

To consider the motion preduced, let us take, instead of the sketch of the machine itself, the four following figures; where the shaded portion represents the cam in four different positions it will pass through during a half revolution. The path of the side A B, opposite to the centre C, is also shewn by a circle divided into six equal parts, in the points 1 2 3 4 5 6, so that, by the principles of geometery, A B must be equal in length to any one of these parts.

sty one of these parts. Suppose then, that the revolution commences with the cam in the position shewn in the first figure, when B is at 1, and proceeds in the direction of the numbers. During the first sixth of a turn, till B reaches 2, as in the second figure, there will be no metion imparted to the horizontal line D F, which represents the rectangular opening of the complete machine. While B is moving on from 2 to 3, as in the third figure, the arc C B, will drive D F upwards, the motion being the same as that of a simple eccentric circle turning about a point in its circumference, and whose connecting rod is parallel to the direction of the reciprocal movement. After passing 3 the point B itself will become the driver until 4 is reached, as in the fourth figure; and the motion will be the same as from 2 to 3, except that it is decreasing in velocity, while that was increasing. Finally, as B moves from 4 to 5 the motion will again cease; and afterwards be repeated exactly as it was from 2 to 4, excepting that it will be in the reverse direction, till the revolution is completed.

The same motion might be obtained from an eccentric with a loop at the end of the rod, as is also shewn in a figure; but a great objection would be, that a blow would be struck on the pin at the end of each intermission.

Cams are almost endless in their variety; but we will leave the consideration of several more examples of them for our next paper.