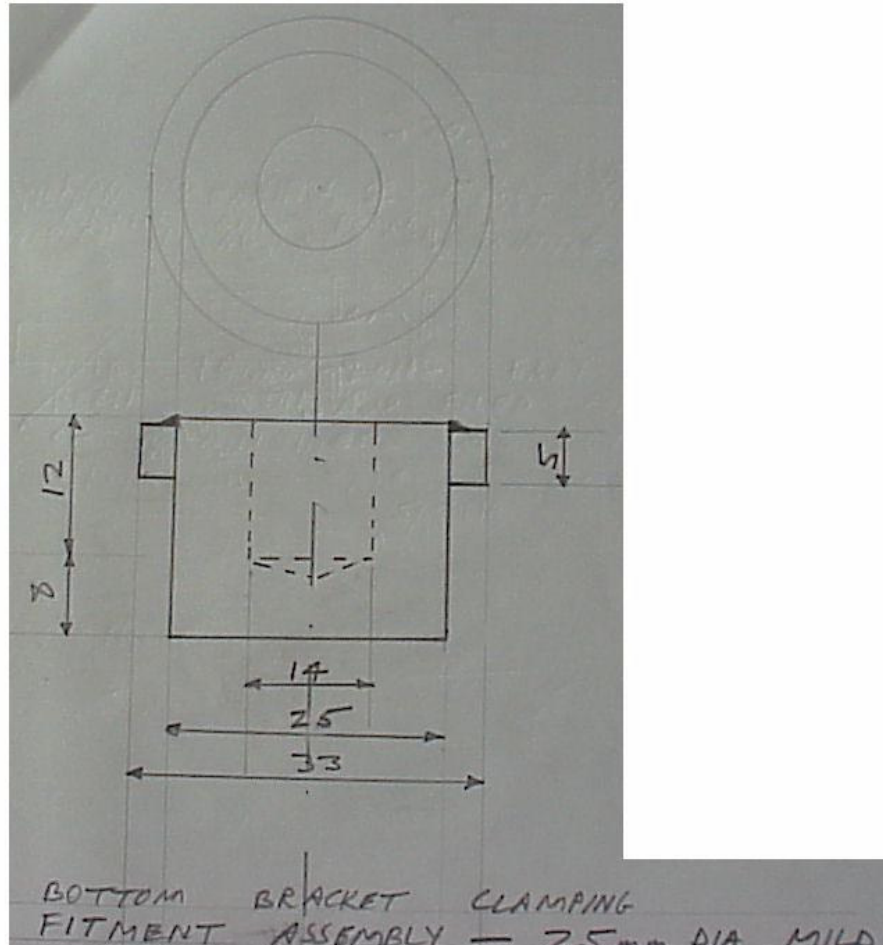


Acknowledgements



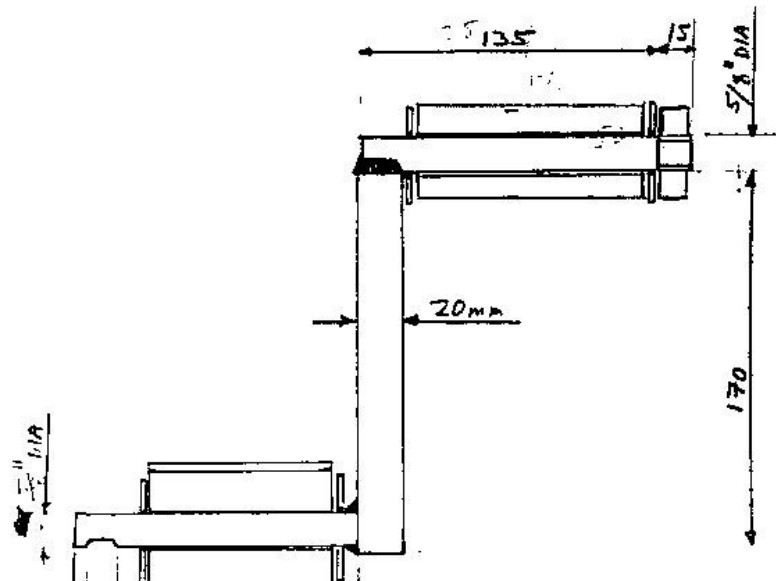
[Home](#) > [ar.cn.de.en.es.fr.id.it.ph.po.ru.sw](#)

[Index.htm](#) [pp160.htm](#) CLAMPING UNIT, PEDAL BEARING UNIT CYCLE TYPE

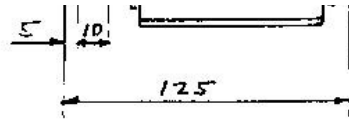


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[Index.htm](#) [pp170.htm](#) CRANKSHAFT ASSY FOR PBU WOODEN BEARING UNIT



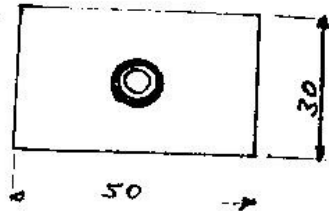
Acknowledgements

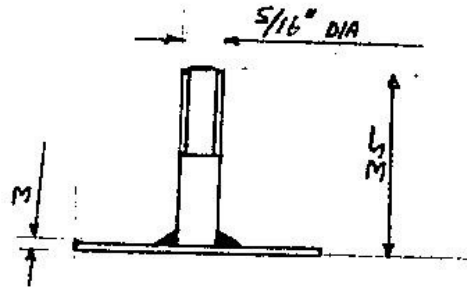


SECTIONED VIEW OF MILD STEEL SPINDLE,
 CRANK AND PEDAL ROD ASSEMBLY, WITH
 WOODEN BEARING, 4 THRUST WASHERS,
 WOODEN PEDAL, AND RETAINING NUT.
 NOTE 14mm - LONG FLAT WHEN HAS

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[Index.htm](#) [pp180.htm](#) CLAMPING BOLT, CHAINWHEEL-TO-PULLEY

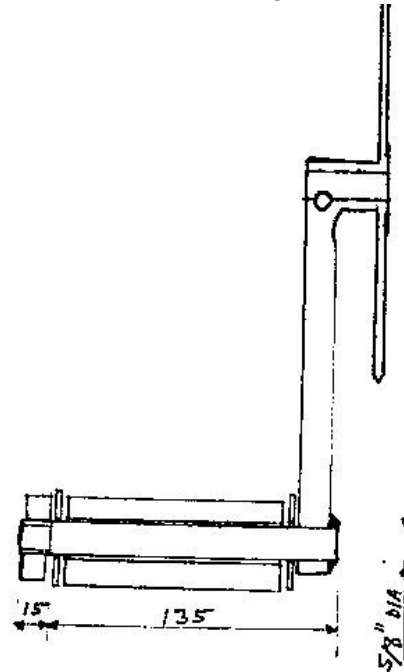




PT. 7 - CHAINWHEEL / PULLEY CLAMPING BOLT ASSEMBLY,
5/16" DIA HTS BOLT AND 30 X 3 MILD
STEEL STRIP.

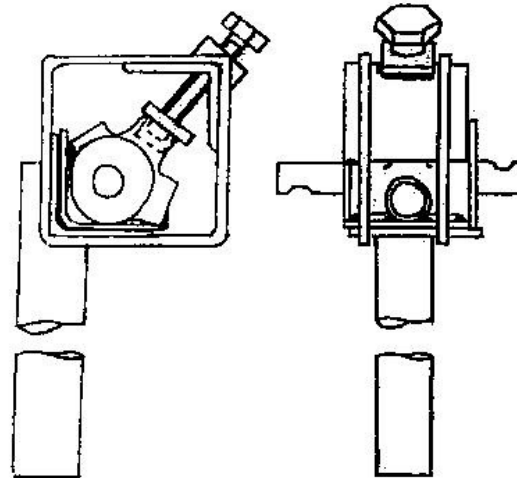
[Home](#) > [ar.cn.de.en.es.fr.id.it.ph.po.ru.sw](#)

[Index.htm](#) [pp190.htm](#) CHAINWHEEL ASSY WITH WOODEN PEDAL




SECTIONED VIEW OF BICYCLE
CHAINWHEEL AND PEDAL ROD
ASSEMBLY, WITH WOODEN PEDAL,
2 THRUST WASHERS, AND PEDAL
RETAINING NUT.

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[Index.htm](#) [pp200.htm](#) PBU SUPPORT ASSY, STANDARD CYCLE COMPONENTS

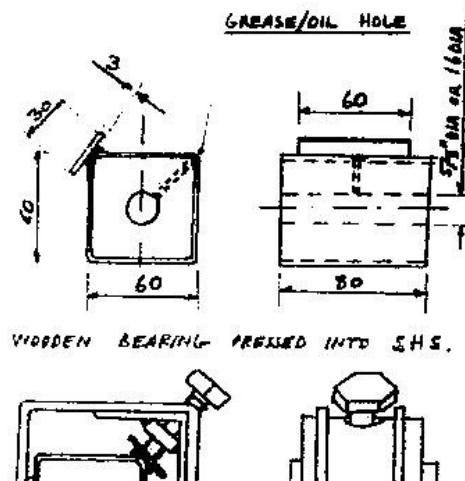
BEARING UNIT SUPPORT
WITH STANDARD BICYCLE BOTTOM
BRACKET AND SPINDLE ASSEMBLY
AND CLAMPING ASSEMBLY.



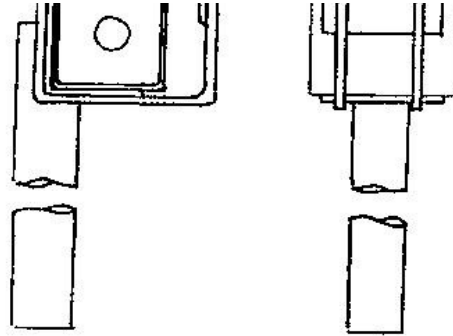

STANDARD BICYCLE BOTTOM
BRACKET AND SPINDLE
ASSEMBLY BRAZED TO
LATERAL ADJUSTMENT
INTERMEDIARY
MILD STEEL ANGLE,
50X50X 67 mm LONG

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[Index.htm](#) [pp210.htm](#) PBU ASSY - WOODEN BEARING TYPE, MODULAR

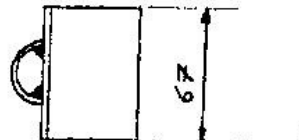


Acknowledgements

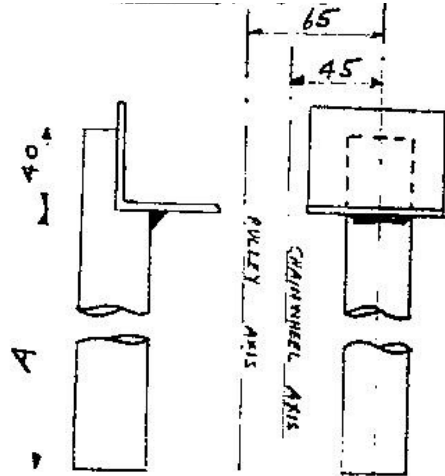


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[Index.htm](#) [pp220.htm](#) PBU SUPPORT STAND



Acknowledgements



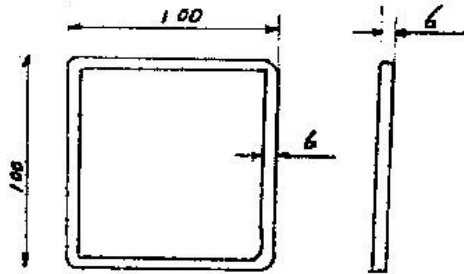
BEARING UNIT SUPPORT - 1 OFF,
 3/4" BORE MILD STEEL PIPE AND
 MILD STEEL ANGLE, 50X50X6 MM.

	A
PULLEY-DRIVEN MACHINE	320mm
CHAIN-DRIVEN MACHINE	260

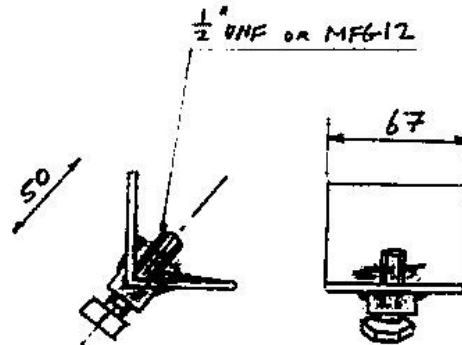
NOTE THAT THE POSITION OF THE BEARING UNIT CAN BE ADJUSTED Laterally ON THE BEARING UNIT SUPPORT.

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[Index.htm](#) [pp230.htm](#) PBU CLAMPING FRAMES AND SCREW CLAMP

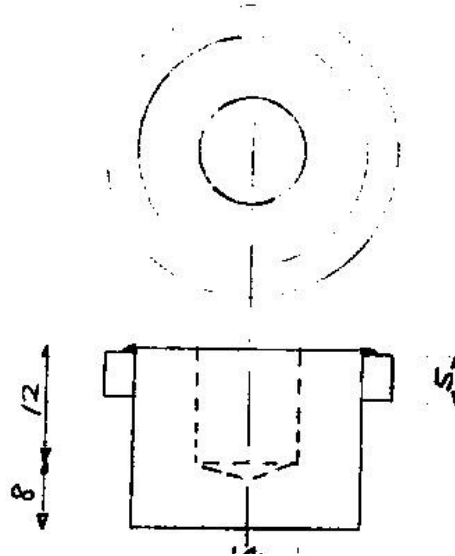


BEARING CLAMPING FRAMES, 2 OFF,
MILD STEEL SQUARE HOLLOW SECTION,
SAWED OUT SQUARE IN TWO OPPOSITE CORNERS.

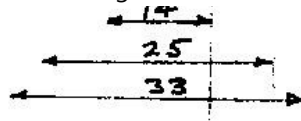


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[Index.htm](#) [pp240.htm](#) PBU CLAMP FOR CYCLE TYPE PBU



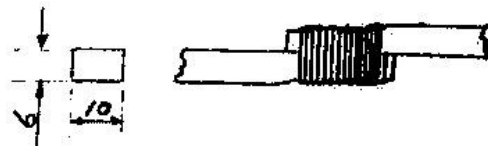
Acknowledgements



BOTTOM BRACKET CLAMPING
FITMENT ASSEMBLY -
25mm DIA MILD STEEL BAR AND
1" BORE MILD STEEL PIPE.

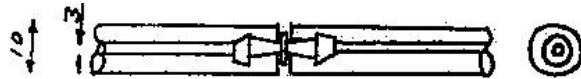
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[Index.htm](#) [pp250.htm](#) FASTENER, SEPARABLE, FOR HOLLOW PLASTIC BELTING



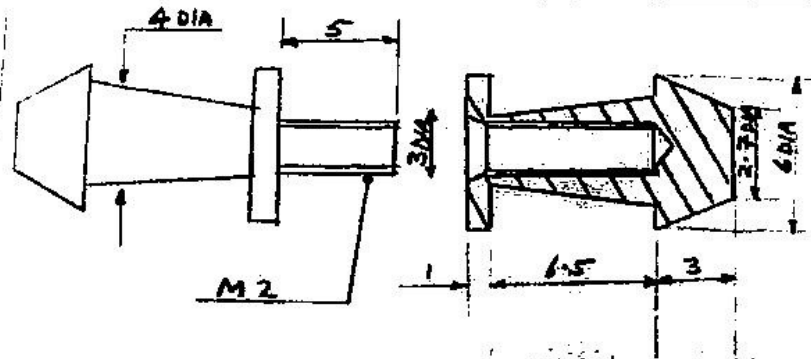
CAR TYRE BELTING CUT FROM
CIRCUMFERENCE OF WORN TYRE, AND
FASTENED BY BINDING WITH 1mm DIA
ALUMINIUM OR COPPER WIRE.

