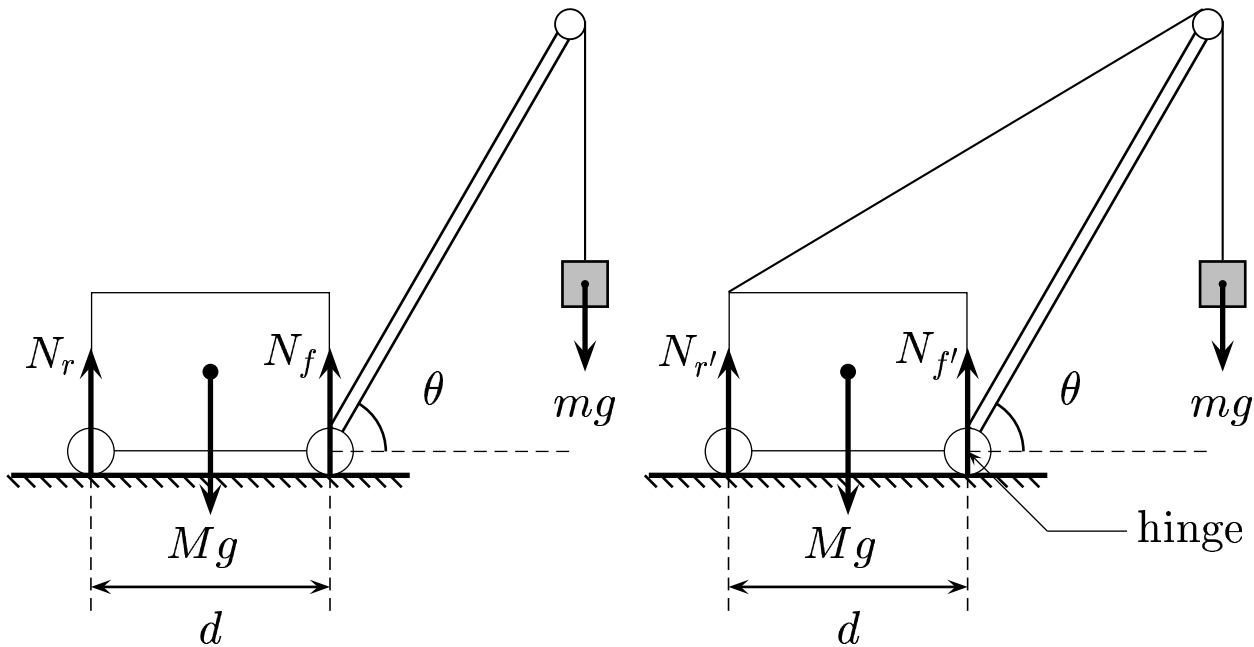


Consider two crane-and-weight systems that are identical in all aspects except the following;

System 1 the crane-arm is rigidly connected to the “crane-body”.

System 2 the connection is through a hinge together with a supporting wire with a negligible mass. Denote N_f and N_r to be the forces which the ground exerts on the front and the rear wheels for system 1. The corresponding forces for systems 2 are N'_f and N'_r .



Which one is right?

- A) $N'_f = N_f$ and $N'_r < N_r$.
- B) $N'_f = N_f$ and $N'_r = N_r$.
- C) $N'_f > N_f$ and $N'_r < N_r$.
- D) $N'_f > N_f$ and $N'_r = N_r$.

The “internal forces” always appear in pairs.

Each pair has an action-force and reaction-force.

The two forces of each pair are collinear and cancel each other out.

So, internal forces do not lead to a net force or a net torque.

Only external forces appear in the static equilibrium equations.

For present cases, their equilibrium equations which contains respective external forces are identical.

In turn, the respective forces are identical.

Answer **B** .