



COMMUNITY HANDBOOK  
ON  
WATER AND SANITATION

AFRIDEV VERSION



COMMUNITY BASED MANAGEMENT UNIT  
MALAWI GOVERNMENT

# COMMUNITY HANDBOOK

ON

## WATER AND SANITATION

### AFRIDEV VERSION

This manual is a summary of the most important messages which are delivered during the standard Community Based Management (CBM) training course which is being given to Pump Committees and Caretakers.

It is hoped that the manual will serve as a reminder to those Committee members who attended the course, and that it will also be used by them to teach water and sanitation issues to other members of their community.

It is divided into four sections as follows:

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# SECTION 1

## Community Organisation and Responsibilities



UNITY IS STRENGTH

# COMMITTEE COMPOSITION

A committee is a small group of people elected by the community who can represent the whole community and make decisions on their behalf.

A committee should contain ten members. Ideally for water and sanitation activities there should be more women than men in the committee. This will give women the opportunity to take an active role in matters that concern them on a daily basis.

The normal composition of a committee is as follows:

1. Chairman
2. Vice Chairman
3. Secretary
4. Vice Secretary
5. Treasurer
6. Vice Treasurer
7. Committee member
8. Committee member
9. Committee member
10. Committee member

# VILLAGE WATER AND HEALTH COMMITTEE

This is an overall committee comprising of ten members for all water and sanitation matters in a village. If a village has several water points then this committee will oversee the activities of all the Water Point Committees.

However, if there is only one water point in a village then there is no need to set up a separate Water Point Committee. The Village Water and Health Committee can take on the duties concerning the water point.

The main function of the Village Water and Health Committee is as follows:

1. To ensure that the villagers are made aware of the basic hygiene principles so that maximum benefits are obtained from the water point installation.
2. To ensure that arrangements of any self-help activities required for the proper operation and maintenance of the water point are facilitated.
3. To supervise water point committees and ensure that elections are held every 2 years or at any other agreed interval.

# THE PUMP COMMITTEE



# THE PUMP COMMITTEE

This is a committee which should be set up at each water point comprising ten members.

The committee should have undergone a two day training course on hygiene education and sanitation promotion (HESP), village level operation and maintenance (VLOM), committee procedure, leadership and financial management.

The committee's main duties are:

1. To ensure that the hand pump is always in good working order with a clean surrounding at all times.
2. To ensure that maintenance fund contributions are carried out and used properly.
3. To ensure that caretakers are provided with spare parts that they will need in order to carry out regular preventive maintenance of the hand pump.
4. To ensure that users of the hand pump do so correctly and in accordance with any rules or regulations that the committee decide upon after consultation with the community.
5. To represent the water users at meetings and discussions with the government and other organisations concerning water and sanitation issues.
6. To meet regularly to resolve any problems and keep good records of any decisions made.
7. To report to extension workers any problems or breakdowns which cannot be resolved by the committee.



## ROLES OF THE COMMITTEE MEMBERS

### CHAIRMAN



1. The Chairman ensures that all members contribute to discussions and activities concerning the water point.
2. He/She assists in making the agenda, controlling discussions and ensuring that all committee members understand and play their roles effectively.
3. He/She makes regular visits to inspect the condition of the borehole, and ensures that the community is kept informed of all activities taking place.
4. The Chairman should make regular contact with Village Headman, local leaders and extension workers to report progress and any problems.



### VICE CHAIRMAN

The Vice Chairman should assume the duties of the Chairman in his/her absence.

## SECRETARY



1. This should be a literate person who keeps a brief record of what is discussed and agreed upon at meetings.
2. The Secretary assists the Chairman in making necessary arrangements for meetings such as arranging date, time, venue, agenda and carrying out any written correspondence.
3. He/She is also responsible for writing invitation letters for meetings, writing minutes and advising the Chairman on procedure of the meetings.

## VICE SECRETARY



The Vice Secretary assumes the duties of the Secretary when he/she is away.

## **TREASURER**

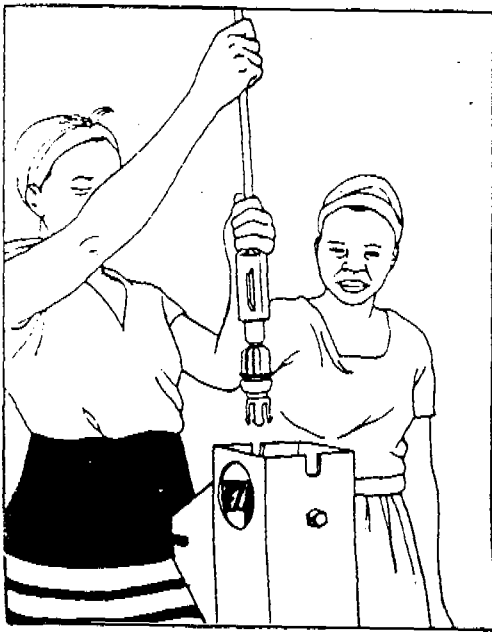


1. The Treasurer is an honest person who is the keeper of money and goods. He/She must keep good records of all monies raised and how and when they are spent.
2. The Treasurer must inform fellow committee members and other people of the financial position of the water point fund.



## **VICE TREASURER**

She/He is the Vice Treasurer who takes up the duties of the Treasurer in his/her absence.



## THE PUMP CARETAKERS

Three committee members should be appointed as pump caretakers. Ideally there should be two women caretakers and one man. They can hold any position on the committee.

The caretakers should have undergone a three day training course on the technical aspects of pump maintenance.

The main duties of the pump caretakers are as follows:

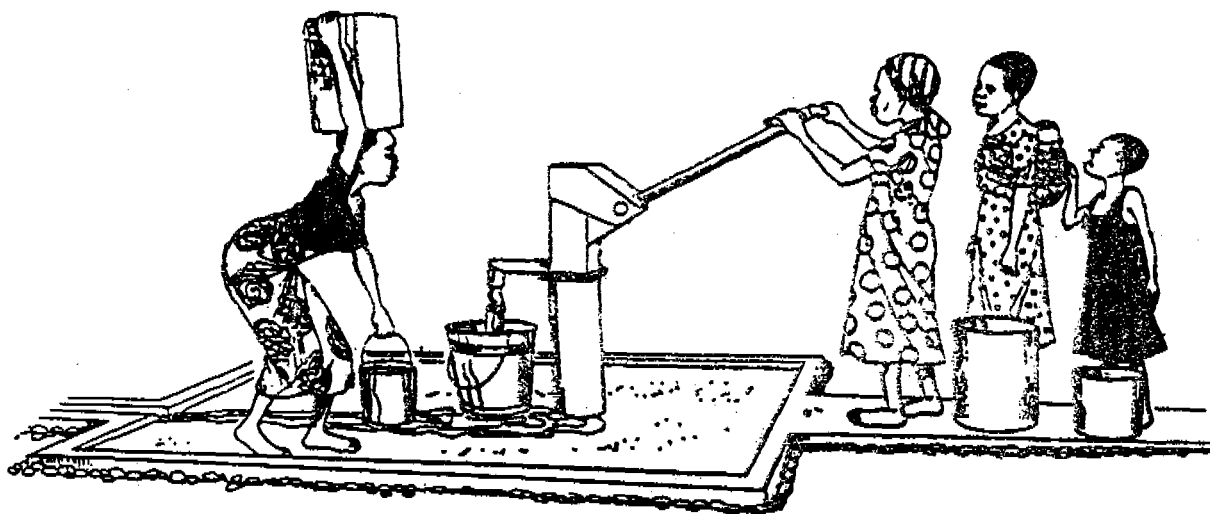
1. To carry out weekly checks on the hand pump.
2. To carry out regular preventive maintenance of the pump.
3. To discuss any technical problems of the hand pump with the water point committee and advice them on any action that needs to be taken.
4. Demonstrate to all users how to operate the pump properly. The handle should always be moved up and down gently. Banging of the handle or moving it sideways should be avoided.

## COMMITTEE MEMBERS



1. They are respected and trusted members of the community whose wisdom and experiences people value.
2. They participate in meetings and advise other members on important issues of community concern.
3. They contribute items to be included on the agenda of the next meeting based on facts gathered from other water point users.

## ALL WATER POINT USERS



All water point users should bear in mind that their participation on water and sanitation activities is paramount. Therefore, they should:

- help to draw up and follow rules and regulations
- support all self-help activities and encourage others to participate
- carry out any other duties as agreed by the committee

## **VARIOUS MEANS AND WAYS OF RAISING MAINTENANCE FUNDS BY THE COMMITTEE**

There are various ways in which funds can be raised such as:

- monthly household contributions
- annual household contributions
- annual harvest contributions
- any other method the community agree upon e.g. opening a vegetable garden, growing cash crops or group labour activities

It is important to stress here that the committee should always keep a set of fast wearing spare parts and avoid keeping cash.

Note that spare parts can be purchased in Chipuku Stores and it is hoped that some local village grocers will also start selling them.

# FINANCIAL MANAGEMENT PROCEDURES IN THE BOREHOLE PROGRAMME

Appropriate and suitable procedures should be followed if fund raising is to be sustainable among water users. For example:

1. Discussing with Village Headman and other local leaders on the establishment of the fund.
2. Convening a village meeting to highlight the purpose of the fund.
3. Once people are satisfied and willing to contribute discuss sanctions against those who default.
4. Once funds are collected:
  - record all payments
  - issue receipts or any evidence
  - purchase spare parts immediately
  - open a bank account if there is much surplus
5. Keep water users and local leaders informed on financial matters such as monies raised and expenditures.



## **LEADERSHIP PROBLEMS**

Common problems faced by the committee on water and sanitation activities are:

- Individuals refusing to work at the water point
- Individuals refusing to contribute maintenance funds
- A member in the committee being weak and inactive
- Embezzlement of money
- A dormant committee
- The Village Headman failing to support the committee

In order to avoid such problems, the committee should draw rules and regulations together with all water users which every member should abide by.

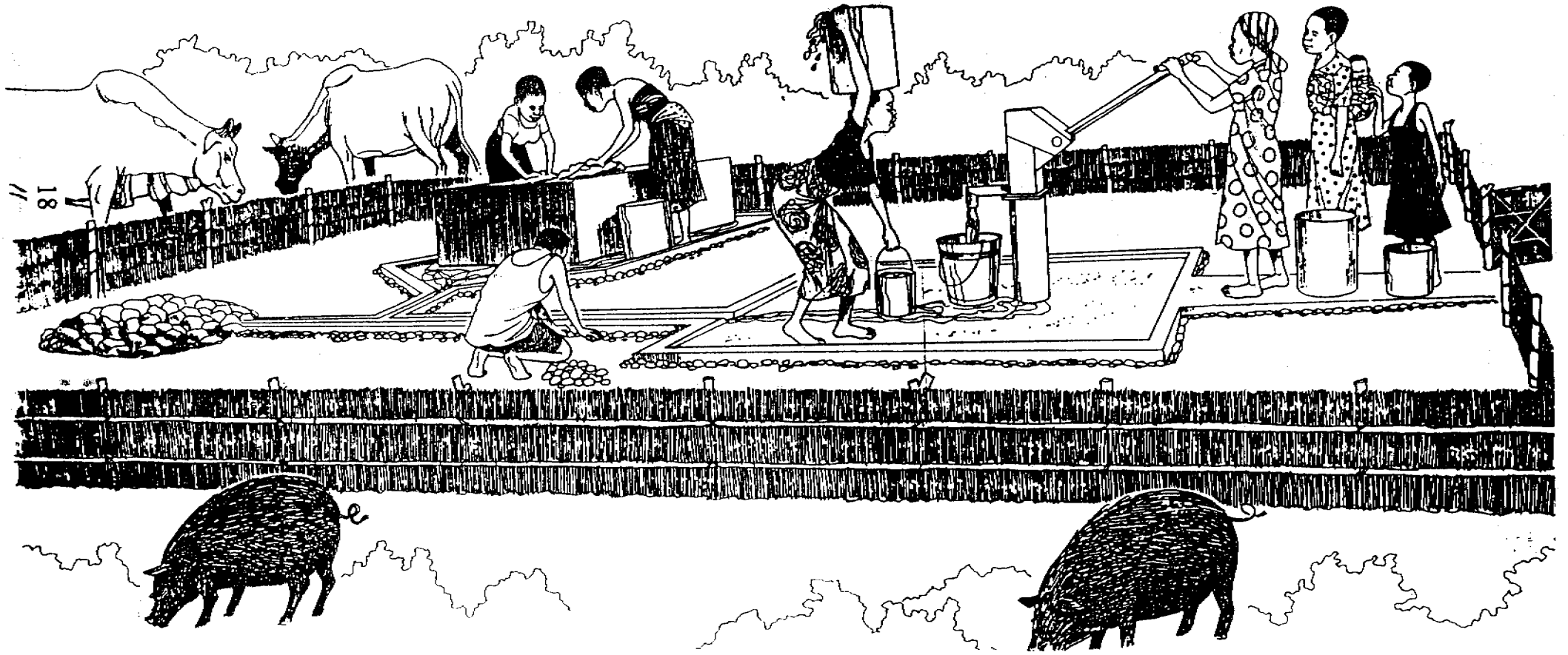
People will obey rules and regulations drawn up by themselves as opposed to those imposed on them by the committee.

