

**AIM:** To study the construction and operation of 'WILFLEY TABLE'.

**THEORY:**

The function of Wilfley table is that to separate two or more materials mixed on the basis of their density. The working of Wilfley table is carried out by flowing the materials across the plane surface, i.e the table with the help of water. This water acts as medium of separation. The plane is vibrated in reciprocating i.e. to-and-fro motion with the help of an electric motor. The reciprocating motion is obtained from the eccentric which is connected with the motor with a suitable device. The separation mainly depends on their density but sometimes depends on the size and shape of the materials.

**CONSTRUCTION:**

The Wilfley table consists of a wooden flat table A which is inclined at an angle of 20-30° to the axis of the horizontal. There is a series of riffles B and their size is about 1/3 inch. The materials to be separated are fed at the top right hand corner D. Due to the reciprocating motion, the feed materials moves across the table. The particles tends to move downwards under the combined action of gravity and the streams of water which is introduced with the materials, but are opposed by the riffles. The smaller particles are accumulated and large particles carries along parallel to the riffles.

**OPERATION:**

The Wilfley table is a device of size separation. Here separation is accomplished due to variation in gravity. The feed material i.e. the solid mixture which is to be separated is fed or introduced at the inlet point of the equipment while at the same time water which acts as the separating media , which is supplied under controlled flow rate through a valve at the second point, generally right hand top corner. Thus the mixture is carried out by the water through the channel. From the end of the channel, the mixture along water meet some riffles which opposes the direction i.e. pressure of the input ,and distributed through the gaps between the riffles. Due to the reciprocating i.e. to- and- fro motion of the plane (table), the materials move towards the end of the plane depending upon their(density) gravity. The lightest particles moves along with water accomplishing separation whereas the lighter particles gets accumulation towards the end of the plane. On the other hand, the heavier particles doesn't move and gets accumulated at the beginning of the plane.

The particles which goes along with water can be separated by filter papers. And the lighter and heavier particles are separated by hand from the plane and by performing

recycle operation separate fractions of particles are found. These are dried and after that, we get the final separated product

**PRECAUTION:**

One most important precaution that must be considered is that the flow rate of water must be controllable i.e. optimum. If the flow rate exceed the desired flow rate, no separation will be accomplished and the feed material passes along with water.

**APPLICATION:**

Wilfley Table is used to separate for grinding materials of about 500-mesh size. It is particularly used in mining industries for separation of coal from other materials like copper ores or some other materials. It is also used in industries for separation of bagasse fibre, nuts, woodchips etc. It is also useful for the treatment of materials containing only one valuable material.

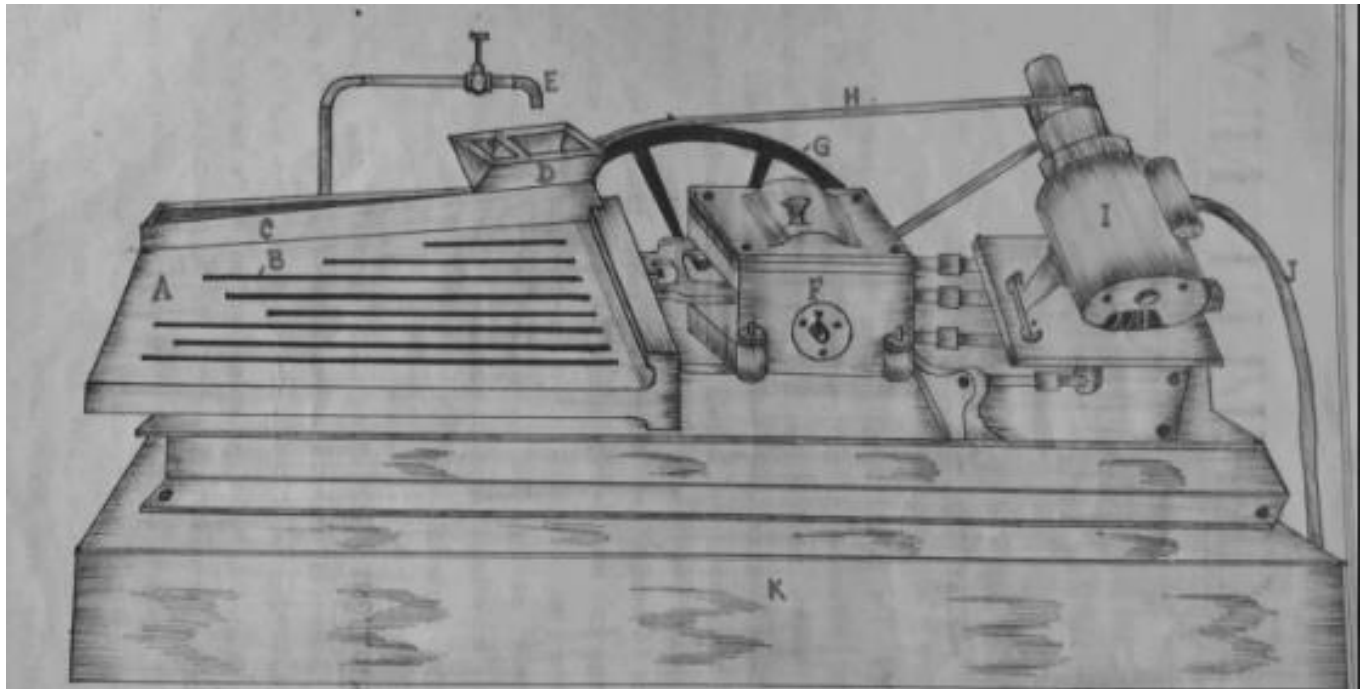


Fig. D.

**WILFLEY TABLE.**

A—plane or table, B—riffles, C—channel, D—inlet core, E—water tap, F—vibrating box, G—pulley, H—belt, I—motor, J—electric mains, K—ground floor.