Acknowledgements



HOLLOW EXTRUDED PLASTIC BELTING,
FASTENED BY HARPOON-TYPE ALUMINIUM
FASTENER [EATON, BIRMINGHAM]

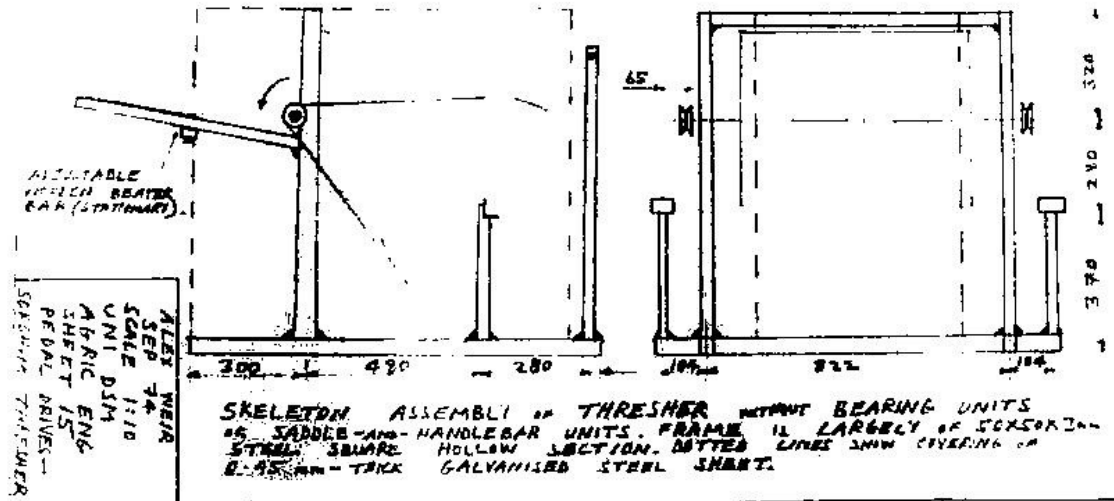
SCALE 1:1



HIGH TENSILE STEEL SEPARABLE FASTENER
FOR HOLLOW PLASTIC BELTING

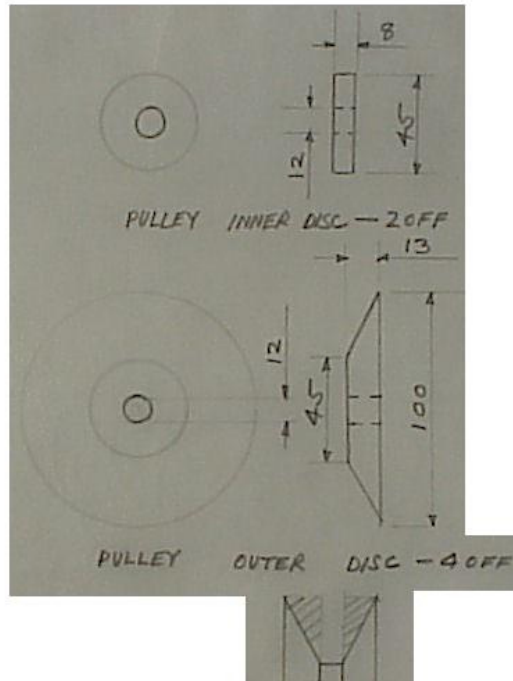
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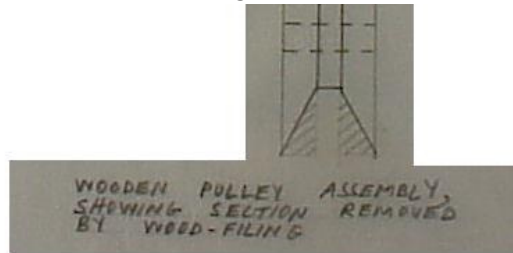
[Index.htm](#) [pp260.htm](#) FRAME, 2 MAN PEDAL THRESHER



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[Index.htm](#) [pp270.htm](#) WOODEN PULLEY ASSEMBLY

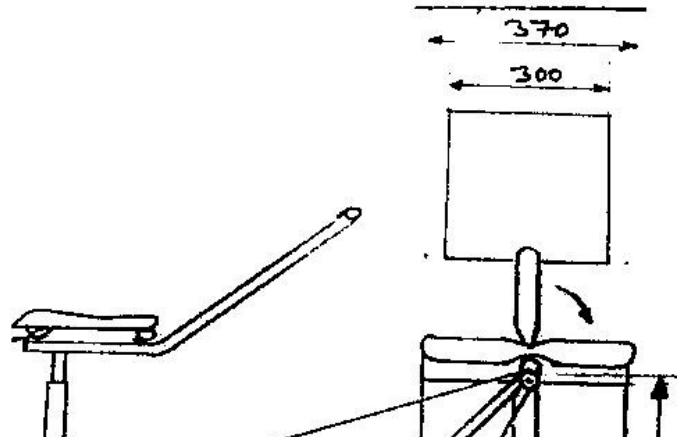


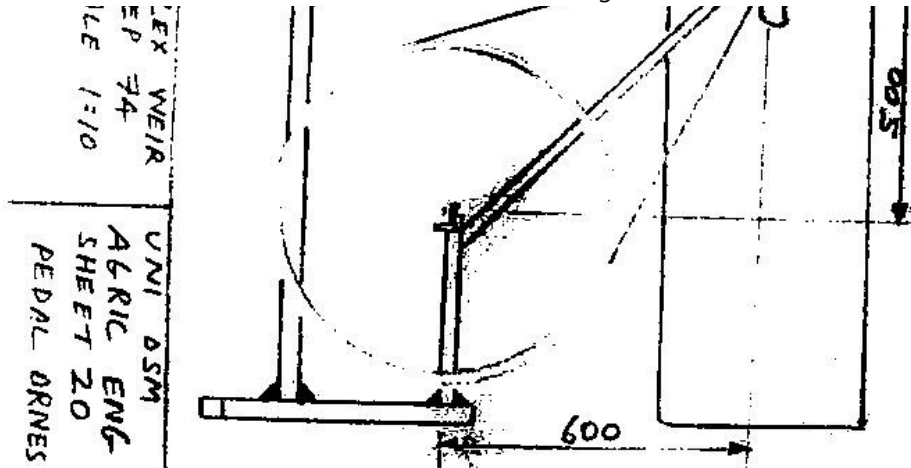


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[Index.htm](#) [pp280.htm](#) WINNOWER ASSY-SIDE VIEW

WINDMILLING FAN & FRAME
CONCRETE WITH BEARINGS
WITH PULLEY WHEEL &
SUBLE-ASSEMBLY BAR UNIT
ALSO WITH SCHEMATIC
DRAWING OF HELIX AND
SPRING MECHANISM SACK.
A1
S1
SCA

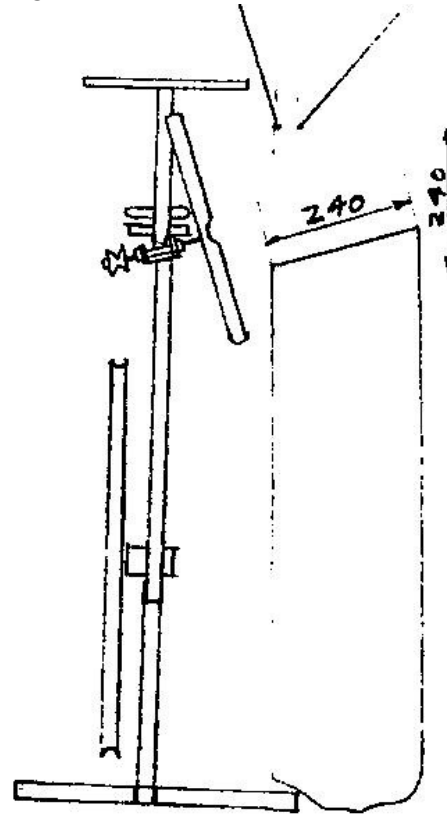
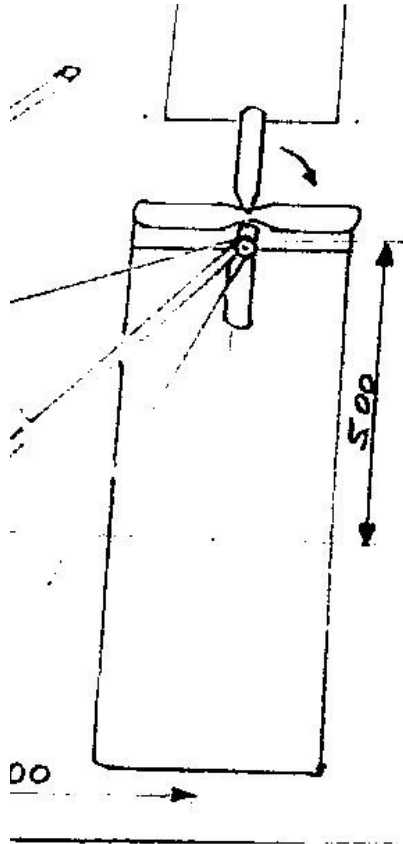




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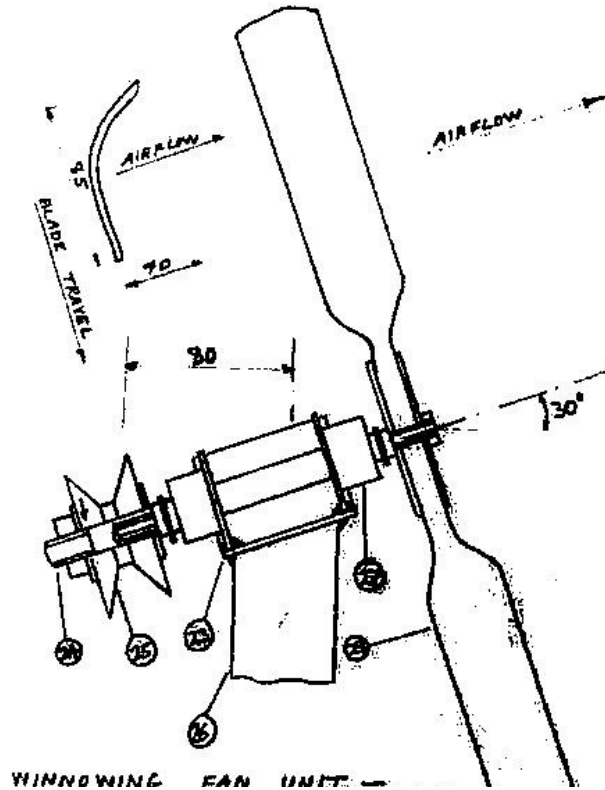
[Index.htm](#) [pp290.htm](#) WINNOWER ASSY-FRONT VIEW





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[Index.htm](#) [pp300.htm](#) FAN UNIT, WINNOWER

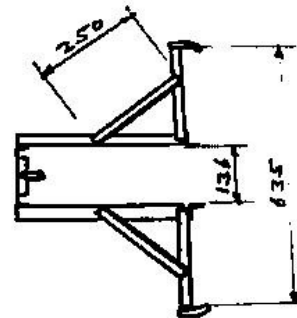
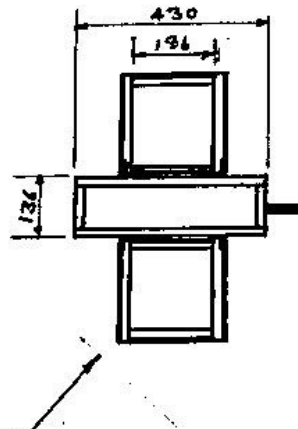


FRONT VIEW - GIVES AIR SPEED OF
OF 2-4 metre/second FOR REVOLVING
SPEED OF 60 REV/MINUTE

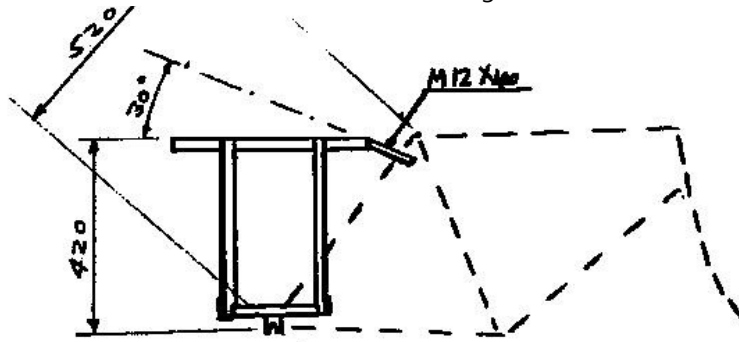


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[Index.htm](#) [pp310.htm](#) BICYCLE PANNIERS, WATER/MISC CARRIER



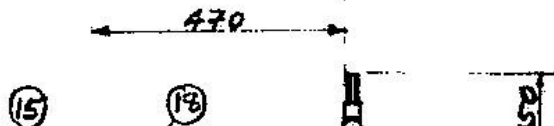
BICYCLE CARRIER FOR



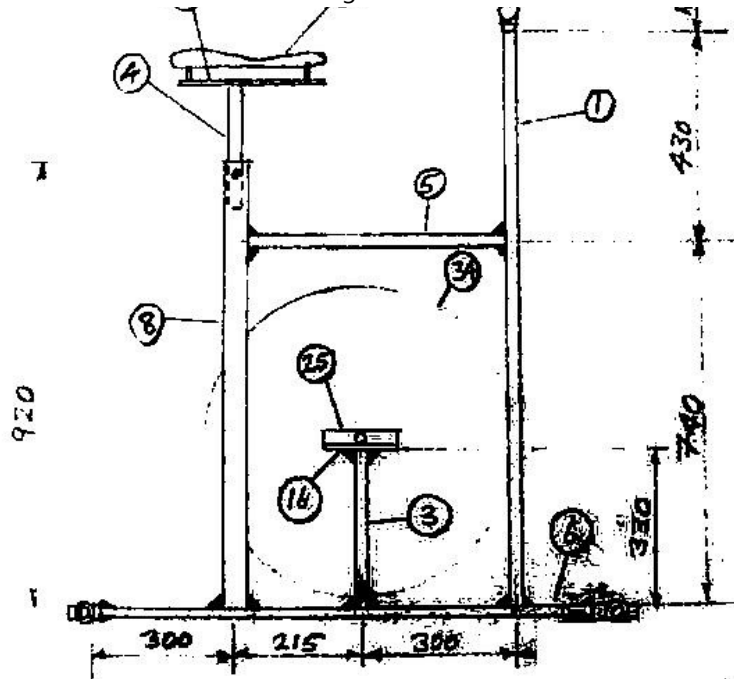
TWO 20-LITRE KEROSENE
CANS. 30x30x2mm MILD
STEEL EQUAL ANGLE X 6 METRE
TOTAL LENGTH, TO CONTAIN TI
CANS OF DIMENSIONS 240x240

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[Index.htm](#) [pp320.htm](#) PEDAL DRIVE GRAIN MILL, SHAFT DRIVE



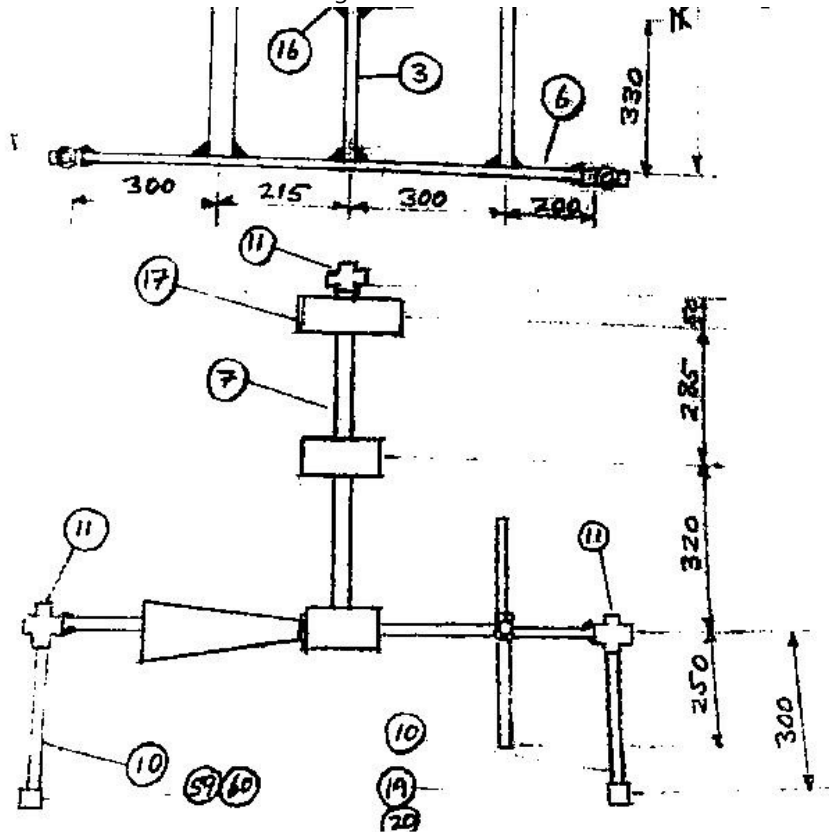
Acknowledgements



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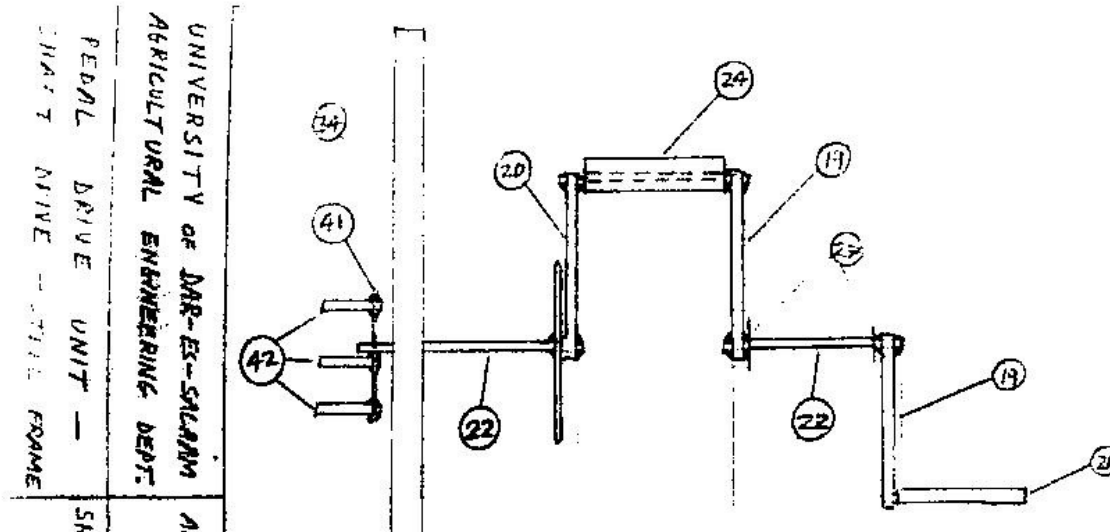
[Index.htm](#) [pp330.htm](#) PEDAL DRIVE GRAIN MILL, SHAFT DRIVE

