PLATE No. 57

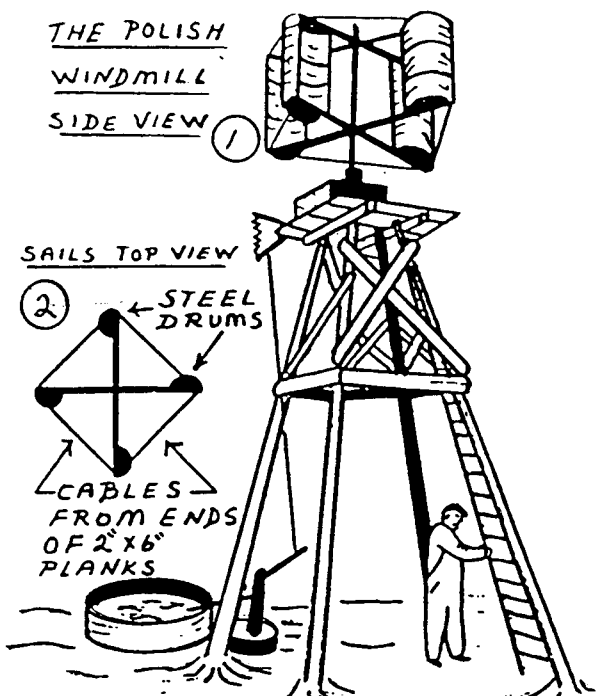
DESIGN ALTERNATIVE III

THE POLISH WINMILL I

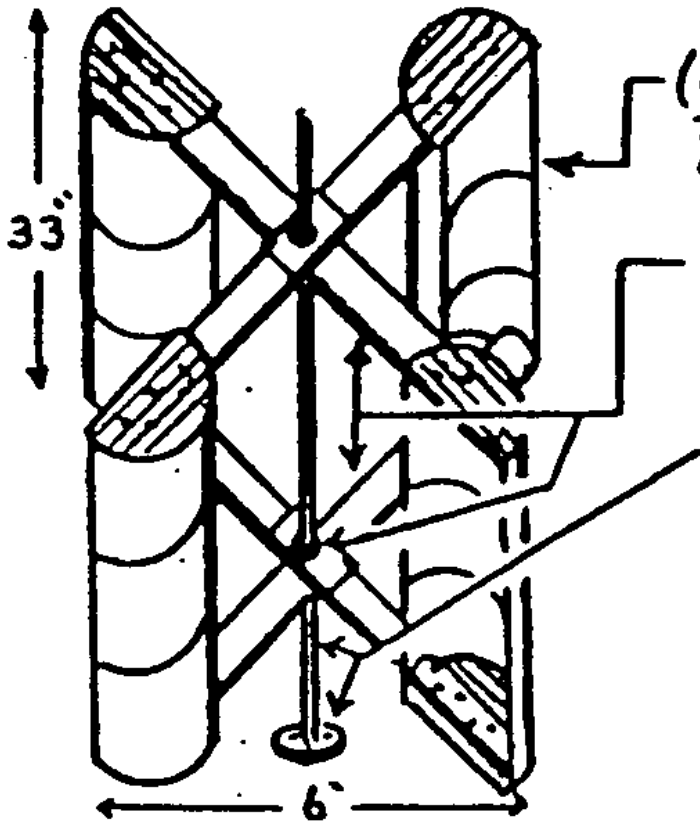
- VERTICAL AXIS - STEEL DRUM SAILS -

- AUTO REAR END DRIVE - MULTIDIRECTIONAL

- NEADS NO TAIL VANE



SAILS TOP ¾ VIEW

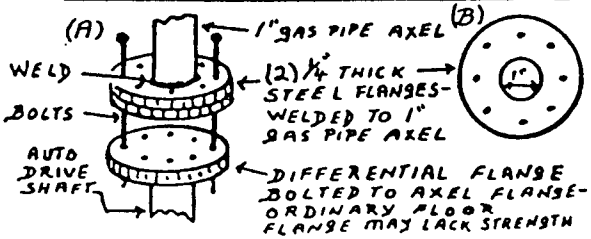


(4) SAILS - ½ STEEL DRUMS BOLTED TOP AND BOTTOM TO 6FT PIECES OF 2"X6" LUMBER

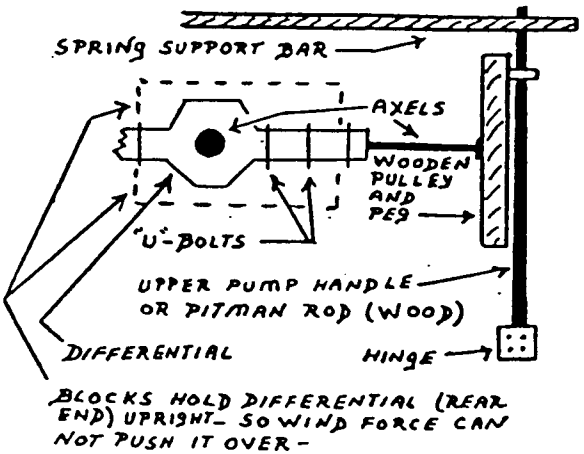
4+4 (TOP AND BOTTOM) PIECES OF 2" X 6" LUMBER - ATTACHED TO AXEL WITH FLOOR FLANGE NUTS -

