

ABSTRACT

A positive displacement flowmeter having a pair of non-circular gears in a rolling contact on a pitch line without slippage. The positive displacement flowmeter comprises a casing (3) and a pair of rotors (1, 2) provided in the casing (3) and rotatable around its center axes (4, 5). The pair of rotors (1, 2) have a tooth profile curve which is an oval pitch curve itself having a trajectory of contact points on the pitch line, and they satisfy a condition of $r_1 + r_2 = K = \text{const}$ $r_1 d\theta_1 = r_2 d\theta_2$, and a moving radius of the oval pitch curve is given by $r_i = a / (1 - b \cos n\theta_i)$ ($i=1, 2$), where " r_i ($i=1, 2$)" is the moving radius that is a distance from a center of rotation to the oval pitch curve, " a " is a homothetic coefficient, " b " is a flattening, " n " is a number of lobes, and " θ_i ($i=1, 2$)" is a moving angle.