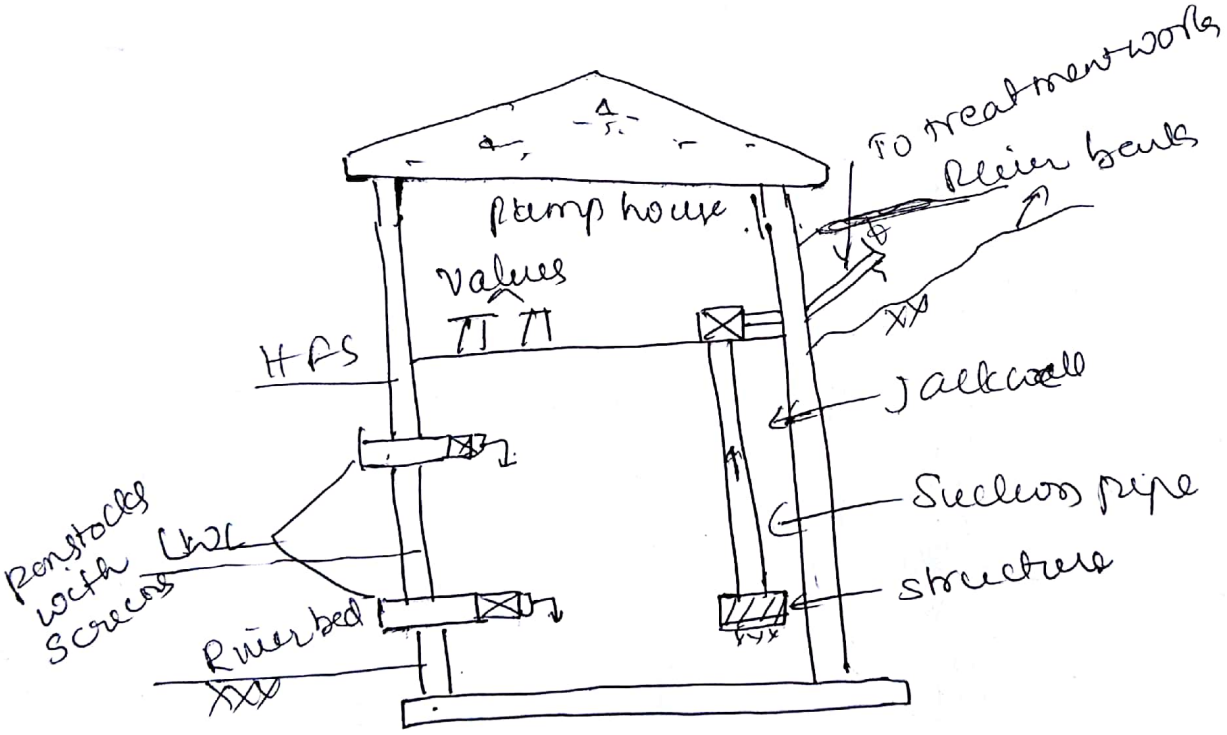
what is an intake structure? Explain river Intake structure with neat sketch

→ A device or a structure placed in a surface water source to draw water from their source & then discharge into an intake conduit through which it will flow into the water works system is called intake structure.

River Intake structure



In river intakes water is drawn from upstream side to get comparatively better quality of water. They are located sufficiently inside the rivers so that required demand of water is met in all seasons. It is circular masonry tower of 4 to 7 m in dia constructed along the bank of river.

2] Classify displacement ~~pumps~~ pumps. Explain the working of reciprocating pump with neat sketch.

→ Classification of displacement pumps

a) positive displacement pumps
   * Reciprocating pump
   * Rotary pump.

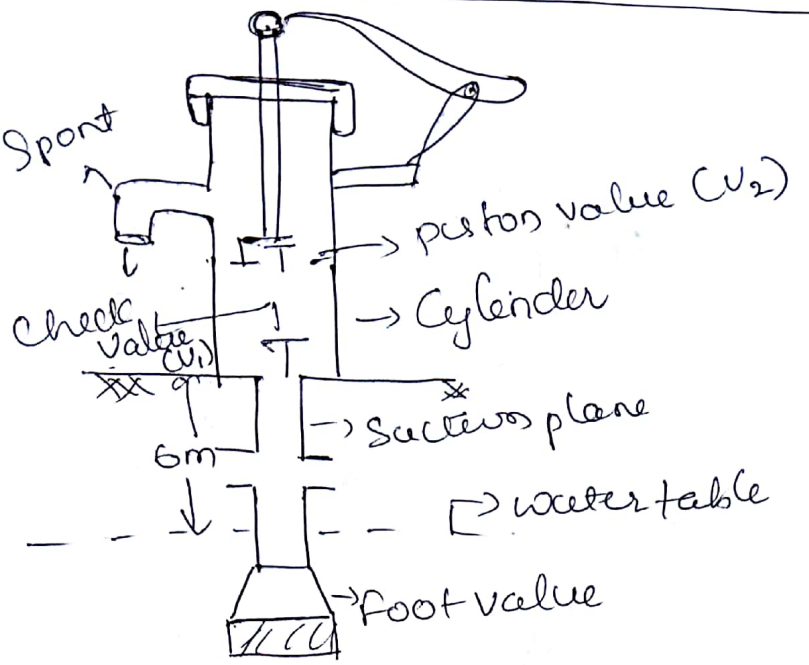
b) Variable displacement pumps.
   * Centrifugal pump
   * Turbine pump
      → Deep well pump
      → Sub mersible pump.
   * propeller pump.

c) Miscellaneous pump
   * jet pump
   * Airlift pump.