## SECTION 2

### HYGIENE EDUCATION AND SANITATION

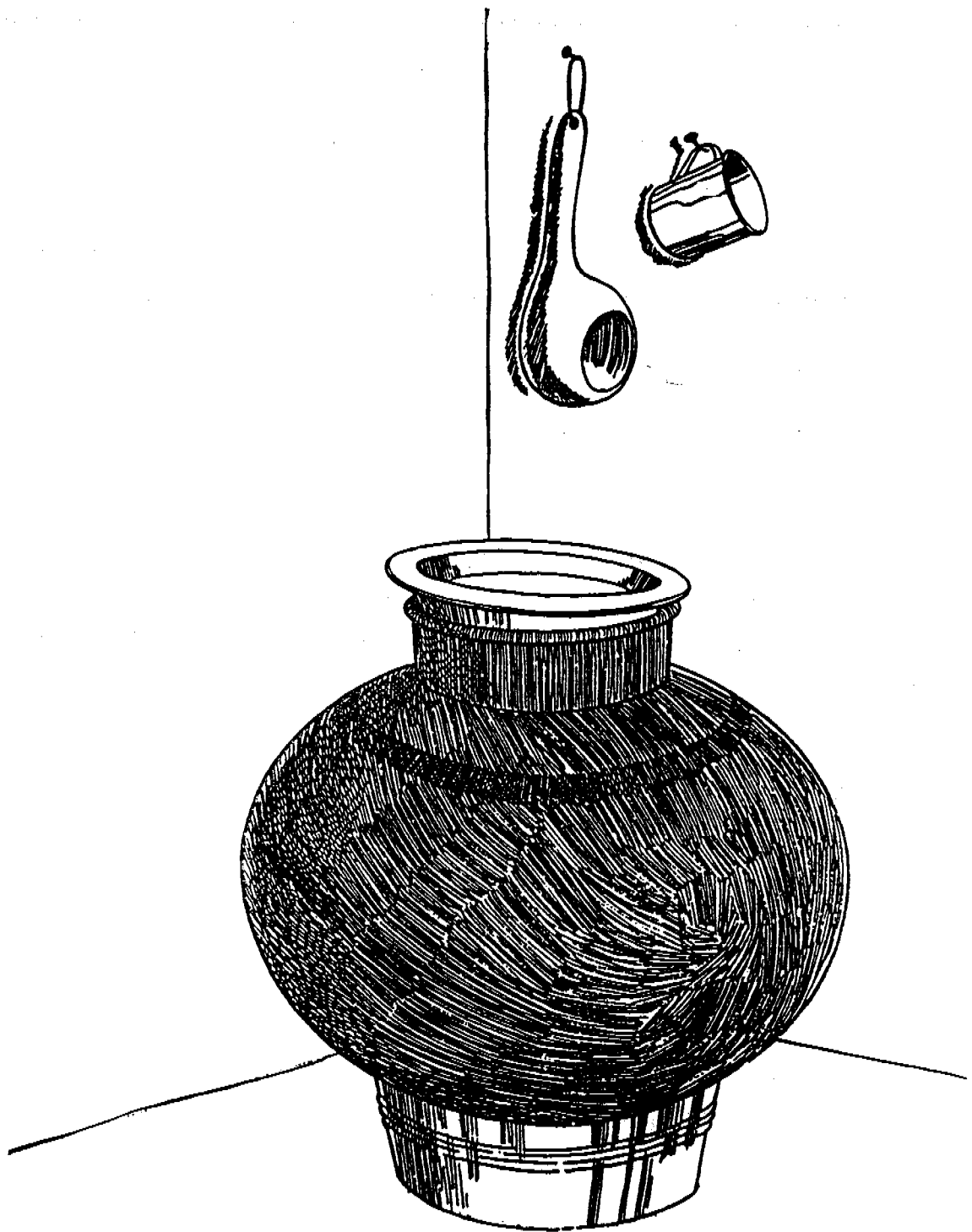


NO WATER NO HYGIENE  
NO HYGIENE NO SAFE WATER



## KEEP YOUR WATER POINT CLEAN

- \* Construct a fence or wall around the water point to keep animals out.
- \* Construct a soakaway or drain to avoid water collecting into pools and becoming stagnant and unhygienic.
- \* Keep the area around the water point clean by sweeping regularly.
- \* Clean out the soakaway if it becomes clogged up and stops working properly.
- \* Do not bathe at the water point.
- \* Do not wash napkins or underwear at the water point.
- \* Clothes should only be washed at a washing slab.
- \* Do not let children play with the handpump.



## **DRAWING AND STORING WATER**

- \* Before drawing water wash your hands and the collecting container with ash as opposed to sand.
  
- \* Avoid using very large collecting containers which require assistance with lifting and lowering. If assistance is given ensure that the person helping first washes their hands.
  
- \* When carrying water do not put leaves in the water as these can make the water unhealthy.
  
- \* To avoid spillage do not overfill the pot or pail used for carrying water.
  
- \* Seal any leaking container with burnt plastic material as opposed to clay or soil.
  
- \* Always keep your water in a safe place where animals cannot reach it.
  
- \* Store drinking water in a container raised up using bricks or stones.
  
- \* Keep water covered at all times so that flies, dust and insects cannot enter into the storage pot. A plate makes a good cover.



## THE TWO CUP SYSTEM

- \* Always use the two cup system when drawing water from the storage pot for drinking.
- \* The two cup system is a good way to prevent the water in the storage container from becoming contaminated.
- \* Use one cup for drawing water from the container. Pour the water into a second cup which is then used to drinking.
- \* Always use the same cup for drawing and the other cup for drinking.
- \* Avoid putting your hand or fingers into the water when drawing.
- \* Wash the drinking cup immediately after using and before anyone else uses it.
- \* Make sure all you family and any visitors use this system.
- \* Drinking water should be changed every day to ensure it is fresh.



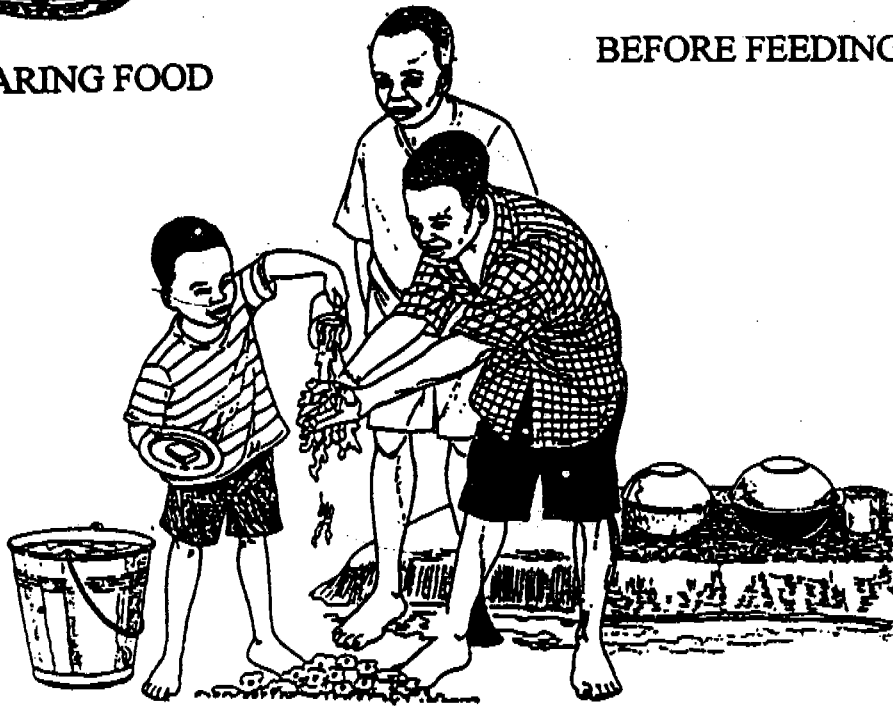
# WASH YOUR HANDS



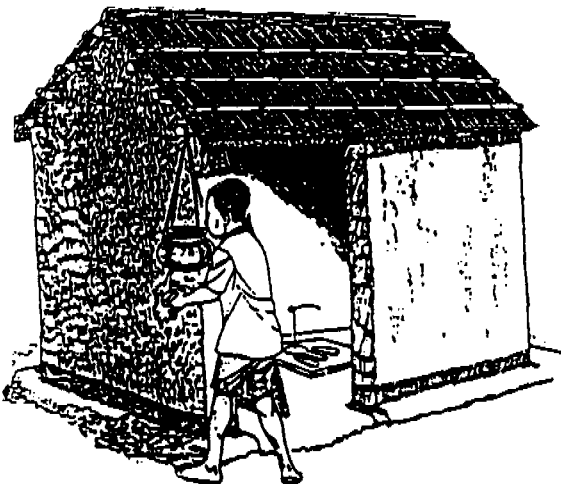
BEFORE PREPARING FOOD



BEFORE FEEDING BABIES



BEFORE EATING



AFTER USING THE TOILET



AFTER CLEANING BABIES

## **ALWAYS WASH YOUR HANDS WITH SOAP OR ASH AND WATER**

- \* Before cooking or handling food.
- \* Before eating.
- \* Before feeding babies and small children.
- \* After using the toilet.
- \* After cleaning babies and young children.
- \* After eating.
- \* People should wash their hands separately and not using a common basin where germs which cause disease could be transmitted.
- \* Washing your hands will remove germs from them which might otherwise contaminate food and drinking water and cause illness.



## KEEP YOUR HOUSEHOLD CLEAN

- \* Keep the area surrounding your house clean and tidy.
- \* Construct a pit and throw all rubbish in it and burn it.
- \* Construct a plate drying rack and use this so that animals can not reach the plates.
- \* Keep any cooked or prepared food clean by covering it to avoid flies landing on the food.
- \* Keep livestock in an enclosed pen.



## **MAKE SURE YOUR FAMILY HAS A TOILET**

- \* If possible construct your toilet using a Sanplat.
- \* Every household should have a toilet and should use it.
- \* Refrain from defecating in the bush as it is unhygienic and can spread disease.
- \* Provide facilities so people can wash their hands after using the toilet.
- \* Clean the toilet every day.
- \* Put babies' faeces into the toilet.
- \* Keep the toilet floor opening covered.
- \* Put ashes down the toilet to avoid flies.
- \* Avoid siting your toilet near to a water point and do not site your toilet up-hill from a borehole or shallow well.

## WATER FOR DRINKING



- \* To avoid illness only drink water which has come from the water point and which you know is safe.
- \* Make sure that your children do the same and that they do not drink water from unprotected sources when they are away from the house.

**SECTION 3**

**SANPLAT CASTING**



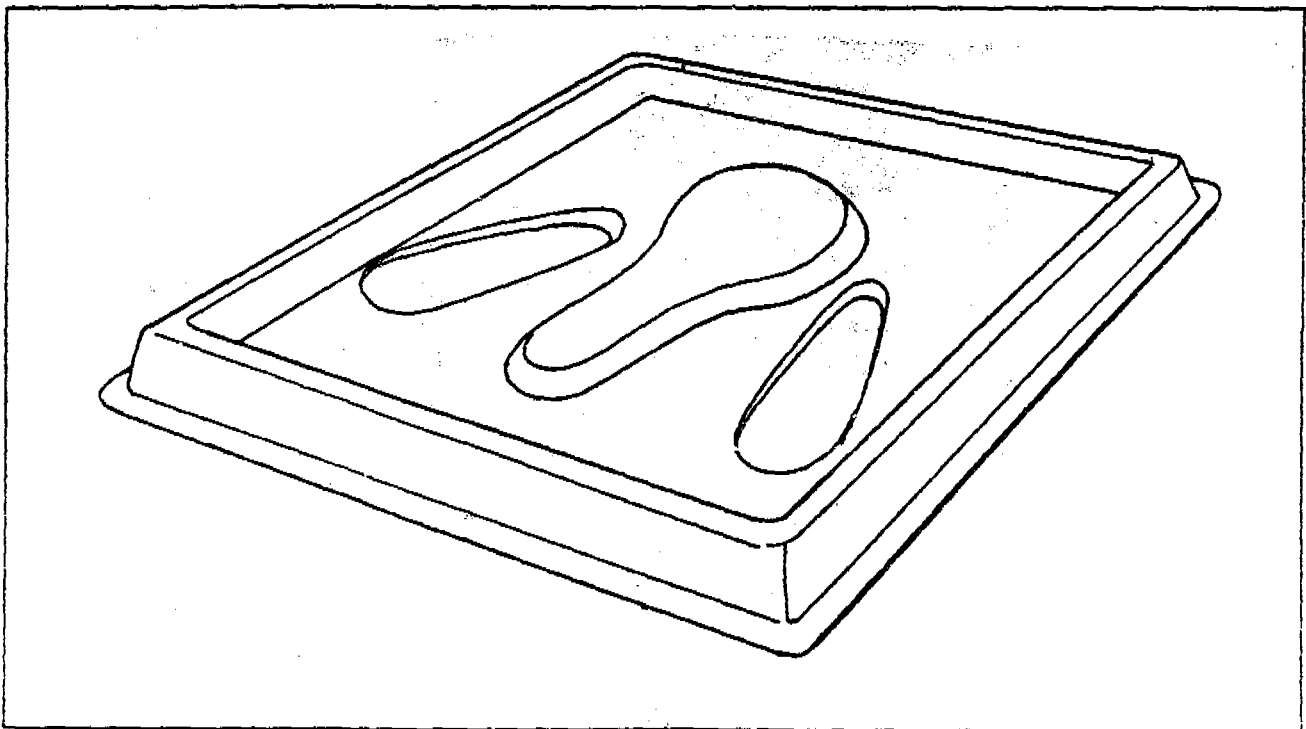
**LISTEN TO GOOD ADVICE**



## SANPLAT

The following section explains how to cast a Sanplat using a locally made timber mould.

Some projects may use an alternative plastic mould as shown in figure 7 below. If this type of mould is used then the process is made easier as there are less steps to follow.



**FIGURE 7**

# **SANPLAT**

## **A SANPLAT WILL IMPROVE YOUR LATRINE**

A Sanplat is easy to make and install on a pit latrine. It will make your latrine cleaner and healthier to use for both your family and visitors. It has the following advantages:-

1. It does not have an open hole which can be dangerous for children.
2. It has footrests which are easy to find even at night in the dark.
3. It has a tight-fitting lid which, when in position, will prevent flies and cockroaches from entering as well as reducing bad smells.
4. The Sanplat is made of concrete and is therefore strong and easy to clean.
5. It is light and easy to carry and can be installed again and again for many years.

