

262

## A home built and portable cattle race

R. von Kaufmann

Keywords: Portable — Cattle — Race.

### Summary

*ILCA scientists in Kaduna, Nigeria, have designed a portable cattle race using only scrap material from building sites. An electronic weighing apparatus is adopted consisting of a wooden platform positioned across two metal beams each containing two load cells which respond to pressure by varying electrical resistance, power being supplied by an ordinary car battery.*

### Resumé

*Les chercheurs du CIPEA à Kaduna, Nigéria, ont mis au point un couloir de contention pour bétail pouvant être construit à partir de matériaux de construction récupérés. La pesée est faite par un appareil électronique composé d'une plate-forme en bois déposée sur deux barres reliées à des cellules sensibles à la pression et faisant varier la résistance électrique; le courant est fourni par une batterie de voiture.*

There have been many attempts at making portable races but portability has been sought by using very light material. Such races have invariably proven to be too weak for use with cattle that are unfamiliar with being handled in races. They have also been too complex to be home built.

We have used only scrap material; pipes and reinforcing steel from building sites. All the pieces are measured to be easily carried in a Toyota pick-up. There are no screws or bolts so no tools are required other than a piece of heavy metal needed to drive pegs into the ground. No holes need to be dug nor are any other site preparations required. These features mean that the whole unit can be assembled or disassembled in about 15 minutes.

The SIDE-VIEW and END-VIEW PLANS show;

The upright posts are of 10 cm diameter pipes 1.2 meters in length. These are braced by 5 cm diameter, 1.6 meters long pipes.

The braces are bent to fit into rings made from 7 cm cutoffs 6 cm diameter pipes welded onto the uprights. A hole is drilled at the end of each brace to permit a steel pin, made from 1 cm diameter steel or 5 inch nails, to secure the brace to the upright.

At the ground end the braces are welded to 10 cm x 30 cm plates that are drilled for steel pegs that are driven into the ground to secure the brace.

The pegs are made from 40 cm long, 2.5 cm diameter reinforcing steel pointed at one end.

The angle of the bends to the upright and the angle of the ground plate to the braces are set to give the upright the correct angle for the race. A vertical plumb from the outer edge of the top of the upright will touch the ground about 37 cm from the outer edge of the ground end of the upright.

The 3D DIAGRAM — with exploded sections shows:

The lateral bars are made of 6 cm diameter pipes 2.28 long. These are held on to the uprights by 4 cm x 40 cm pegs made from reinforcing steel. These end and mid-section pegs

are put through 7 cm x 6 cm diameter rings made from pipe off-cuts which are welded to the uprights.

The end-pegs have stop collars made from 6 cm diameter pipe off-cuts welded to one end.

The mid-pegs used to join lateral bars in mid sections of the race have collars of 7 cm x 6 cm diameter pipe off-cuts welded equal distance from each end to act as stoppers. In using these it must be remembered that all the stoppers must be on the same side of the ring welded to the upright so that all the lateral bars and mid-section pegs can be the same length.

There are three parallel lateral bars. The rings made from 7 cm off-cuts of 6 cm diameter pipe are welded on the upright so that the upper lateral is at the top of the upright, the second 40 cm below and the third a further 40 cm below. This leaves 40 cm between the lowest lateral and the ground.

A wooden platform 60 cm x 2 m is made to place above the load beams.

The above details account for the whole locally made race and weigh platform. The race may be made longer by adding mid-sections. A chute can be made by bending a set of mid-section section pegs to the appropriate angle. It should be remembered that only one side of the race should be angled so that cattle can always be forced against one straight side into the race. A funnel is not correct since cattle in the middle of the ground being forced in to the race can not be reached and may turn and/or jamb the others.

When starting a weighing programme with untrained animals we have found it useful to assemble the race at the exit of the corral and leave the weighing platform on the ground so that the cattle become accustomed to walking through the race and over the platform. After only a few days it is possible to easily stop individual animals on the weigh platform.

On weighing days the load beams are merely slipped under the weigh platform and the cattle notice no difference.

