Machine and Concrete

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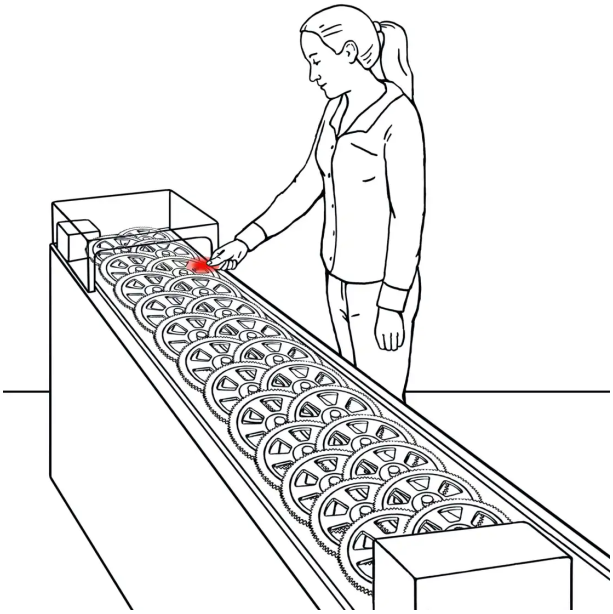
How long does one revolution of the last gear take?



Look at the gear wheels.

What do you notice?

Put your finger on the third, fourth, fifth gear wheel.

Can you still feel the movement?

This gear train consists of 24 large double gear wheels, a small double gear wheel and a worm wheel directly at the motor. During the power transmission from a large double gear wheel to the next, one gear wheel with 14 teeth meshes with another that has 120 teeth. Each transmission therefore corresponds to a reduction of 14 to 120. Down to the last gear wheel there is a total reduction of $1 : 8.57^{24}$.

The motor's rotational speed is reduced by the worm wheel. The first (small) wheel rotates at 79.2 revolutions per minute, the first large double gear wheel at about 9 revolutions per minute. The speed of the last gear wheel is now at only 3.2×10^{-21} revolutions per minute.

That is so slow that it would take about 594,000,000,000,000 (594 trillion) years for the last gear wheel to complete one revolution. The fact that it is embedded in concrete is practically irrelevant.