1" - GAS PIPE AXEL BOLTED TO AUTO REAR END WITH STEEL FLANGE -

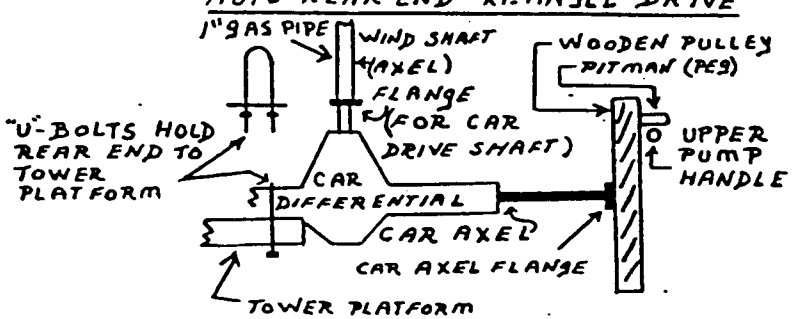
STEEL VERTICAL AXEL FLANGE



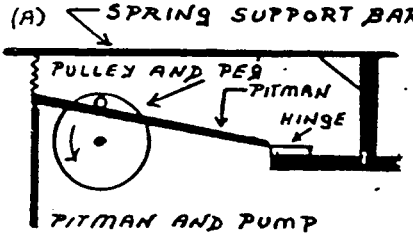
TOP VIEW
AUTO REAR END AND PITMAN



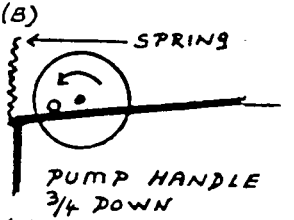
SIDE VIEW
AUTO REAR END RT. ANGLE DRIVE

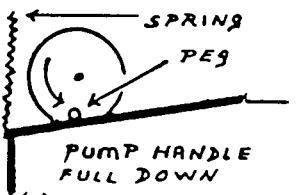


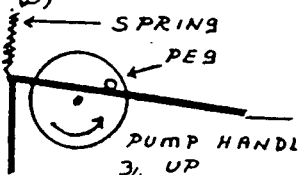
ECCENTRIC PIN ON WOODEN PULLEY DRIVES PITMAN.

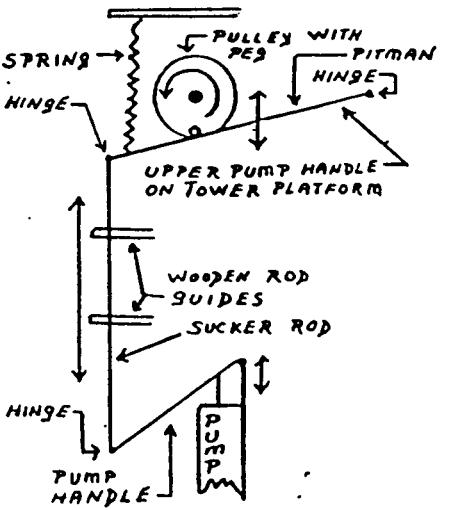


PITMAN CONNECTED TO PUMP HANDLE WITH SUCKER ROD









NOTE – PEG PUSHES PUMP HANDLE DOWN – SPRING RAISES IT UP – ROTARY → VERTICAL MOTION –

PLATE NO. 57

The biggest advantage of this design is that it is multidirectional and, thus, requires no tail vane. No matter what the direction of the wind, it just keeps on turning. The only way to stop it is to either tie it down or block it from the wind.

By increasing the length of the arms, and by adding quarter sections of steel drums to the half drums on the ends of the arms, you will increase the torque.

The set up for adapting the auto rear end (fig. 4), is described in plate no. 29 and its accompanying verbal text.

