G1 Compound Gear Train

This Reuleaux machine first acts by rotating the first gear. This gear interlocks with the second gear causing rotation in the opposite direction through their interlocking teeth. This gear then rotates the third gear through their connected shaft. Then, the third gear acts upon the fourth gear through interlocking teeth to rotate the fourth gear behind the first but at a different rpm.

Its primary purpose is to achieve a specific gear ratio that provides precise speed or torque control. One of the key advantages of a compound gear train is its ability to distribute the load among multiple gears. This helps to reduce stress on individual gears, which can extend their lifespan and reduce the likelihood of gear failure. Additionally, compound gear trains can achieve the same gear ratio as a simple gear train, but in a much more compact space, allowing for simplification and smaller products.

Source: https://digital.library.cornell.edu/catalog/ss:372560