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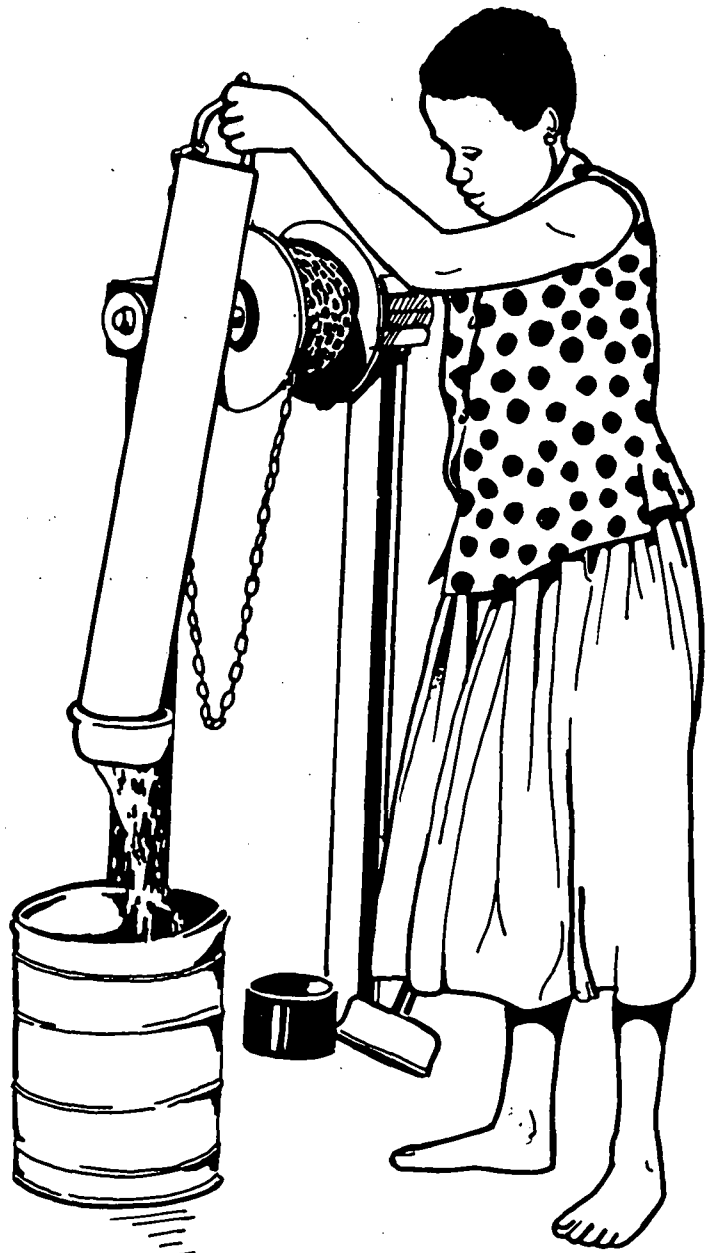
Republic of Zimbabwe
Ministry of Health

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Raising water with different pumps

Pump handout No 1

The Zimbabwe Bucket Pump



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Causeway, Harare

232.2 86RA-5626

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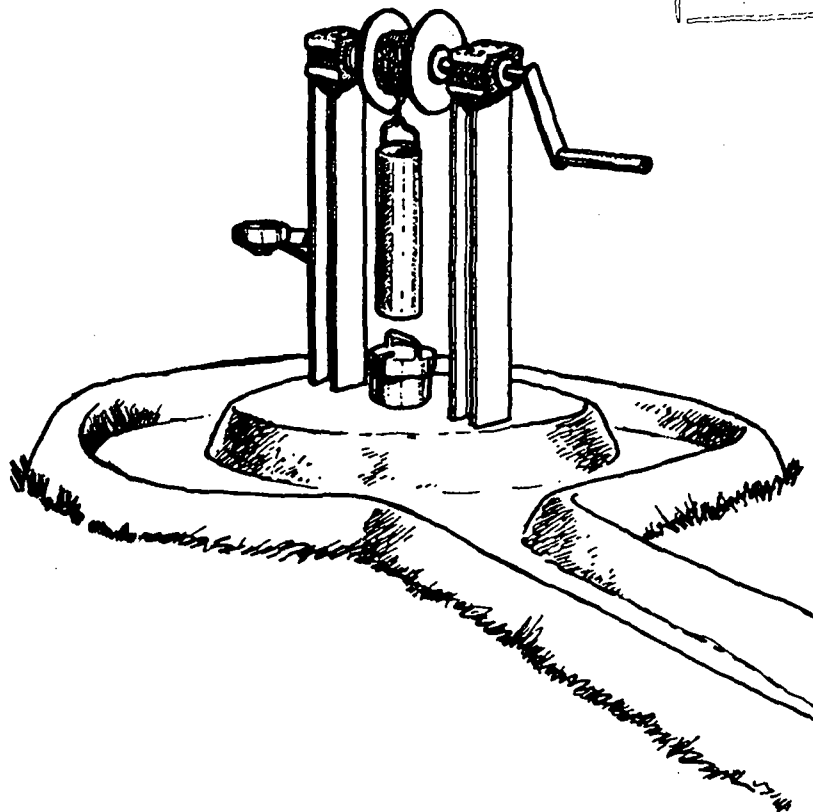
The Zimbabwe Bucket Pump

The Zimbabwe bucket pump is a hand operated pump which is used to raise water from tube wells and hand dug wells in rural Zimbabwe. Bucket pumps provide a simple, safe and hygienic way of raising water for domestic use.