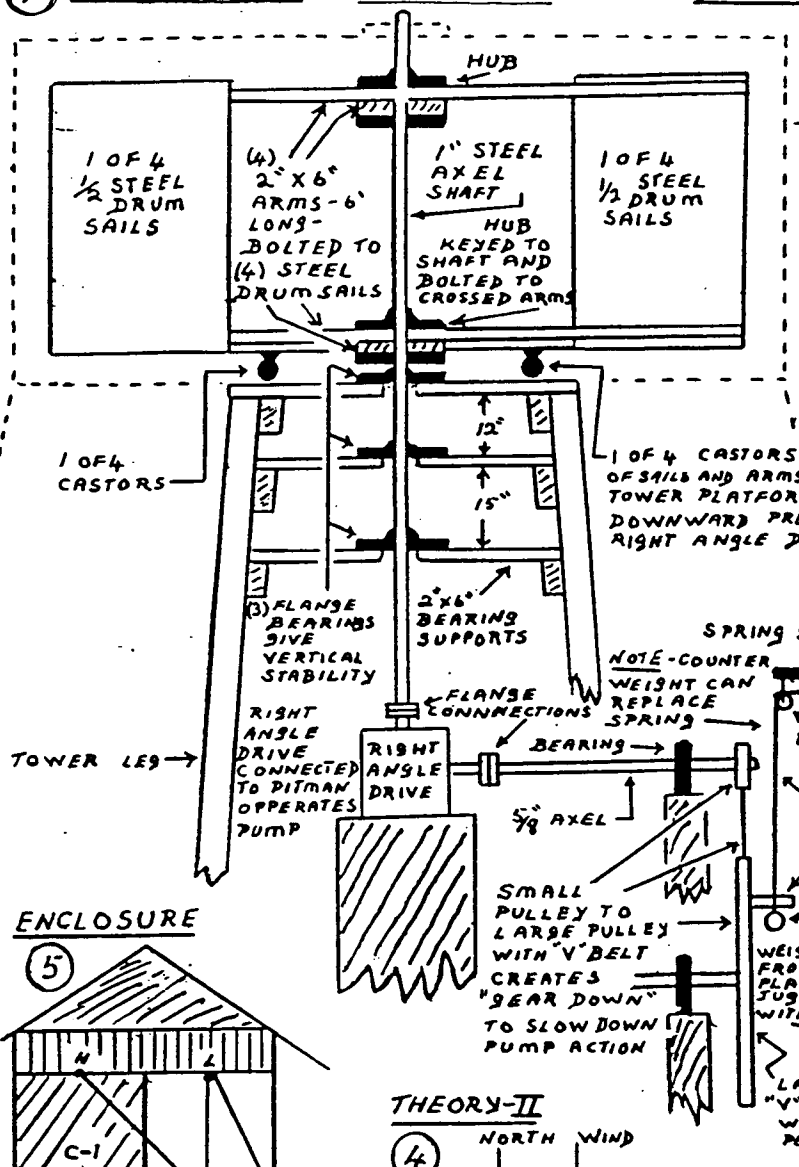
The pitman (fig. 5, 6 and 7), is a wooden or metal peg on a wooden or metal wheel, which is bolted to a metal disc, which is bolted to the auto rear end axle flange.

The 1", (or 2"), gas pipe sail axle is welded to a 1/4" thick steel plate disc, which bolts to the auto rear end drive shaft flange, (see fig. 3, 4 and 8).

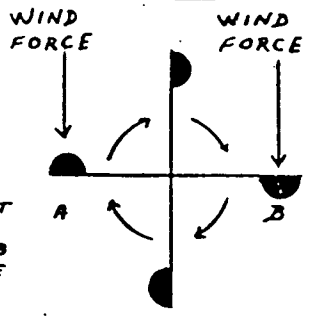
PLATE No. 58

DESIGN ALTERNATIVE - IV
THE POLISH WINDMILL II
- VARIATION - USING MANUFACTURED RIGHT ANGLE DRIVE AND ENCLOSURE

(1) BEARINGS ETC - SIDE VIEW

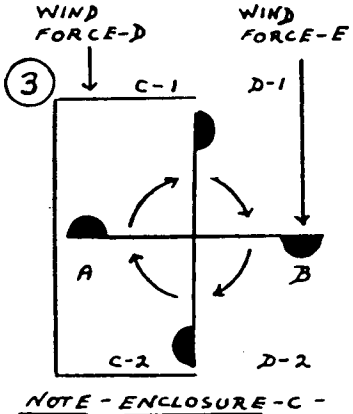


(2) THEORY - I



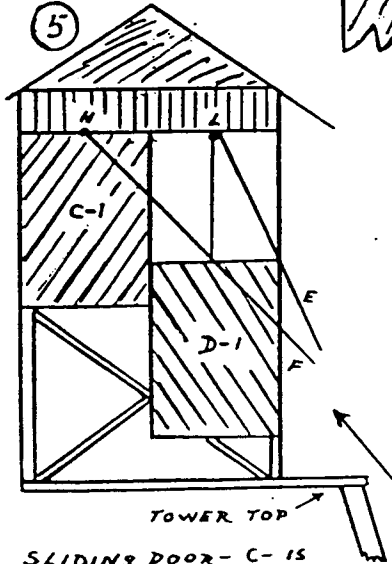
NOTE - WITHOUT ENCLOSURE - WIND STRIKES SAIL - A WITH SAME FORCE AS SAIL - B - SLOWS ROTATION AS - A - ACTS AS A BREAK ON - B -