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[Index.htm](#) [pp340.htm](#) CRANKSHAFT, PEDAL DRIVE GRAIN MILL, SHAFT DRIVE



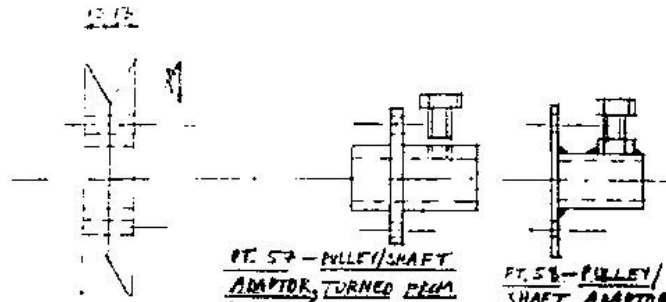
Acknowledgements

LEK WEIR DETAIL
HEET 2 OF 15

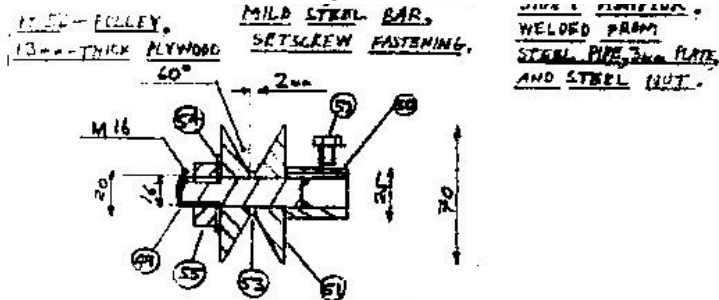


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[Index.htm](#) [pp350.htm](#) WOODEN PULLEY ASSY, DRIVEN, WINNOWER/WATER PUMP



Acknowledgements



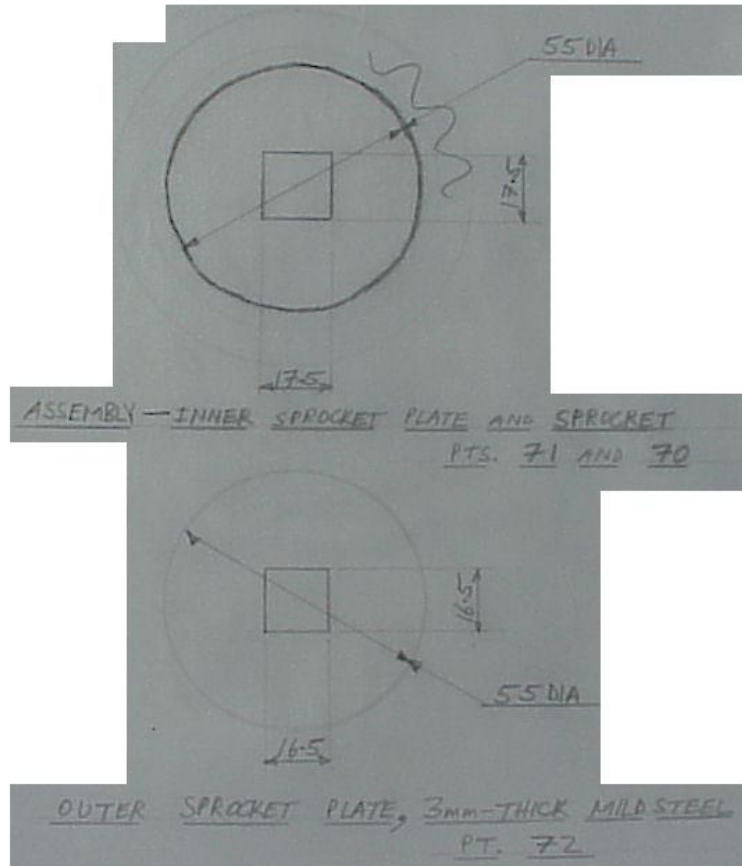
ASSEMBLY — 1500 R.P.M. PULLEY FOR 16mm DIA SHAFT —
KEYWAY AND SETSCREW FASTENING.

PT. 49 — 16mm DIA MILD STEEL BAR
PT. 50 — 25mm DIA MILD STEEL BAR
PT. 51 — 14mm THICK HARDWOOD
PT. 52 — M6 SETSCREW
PT. 53 — 1/2" STEEL PIPE
PT. 54 — 16mm DIA STEEL WASHER
PT. 55 — M16 STEEL NUT.

UNIVERSITY OF DAR-ES-SALAAM, ALEX WEIR DEC 7.
AGRICULTURAL ENGINEERING DEPT.

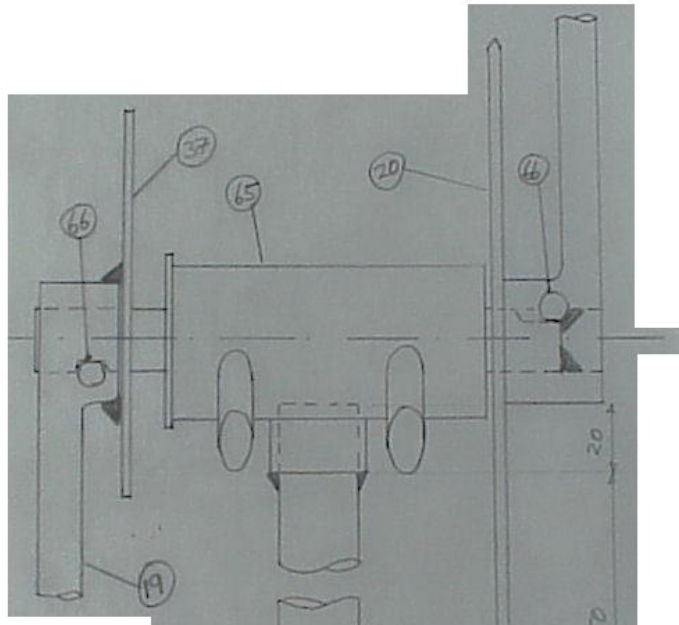
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[Index.htm](#) [pp360.htm](#) PLATES, 18 TOOTH SPROCKETS

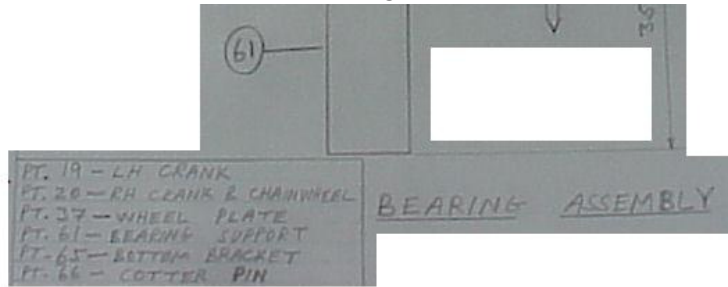


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[Index.htm](#) [pp370.htm](#) PBU ASSY, CYCLE TYPE, WELDED TO FRAME

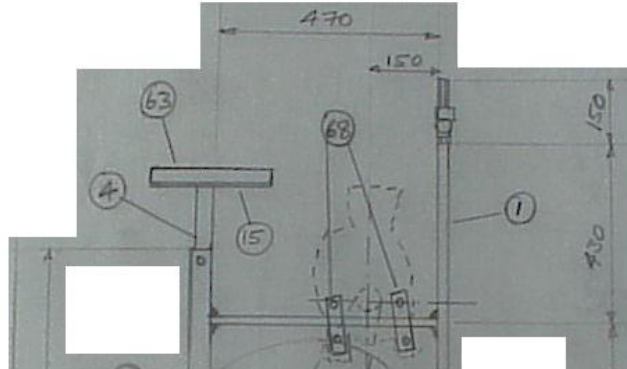


Acknowledgements

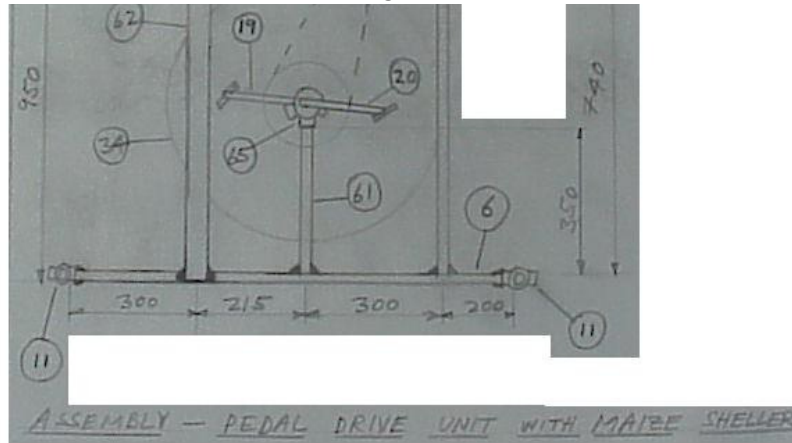


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[Index.htm](#) [pp380.htm](#) 1 MAN PEDAL MAIZE SHELLER

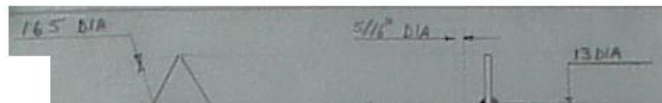


Acknowledgements

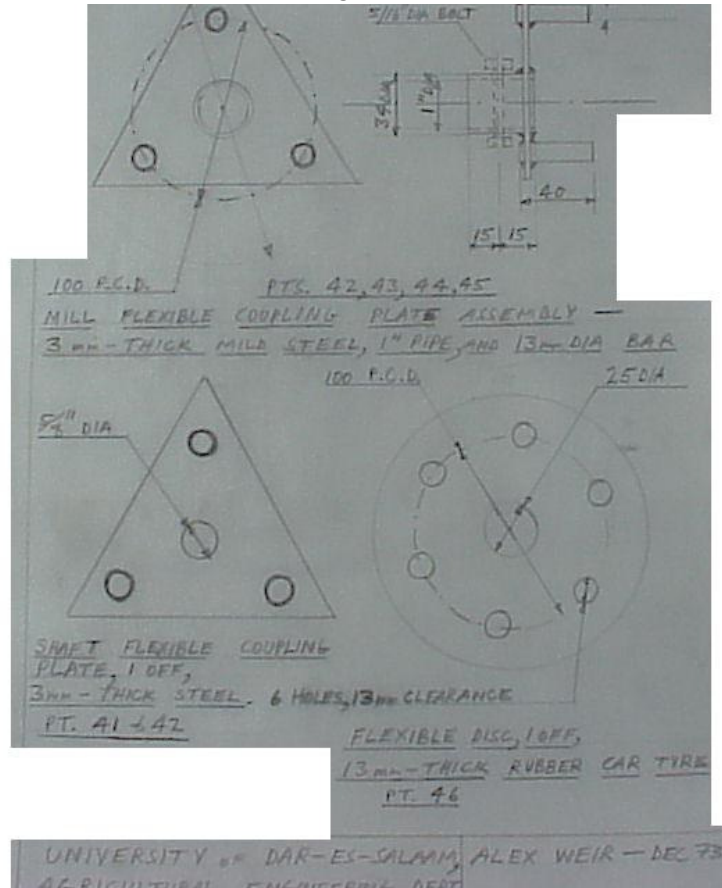


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[Index.htm](#) [pp390.htm](#) FLEXIBLE COUPLING, TYRE TYPE, SHAFT DRIVE SYSTEM

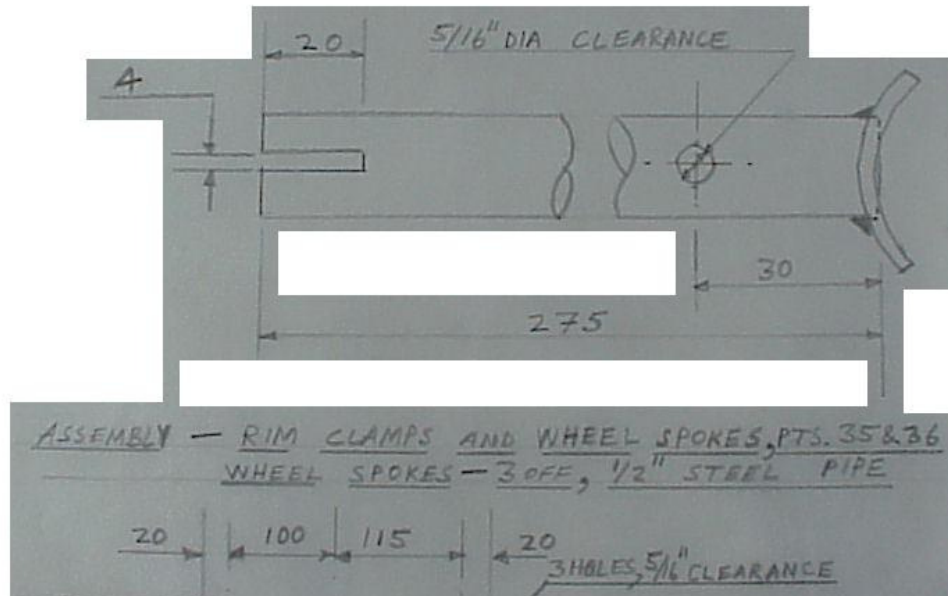


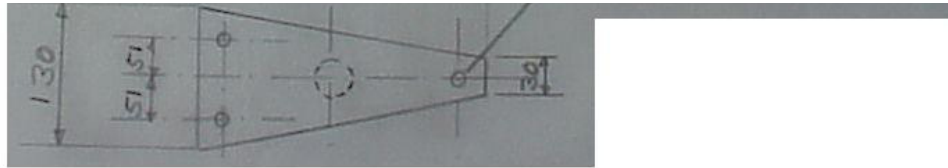
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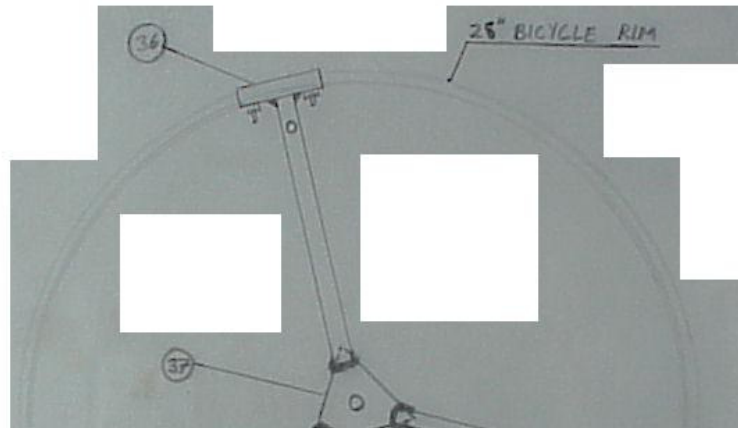
[Index.htm](#) [pp400.htm](#) RIM CLAMPS + WHEEL SPOKES, PULLEY 600MM