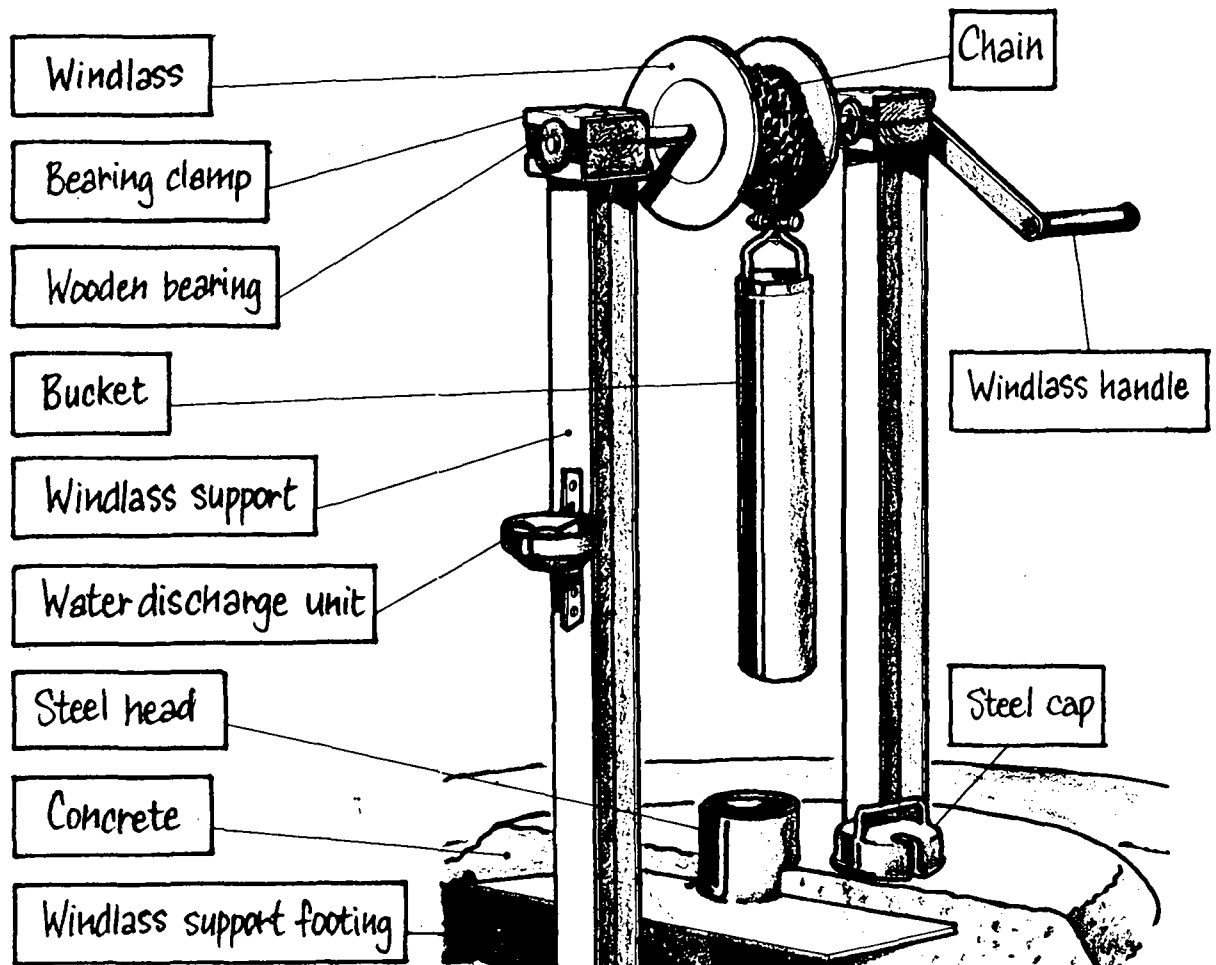
Bucket pumps are made in Zimbabwe. They can be easily installed by the community and will last for many years if properly maintained.

The Zimbabwe Bucket Pump was developed at Blair Research Laboratory, Harare.