(3)



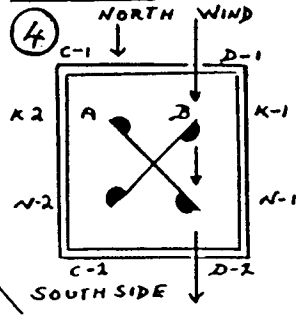
NOTE - ENCLOSURE - C - PREVENTS WIND FORCE-D FROM STRIKING SAIL-A AND IMPEDING THE SPEAD OF ROTATION WIND FORCE-E - STRIKES SAIL B - ONLY - ENCLOSURE - C - MUST BE ADJUSTABLE ACCORDING TO DIRECTION OF WIND -

ENCLOSURE (5)



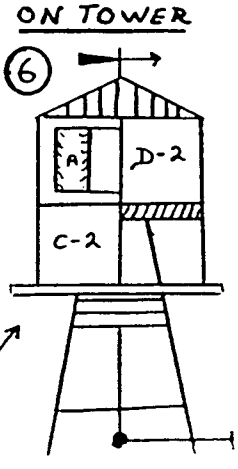
SLIDING DOOR - C - IS PULLED UP BY ROPE - F - ON PULLEY - H - TO SHIELD SAILS IN POSITION - A - (SEE THEORY) - - WHEN WIND DIRECTION CHANGES - LOWER - C - AND RAISE - D - WITH ROPE - E -

THEORY - II (4)



- NOTE - FOR NORTH WIND OPEN DOORS D-1, D-2, K-1, N-1; - CLOSE DOORS C-1, C-2, K-2 N-2; FOR SOUTH WIND DO THE REVERSE -

ON TOWER (6)



ON ROOF TOP (7)

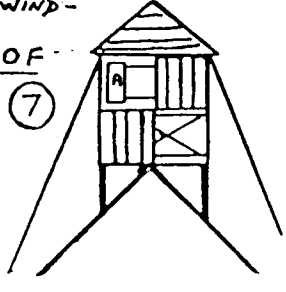


PLATE NO. 58

Note the counter weight replacing the spring in fig. 1. The counter weight is simply a plastic tub filled with the proper amount of sand. A counter weight will not wear as a spring will. A spring, however, will last a long time if it is not extended beyond its proper stretching limit.

Note the important concept, illustrated in fig. 2, 3, 4, 5, 6 and 7.

Left alone, the wind blows at the same time on both sides of the machine, the open sail going as well as on the back side of the returning sail coming back.

If the returning sail side is blocked off, the speed and power of the machine will increase dramatically. This can be done in a number of ways as illustrated. A good alternative is the replacement of the doors (fig. 5), with venetian blind type louvre boards which can be opened or closed at will.

A more simple solution is to erect canvas or wooden barriers which can be easily raised or taken down.

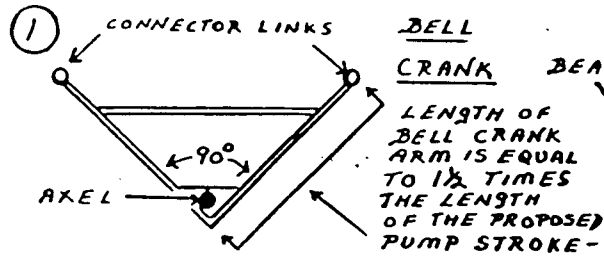
PLATE NO. 59

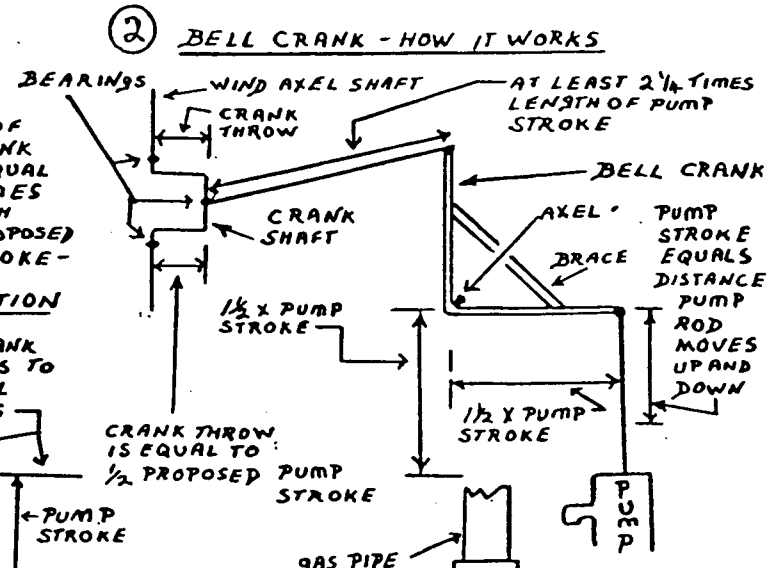
The methods of power direction change, illustrated here, can be applied to all designs, (see the section on "Design Relationships").