Reciprocating pump

→ reciprocating pump is also known as "positive displacement pump" because in it liquid is pushed out of the cylinder by the actual displacement of piston

→ A reciprocating pump is driven by power available from an external source & consists of a cylinder in which piston or plunger reciprocates this movement of the piston or plunger creates alternately vacuum pressure & positive pressure in the cylinder which raises the water.



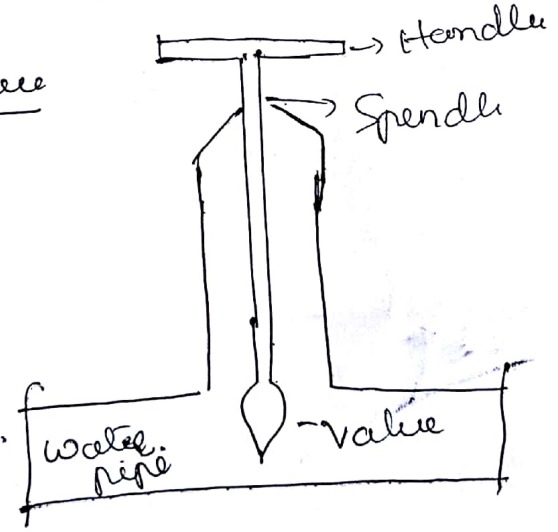
Reciprocating pumps

3] Explain with neat sketches

~~i) Sluice value~~

~~ii)~~

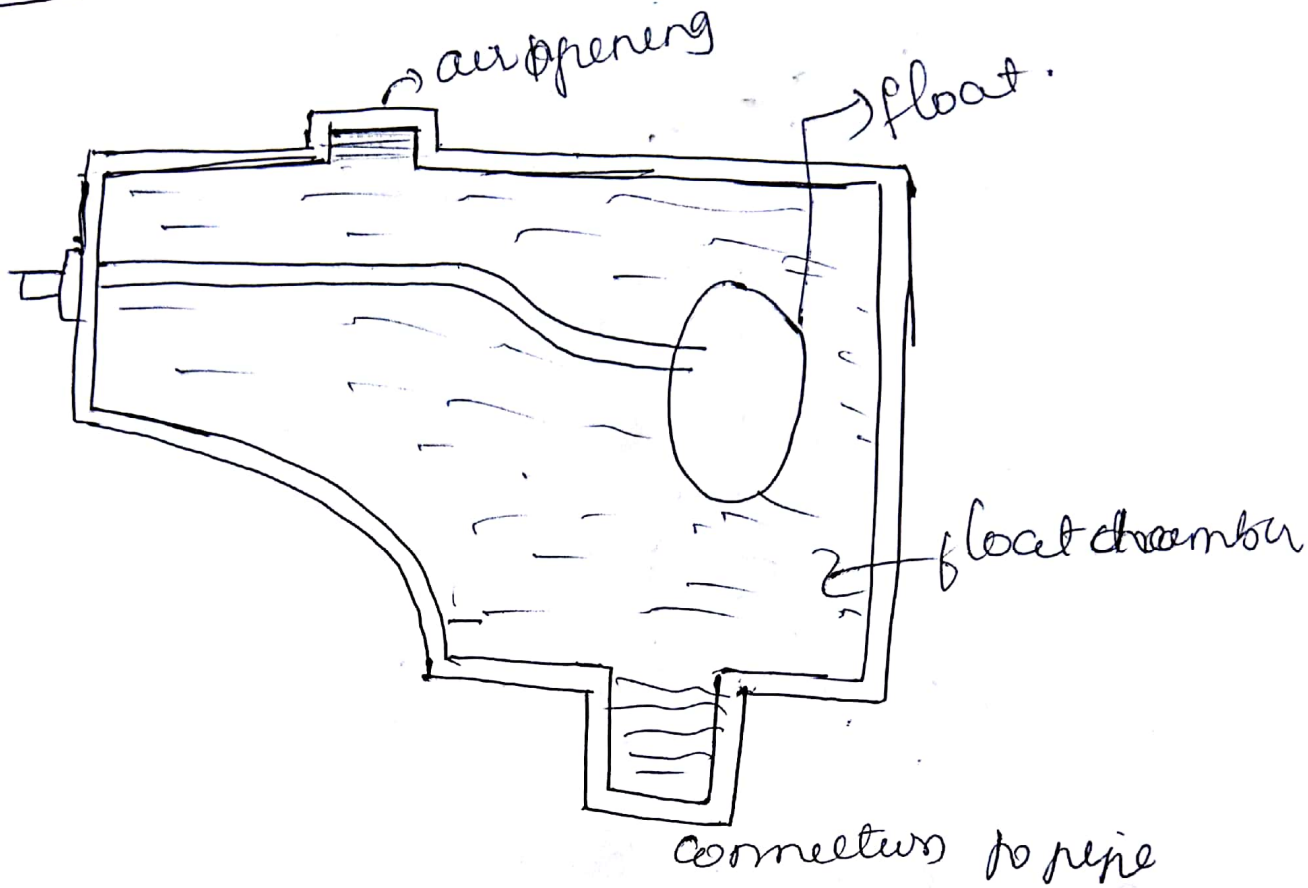
i) Sluice value



→ These are some times known as gate values. This is generally use to control the flow in a pipe line when a question of repair is needed. this value the supply of water beyond the value in pipe line

→ This is made of cast iron having a brass or stainless steel mounting at the end fitted with a pipe.

11) Air Valve



-> In long pipe line, air accumulates at high points of the line which interferes with streamline flow of water, at such points air valve are provided which remove the accumulated air automatically. This valve has one or two hollow floats inside the float chamber. There are air opening at the top & Values are connected to the main. float chamber normally remains full of water. after which the chamber again fill up with water & takes the float up which closes the air openings.

What are ~~good~~ Fire hydrants? Give the require-ments of good hydrants.

→ Fire hydrant

A hydrant is an outlet provided on an water pipe for tapping water mainly in case of fire. They are located at 100 to 150 m apart the road & also at Suction roads.

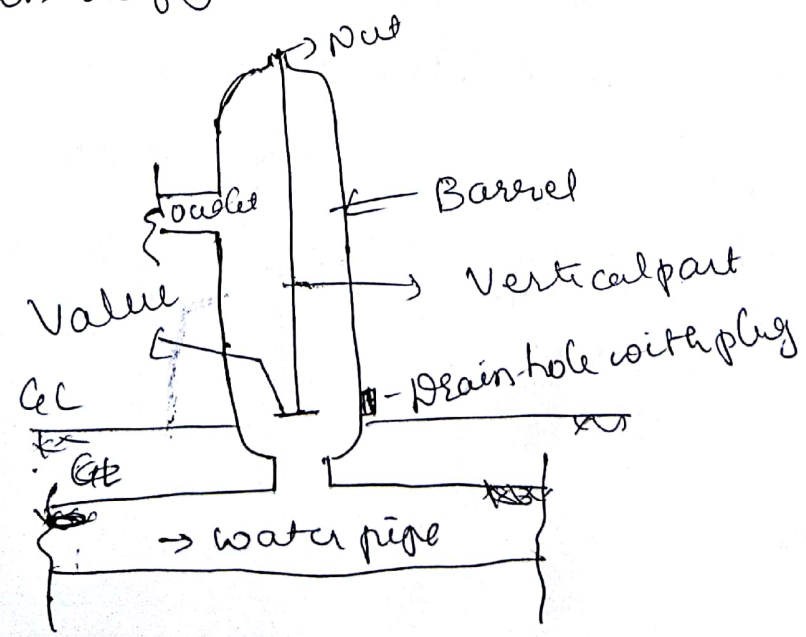
They are of two types

→ Flush hydrant

