Reinforcing

Reinforcing a plastic Matrix with a high-strength fibre material gives us fibre-Reinforced plastics (FRP).

FRP is composed of fibres and matrix. High performance fibre embedded to a polymer matrix.

It has a high Strength to weight ratio & excellent corrosion Resistance.

Due to these specific properties reinforced plastics are used in Boat hulls & in storage tanks for storage acids

The main reinforcing fibre which are generally used are those of glass, graphite, alumina & Boron.
Aromatic polyamide fibres are also used which reduces weight by 50% as compared to other.
The common resin matrix used in FRPs includes polyesters, epoxy, phenolic & silicone.

There are several Method for the preparation of Reinforced plastics.

1) The hand lay up technique -

This is the simplest method for producing Reinforced plastic.
First a thin coating of polyvinyl alcohol, silicone oil or wax is applied on the mould.
It prevents the final fabricated article from sticking to the Mould.
The mould is then coated with a Resin Matrix.

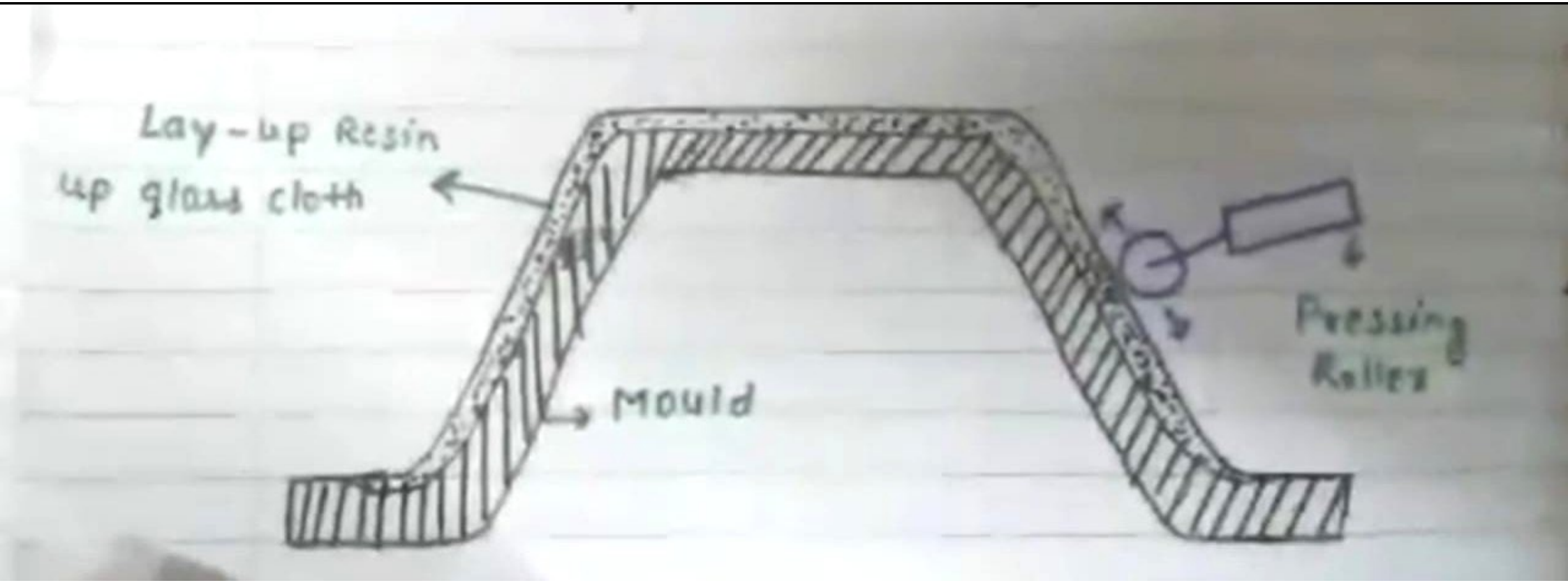
Matrix

Another layer of the resin coating is given over the glass cloth.

Rollers are used to press the glass cloth on the Resin uniformly.