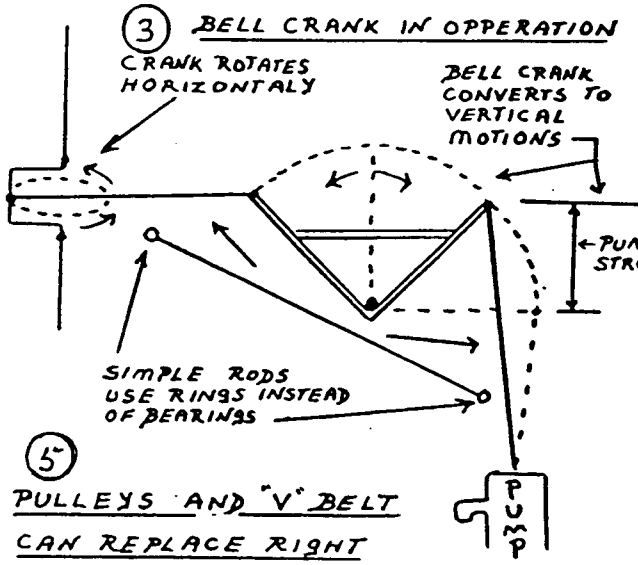
PLATE No. 5-9

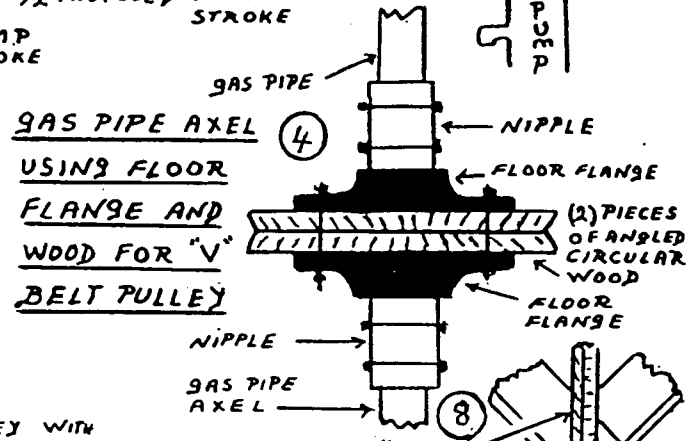
HORIZONTAL MOTION CONVERTED TO VERTICAL MOTION BY BELL CRANK-

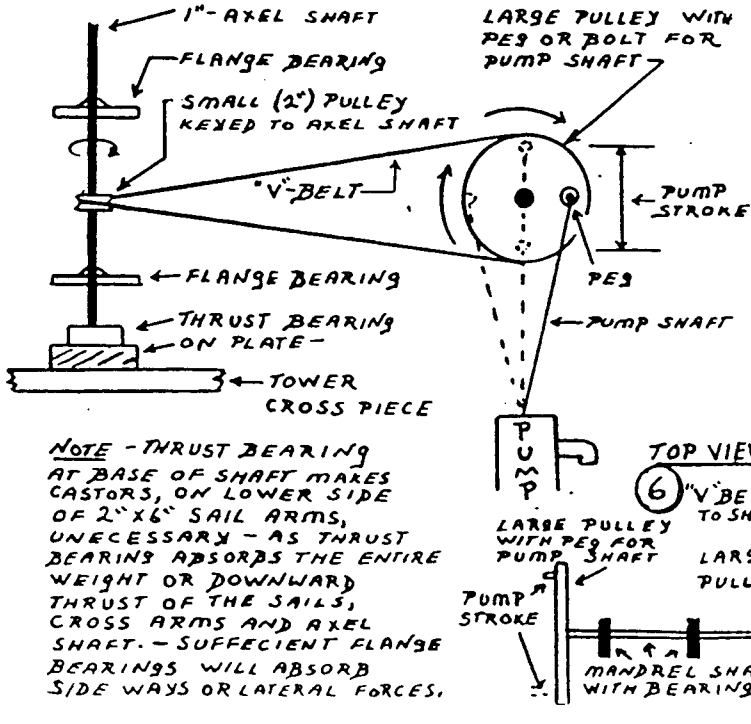
DESIGN ALTERNATIVE - V
THE POLISH WINDMILL - III
POWER CONNECTIONS











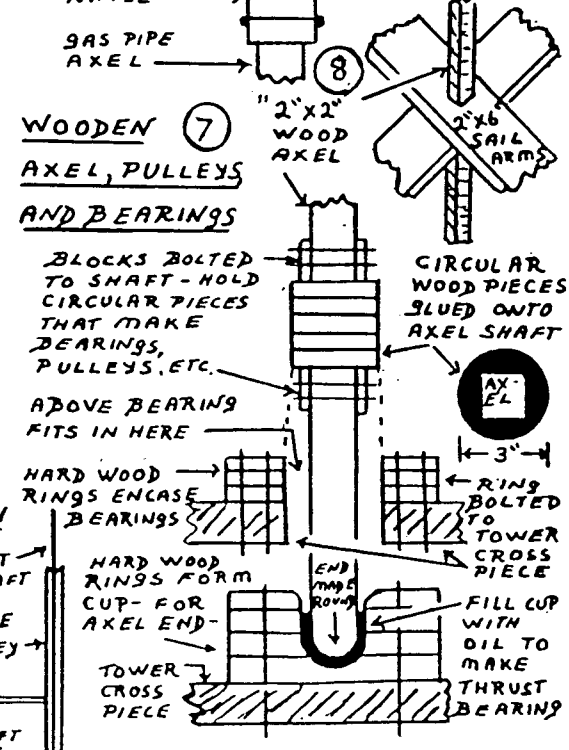


