THESIS

IN

CHEMICAL ENGINEERING.

THE CONSTRUCTION AND MANIPULATION OF A MECHANICAL STIRRER.

RESPECTFULLY SUBMITTED

BY

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[1920]

Any apparatus which can be used in a chemical laboratory to stir liquids has two important uses: first, in titration, and second, to prevent over boiling or bumping of boiling liquids. It was with these two factors in mind that this mechanical stirrer was constructed.

In order to have a stirrer that will suit all occasions, the glass stirring rod is made adjustable so that it can be immersed into the liquid to any desired depth. Moreover, the rod can easily be removed and a new one substituted in its place, thus providing so that rods of different curvature and length can be used with little or no trouble.

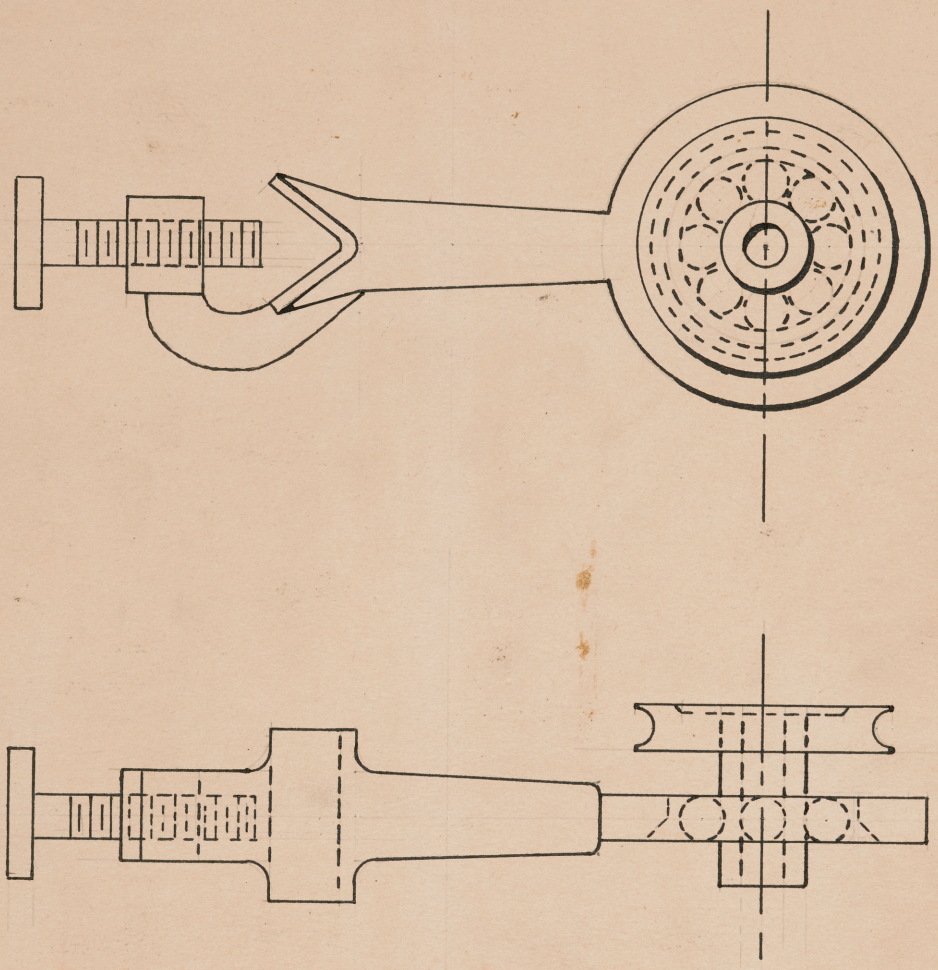
The stirrer itself is mounted upon an ordinary cast iron funnel holder. This holder is mounted upon a vertical stand and can be moved up or down the stand to any desired height.

To this cast iron holder there is attached a small ball bearing socket in shich rotates a half inch hollowed shaft, made of steel. This ball bearing socket is held in place by an overlying washer, which is bolted to the holder.

The hollow shaft, free to revolve in the socket, has a small pulley wheel attached to its upper end. This pulley wheel was constructed so that when coupled to the electric motor in the

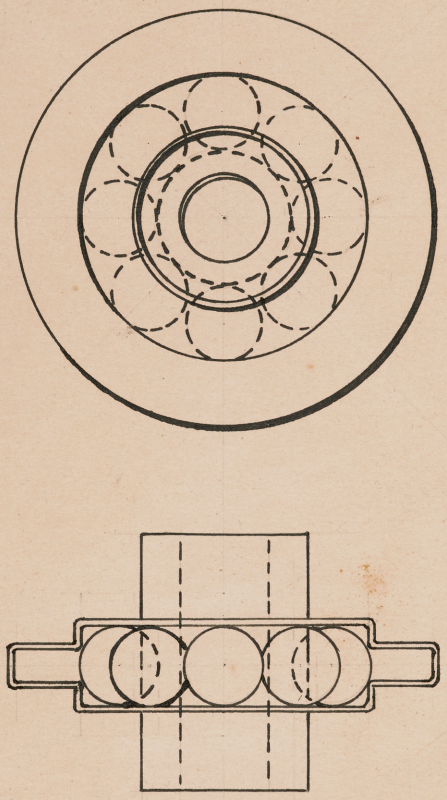
laboratory, it would rotate at about the same speed that a chemist in the laboratory would rotate a stirring rod in a beaker of some solution. I arrived at this speed by actually stirring a beaker of water with a rotary motion and counting the revolutions thus made during one minute. The speed thus determined was approximately 100 r.p.m.

The curved or bent stirring rod is inserted into the hollow shaft and clamped there with a small set screw. The shape of the stirring rod is shown below, and it can be seen that when revolved by means of the pulley, it will set up a rotary stirring motion in any liquid into which it is immersed.



ACTUAL SIZE.

STIRRER DETACHED FROM VERTICAL ROD.



BALL BEARING SOCKET. TWICE ACTUAL SIZE.