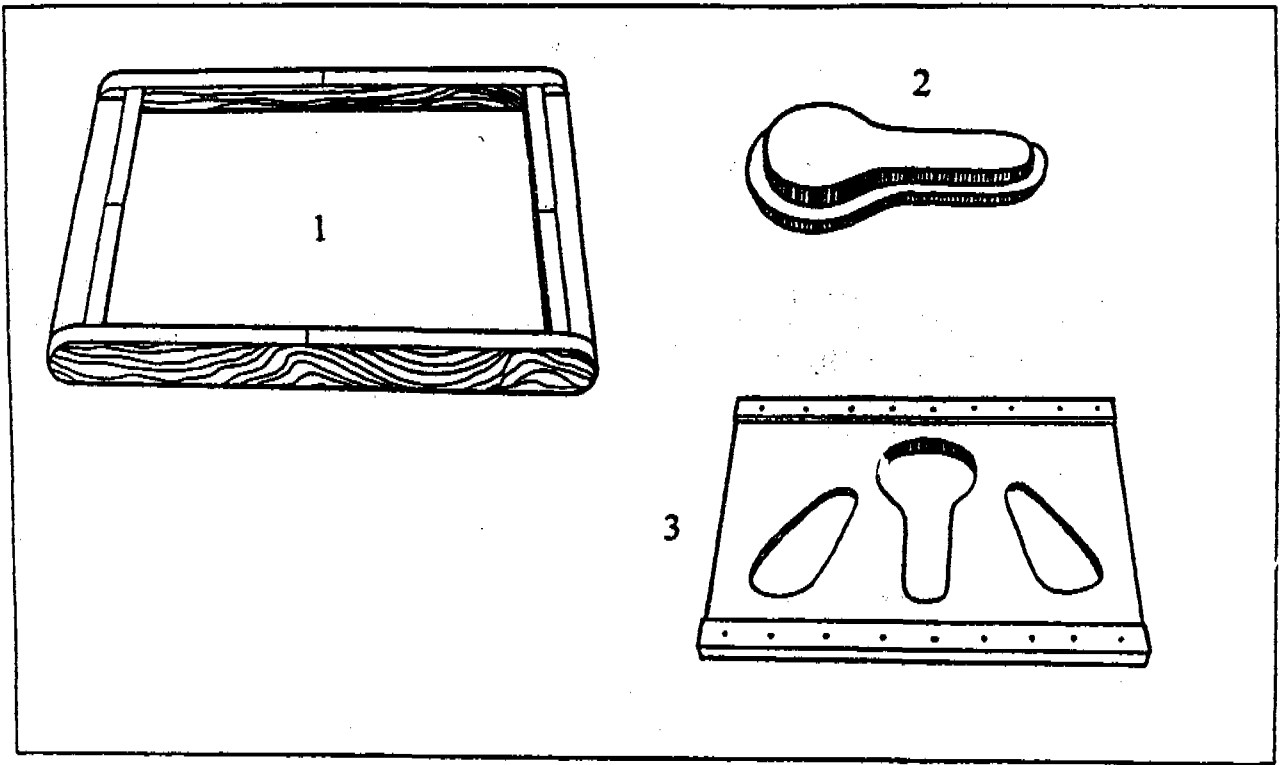


FIGURE 8

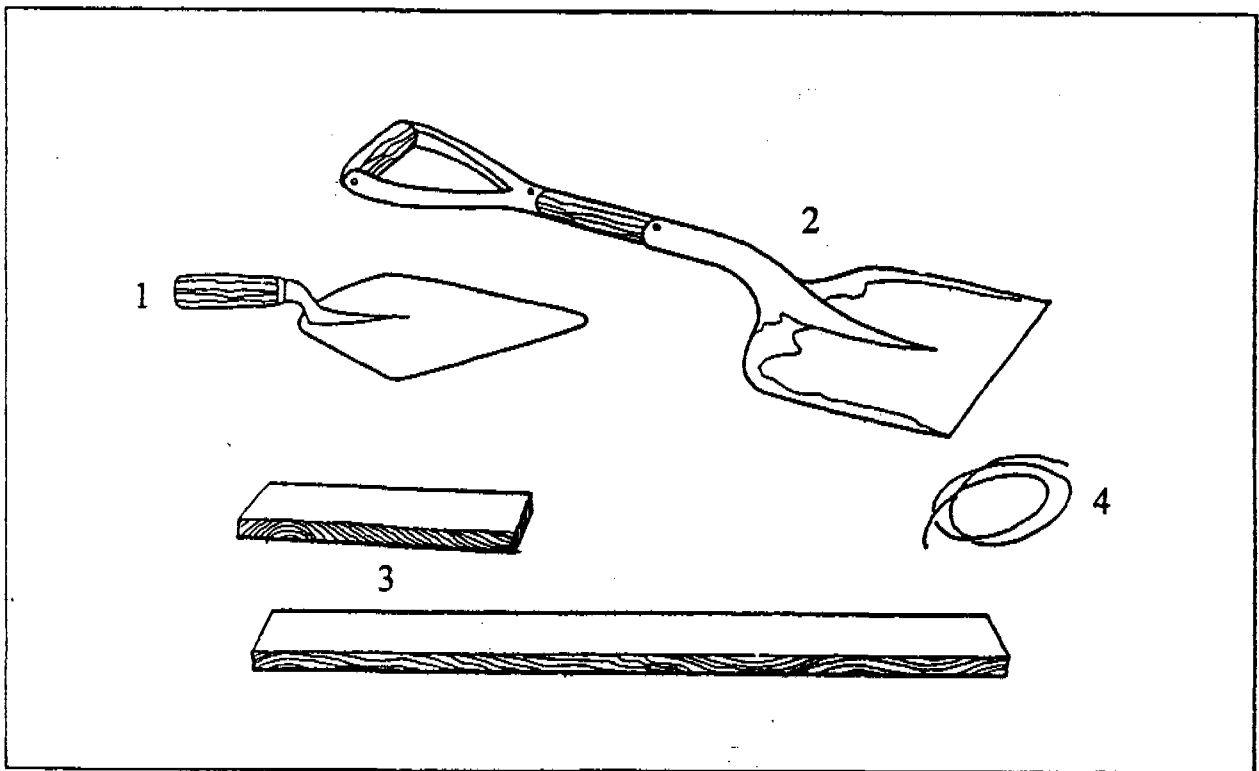


FIGURE 9

To make a Sanplat you will need the following:

Figure 8

### **Moulds**

1. Frame
2. Drophole mould
3. Foot rest mould

Figure 9

### **Tools**

1. Builders trowel
2. Shovel for mixing
3. Two timbers of lengths 300mm and 800mm
4. A 2 metre length of string

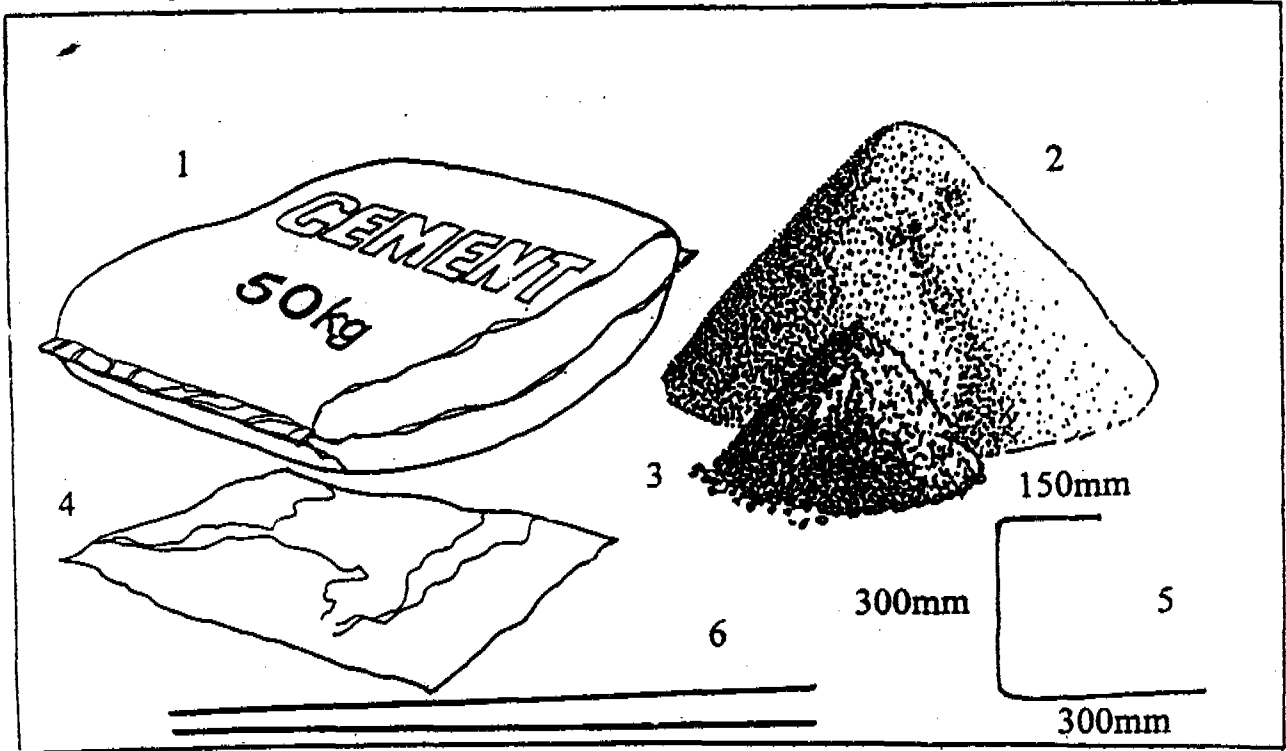


FIGURE 10

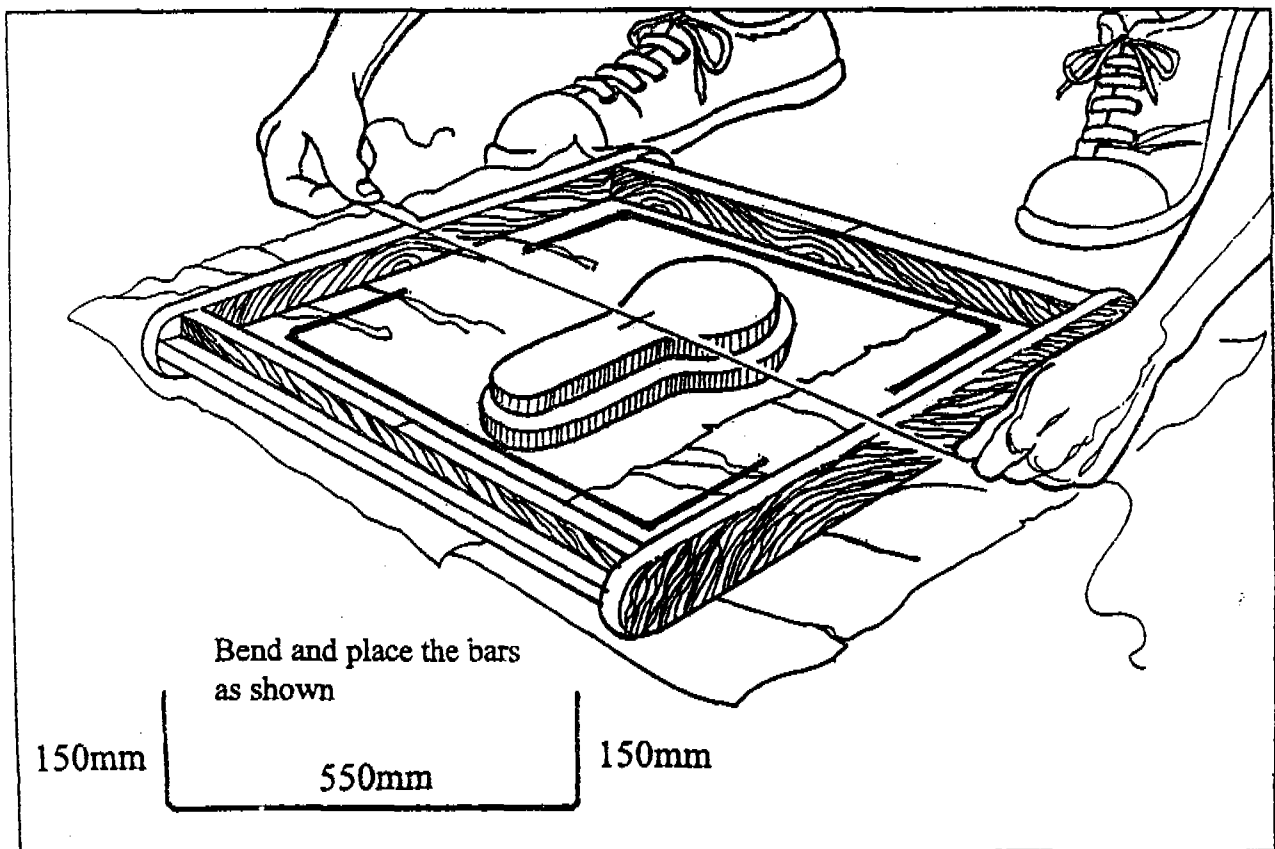


FIGURE 11

## Figure 10

### Materials

1. Cement
2. Clean sand
3. Broken stones of 10mm size
4. A sheet of paper or plastic to place under the mould
5. 6 mm diameter iron rod for making a handle, 750 mm long.
6. Two 6mm diameter reinforcement bars, 850mm long.