PLATE NO. 60

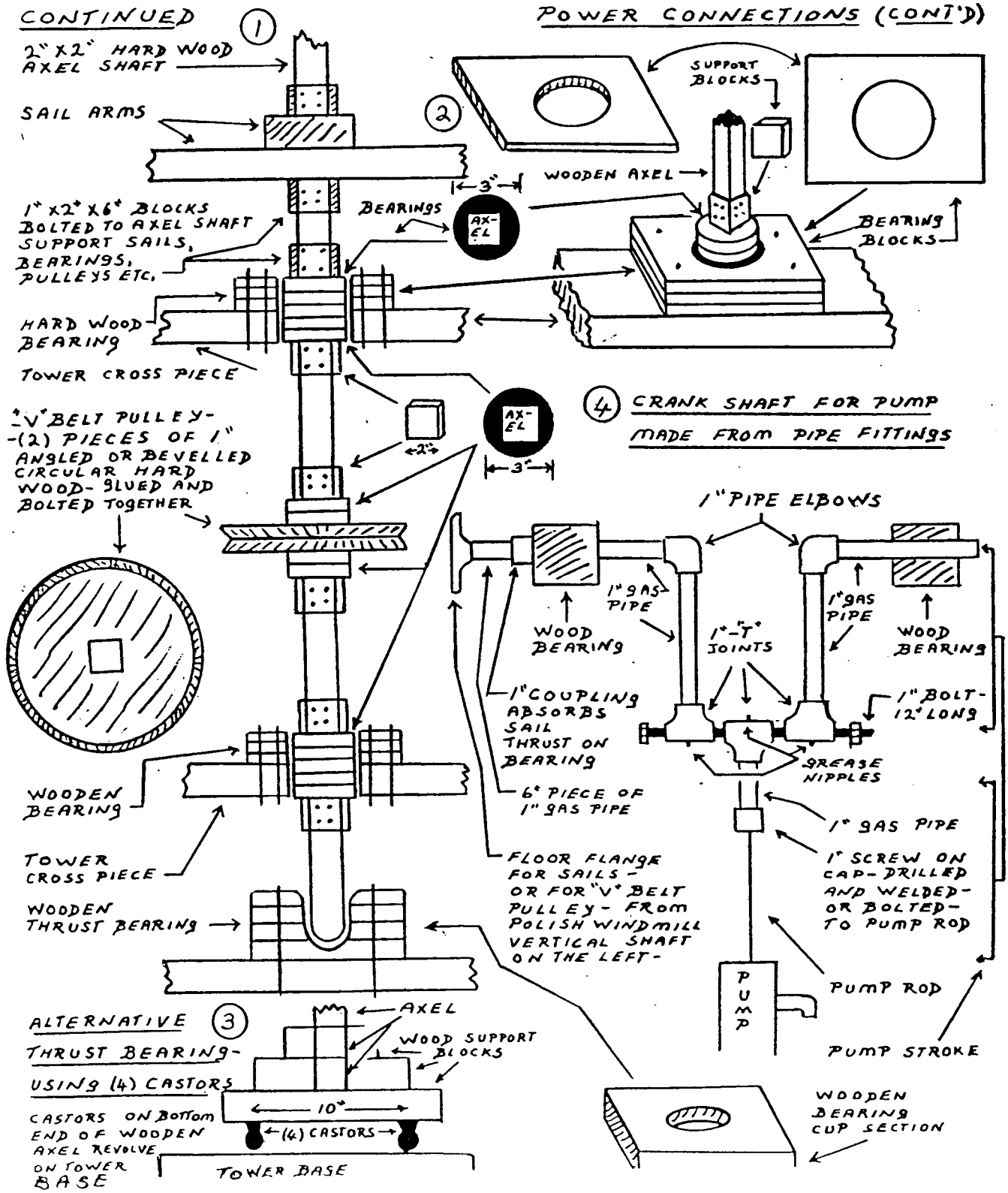
The wooden bearings here illustrate all work in the same way as those shown in plate No. 15. Vertical bearings should have cups, (widening of the hole), at the top, so that used crank case oil can be poured in from time to time for lubrication.