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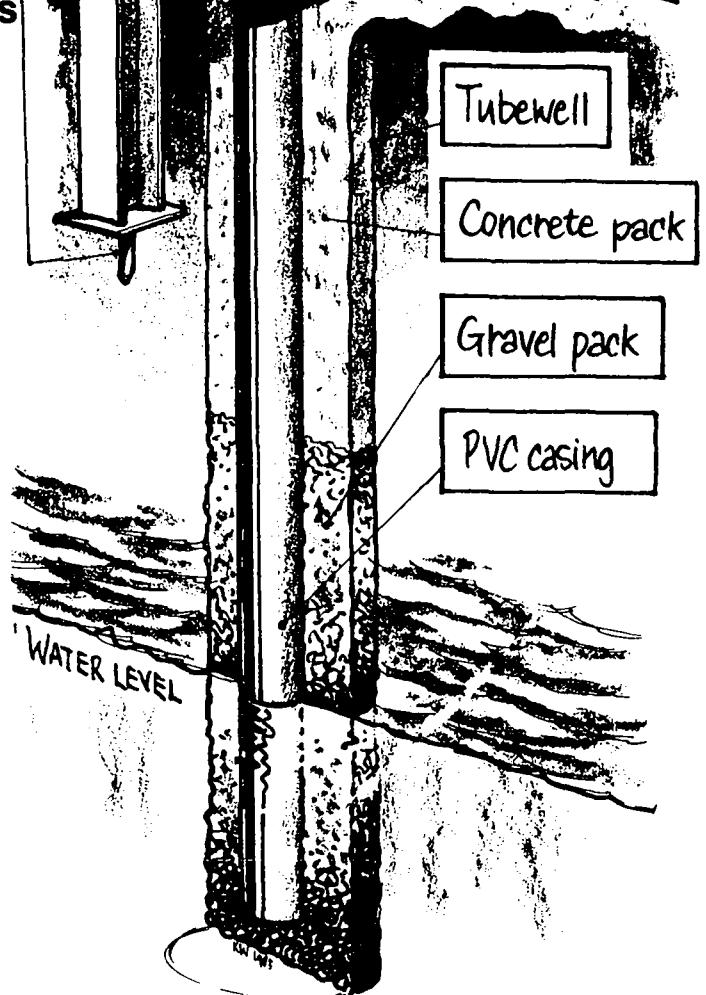


THE ZIMBABWE BUCKET PUMP



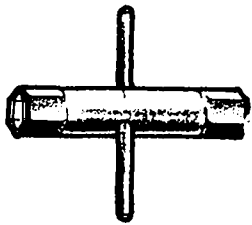
THE BUCKET PUMP: how it works

- * The bucket pump is installed over a tubewell or a shallow hand-dug or blasted well
- * The bucket, steel head and cap, and the windlass supports are made of steel
- * The wooden bearings are made of hard wood
- * The bucket is lowered into the well on a steel chain which is attached to the windlass
- * The bucket is raised by the operator who winds up the chain, using the windlass handle
- * The operator rests the bucket on the water discharger. The valve inside the bucket opens and water is released into a water container.

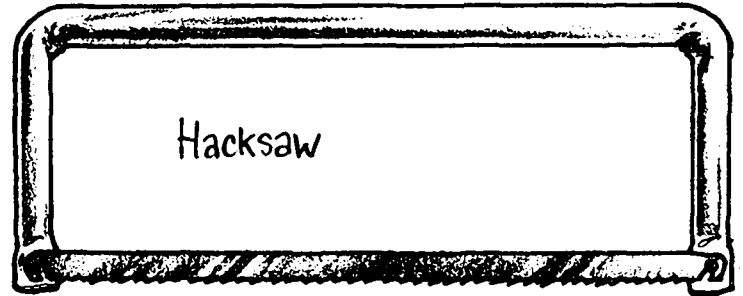


Different materials are needed for fitting a bucket pump to a water supply

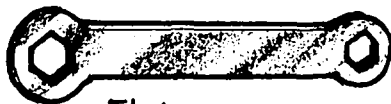
These tools are provided with the bucket pump. Check them!



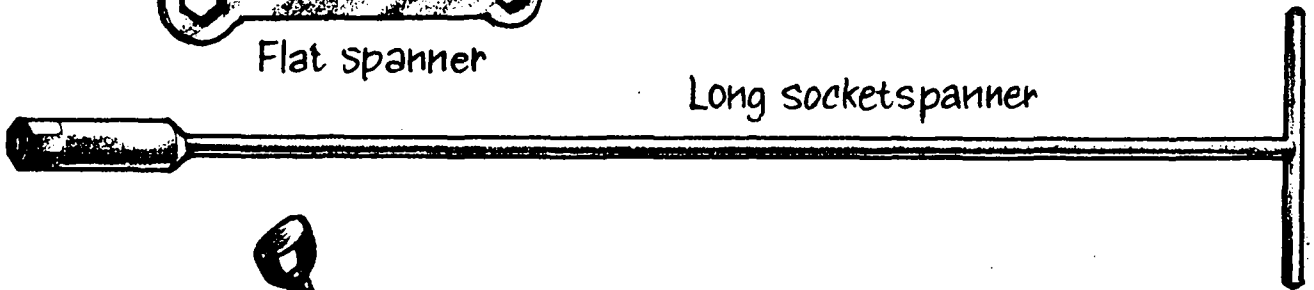
Short socketspanner



Hacksaw

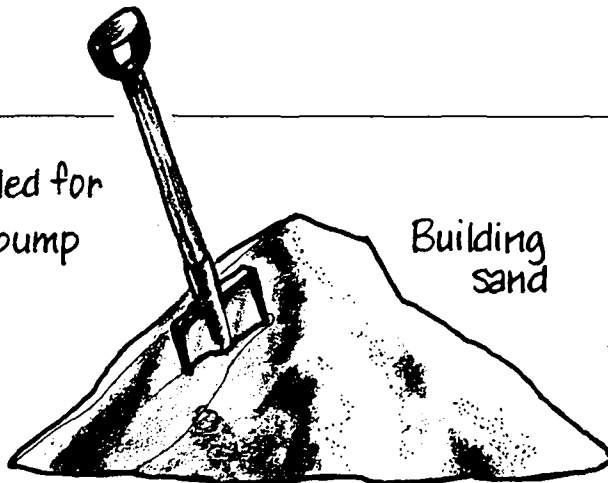


Flat spanner

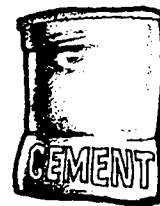


Long socketspanner

Materials needed for fitting the bucket pump



Building sand



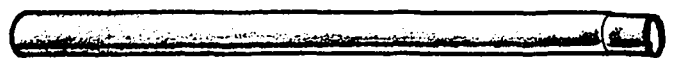
Cement (appr. 4 pockets)