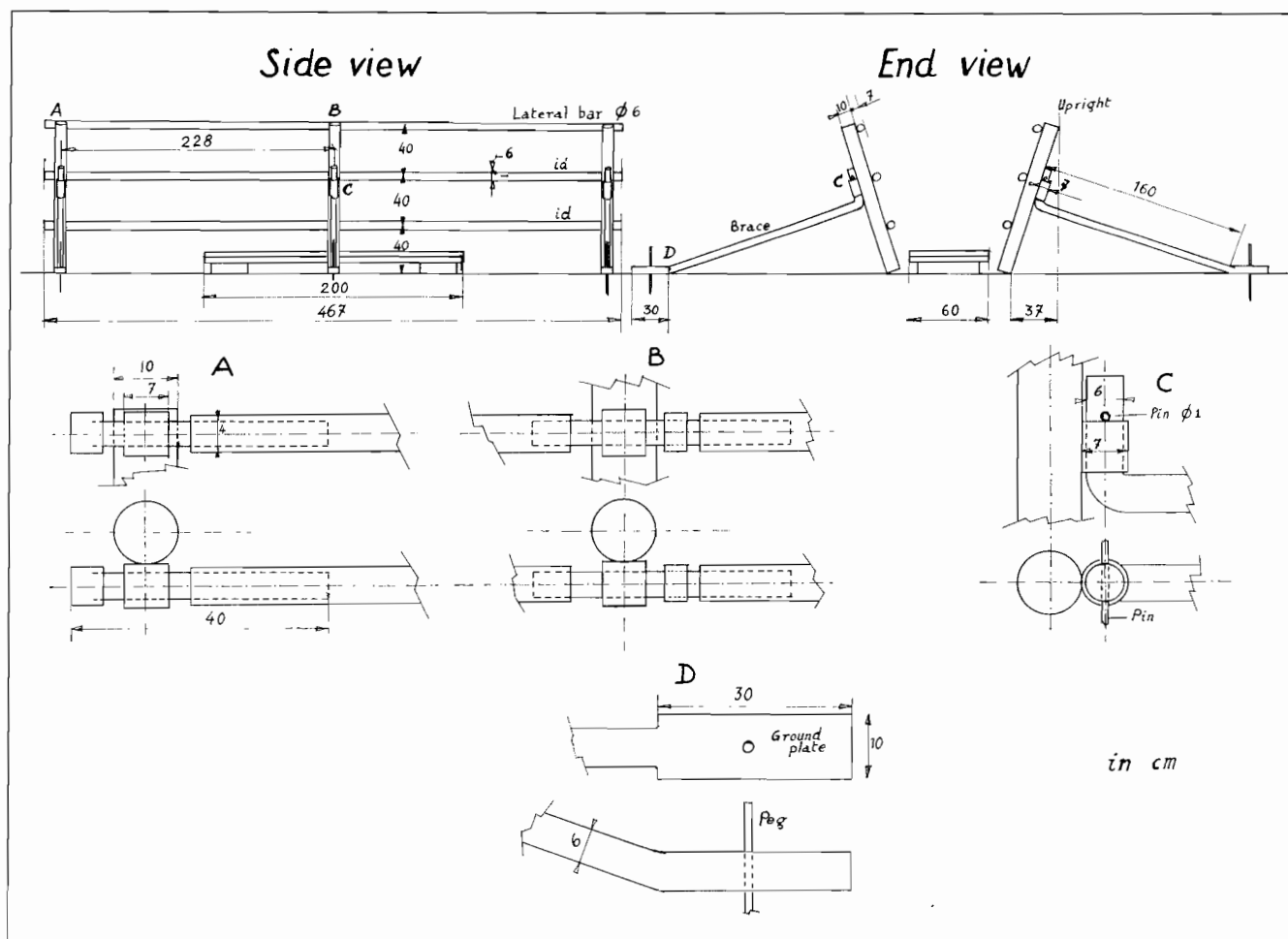


Figure: Side view and End-view plans - 3D Diagram

The load beams are attached to a meter to a meter and to a vehicle battery normally from the vehicle that transported the workers and the race.

The electronic weighing system that we have used and are very satisfied with is the Barlo Atlas portable beam scale, presently marketed by Sartek Pty Ltd (PO Box 35, Underwood Queensland 4119, Australia) at FoB price Brisbane of US \$ 1,362. The scale weights approximately 45 kg and comprises of a pairs of steel weight beams which incorporate a set of precision steel shear beam load cells; a digital display gives the weights.

One modification introduced since we obtained our equipment is a card and RS232 cable that allows the weight to be read directly into a portable computer. The enumerator then

only has to enter the animals eartag number. At present we record on to field books for later entry into ILCA's Data Entry and Analysis (IDEAS) system.

IDEAS is a Dbase 3 based recording systems that has modules for; baseline data, weight, reproduction, milk, traction and wool. It has error correction facilities that help improve the quality of field data. We usually analyse the data with SAS or Harvey's Least Squares. IDEAS is currently being revised to remove the internal Harvey's facility that has not proven too useful and to include financial data that was not required by the breeders who wrote the original specifications. The intention is to make IDEAS fully appropriate to breeders, livestock managers, as well as researchers.