### Making a Sanplat

1. Level the ground where you want to cast a Sanplat using the longer timber.
2. First lay the paper on the ground and put the frame on top.
3. Put the drop hole mould in the centre of the frame. Measure with the string to make sure the drop hole mould is in the centre as is shown on figure 11.

4. Measure and mix the cement, sand and broken stones as follows:

cement                      1 part

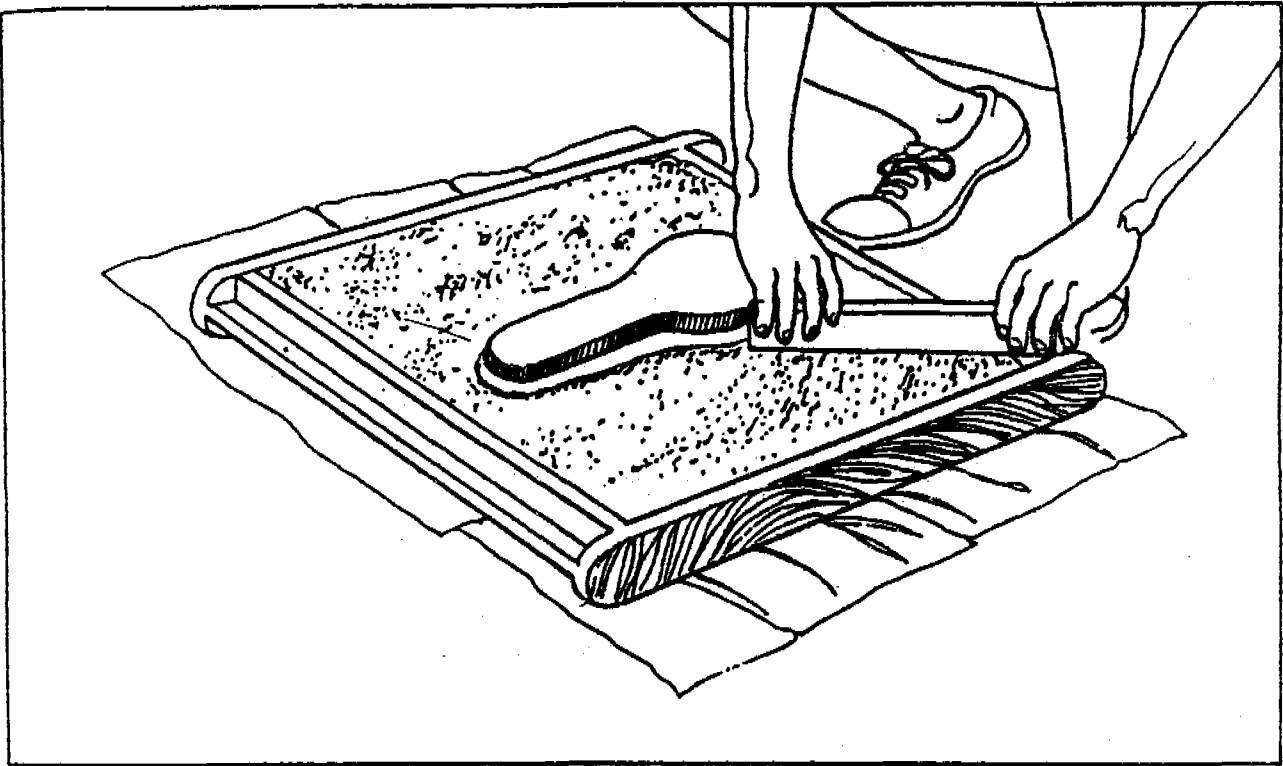
sand                              2 parts

small stones              4 parts

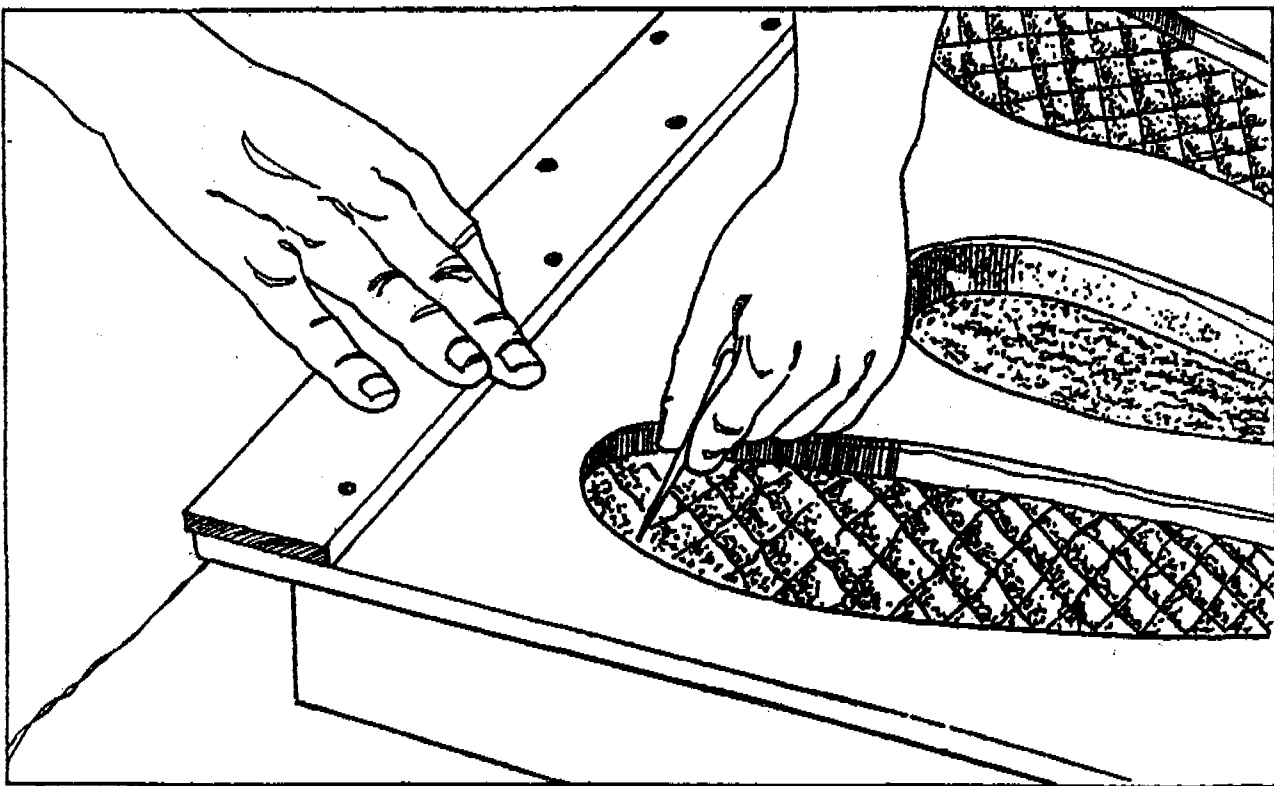
5. Mix thoroughly, then add clean water and continue mixing until everything is well mixed.

6. Start by placing a layer of concrete all around the mould so that it is half full. Then place the two bent reinforcing bars in the positions as shown in figure 11. Now place further concrete and press down hard with the small wooden timber. Make sure the centre is lower so that the concrete slopes towards the drophole as shown in figure 12.

7. When the concrete has started to set, mark and scratch the places where the footrests will be moulded as shown in figure 13.



**FIGURE 12**



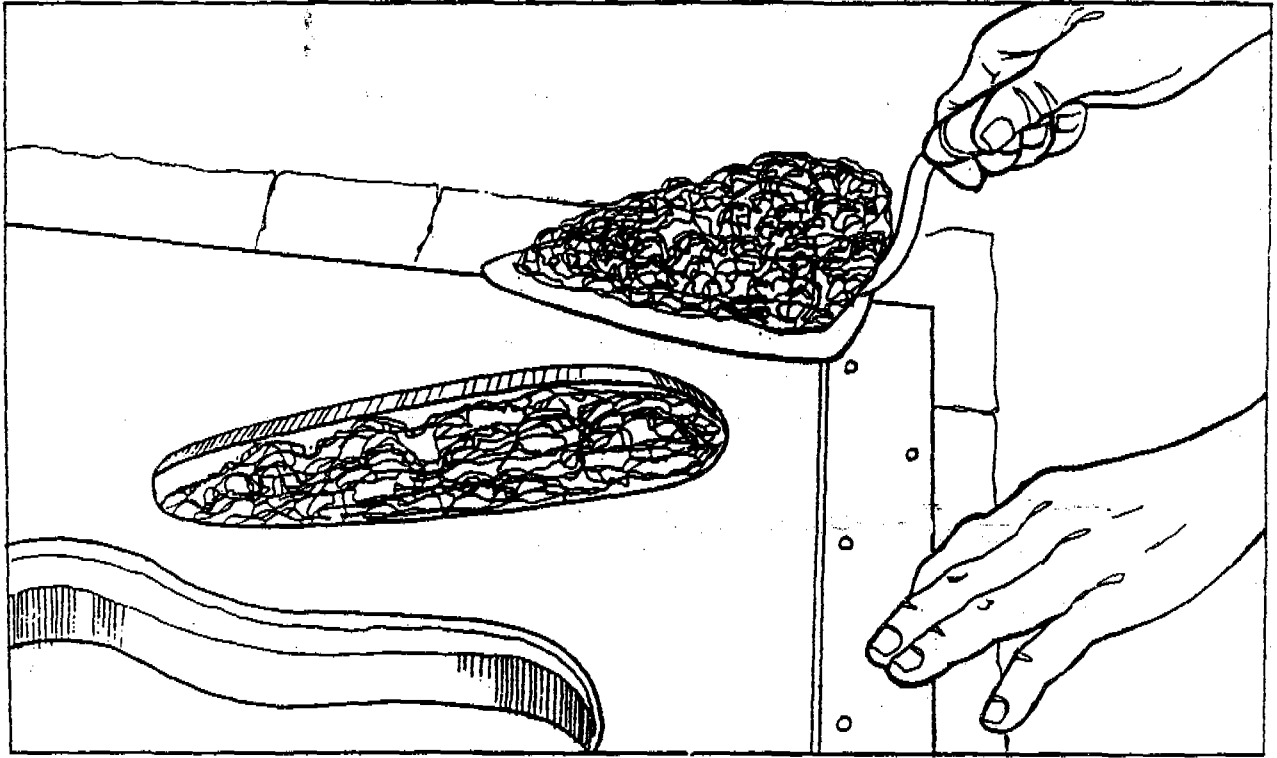
**FIGURE 13**



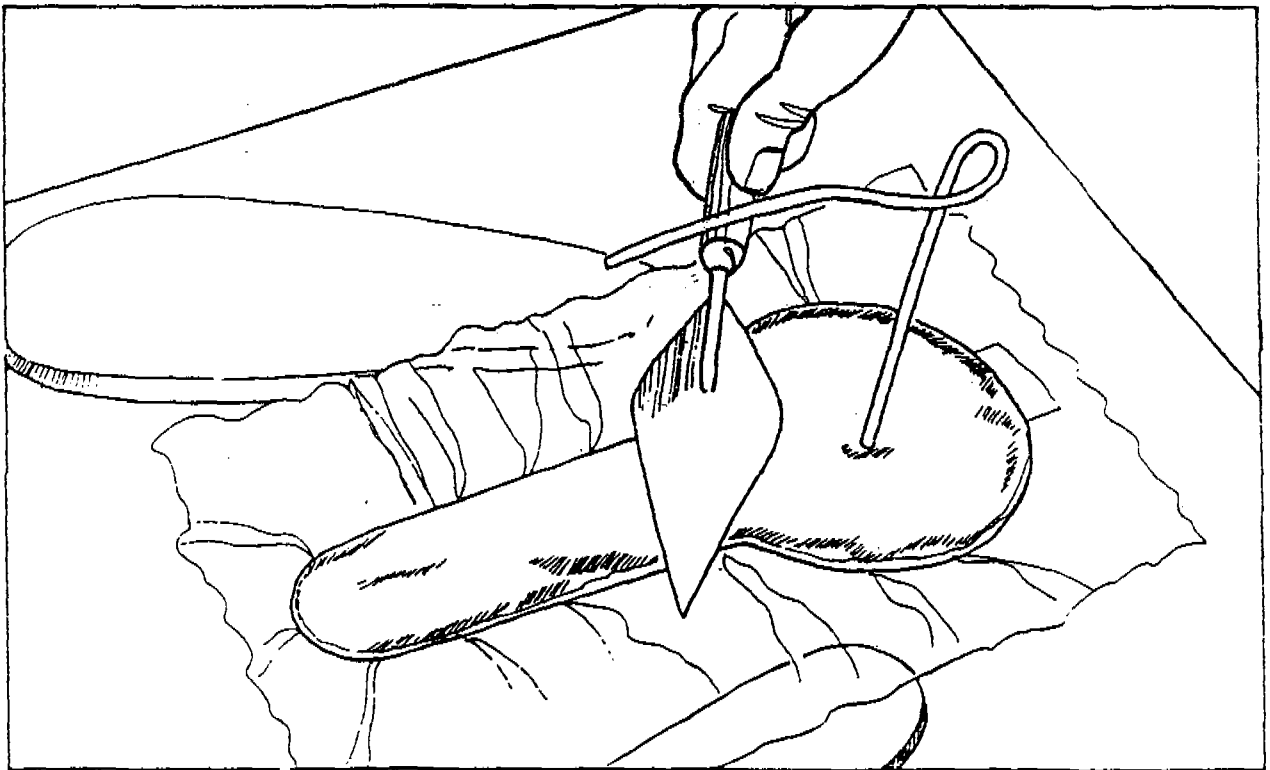
## **Moulding the footrests**

When the concrete has dried for about 4 hrs you can continue moulding the footrests.

1. First apply some water to the concrete.
2. Mix up a small amount of cement mortar using one part cement to three parts of sand.
3. Place the footrest mould so that it lines up with the drophole and fill the mould with cement mortar as shown in figure 14.
4. Level the top part of the foot rest mould and remove it carefully to avoid damage.



