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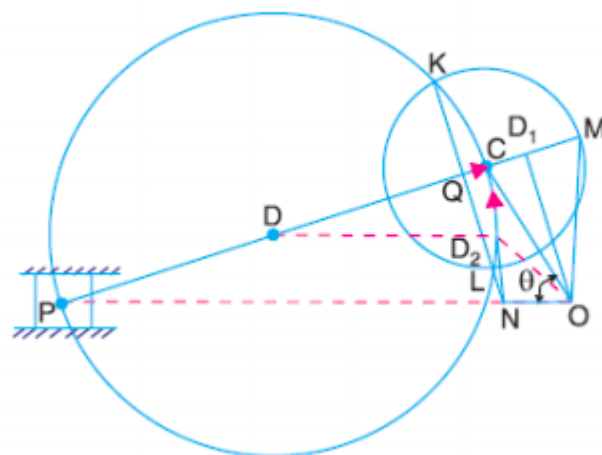
Explain with neat sketch how to find the velocity of a slider in slider crank mechanism by Klein's construction.

**Question:**

**Explain with neat sketch how to find the velocity of a slider in slider crank mechanism by Klein's construction.**

**Answer:**

## Velocity of a slider in a slider crank mechanism by Klein's construction method



Let  $OC$  be the crank and  $PC$  the connecting rod of a reciprocating steam engine, as shown in Fig. below. Let the crank makes an angle  $\theta$  with the line of stroke  $PO$  and rotates with uniform angular velocity  $\omega$  rad/s in a clockwise direction.

First of all, draw  $OM$  perpendicular to  $OP$ ; such that it intersects the line  $PC$  produced at  $M$ . The triangle  $OCM$  is known as Klein's velocity diagram.

In this triangle  $OCM$ ,  $OM$  may be regarded as a line perpendicular to  $PO$ ,

$CM$  may be regarded as a line parallel to  $PC$ , (since it is the same line) and  $CO$  may be regarded as a line parallel to  $CO$ .

$op_1$  represents  $v_{PO}$  (*i.e.* velocity of  $P$  with respect to  $O$  or velocity of cross-head or piston  $P$ ) and is perpendicular to  $OP$ , and

$c_1p_1$  represents  $v_{PC}$  (*i.e.* velocity of  $P$  with respect to  $C$ ) and is parallel to  $CP$ .