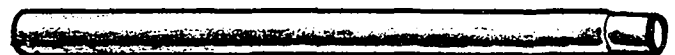
Rocks for building the drainage area



12 x 5 ltr buckets full of small granitechips or sieved coarse river sand



125 mm PVC casing class 6

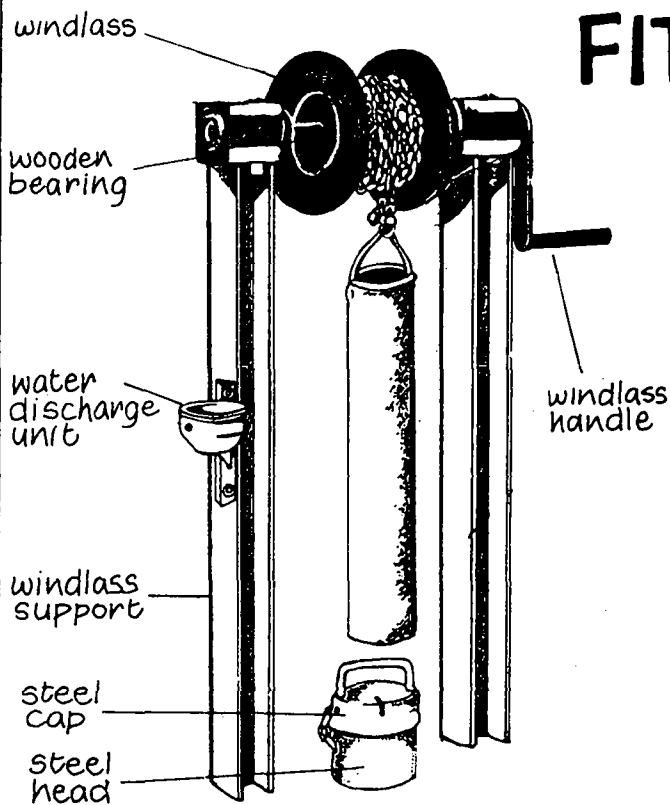


FIT A BUCKET PUMP

STEP BY STEP

A bucket pump raises clean water from underground. A tubewell is drilled by the community using a hand operated drilling rig. The well is lined with 125 mm Class 6 PVC casing to prevent collapse. Then the bucket pump is fitted. A drainage area is built around the well. To assist, the community can bring

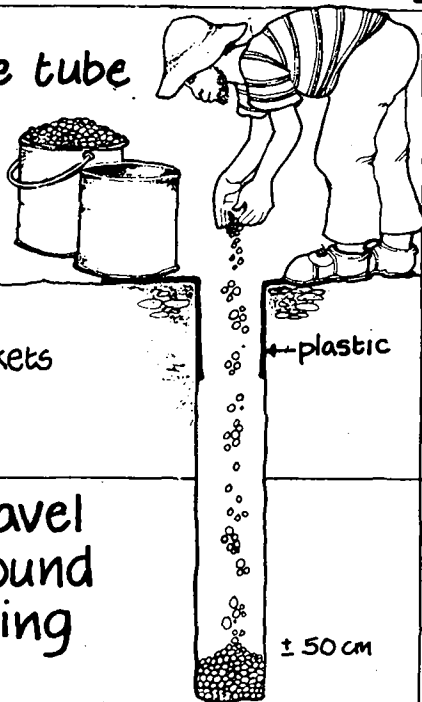
- sand & stones
- small gravel chips



class 6 PVC casing & cement is also required

① after the tube well is drilled make a gravel bed at the base

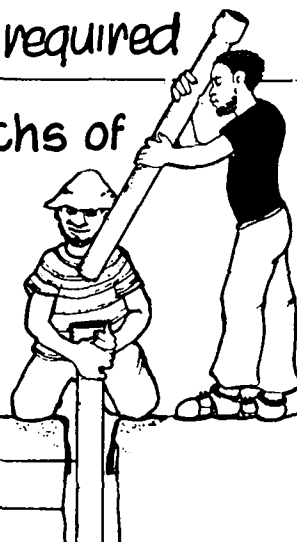
use two 5 litre buckets gravel chips.