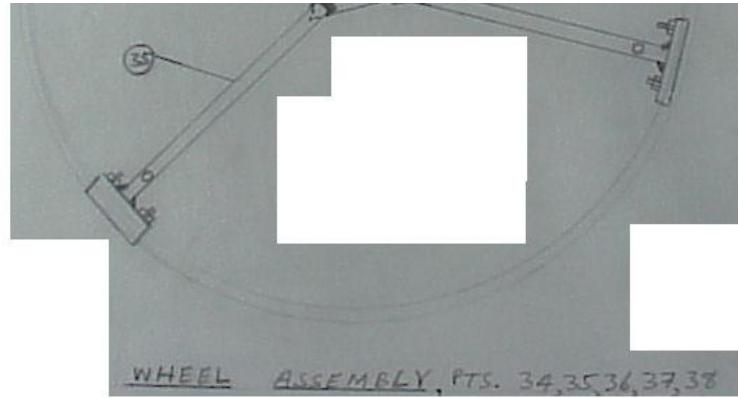




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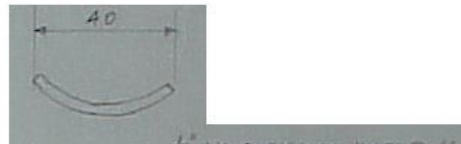
[Index.htm](#) [pp410.htm](#) PULLEY ASSY, 600MM DIA



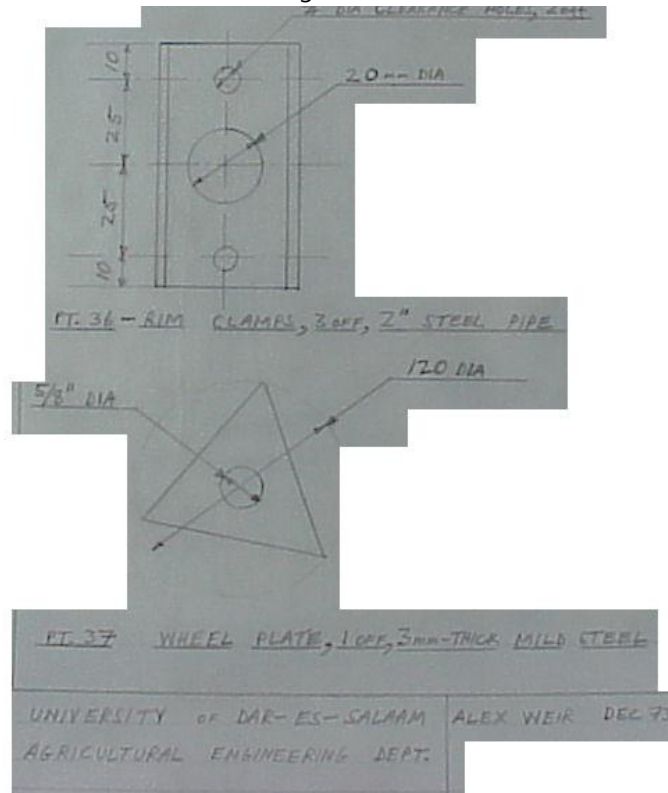


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[Index.htm](#) [pp420.htm](#) RIM CLAMPS + WHEEL PLATE, PULLEY ASSY



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[Index.htm](#) [pp430.htm](#) BEARING BLOCKS, WOODEN BEARINGS

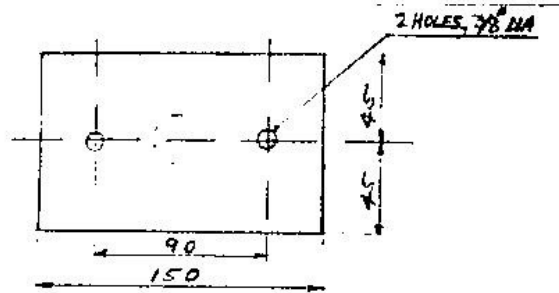


FIG. 11 - BEARING PLATES, 2 off, 3/4\" THICK MILD STEEL

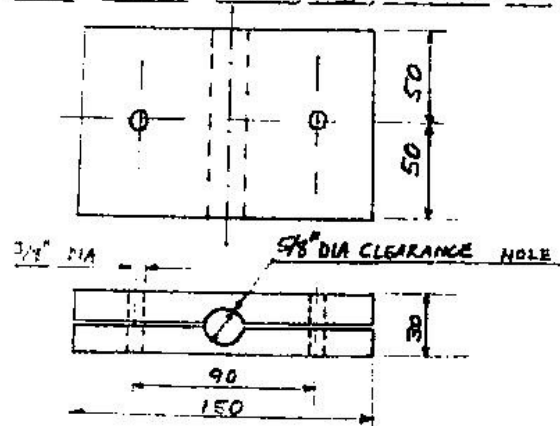
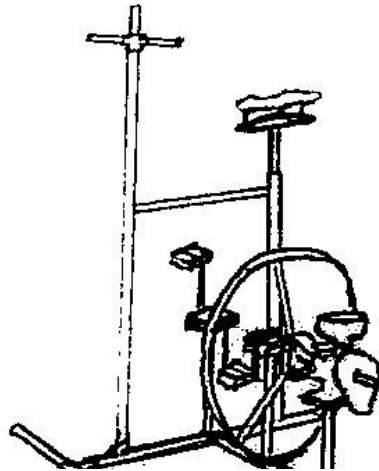


FIG. 25 - BEARING BLOCKS, 2 off, WOOD

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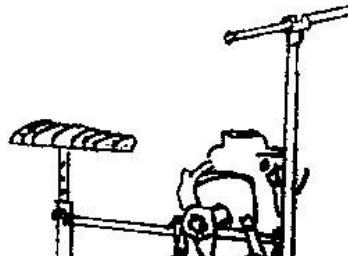
[Index.htm](#) [pp440.htm](#) SHAFT DRIVE PEDAL UNIT WITH GRAIN MILL

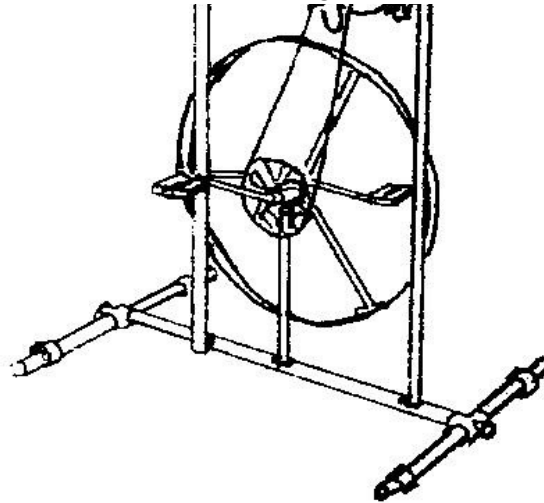


SHAFT-DRIVE PEDAL UNIT WITH CHAIN MILL

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[Index.htm](#) [pp450.htm](#) PEDAL UNIT WITH CHAIN DRIVEN MAIZE SHELLER

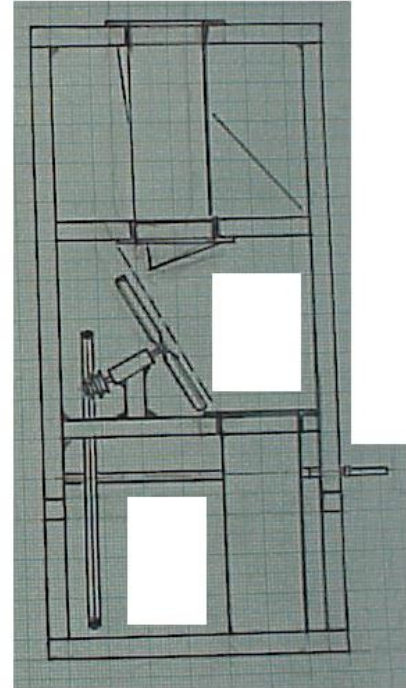
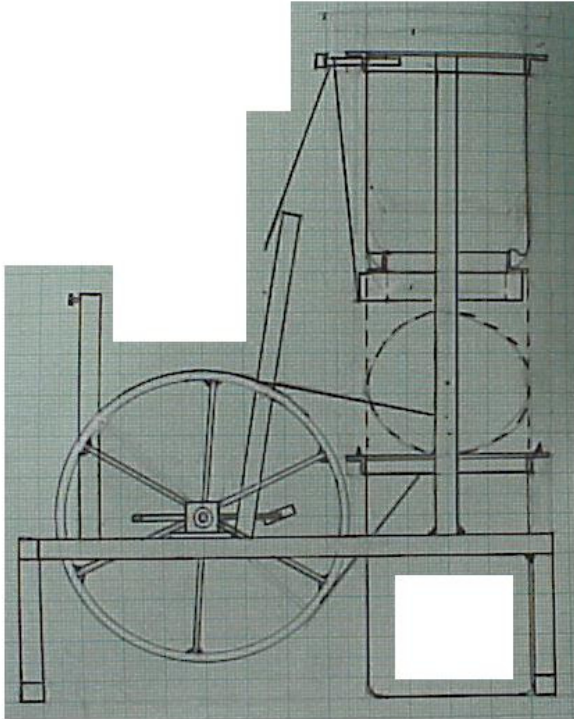




PEDAL UNIT WITH MAIZE SHELLER, CHAIN-DRIVEN.

[Home](#) > [ar.cn.de.en.es.fr.id.it.ph.po.ru.sw](#)

[Index.htm](#) [pp460.htm](#) PEDAL WINNOWER, 1978 MODEL

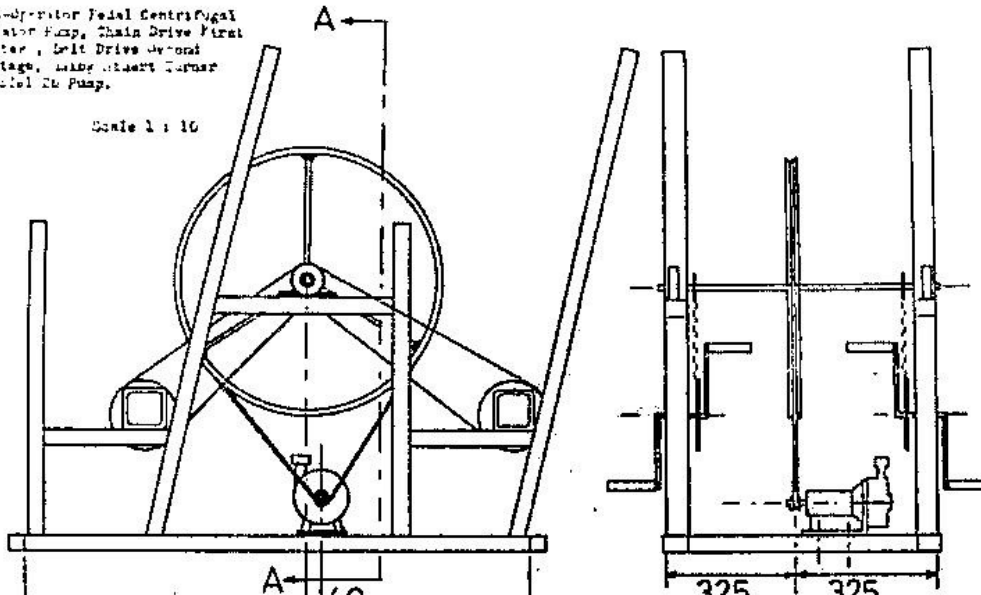


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[Index.htm](#) [pp470.htm](#) 4 MAN PEDAL CENTRIFUGAL PUMP ASSY

4-Man Pedal Centrifugal
Water Pump, Chain Drive First
Stage, Belt Drive Second
Stage, Cast Iron Frame
Model 20 Pump.

Scale 1 : 10

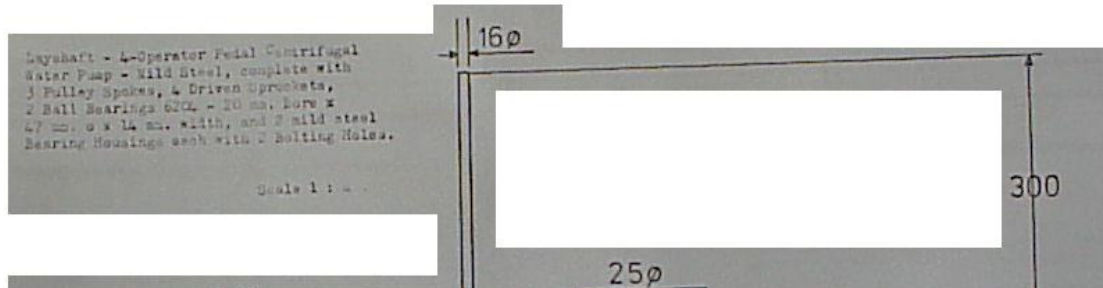


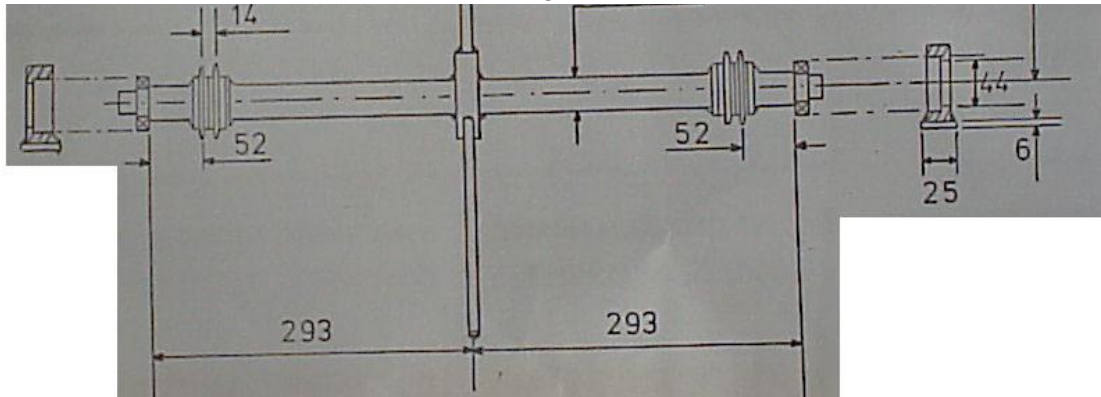


320 320

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[Index.htm](#) [pp480.htm](#) LAYSHAFT, 4 MAN PEDAL CENTRIFUGAL PUMP

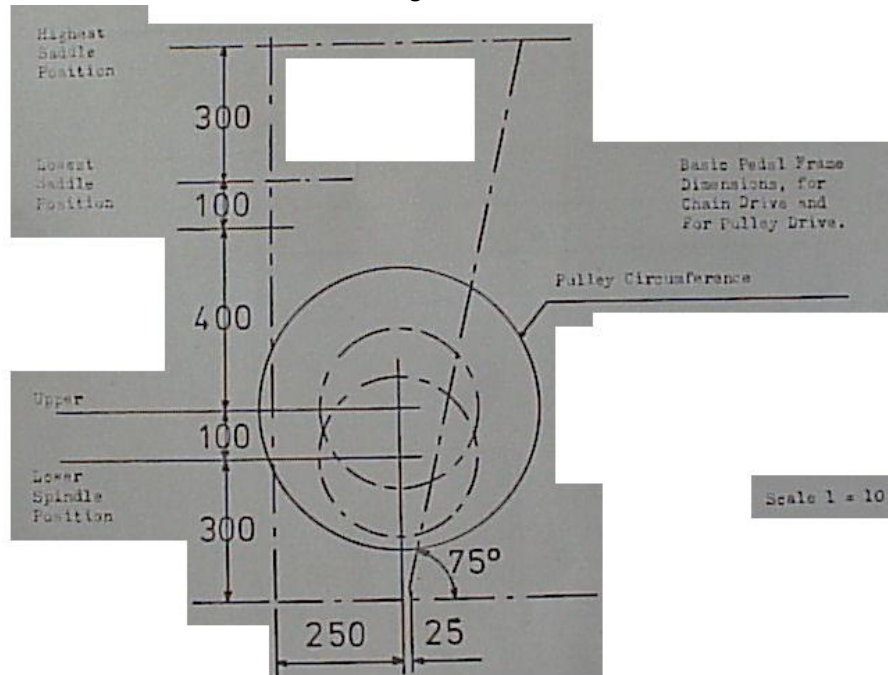




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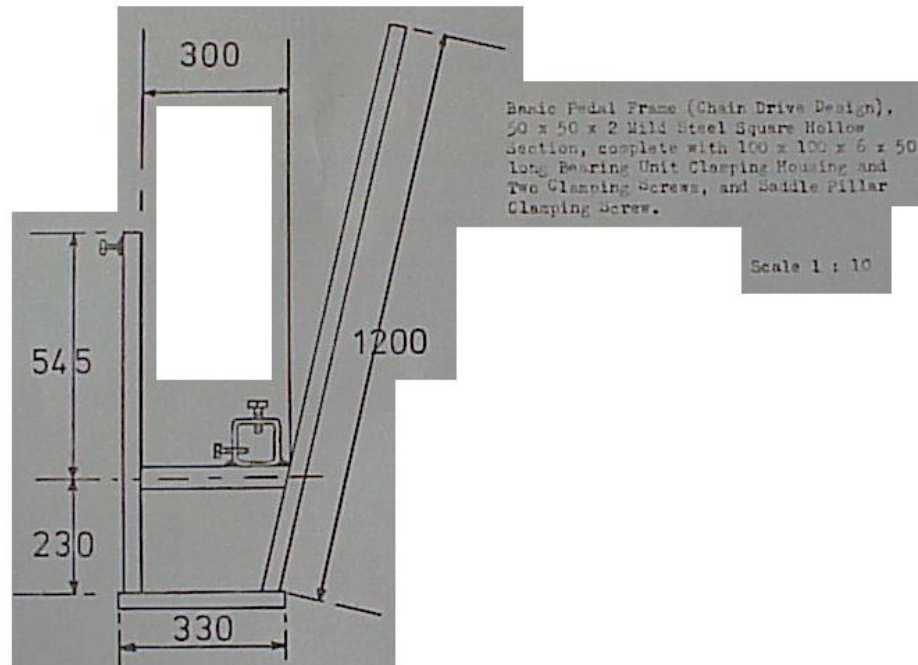
[Index.htm](#) [pp490.htm](#) GENERAL DIMENSIONING, PEDAL UNITS

