Let X_i be the expected number of trials required for the car in the ith slot to get to the end. Since the order of cards is preserved, car N will end in slot $2N$, car $N-1$ in $2N-1$, and for car i in the $N+i$ slot. This means every car has to move up N slots. Since the probability that a car moves is the same every trial,

$$X_i \sim \sum_{j=1}^{N} Y_j$$

where $Y_j \sim Geometric(0.5)$. This is because a geometric variable counts the number of trials till a success (including the success case). Since we are interested in N successes, we consider N geometric variables one after the other. Therefore

$$\mathbb{E}[X_i] = \mathbb{E}\left[\sum_{j=1}^{N} Y_j\right] = \sum_{j=1}^{N} \mathbb{E}\left[Y_j\right] = \frac{N}{0.5} = 2N$$

Therefore,

$$\mathbb{E}[\text{Total time}] = \mathbb{E}\left[\sum_{i=0}^{N} X_i\right] = 2N \cdot \sum_{i=1}^{N} = 2N^2$$