② lower lengths of (class 6) PVC casing inside tubewell

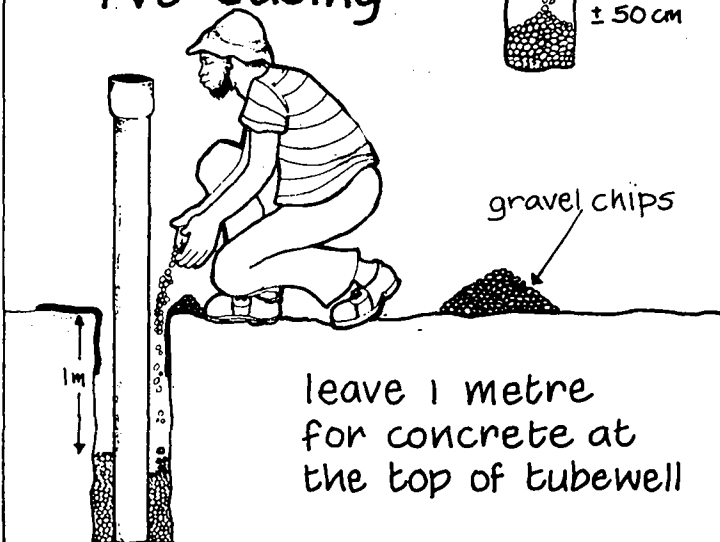
hold casing upright and straight

PVC casing
tubewell



③ pack gravel chips around PVC casing

leave 1 metre for concrete at the top of tubewell



④ pack concrete around top metre of casing inside tubewell

concrete mix
4 stone : 2 sand : 1 cement

1m concrete mix

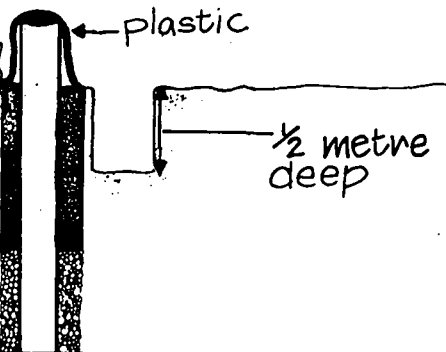


5 use a saw to cut PVC casing off 30 cm above ground level

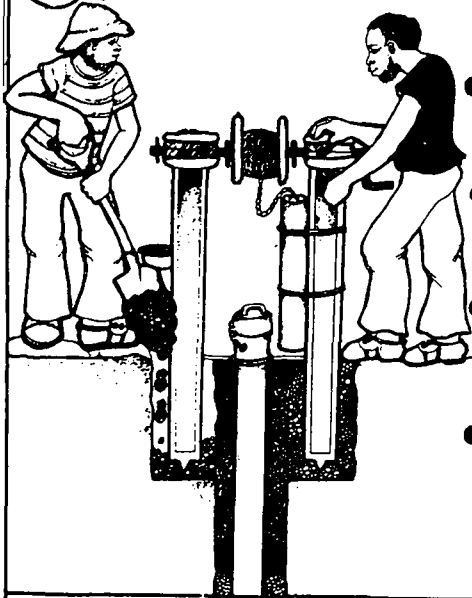
- measure carefully
- cut straight
- Then cover PVC casing with plastic to prevent dirt falling into tubewell



6 on each side of the tubewell, dig holes for the bucket pump supports



7 position the bucket pump

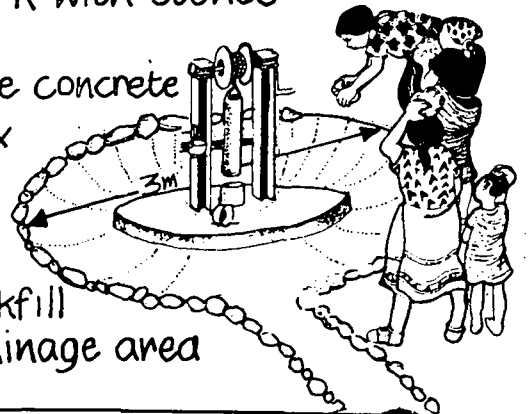


- fit steel cap over casing
- lower pump supports into holes
- level pump so it is upright
- backfill with concrete MIX 4 : 2 : 1

8 build a drainage area around bucket pump

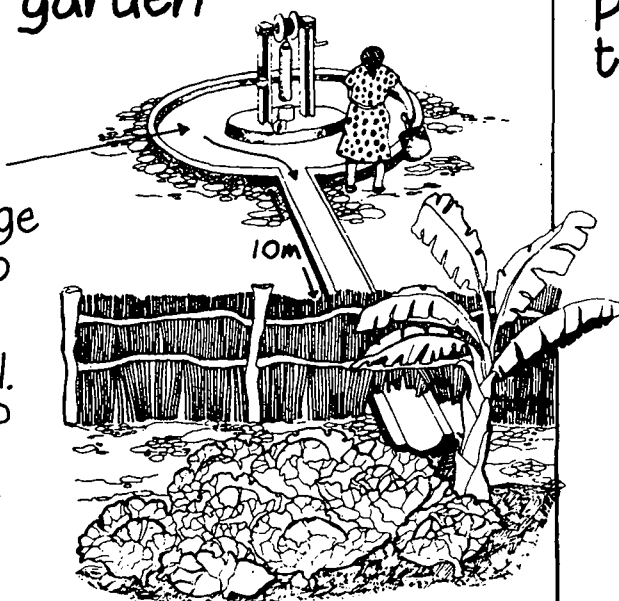
- to do this, measure a 3m diameter circle around bucket pump
- mark with stones

- use concrete mix 4:2:1 to backfill drainage area



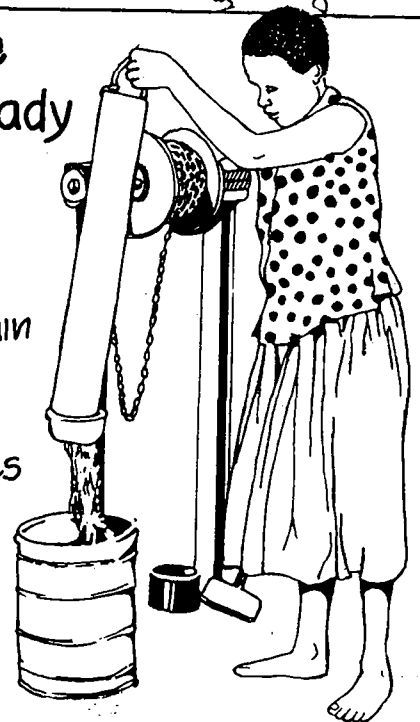
9 make a runoff channel to garden

slope drainage area to runoff channel. leave to dry for 3 days.