Acknowledgements



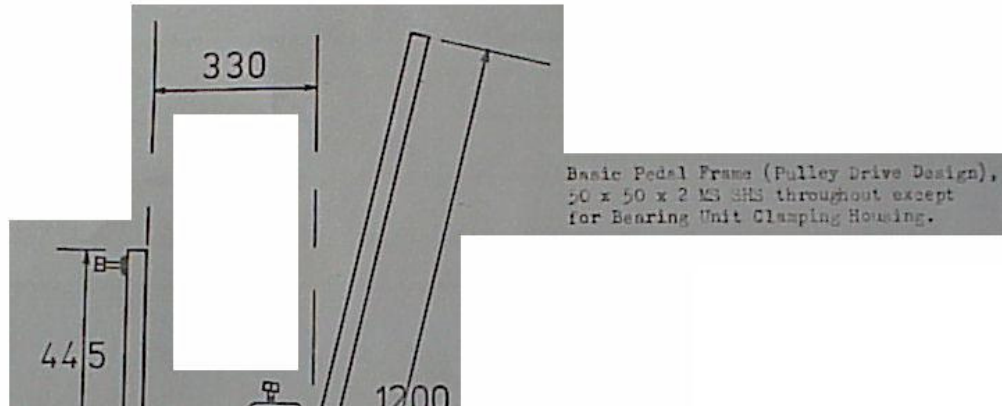
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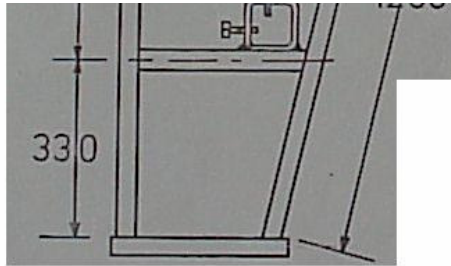
[Index.htm](#) [pp500.htm](#) GENERAL DIMENSIONING, PEDAL UNITS



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[Index.htm](#) [pp510.htm](#) GENERAL DIMENSIONING, PEDAL UNITS

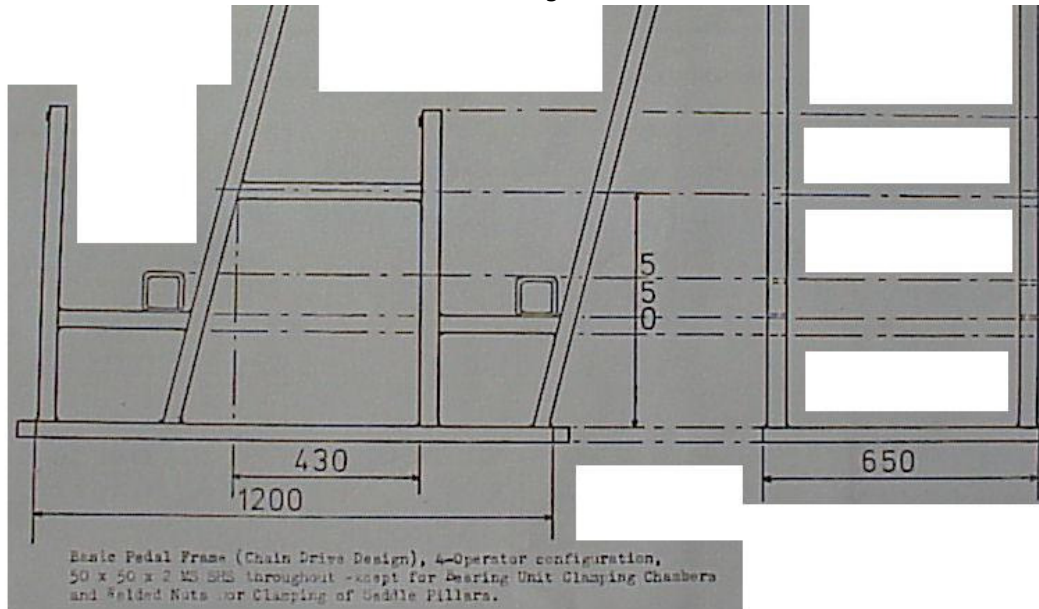




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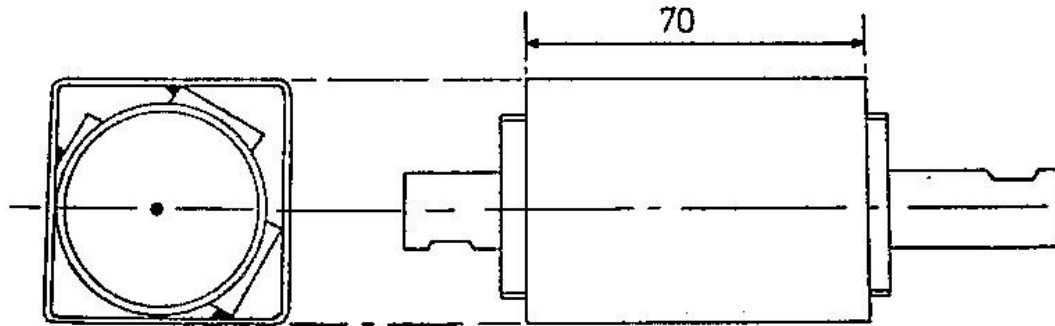
[Index.htm](#) [pp520.htm](#) GENERAL DIMENSIONING, PEDAL DRIVE UNITS





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[Index.htm](#) [pp530.htm](#) PBU BEARING ASSY, HYBRID CYCLE/HOMEMADE

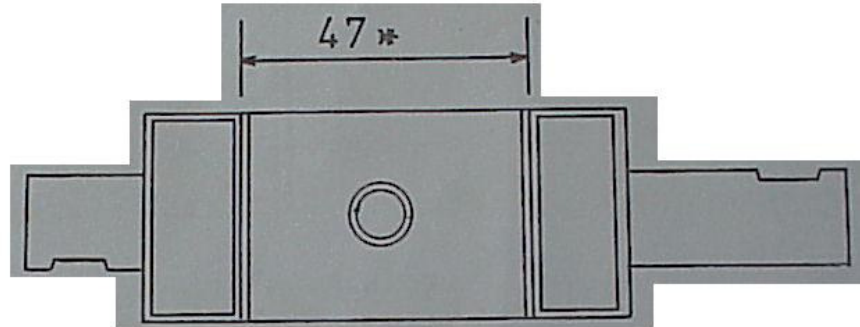


Cast or Fabricated
Bicycle Bottom Bracket,
complete with threads,
Brazed or Soldered inside
50 x 50 x 2 MS MS.

Bearing Assembly Complete
with Bicycle Cups, Balls,
and Spindle.

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[Index.htm](#) [pp540.htm](#) HYBRID PBU



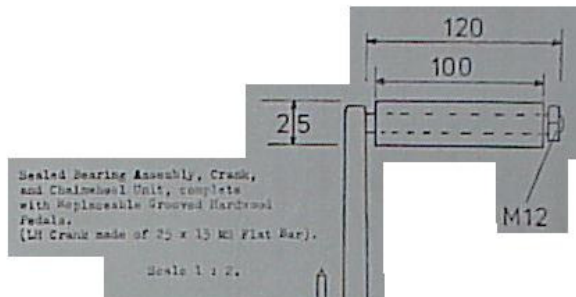
Alternative Sealed Bearing Assembly, with Bicycle Spindle and Balls, and with Bicycle Cups welded to each end of a Piece of 1" bore Water

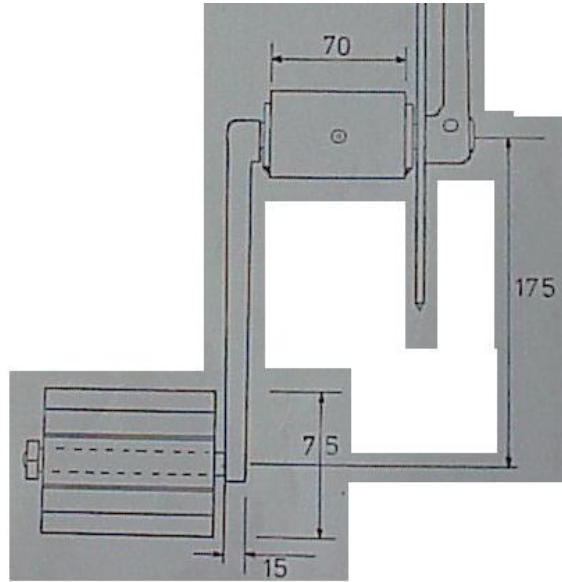
Acknowledgements

Pipe, faced and chamfered, prior to welding inside 50 x 50 x 2 x 70 mm.
▪ Note - this Dimension varies with Type of Spindle and Cups used.
Also complete with $\frac{1}{8}$ " UNF.
Tapped Hole for Grease Nipple.

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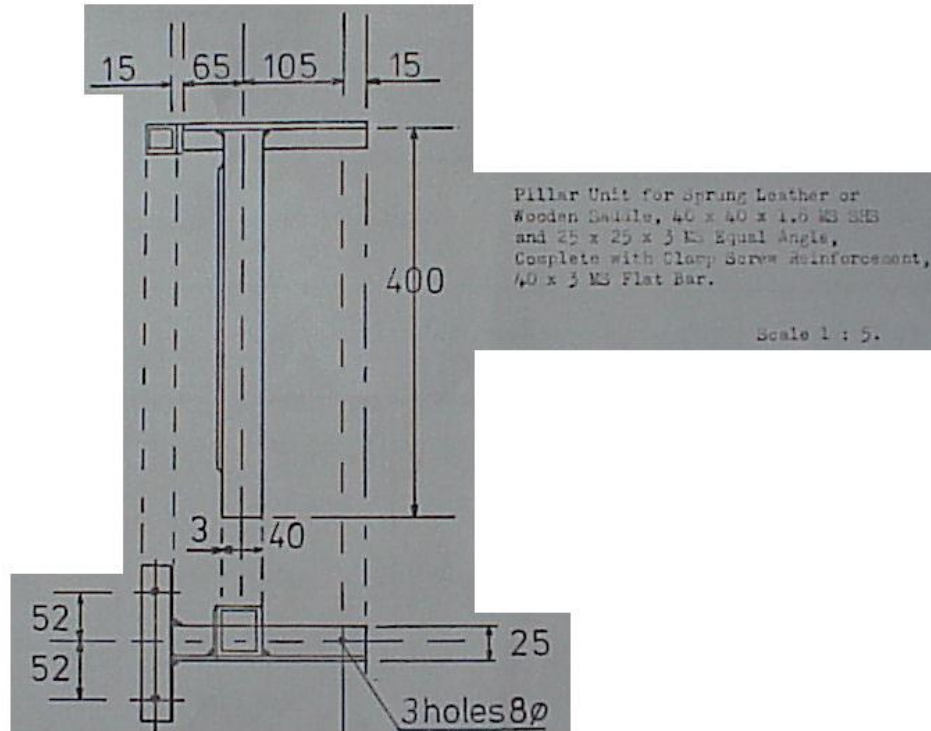
[Index.htm](#) [pp550.htm](#) HYBRID PBU ASSY





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[Index.htm](#) [pp560.htm](#) SADDLE PILLAR UNIT

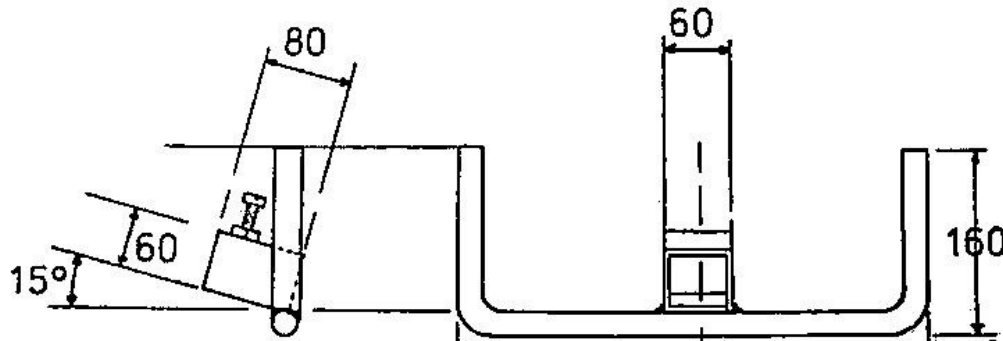


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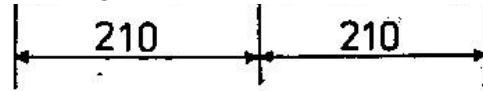
[Index.htm](#) [pp570.htm](#) HANDLEBAR UNIT, HEIGHT ADJUSTABLE

Handlebars, Height-adjustable,
1/2" bore Water Pipe,
60 x 60 x 3 MS SWS, Complete
with M16 Welded Nut and
Clamping Screws.

Scale 1 : 5 .



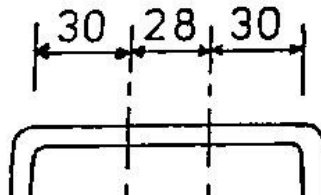
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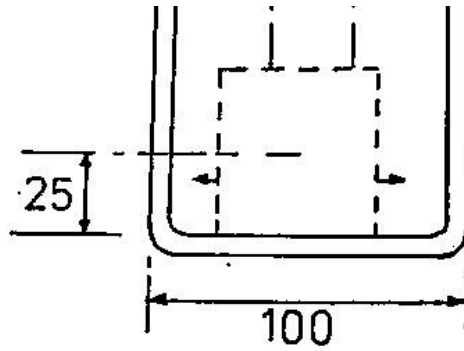
[Home](#) > [ar.cn.de.en.es.fr.id.it.ph.po.ru.sw](#)

[Index.htm](#) [pp580.htm](#) PBU CLAMPING UNIT WITH TENSION ADJUSTMENT

Navigation icons: back, forward, search, etc.



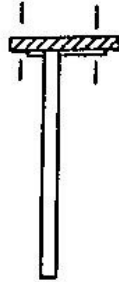
Position of 3 Holes
Tapped M16 in Bearing
Unit Clamping Housing



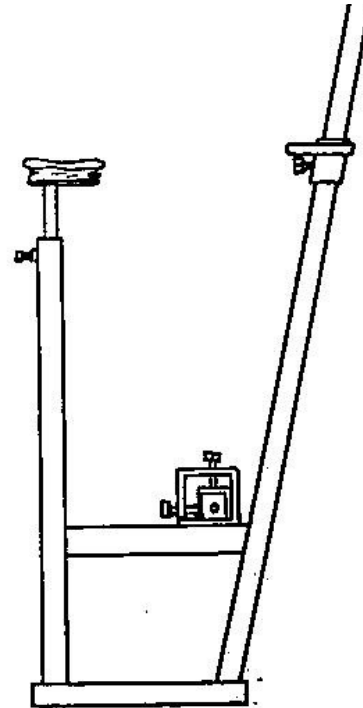
to allow Various Bearing
Unit Positions for
obtaining Belt Tension.