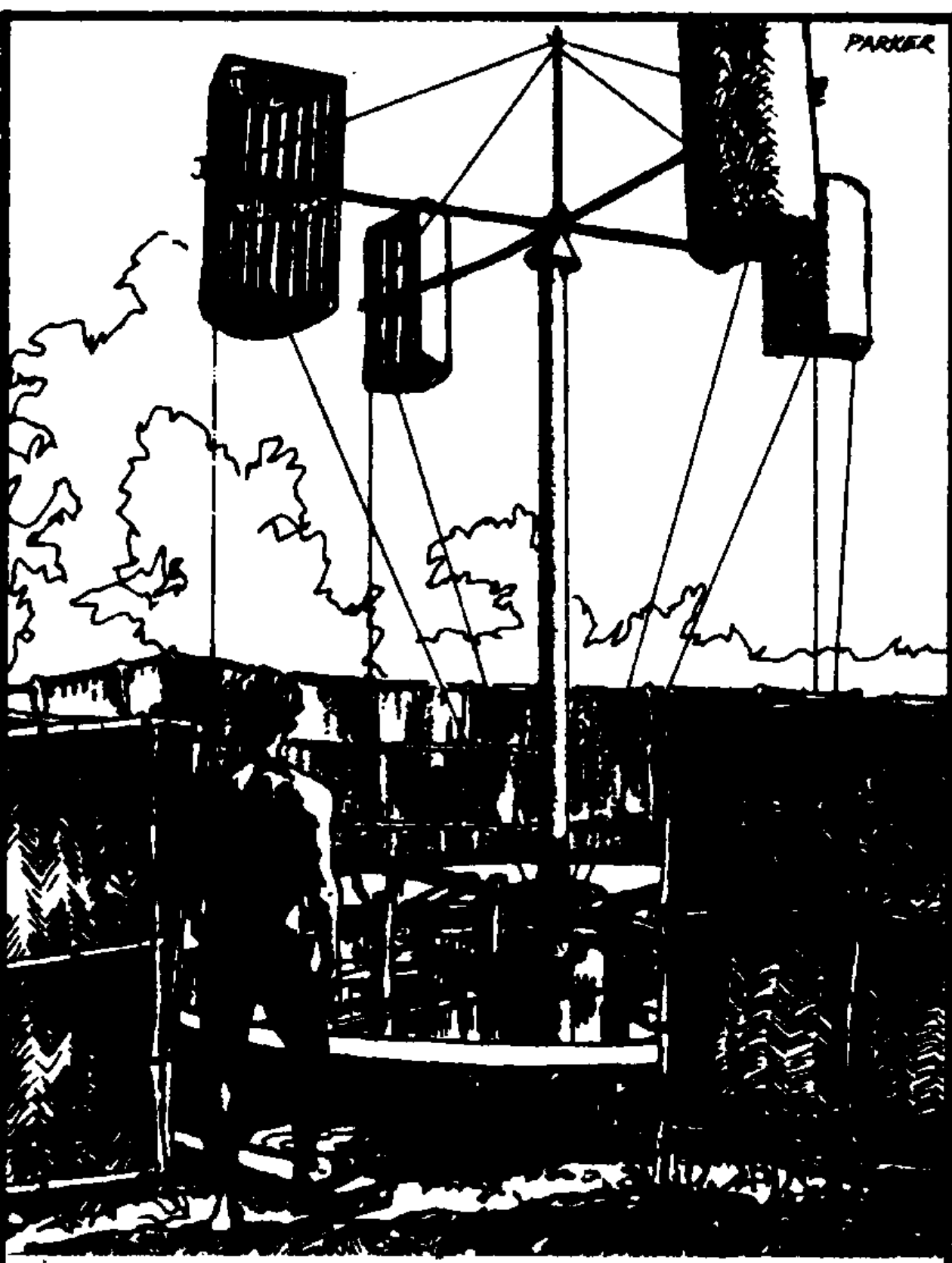
Bearings and pulleys must be of hardwood, while the vertical shaft can be of either hard or soft wood.