→ Post hydrant

Flush hydrants: the flush hydrant is kept in under ground chamber flush with footpath Covered by CS cover carrying a sign board "F-H"

Post hydrants: the post hydrant remains projected 60 to 90cm above ground level. as shown in fig.



Requirements of good fire hydrants

→ should be cheap
→ easy to connect with hose
→ Easily detachable
→ Easily reliable

what do you understand by defluoridation of water describe nalgonda technique of defluoridation process

→ The term defluoridation means to remove the excess fluoride from drinking water or adjusting fluoride level in water upto 1 mg/l.

Traces of fluoride salts are normally present in all types of natural water. The concentration of fluoride ions (F^-) varies from 0.5 mg/l. in rivers & lakes about 1.0 mg/l. In sea water & ground water the concentration of F^- ions can be as high as 10 mg/L. depending on the chemical nature of rocks as well as the type of fluoride mineral present. F^- ions may be essential in for animals and humans.

Nalgond Technique

A very famous example of the precipitation is Nalgonda technique.

This technique developed by (NEERI) India in 1975. The advantage of this technique a easiest to operate. Simplest & least expensive.

This Nalgonda technique is very versatile & has been successfully used for water purification at individual as well as community levels and has been in several developing countries.

Bleaching powder is generally used to achieve simultaneous disinfection of treated water & also keep the system free from undesirable biological growth.

Theamount of aluminium salt added depend on alkalinity & Concentration of floc ide in water under treatment. Flocs are formed & allow it to settle. The process flocs formation & setting of flocs required an hour.