10 now the pump is ready to use!

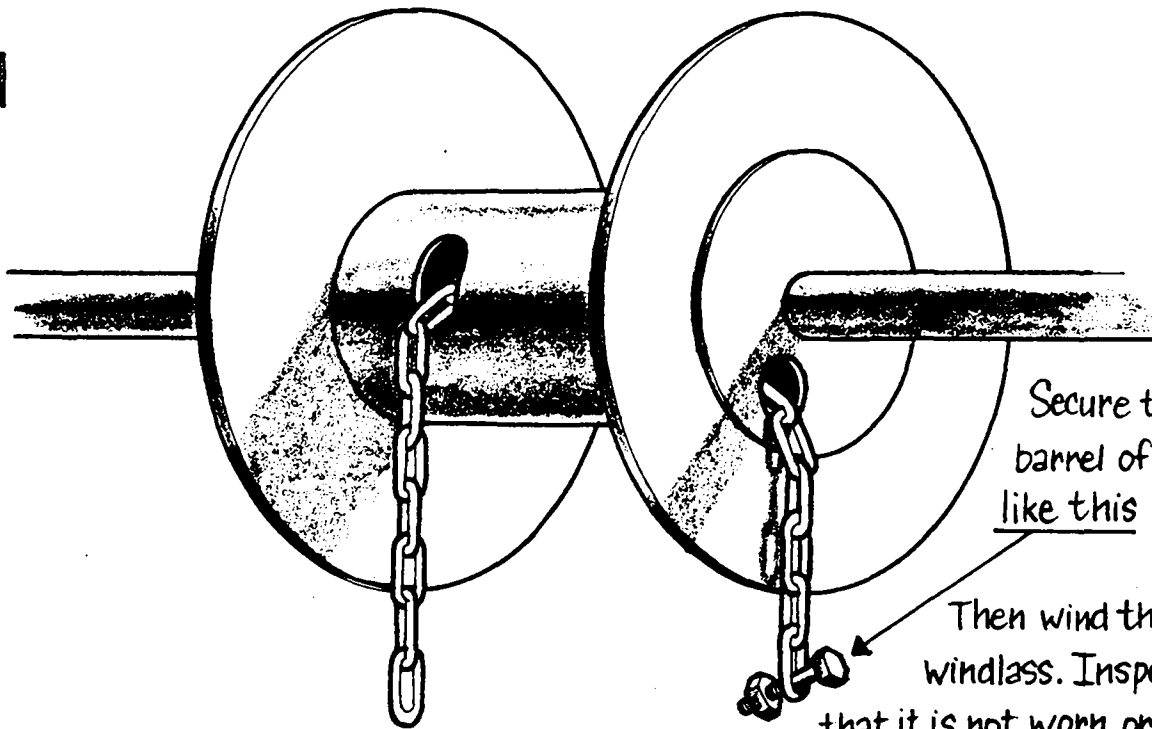
- adjust chain carefully so that bucket does not hit base of tubewell



Extra information

about maintaining and making minor repairs to the bucket pump.

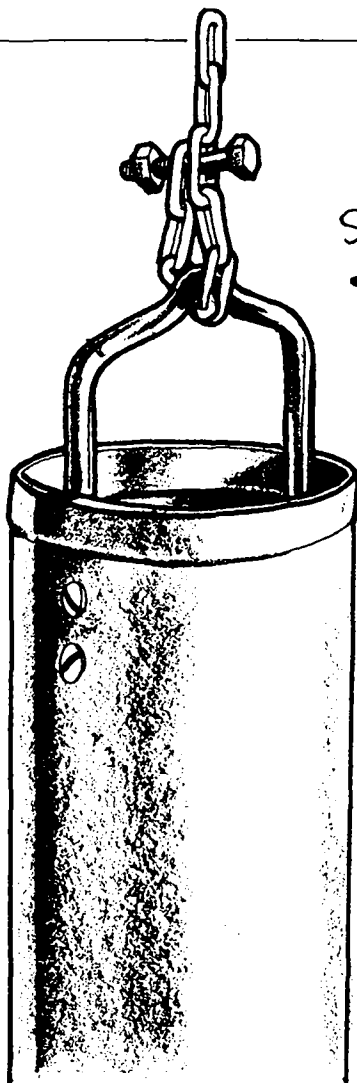
1



Secure the chain on the barrel of the windlass like this

Then wind the chain onto the windlass. Inspect the chain to see that it is not worn or rusted. Replace if necessary!