PLATE No. 60

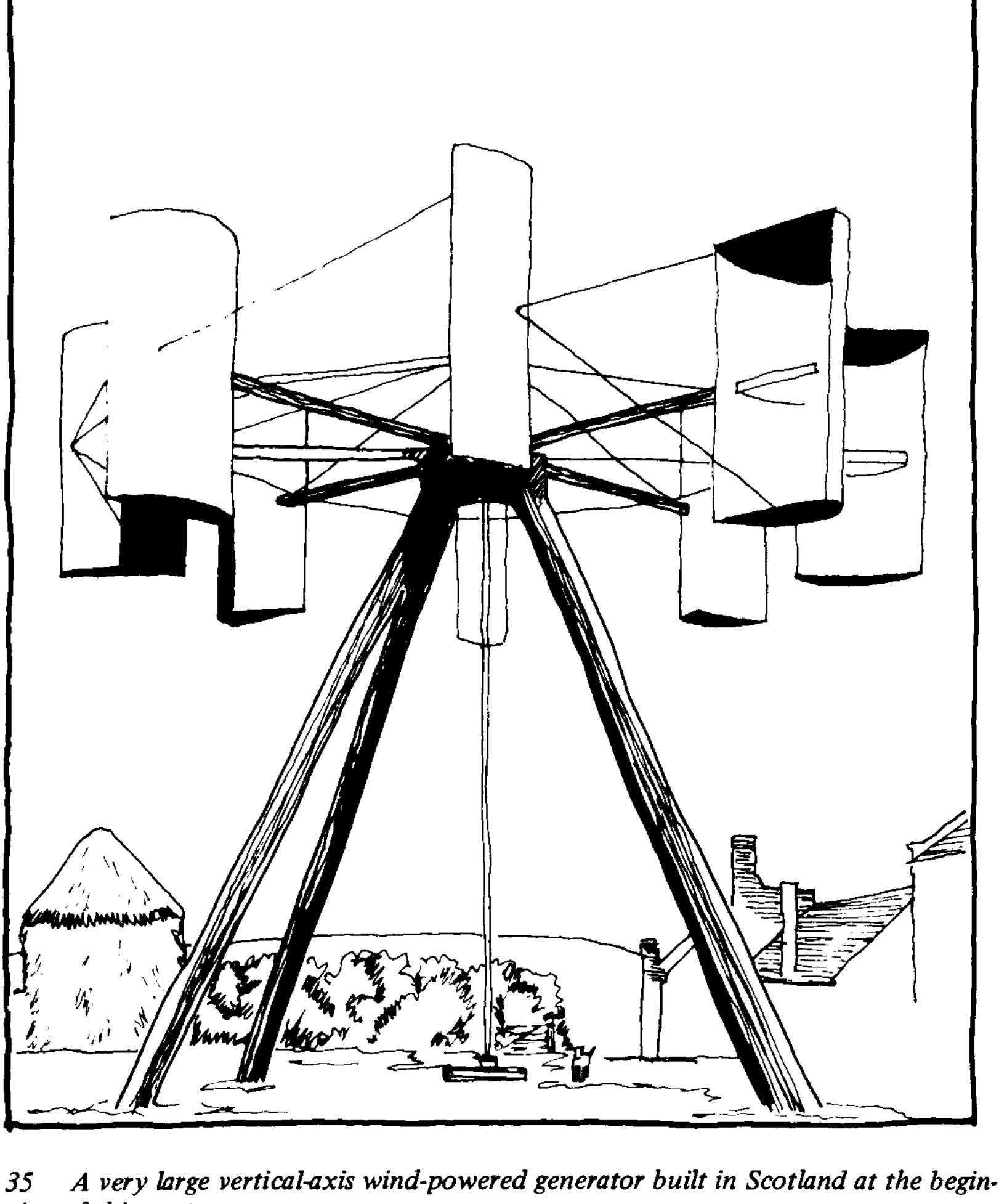
WOODEN SHAFT, BEARINGS, POWER CONNECTIONS CONTINUED

DESIGN ALTERNATIVE - VI
THE POLISH WINDMILL - IV
POWER CONNECTIONS (CONT'D)





Algae culture in India



35 A very large vertical-axis wind-powered generator built in Scotland at the beginning of this century.