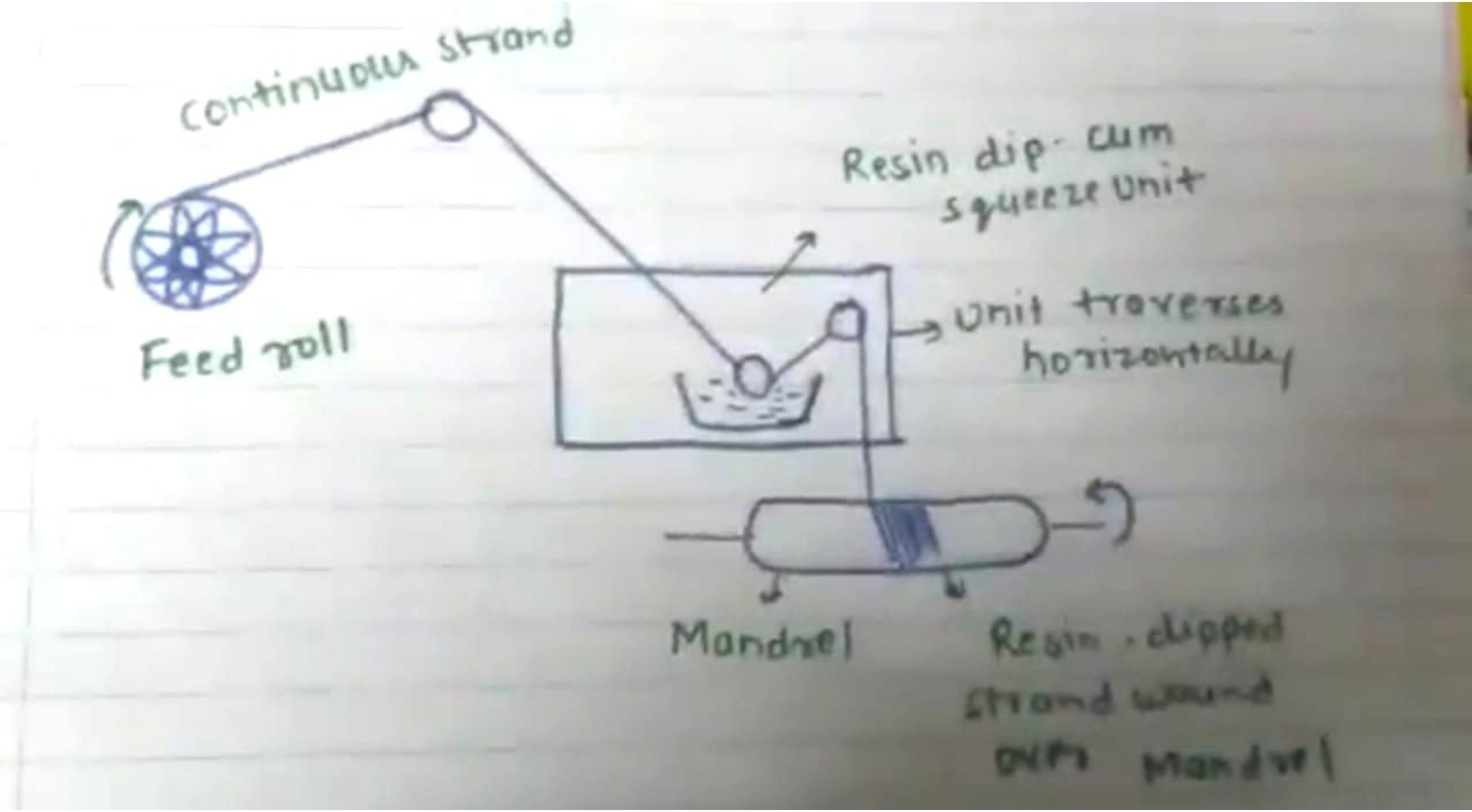
Alternate layers of Resin & glass cloth are laid in a similar manner until the Required thickness is obtained.

Sheet, autobody parts, boat hulls are produced by this technique


Lay-up Resin
up glass cloth
Mould
Pressing
Roller

2) Filament - winding technique -

This is very widely used method for producing Reinforced plastic articles such as high pressure cylinders, Storage tanks.


Continuous strand
Resin dip cum squeeze unit
Feed roll
Unit traverses horizontally
Mandrel
Resin dipped strand wound over mandrel