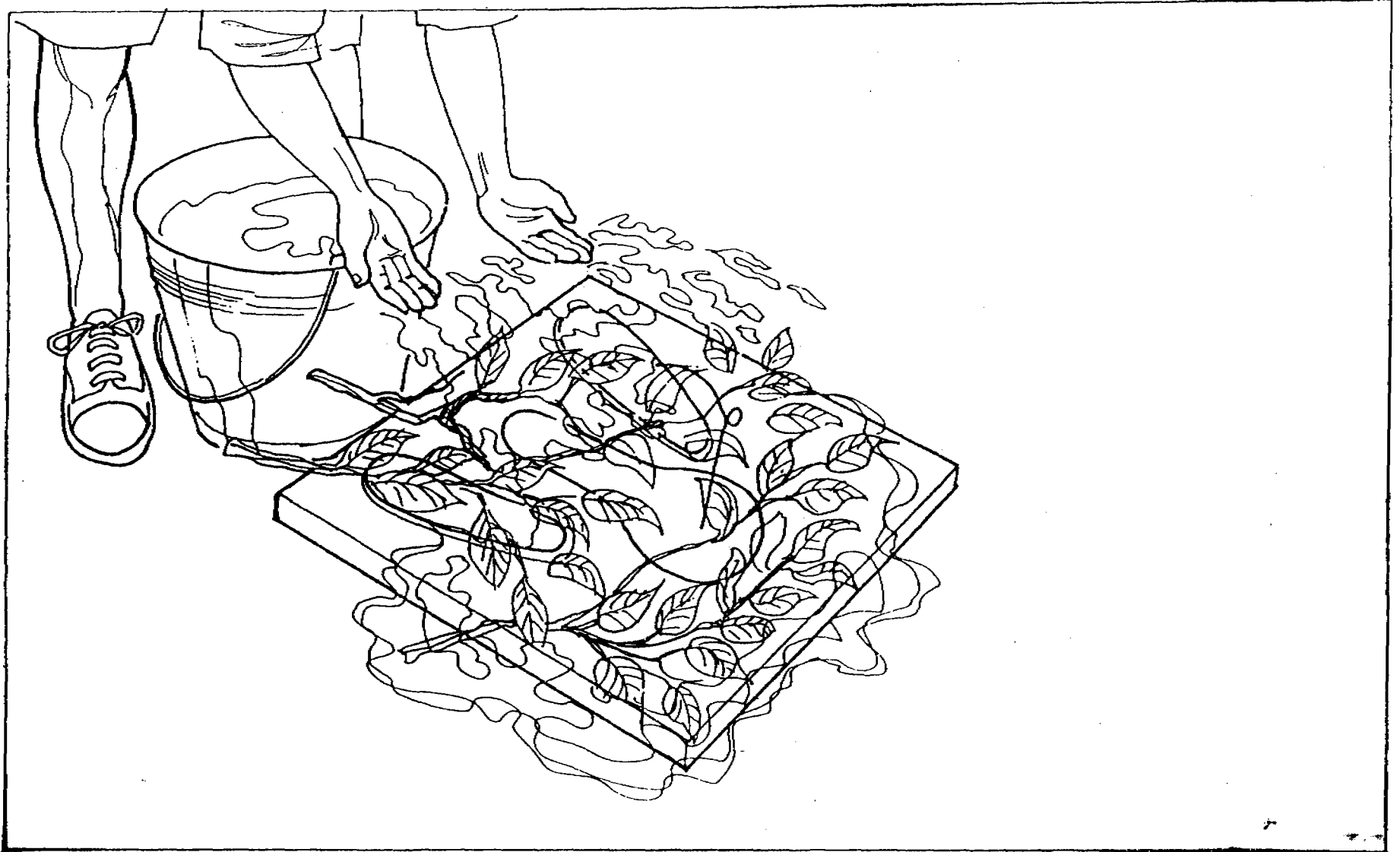
**FIGURE 14**



**FIGURE 15**

## Making a cover

1. Bend the iron rod to form a handle in the shape as shown in figure 10.
2. Place wet paper so that it covers all round the edges of the hole.
3. Put concrete so that it half fills the hole
4. Place the handle in the middle and fill the hole to the top with concrete.
5. Ram and level the top with the trowel as shown on figure 15.



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FIGURE 16

## Hardening and curing the Sanplat

- \* For the concrete to be strong it should be kept wet for one week.
- \* Cover the Sanplat with some paper or leaves and dampen with water at least twice a day.
- \* Don't attempt to lift or move the Sanplat until a week has passed.
- \* When you have finished curing, remove the cover and the paper.

NOW YOUR SANPLAT IS FINISHED

AND YOU CAN NOW INSTALL IT ON TO

YOUR PIT LATRINE AND START USING IT

**SECTION 4**

**AFRIDEV HANDPUMP MAINTENANCE**



**AFRIDEV IS AN EASY PUMP TO MAINTAIN  
EVERYBODY CAN MAINTAIN IT**



## **MAINTAIN YOUR AFRIDEV HANDPUMP**

- \* To prevent breakdowns the pump should be dismantled at least once every three months and checked over. Fast wearing parts will normally need to be replaced at least once a year.

If the pump is used a lot then you may need to replace them more than once a year.

- \* If the pump is used with worn or damaged parts then serious damage can occur with the result that the pump will not work and will need expensive repairs.

- \* Always keep a set of fast wearing spare parts so that you can maintain or replace a worn part without any delay.

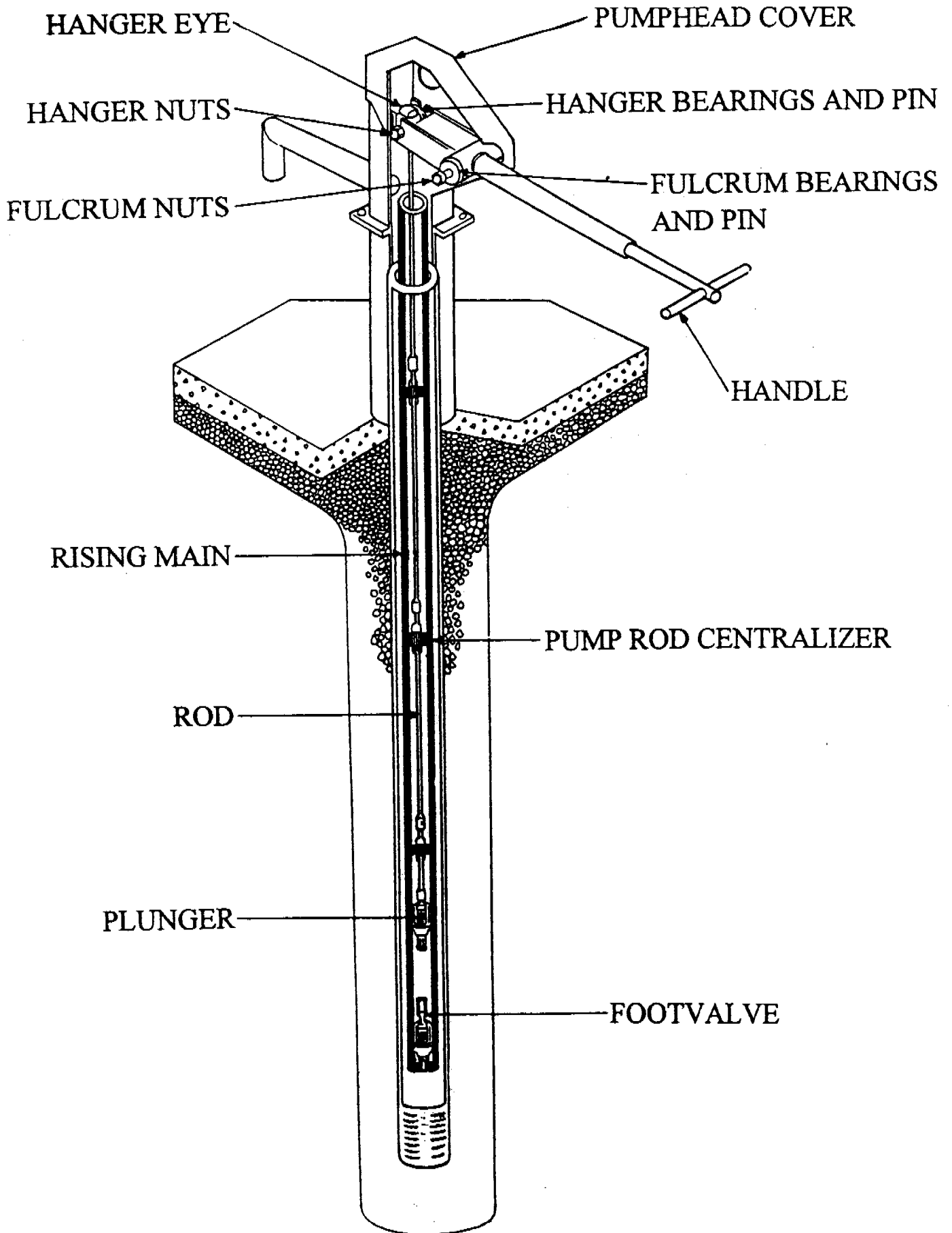
- \* It is better to keep spares rather than cash.

- \* If you have difficulties with any maintenance then seek help from the water monitoring assistant or an extension worker.

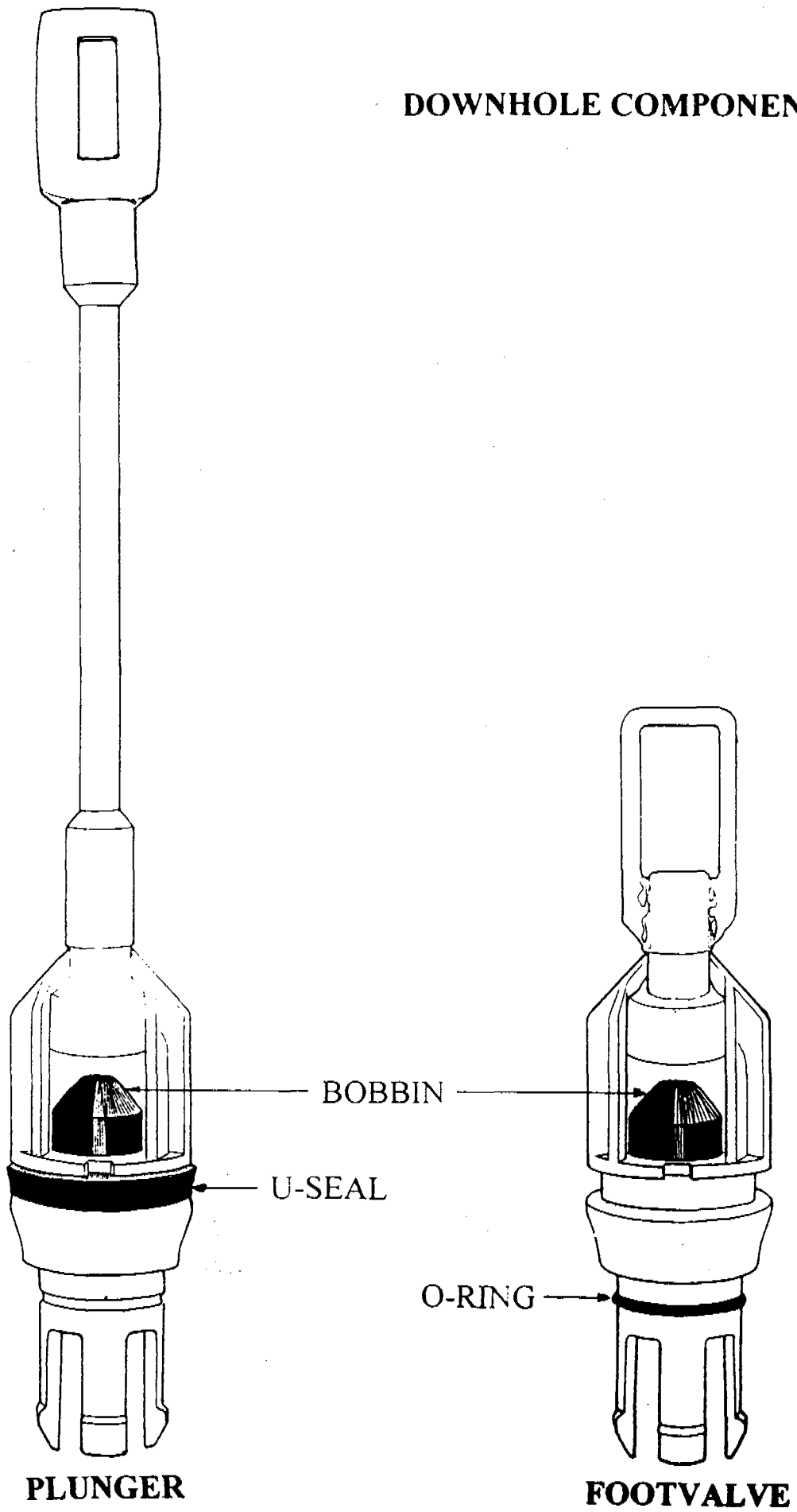
- \* Keep a record of all the maintenance and repair work carried out on your pump.