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[Index.htm](#) [pp590.htm](#) GENERAL PEDAL FRAME DESIGN

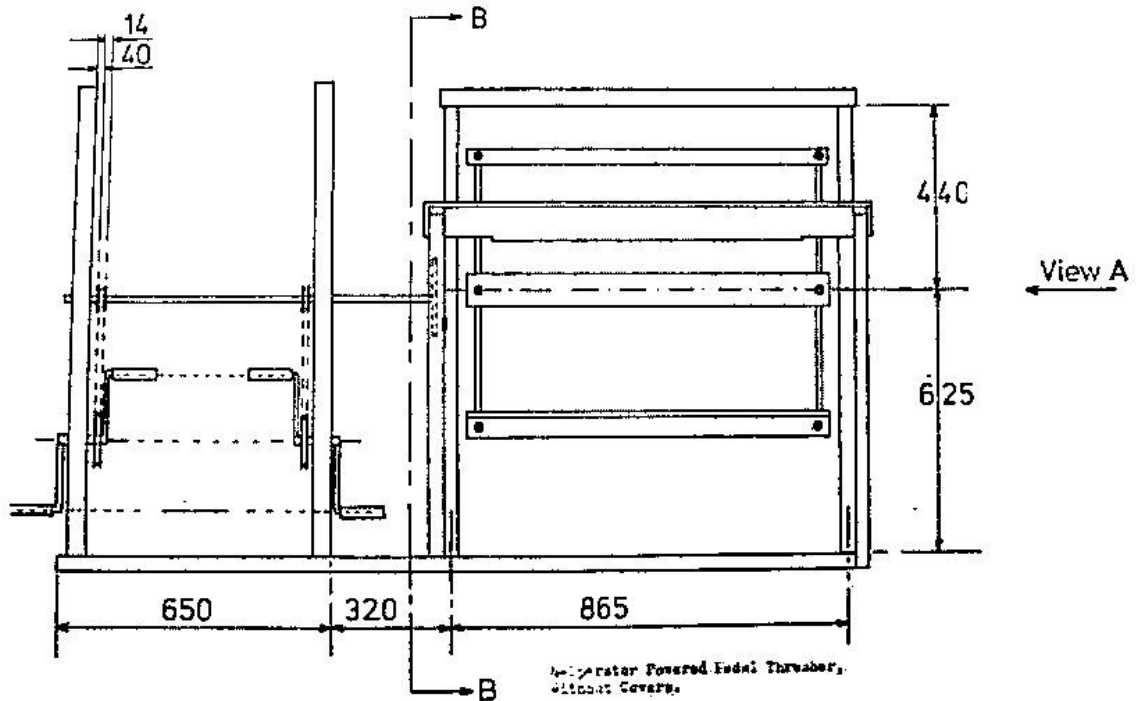


Basic Pedal Frame Design
Complete with Saddle Pillar,
Leather Sprung Saddle,
Handlebars, and 50 x 50
Bearing Housing Clamped in
Position. Also Showing
Alternative Wooden Saddle
Bolted to Saddle Pillar.



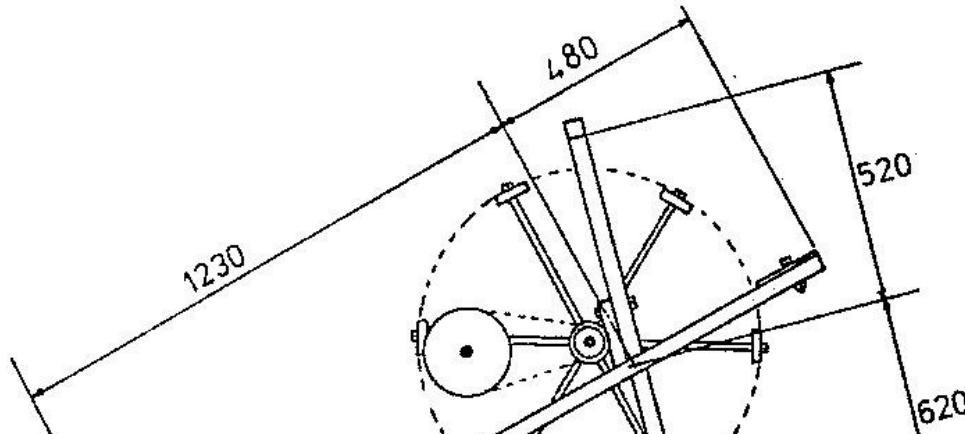
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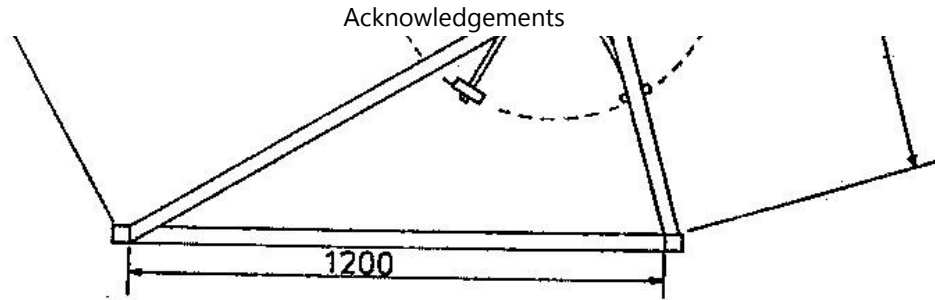
[Index.htm](#) [pp600.htm](#) 4 MAN PEDAL THRESHER



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[Index.htm](#) [pp610.htm](#) 4 MAN PEDAL THRESHER





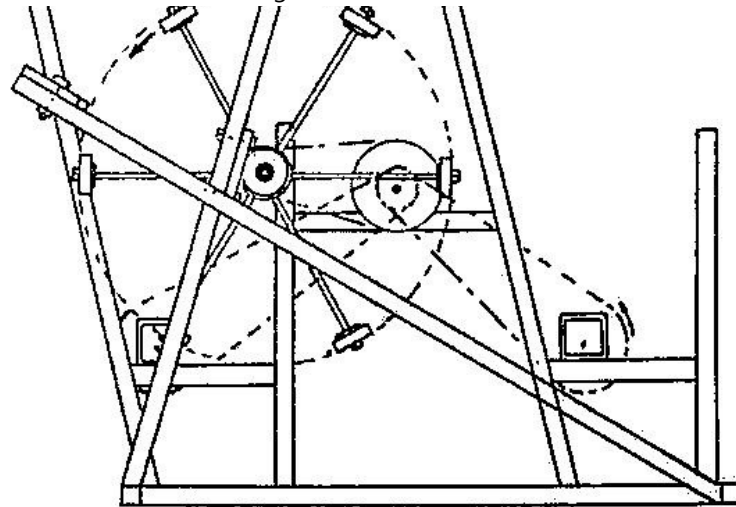
Section EE - 4 Operator Powered Pedal Thresher.

Scale 1 : 10

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[Index.htm](#) [pp620.htm](#) 4 MAN PEDAL THRESHER WITH 2 STAGE CHAIN DRIVE





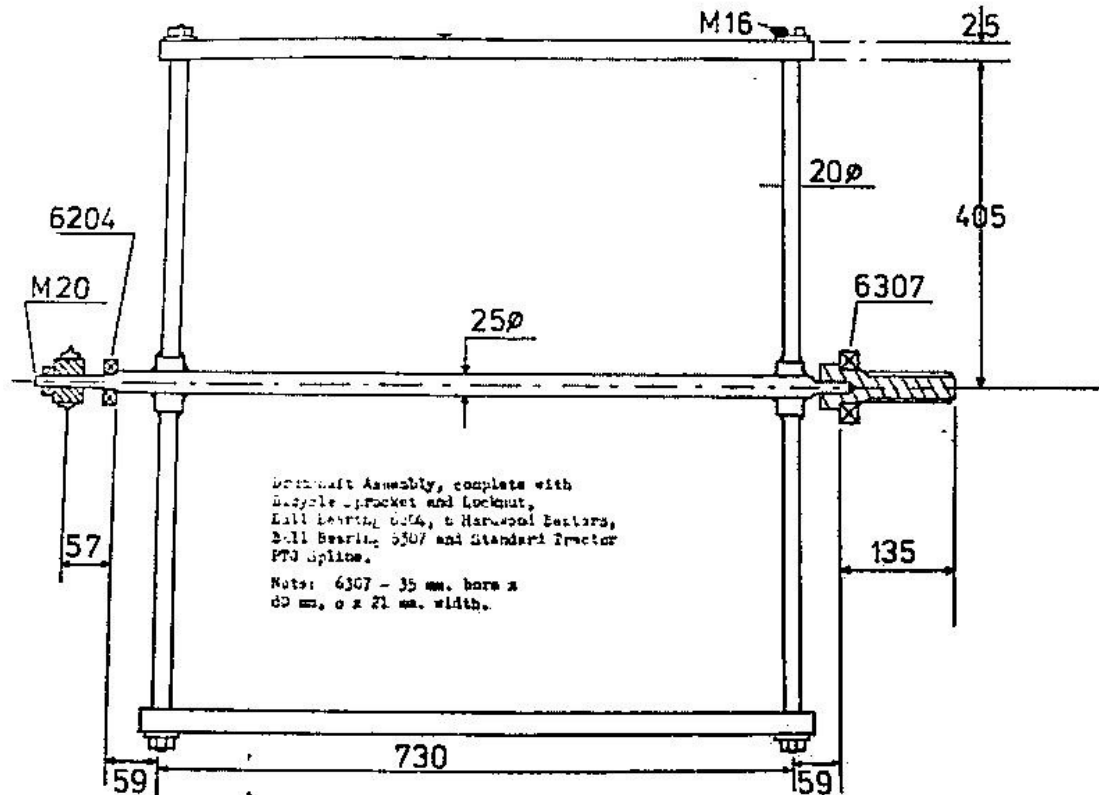
View A —

4 Operator powered Pidal Thresher,
50 x 2 x 2 MB 3MS, Without Covers, showing
2-Stage Chain Drive.

Scale 1:10

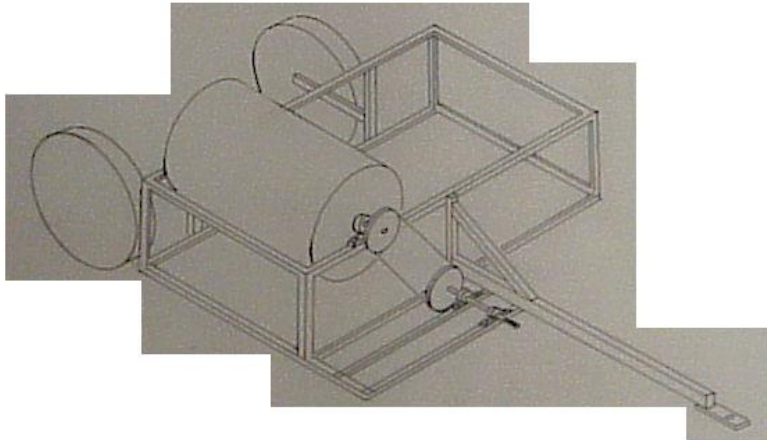
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[Index.htm](#) [pp630.htm](#) TRACTOR POWERED THRESHER-DRUM ASSY



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[Index.htm](#) [pp640.htm](#) TRACTOR POWERED THRESHER

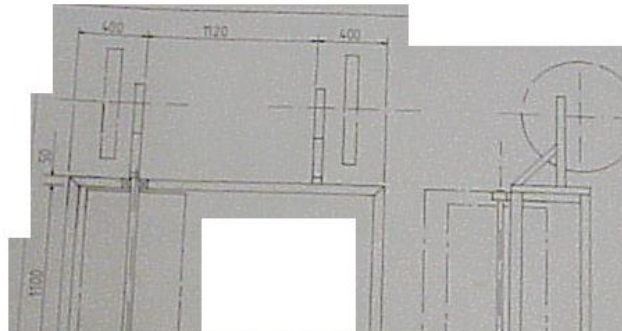


ISOMETRIC TRACTOR PTO THRESHER

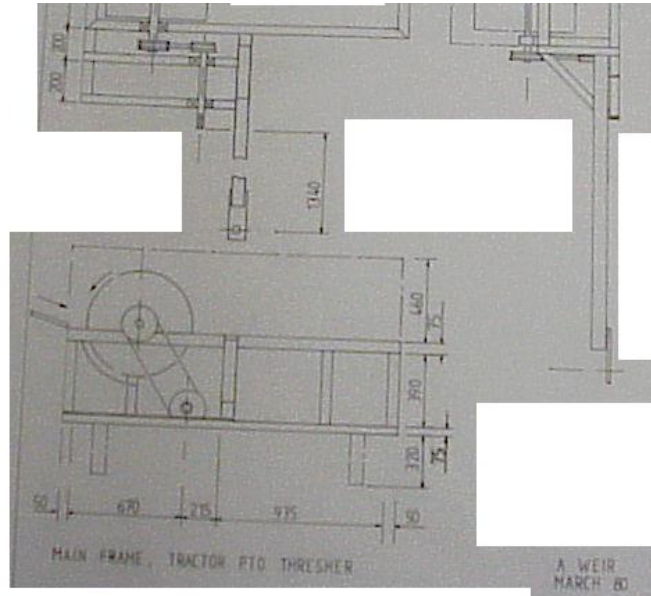
A WEIR
MARCH 80

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[Index.htm](#) [pp650.htm](#) TRACTOR POWERED THRESHER



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[Index.htm](#) [pp660.htm](#) BILL OF MATERIALS-TRACTOR POWERED THRESHER

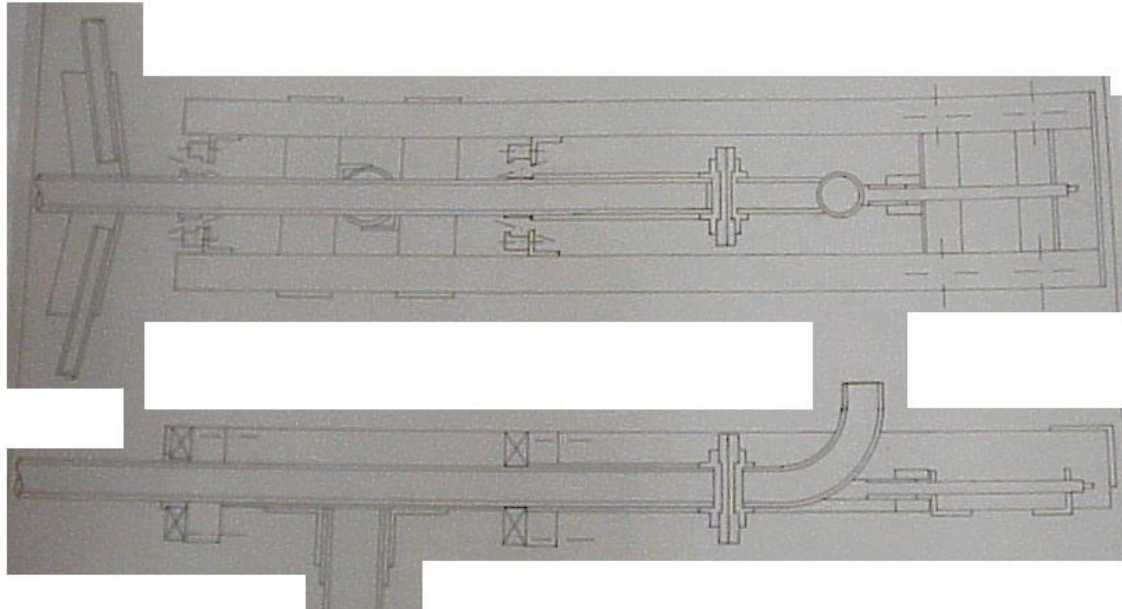
Parts List and Material Requirement

- 19m X 75X50X2.5mm MS RHS - main frame
- 8m X 40X40X1.8mm MS RHS - upper frame
- 1.8m X 100X50X2.5mm MS RHS - towbar
- 0.32m X 70X20mm Carbon Steel Flat bar - tow-hitch
- 2m X 50X50X5mm MS Angle - layshaft bearing supports

- 1.16m X 1.92m MS- \bar{A} - of 1.5mm MS sheet- grain catchment floor
- 1.16m X 1m of 1mm MS sheet - hinged door, grain catchment area.
- 7 m² of 0.5mm galvanised mild steel sheet - other cladding.
- 1 piece total 1m X 1m X 25mm thick hardwood - feeding table.
- 4 pieces ball bearings with housings to suit.(specification to be determined)
- 1 complete threshing drum and concave, rasp-bar type, approx. 600mm diameter X 1 metre width.
- 2 pieces 'taper-lock' fitting twin-groove B-section pulleys and belts
- 0.45metre X 40mm diameter MS round bar - layshaft assembly
- 1 piece male PTO spline - layshaft assembly
- 2 pieces wheel units, roller bearing type, with or without integral axle, with rims and tyres to suit (suggested type 7.50X16" tyres).

