What is claimed is:

1. A rotor, comprising:

a shaft configured to rotate about the center thereof; and

a rotor core fixed to the shaft,

wherein the rotor core has a plurality of flux barriers formed side by side in a radial direction of the rotor core, each of the flux barriers ranging from a certain portion to another portion of an outer circumferential surface of the rotor core,

each of the flux barriers has:

a plurality of bridges that include a bridge forming a part of the outer circumferential surface of the rotor core at opposite ends thereof in a longitudinal direction thereof; and

one or more barrier regions that have a lower permeability than a portion other than each of the flux barriers in the rotor core between the plurality of bridges,

a permanent magnet is provided in at least one of the barrier regions,

a magnetizing direction of the permanent magnet is directed in a direction that intersects a longitudinal direction of each of the flux barriers at a position at which the permanent magnet is provided, and

when a permeability of a region where the permanent magnet is not present in the barrier region is defined as μ_0,

a cross-sectional area of the permanent magnet in a plane that is orthogonal to an extending direction of the shaft is defined as S_M,

a residual magnetic flux density of the permanent magnet is defined as B_r,

a recoil permeability of the permanent magnet is defined as μ_{re},

an arithmetic mean between a minimum and a maximum of a thickness of the barrier region is defined as t_{FB}, and

a sum of widths of all the plurality of bridges is defined as w_B,

a value of $(\mu_0 \times S_M \times B_r)/(\mu_{re} \times t_{FB} \times w_B)$ is within a range between 1.2 and 3.0.

2. The rotor according to Claim 1, wherein the rotor core is formed with one or more magnetic paths which are separated by the flux barrier and through which magnetic flux produced by a stator passes.

3. The rotor according to Claim 1, wherein the permanent magnet is provided in the barrier region that is formed at a position close to any one of opposite ends of at least one of the flux barrier in the longitudinal direction thereof, and a weight-adjusting member having nearly the same weight as the permanent magnet is provided in the barrier region that is formed at a position close to the other end.

4. The rotor according to Claim 1, wherein a non-magnetic material is filled between the rotor core and the permanent magnet in the barrier region.

5. The rotor according to Claim 1, wherein a plurality of barrier regions including the barrier region are formed in at least one of the flux barriers, and the permanent magnet is provided in the barrier region that is closest to the shaft among the plurality of barrier regions.

6. A reluctance motor, comprising:

the rotor defined in Claim 1;

a stator core disposed on an outer circumference of the rotor core with a space from the rotor core and having a plurality of teeth arranged with a space between each other in a circumferential direction; and

a multipole multiphase armature winding wound around the plurality of teeth.