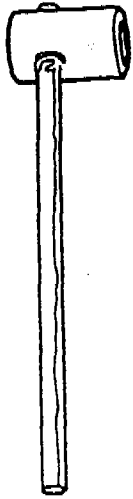
# THE AFRIDEV HANDPUMP



# DOWNHOLE COMPONENTS



**TOOLS**



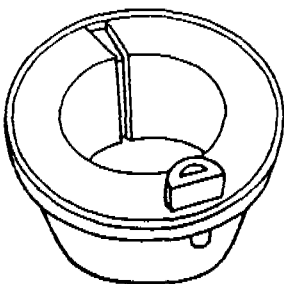
**SOCKET SPANNER**

**FLAT SPANNER**



**FISHING TOOL**

**FAST WEARING SPARE PARTS**



**BUSH BEARING**



**U-SEAL**

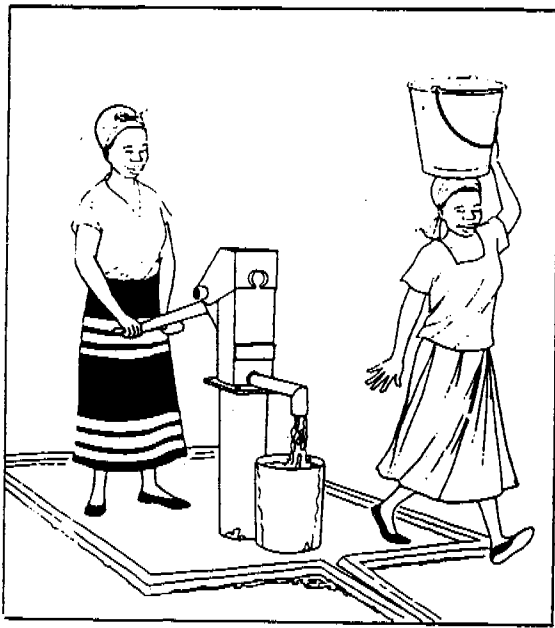


**BOBBIN**



**O-RING**

## DISMANTLING



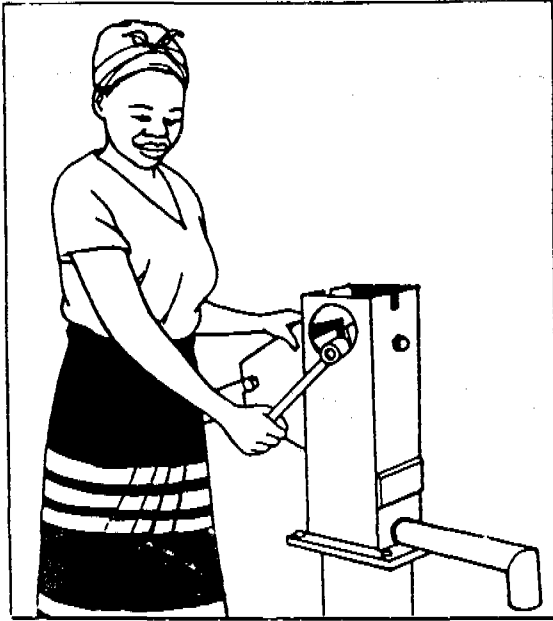
1. Before starting wash your hands and fill some buckets with water to allow you to clean the parts.



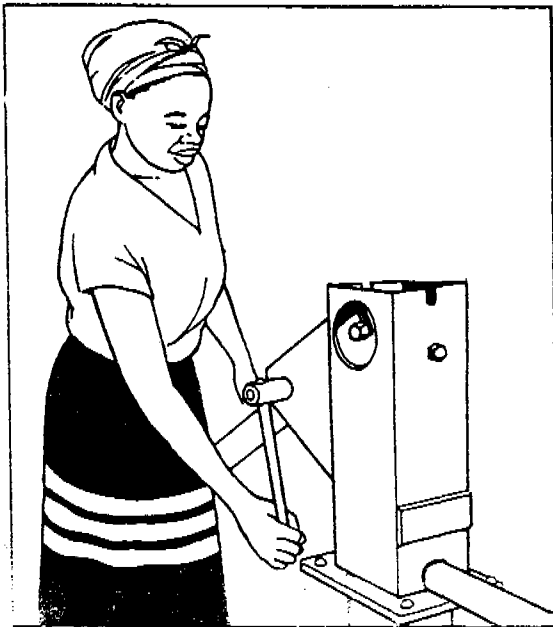
2. Loosen the pump head cover bolt.



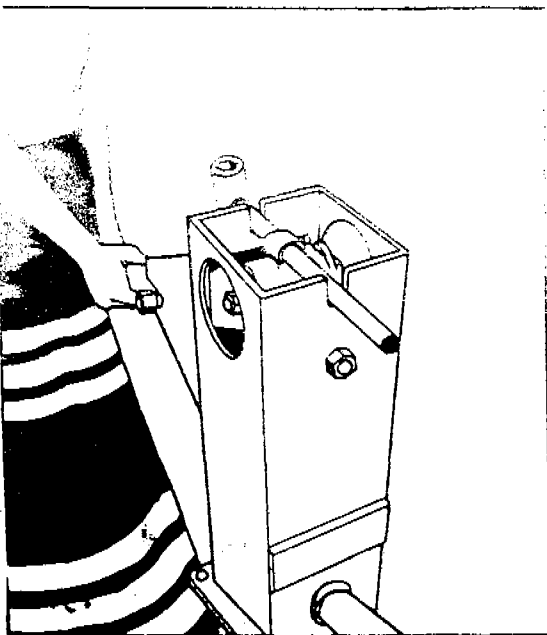
3. Take off the cover.



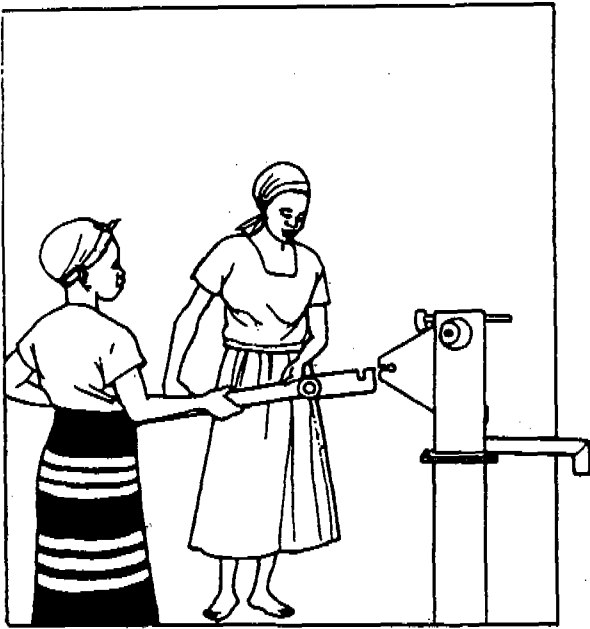
4. Loosen both hanger nuts.



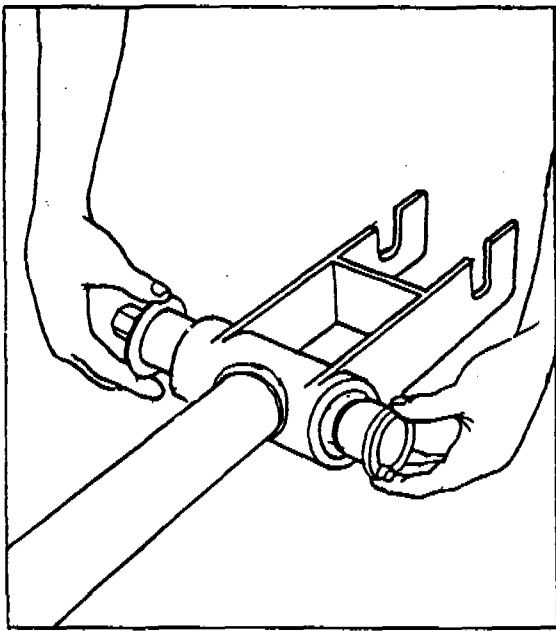
5. Loosen both fulcrum nuts.



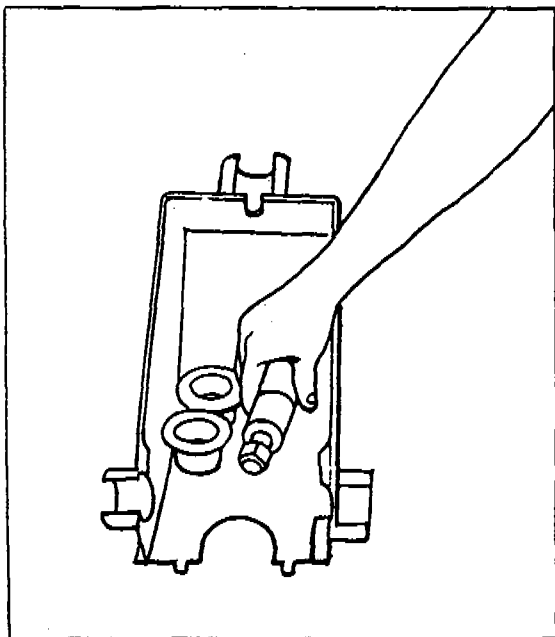
6. Put spanner through hanger eye.



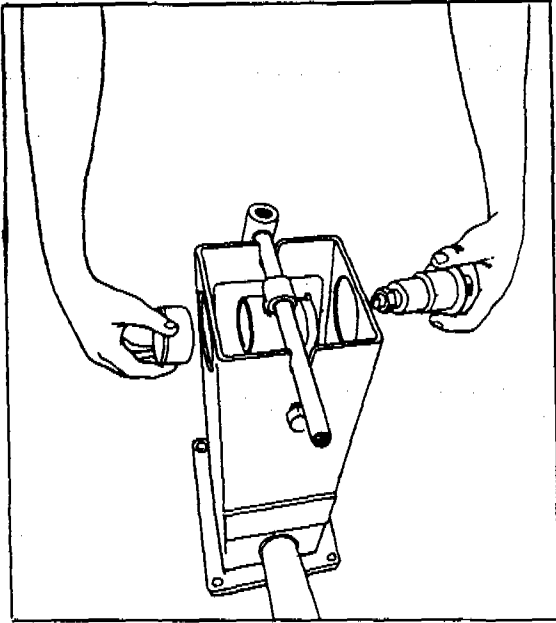
7. Raise and withdraw handle. Take care! As you remove the handle make sure that the bush bearings and pin do not fall out as they may break on the floor.



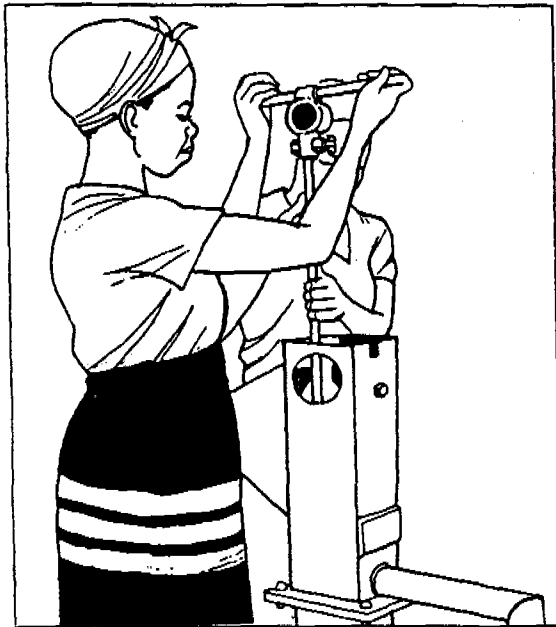
8. Remove fulcrum pin and bush bearings.



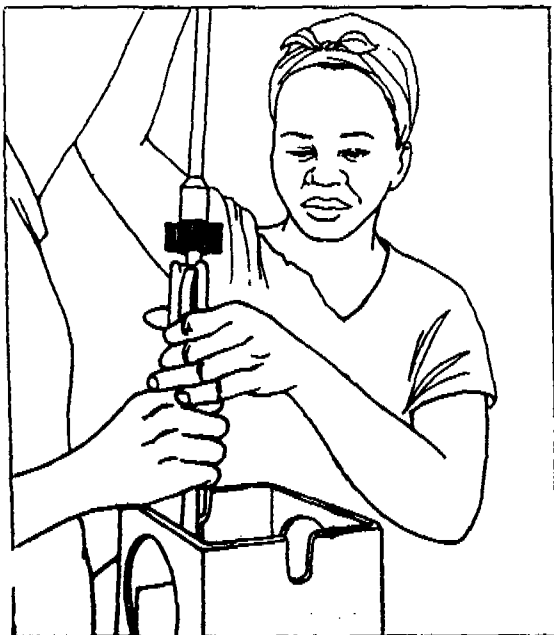
9. Place all parts in the cover for safe keeping.



10. Remove hanger pin and bush bearings.



11. Pull up the hanger and first rod.

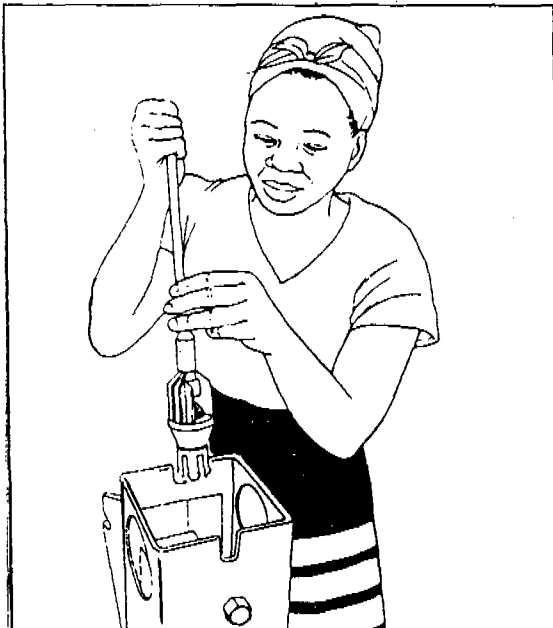


12. Slide up the rubber centralizer where the rods join.

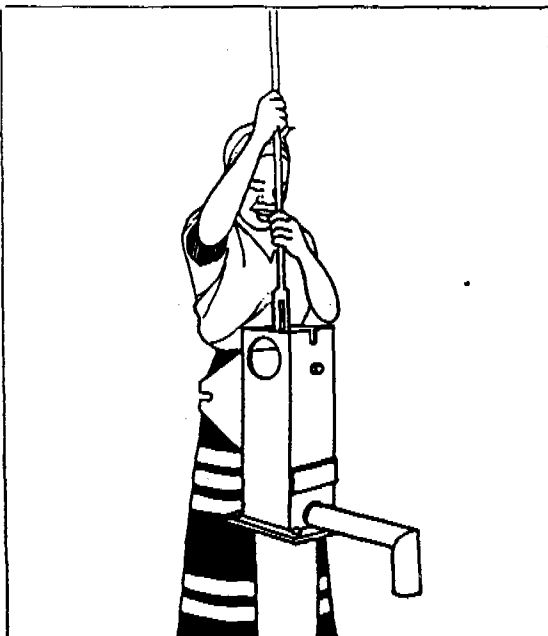


13. Disconnect and remove all the rods.

Remember to keep the rods in the same order. The last rod taken out should be the first one put back.