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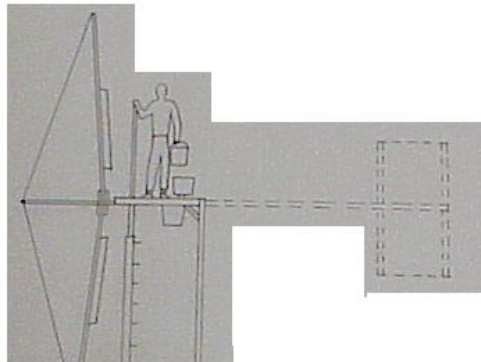
[Index.htm](#) [pp670.htm](#) WIND POWERED GRAIN MILL-MAIN SHAFT W/ MILLING PLATES



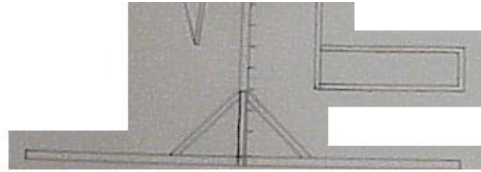


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Acknowledgements



CRETAN SAIL WEC

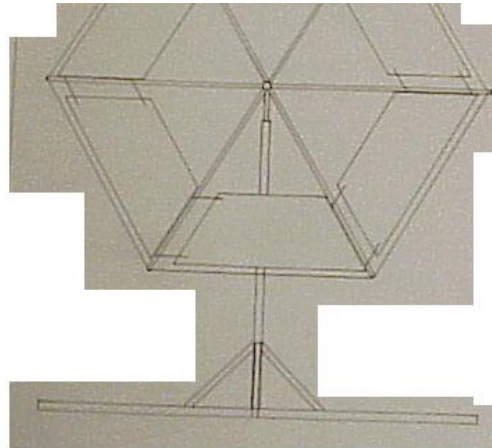
A WEIR
APRIL 80
SCALE 0.02

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[Index.htm](#) [pp690.htm](#) WIND POWERED GRAIN MILL, FRONT VIEW



Acknowledgements



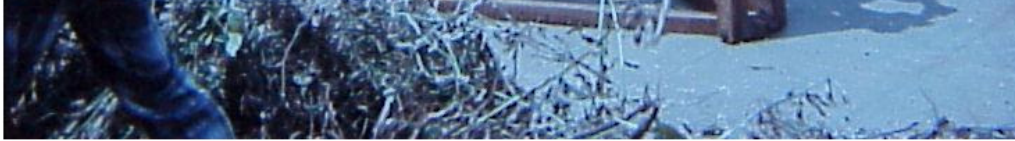
CRETAN SAIL WIND ENERGY
CONVERTER

A WEJR
APRIL 80
SCALE 0.02

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[Index.htm](#) [pp700.htm](#) PHOTO-ONE MAN PEDAL WINNOWER,UGANDA 1972

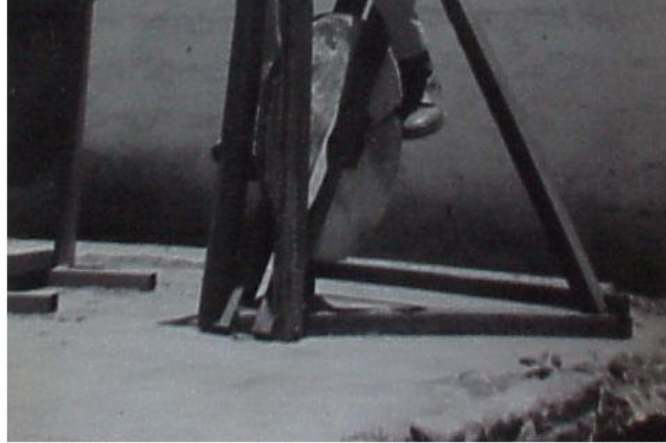




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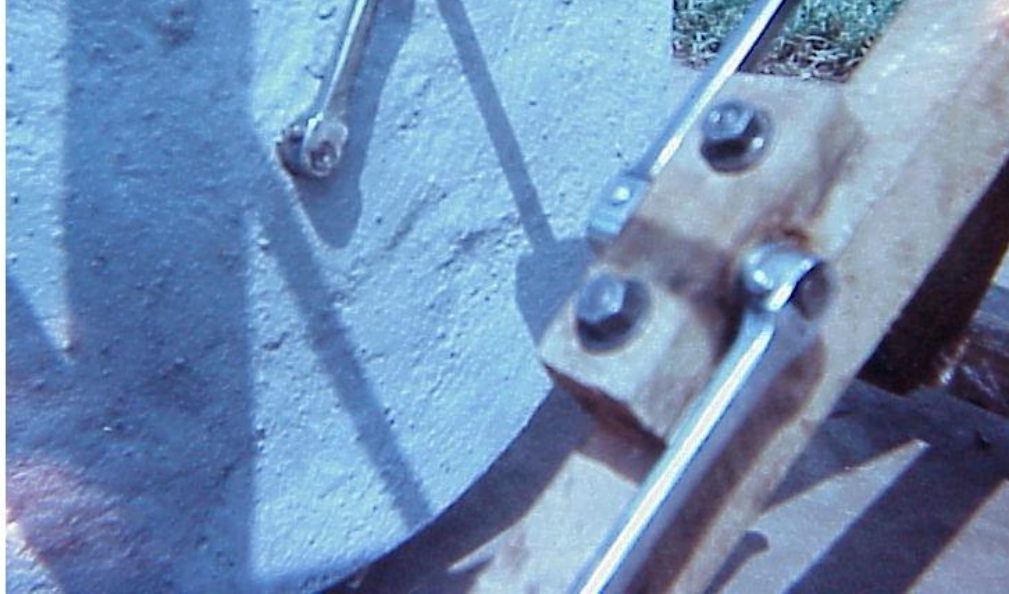




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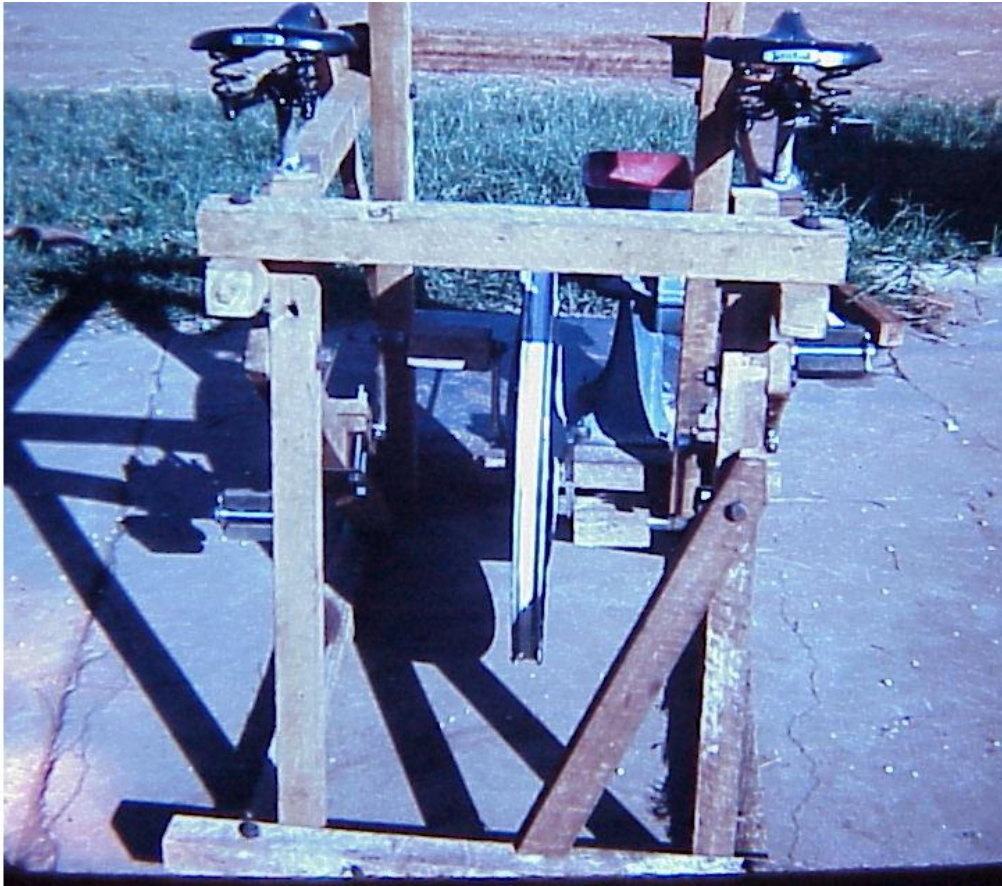




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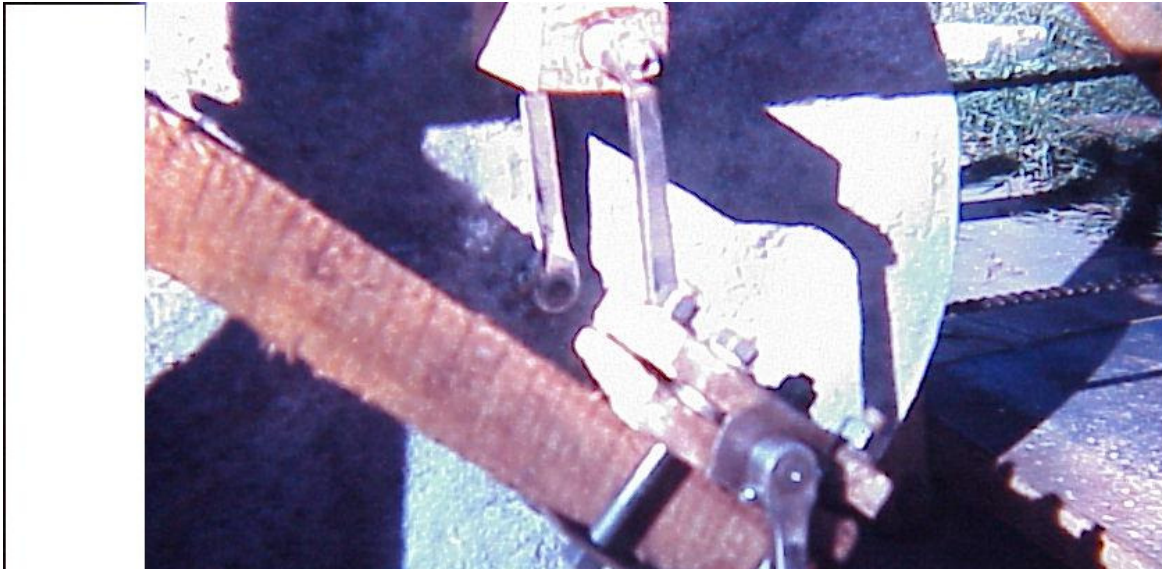
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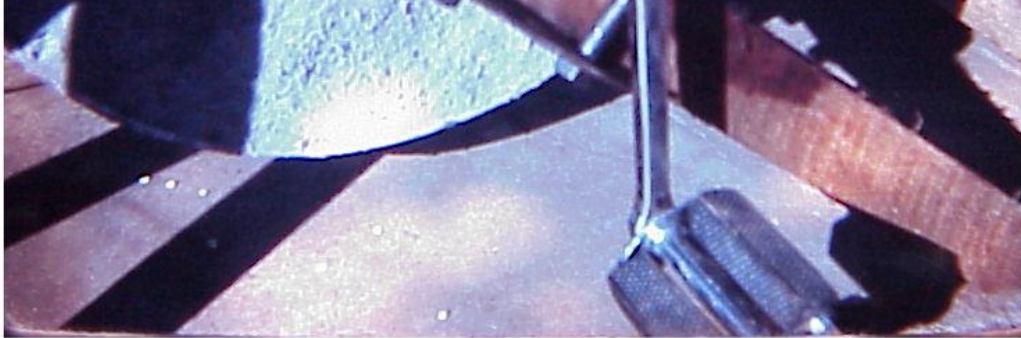




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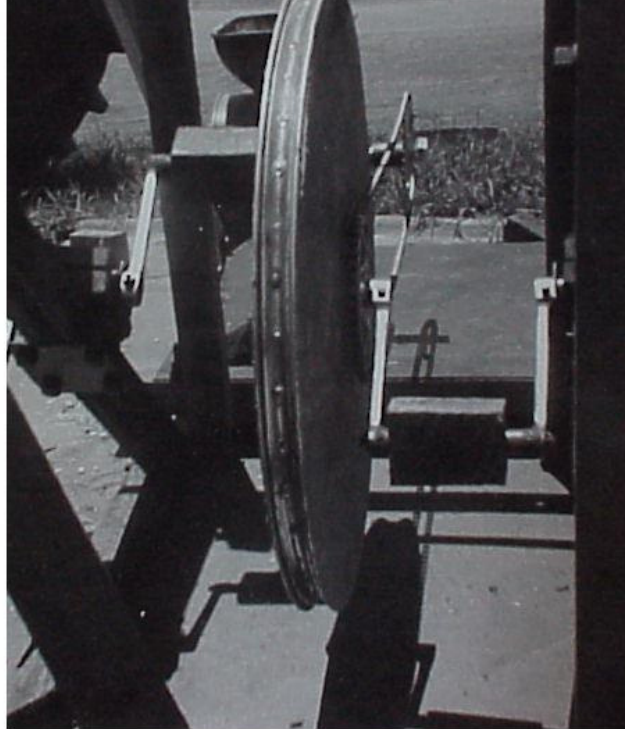