2

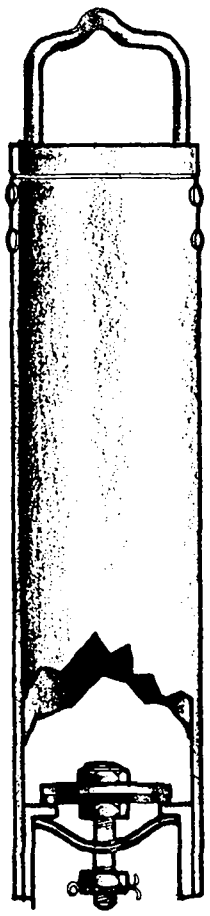


Secure the chain to the bucket.

- Use a nut and a bolt to do this.
- Wire can also be used for this task if necessary

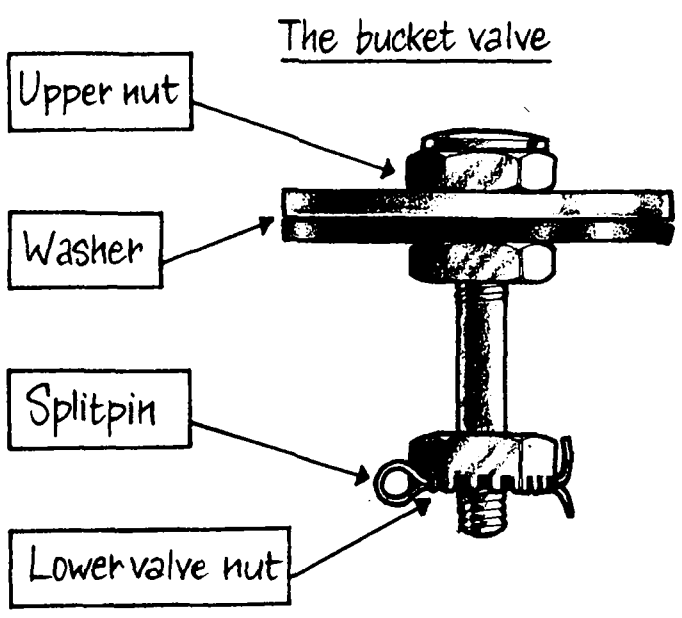
- Adjust the chain to prevent the bucket from hitting the base of the tubewell!
- Advise the people to take care when using the windlass.