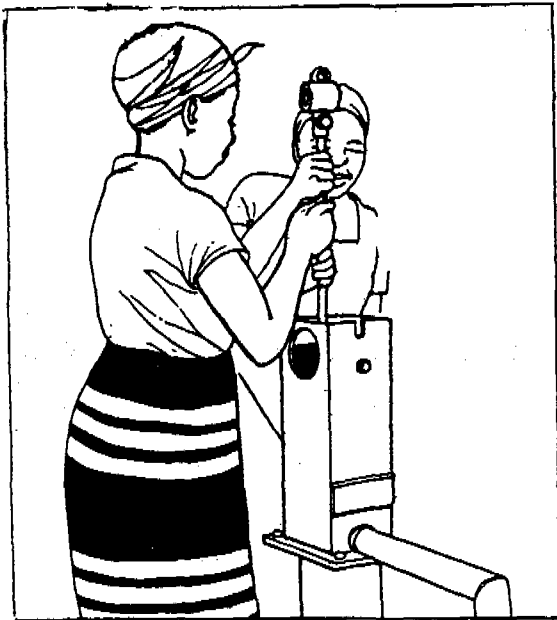


14. Remove the plunger.

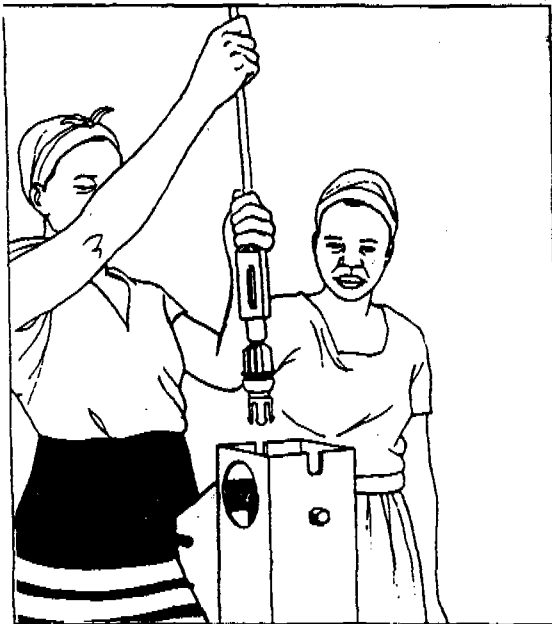


15. Lower the fishing tool and join to the rods.

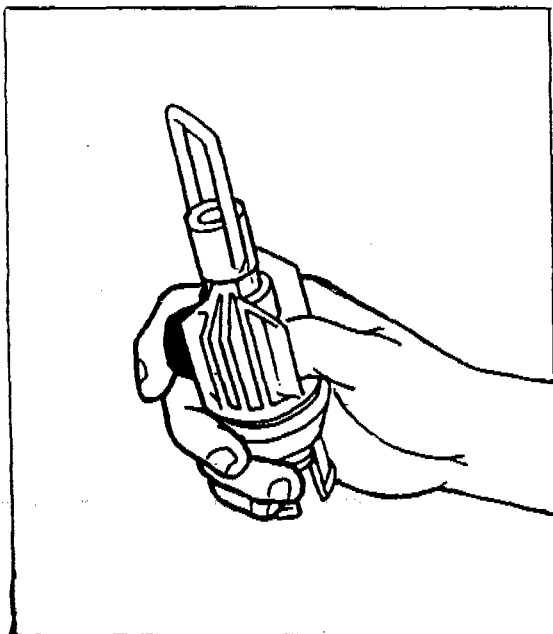




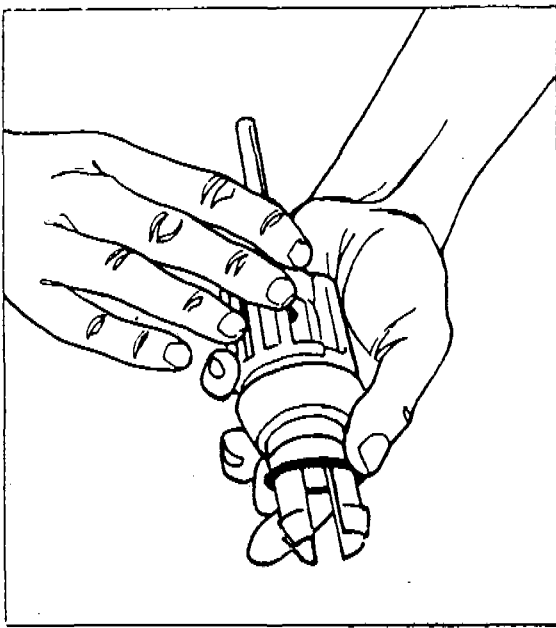
16. Gently lower last rod and hanger until you feel that you have caught the foot valve.



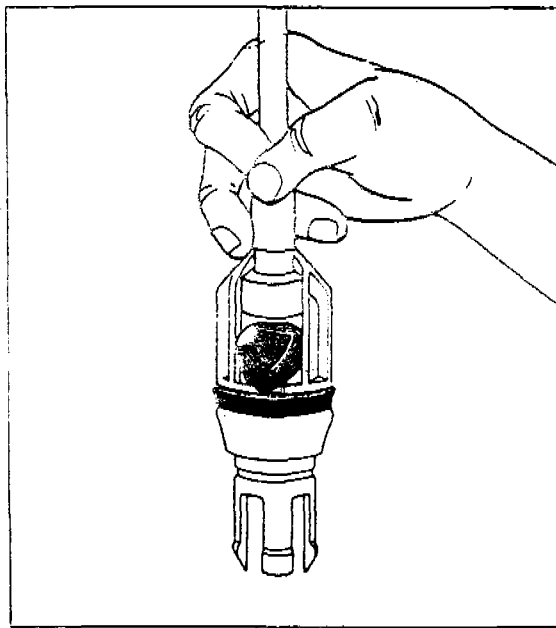
17. Remove all the rods, fishing tool and foot valve.



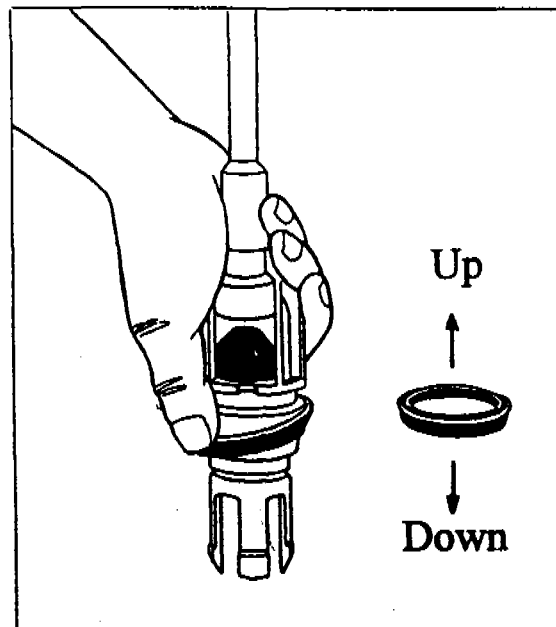
18. Push out the bobbin from the foot valve with your thumb. If the bobbin is damaged replace it with a new one.



19. Remove the O-ring from the foot valve. If the O-ring is damaged replace it with a new one.



20. Push out the bobbin from the plunger with your thumb. If the bobbin is damaged replace it with a new one.

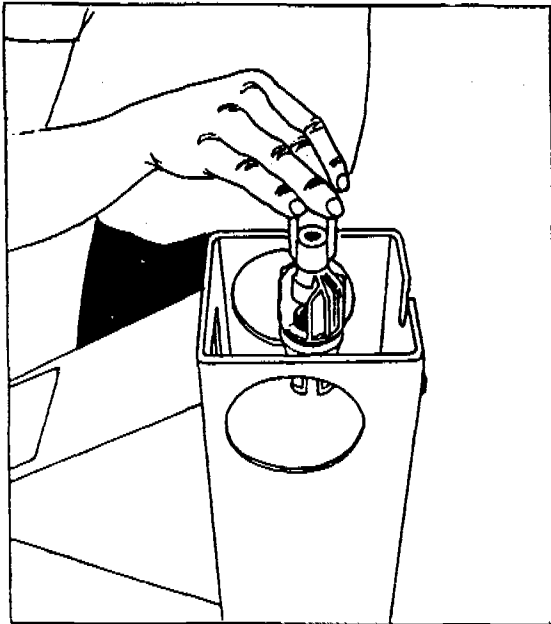


21. Carefully remove the U-seal. If the U-seal is damaged replace it with a new one. Make sure that the groove faces upwards.



## RE-ASSEMBLING

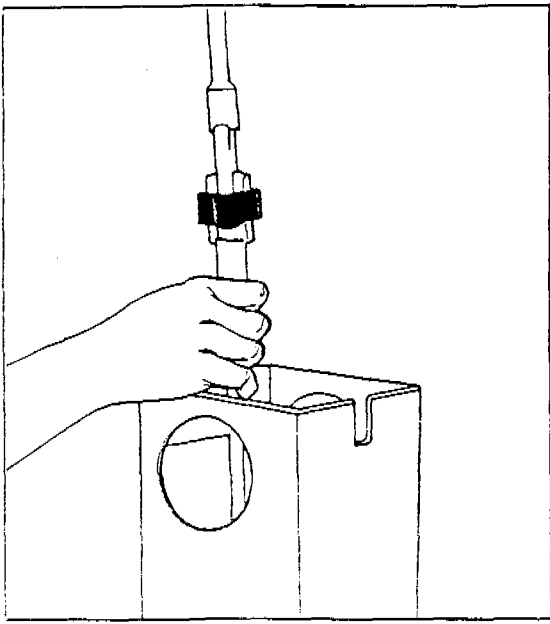
22. Wash the foot valve, plunger and rods. Only use clean water.



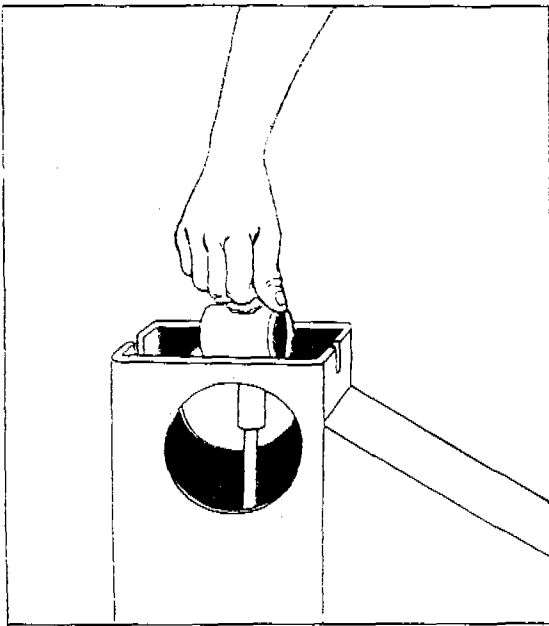
23. To re-assemble the pump first drop the foot valve down the borehole. Make sure the hook is upwards.



24. Put the plunger and pump rods back together and lower them down the borehole.



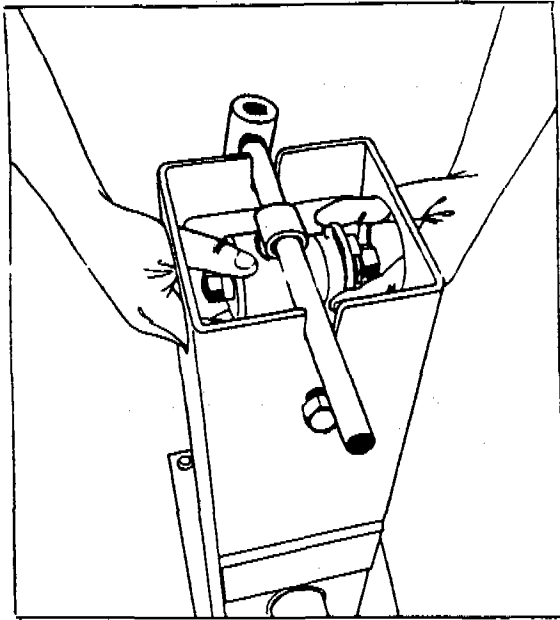
25. Make sure the rubber centralizer is slid down over each joint on the pump rods.