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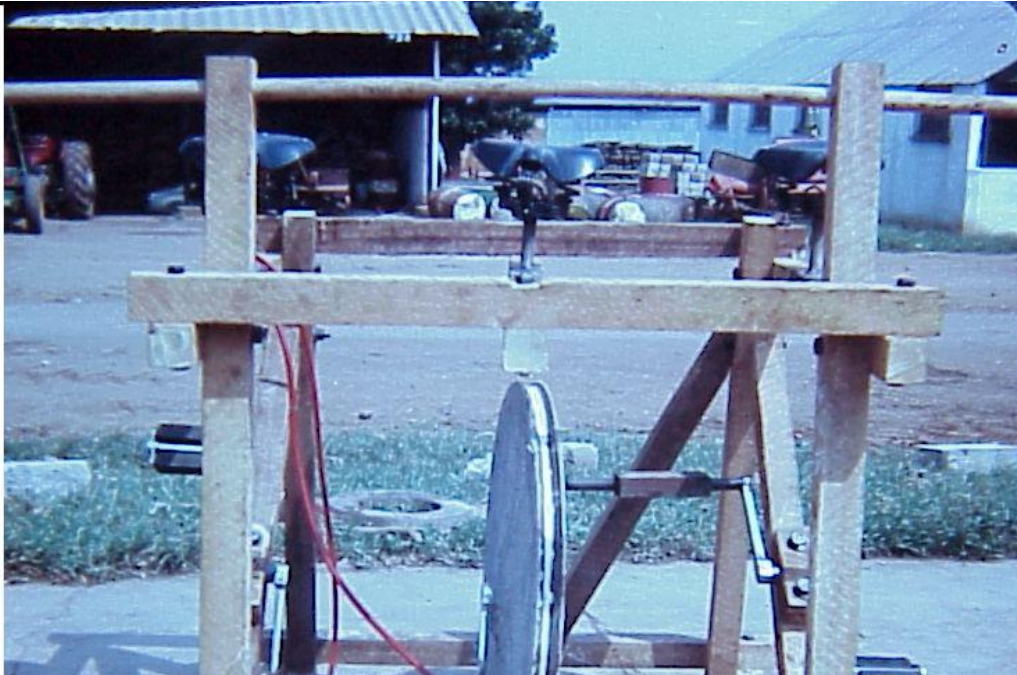
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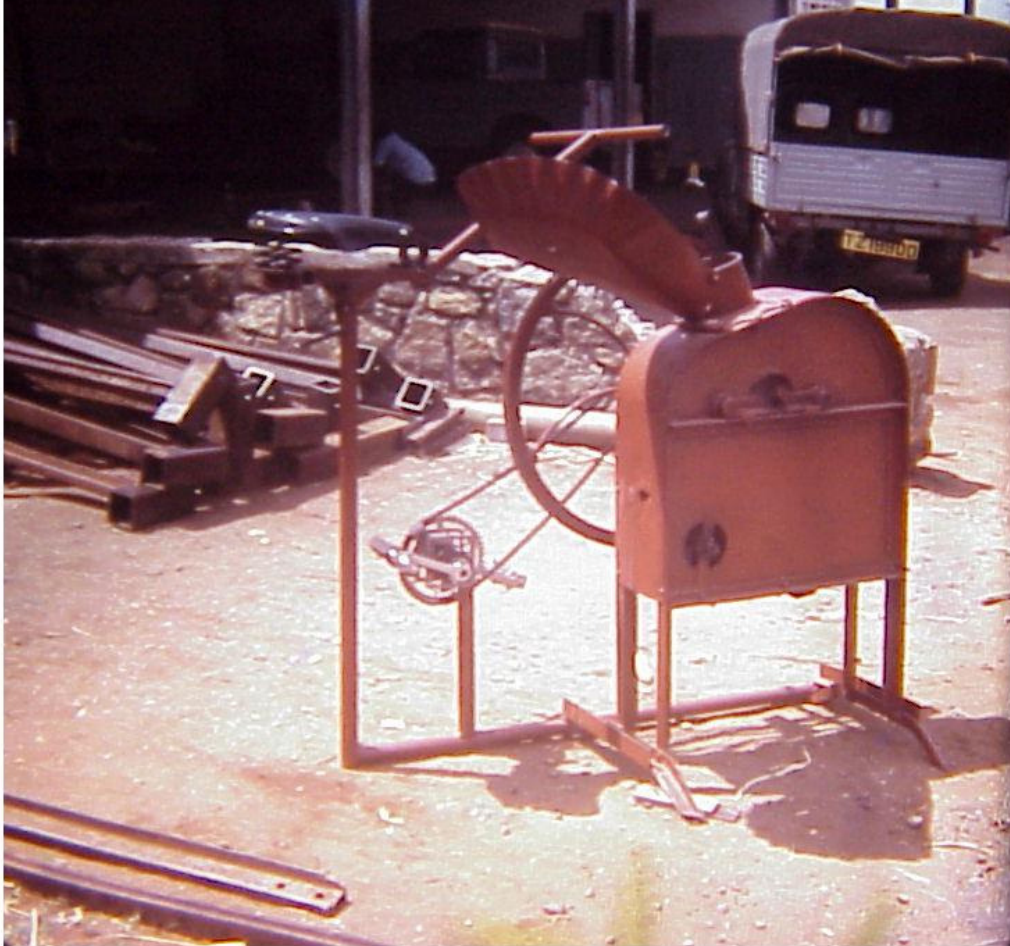
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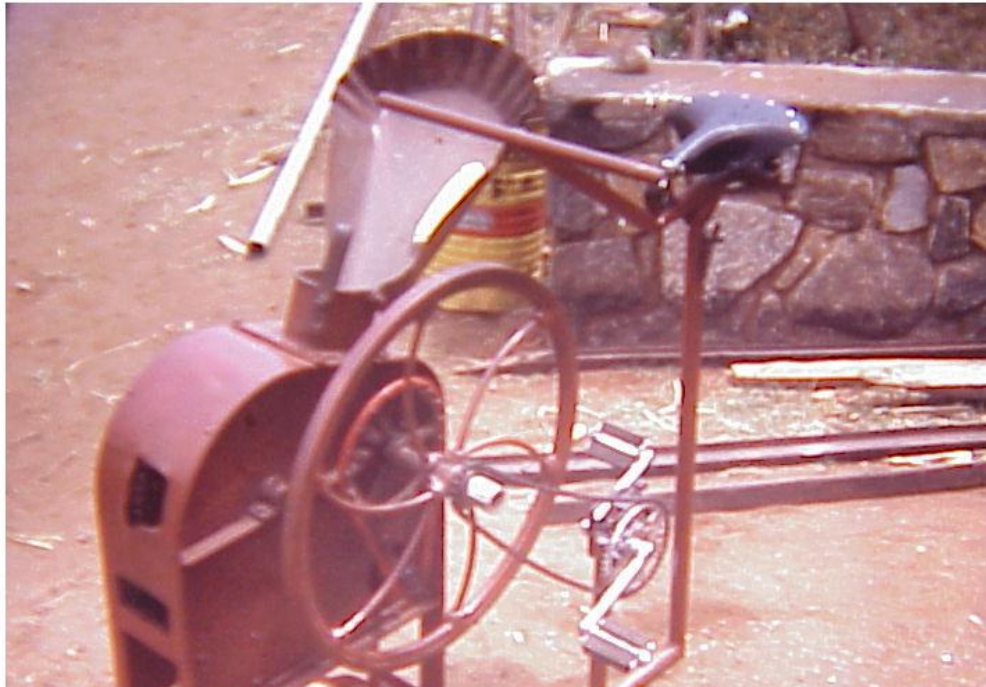
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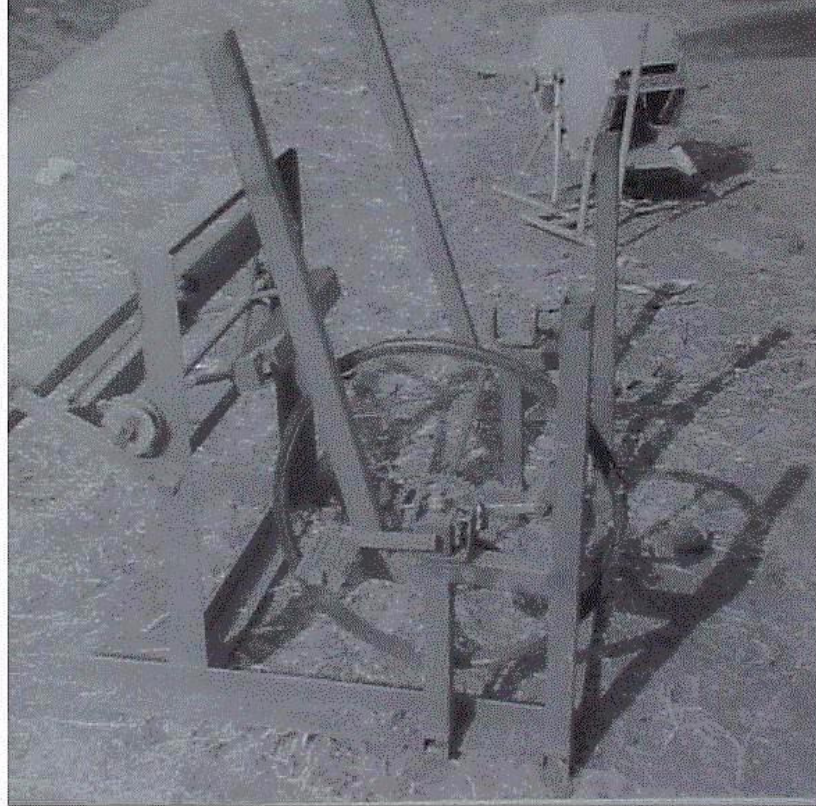
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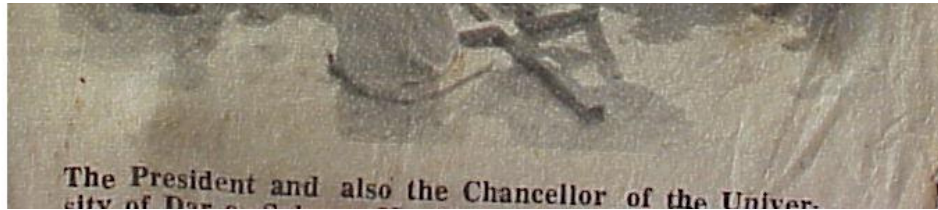
[Index.htm](#) [pp890.htm](#) PHOTO-2 MAN + 1 MAN PEDAL SORGHUM THRESHERS



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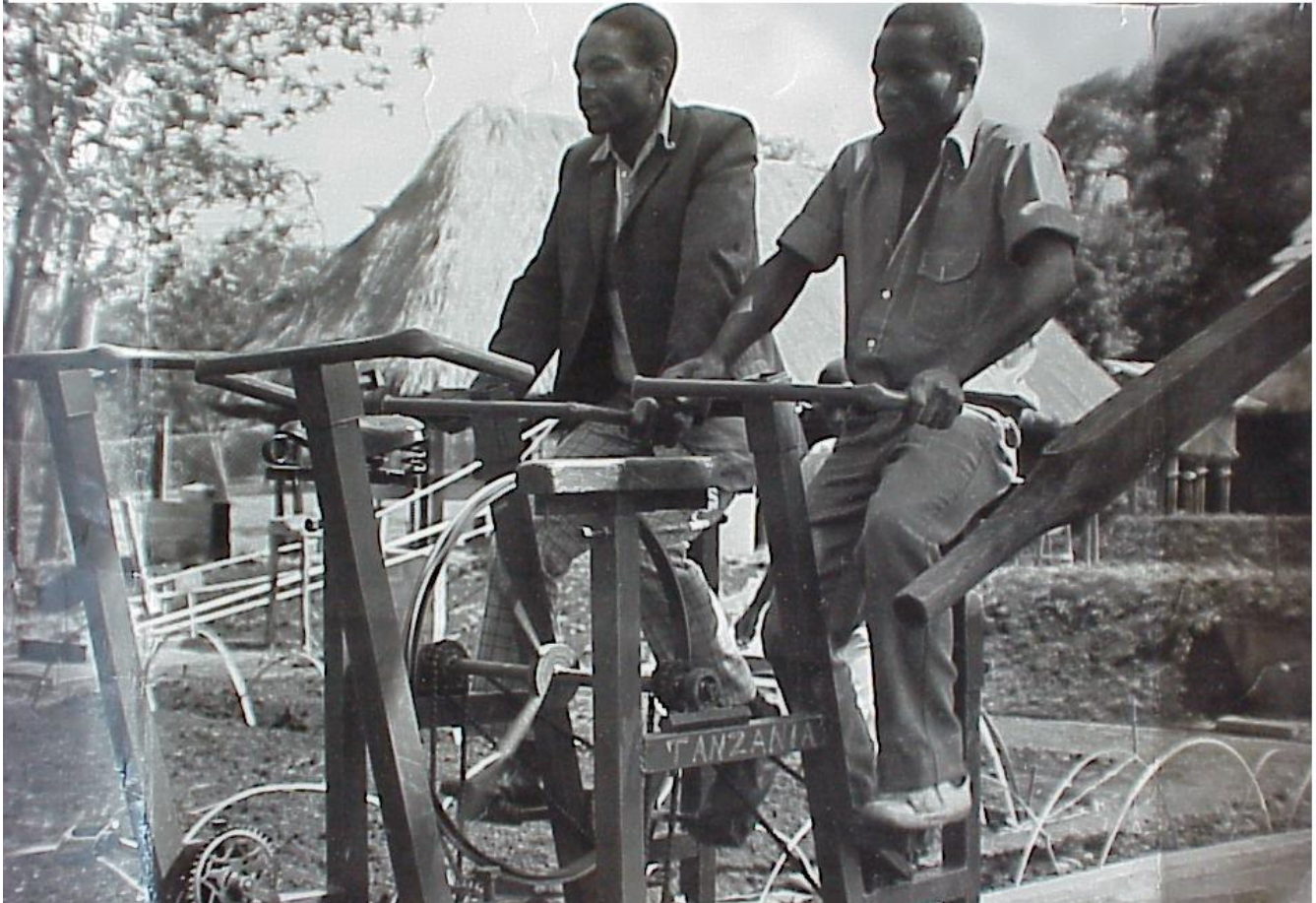
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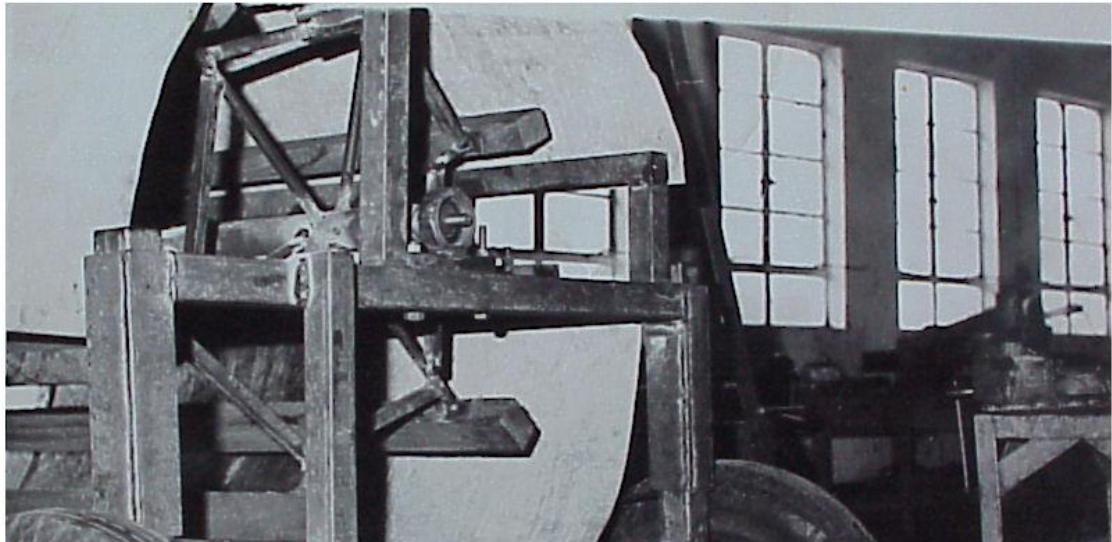
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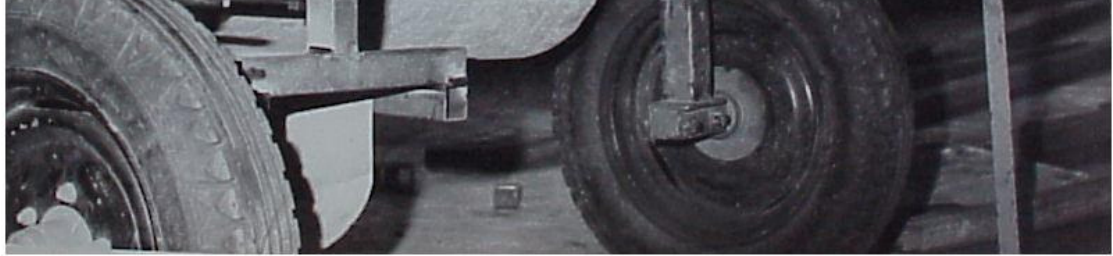




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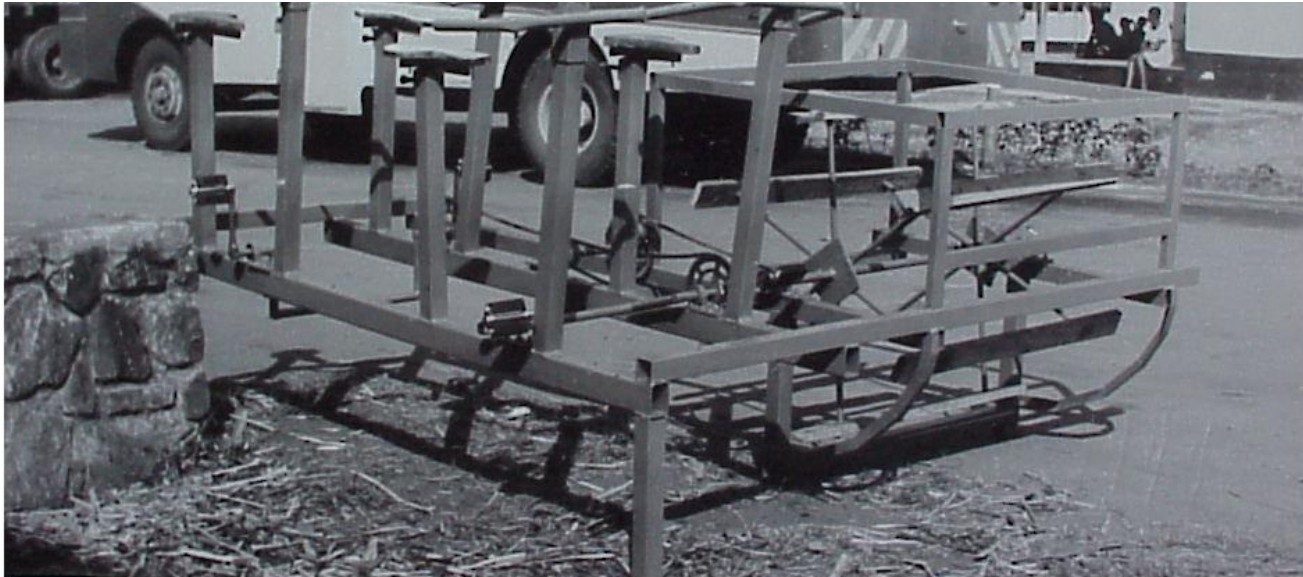




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technology: — The swirling winds which the rural woman has had to put up with can be harnessed to simplify her daily chores. This we know. The question is: what are the practical answers to it that bring the Third World to the level of the First World?

UNCTAD division in charge of the task of seeing the emergence of an order of technological flow believe that technology is unlike other "commodity".

It is, they believe, cumulative; and that many nations have contributed to building up the accumulated treasure-house of technology with no single nation retaining the central role for long.

Technology, the experts further argue, can be transmitted across national frontiers with relative ease; and that its transfer does not, as in other commodities, reduce its availability to the original holder — that is the cost of transfer—the supplying enterprise is ZERO.

And yet, unlike scientific achievements, which are universal, free and available to anybody, the possession of technology is jealously guarded as a secret by its owners. Various legal agreements (patents and trade marks) and other practices have been established to strengthen the so-called rights of technology owners.

The technology recipients, on the other hand, whether from developed or developing countries, are left unprotected. In consequence while all the technology needed to overcome age-old afflictions are already known