3



The bucket

The bucket valve is inside the bucket



The bucket valve

Upper nut

Washer

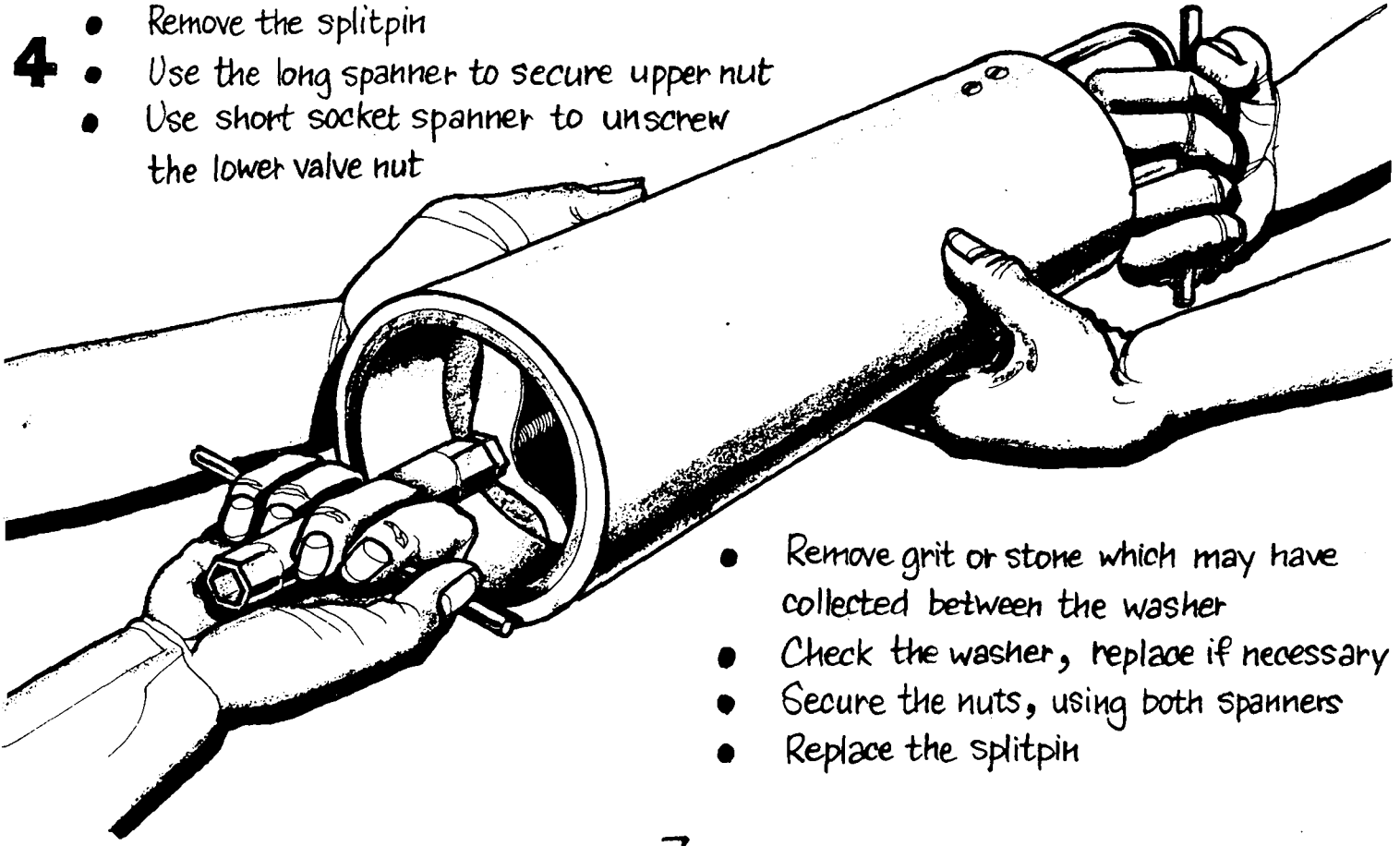
Splitpin

Lower valve nut

4

To replace the washer:

- Remove the splitpin
- Use the long spanner to secure upper nut
- Use short socket spanner to unscrew the lower valve nut

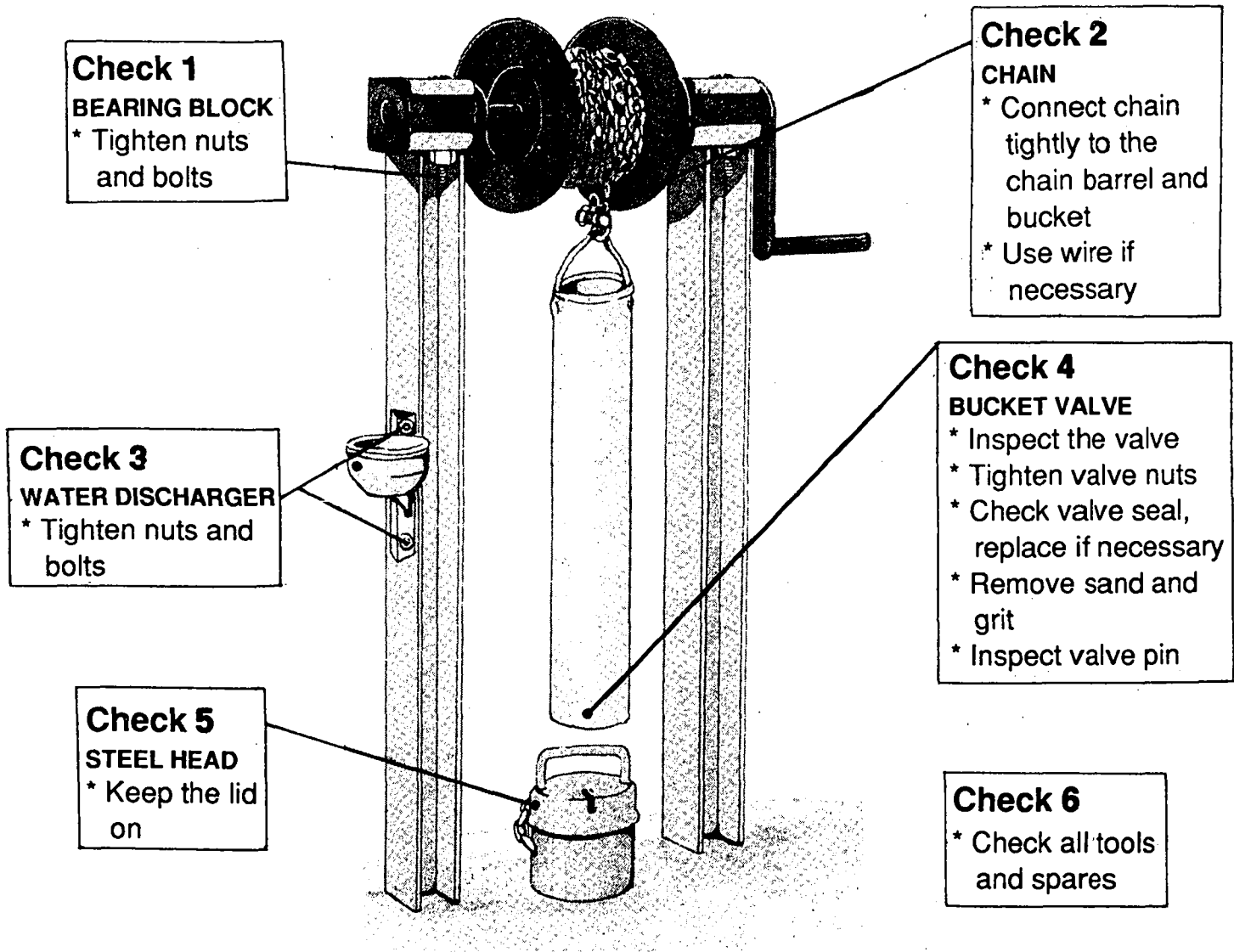


- Remove grit or stone which may have collected between the washer
- Check the washer, replace if necessary
- Secure the nuts, using both spanners
- Replace the splitpin

MAINTENANCE CARD

THE BUCKET PUMP

CHECK.....all working parts regularly
REPAIR.....the bucket pump carefully
REPLACE.....parts when necessary



CHECK THIS PUMP EVERY WEEK
COMPLETE YOUR CHECK BOOK EVERY TIME
SEEK THE ASSISTANCE OF THE HEALTH
WORKER IN YOUR AREA IF PROBLEMS ARISE