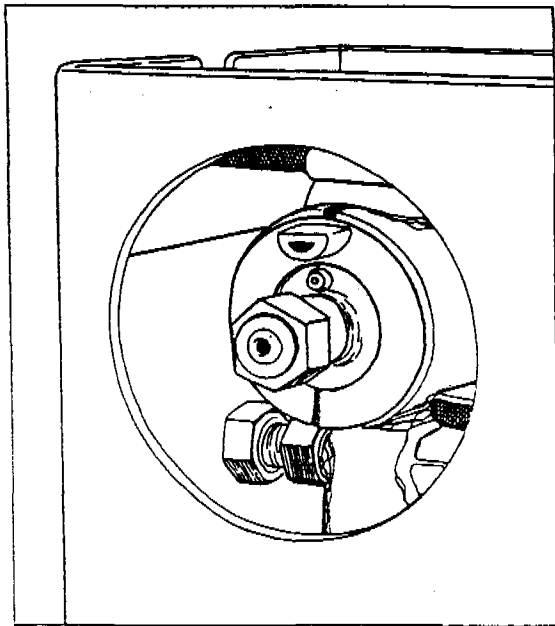
26. Join all the rods together until the hanger rod is connected.



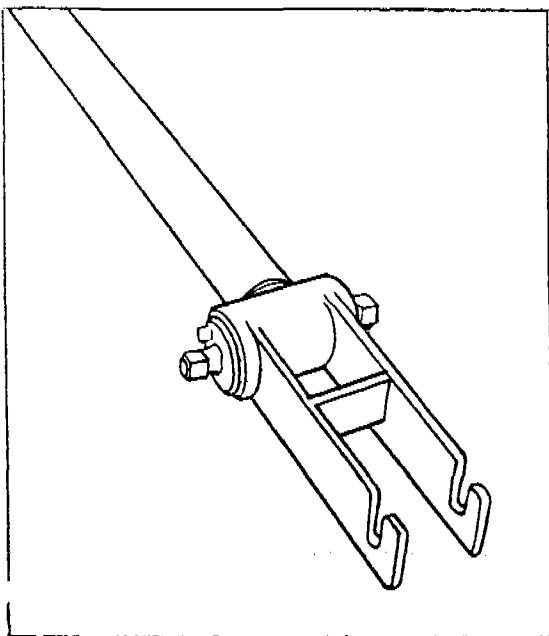
27. Make sure the foot valve is in place by pushing the rods at arms length down the borehole.



28. Put the spanner through the hanger eye to support the rods and then replace the hanger pin and bush bearings. If the bush bearings are worn out or damaged then replace them with new ones.



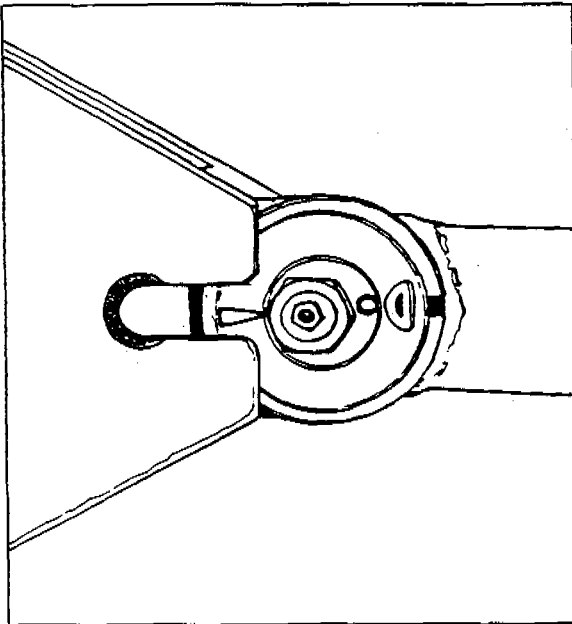
29. Turn the hanger pin and bush bearings so that the small projecting lugs are at the top.



30. Put back the fulcrum pin and bush bearings in the handle. If the bush bearings are worn out or damaged then replace them with new ones.

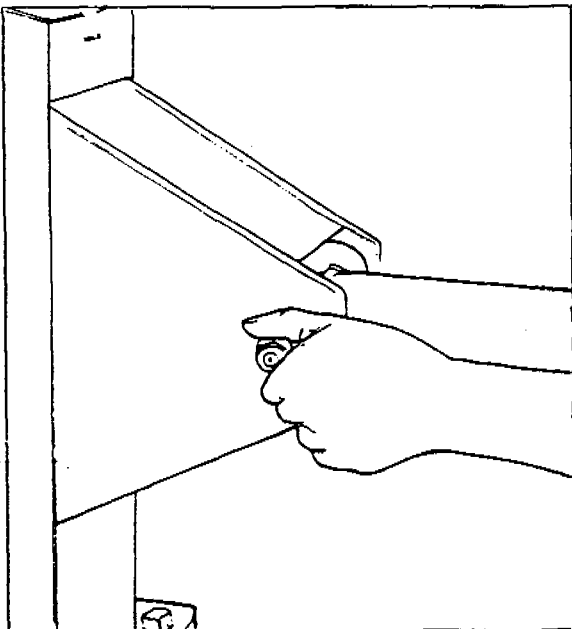


31. Put back the handle.

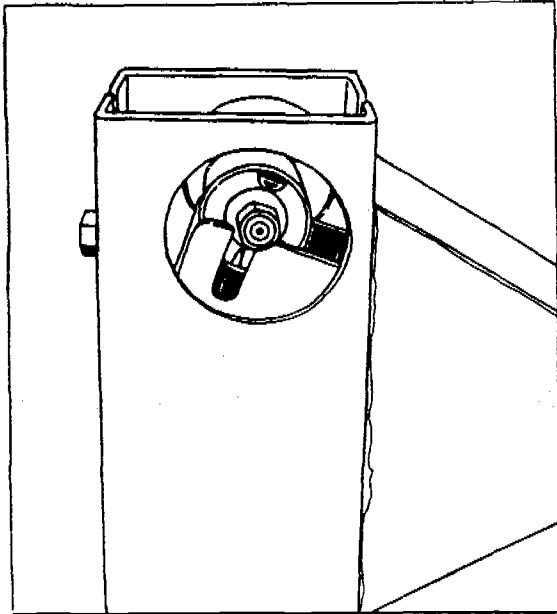


32. Make sure the projection lugs on the pin and bush bearings will fit into slots on the pump body.

Ensure that the pin is pushed right to the back of the slot.

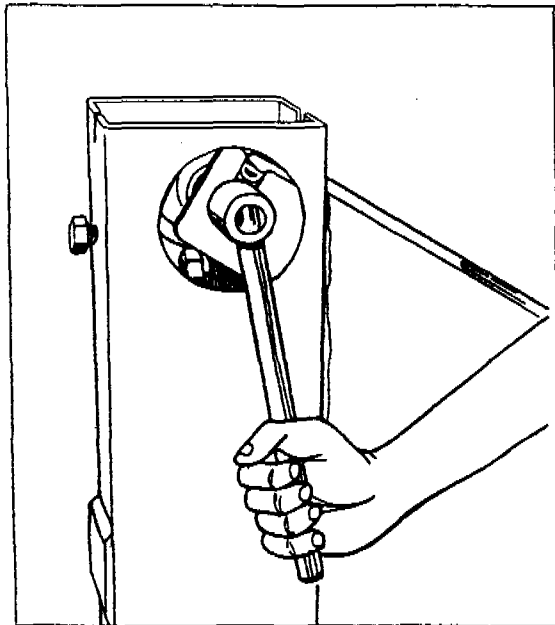


33. Tighten the fulcrum nuts by hand.

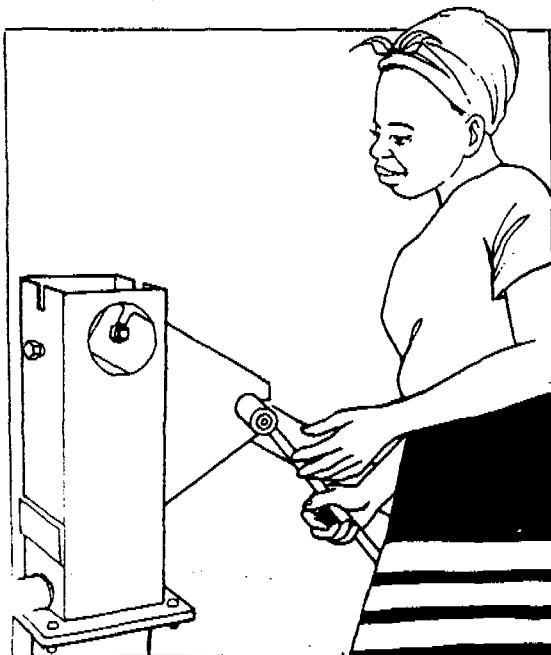


34. Push the handle down so that the slots engage in the hanger.

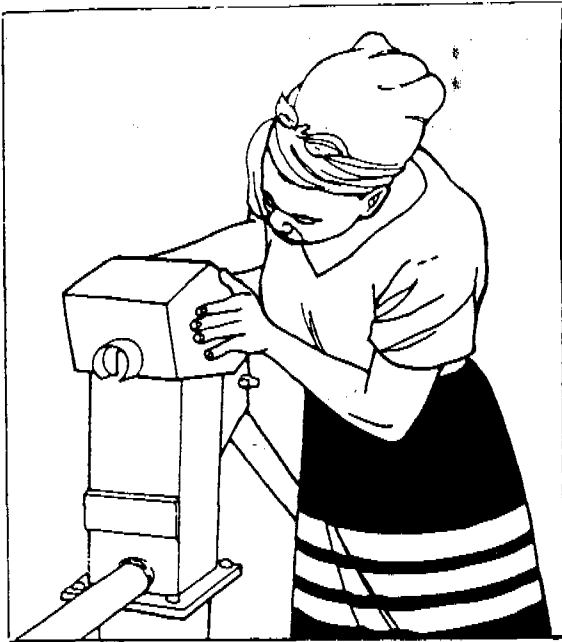
Ensure that the hanger pin has slid to the bottom of the slots. Remove the spanner.



35. Tighten the hanger nuts with the spanner alternatively on both sides.



36. Tighten the fulcrum nuts with the spanner alternatively on both sides.



37. Put back the cover.



38. Tighten the cover nut.



39. Pump water until clear water comes out before using for drinking.

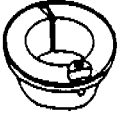
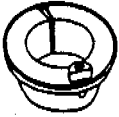






## DEALING WITH PROBLEMS

PROBLEM	POSSIBLE CAUSE	REMEDY
Delayed flow	Foot valve leaking.	Check and replace bobbin and O-ring on the foot valve.
	Leaking rising main	Seek help from a Water Monitoring Assistant (WMA).
Weak flow	U-seal worn out, damaged or wrongly installed.	Check and replace U-seal.
	Plunger or foot valve bobbin worn out or damaged.	Check and replace bobbins.
	O-ring on foot valve worn out or damaged.	Check and replace O-ring.
	Leaking rising main.	Seek help from a WMA.
No flow	Plunger or foot valve bobbin stuck or damaged.	Check and clean. Replace bobbin if necessary.
	U-seal displaced or damaged.	Check and replace U-seal.
	O-ring displaced or damaged.	Check and replace O-ring.
	Rising main damaged or disconnected.	Seek help from a WMA.
	Pump rod broken or disconnected.	Seek help from a WMA.
	Plunger unscrewed from rod.	Seek help from a WMA.
	Water level below suction pipe.	Seek help from a WMA.







<p><b>Heavy handle</b></p>	<p><b>Incorrect handle adjustment.</b></p> <p>Plunger tight or stuck inside cylinder.</p> <p>Pump rod entangling with rising main.</p> <p>Blocked foot valve</p>	<p><b>Adjust handle to correct length.</b></p> <p>Clean or replace U-seal if necessary.</p> <p>Seek help from a WMA.</p> <p>Remove and clean.</p>
<p><b>Excessive lateral play of handle</b></p>	<p><b>Fulcrum bearing bushes worn out.</b></p>	<p><b>Replace fulcrum bearing bushes.</b></p>
<p><b>"Creeky" noise in pumphead (metal to metal rubbing)</b></p>	<p><b>Hanger pin rubbing inside pump body.</b></p> <p>Fulcrum or hanger pins rubbing on their housings.</p> <p>Loose nuts on fulcrum or hanger pins.</p> <p>Handle rubbing against pumphead cover.</p>	<p><b>Replace fulcrum bearing bushes.</b></p> <p>Replace fulcrum or hanger bearing bushes.</p> <p>Tighten nuts.</p> <p>Enlarge slot on cover by filing.</p>
<p><b>Pump pedestal shaking</b></p>	<p><b>Concrete plinth cracked.</b></p>	<p><b>Seek help from a WMA.</b></p>

# MAINTENANCE RECORD SHEET

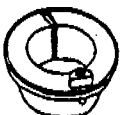
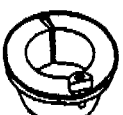




TICK THE PARTS WHICH WERE REPLACED						
	BEARING	BEARING	BOBBIN	BOBBIN	O-RING	U-SEAL
						
DATE	FULCRUM	HANGER	FOOTVALVE	PLUNGER		

# MAINTENANCE RECORD SHEET







TICK THE PARTS WHICH WERE REPLACED

	BEARING 	BEARING 	BOBBIN 	BOBBIN 	O-RING 	U-SEAL 
DATE	FULCRUM	HANGER	FOOTVALVE	PLUNGER		

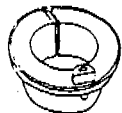
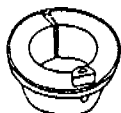




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TICK THE PARTS WHICH WERE REPLACED						
	BEARING 	BEARING 	BOBBIN 	BOBBIN 	O-RING 	U-SEAL 
DATE	FULCRUM	HANGER	FOOTVALVE	PLUNGER		


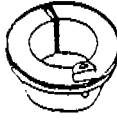




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DATE	FULCRUM	HANGER	FOOTVALVE	PLUNGER		

# MAINTENANCE RECORD SHEET

TICK THE PARTS WHICH WERE REPLACED

	BEARING 	BEARING 	BOBBIN 	BOBBIN 	O-RING 	U-SEAL 
DATE	FULCRUM	HANGER	FOOTVALVE	PLUNGER		