CLAIMS

1. A system, comprising:

a rolling bearing element assembly configured to enable oscillatory motion of a rotary element about a bearing system axis of the rolling bearing element assembly,

wherein the rolling bearing element assembly comprises an inner race, an outer race, a contact surface of the inner race or of the outer race, a plurality of rolling bearing elements disposed between the inner and outer races, and a bearing cage configured to hold the rolling bearing elements such that the rolling bearing elements are circumferentially spaced about the bearing system axis; and

a spring-loaded indexing element fixed to the bearing cage and configured to enable rotation of the bearing cage about the bearing system axis via engagement of the spring-loaded indexing element with the contact surface, wherein the spring-loaded indexing element is configured to establish the engagement with the contact surface when the rotary element is rotating in a first direction about the bearing system axis, and wherein the spring-loaded indexing element is configured to slip along the contact surface when the rotary element rotates in a second direction about the bearing system axis opposite to the first direction.

2. The system of claim 1, wherein the rotary element is coupled to the inner race such that the rotary element imparts the oscillatory motion to the inner race, and wherein the inner race comprises the contact surface.

3. The system of claim 1, wherein the rotary element is coupled to the outer race such that the rotary element imparts the oscillatory motion to the outer race, and wherein the outer race comprises the contact surface.

4. The system of claim 1, wherein the indexing element and the contact surface are configured such that a frictional force between the indexing element and the contact surface holds the indexing element and the contact surface in engagement.

5. The system of claim 1, wherein the contact surface comprises ratchet teeth.

6. The system of claim 1, wherein the indexing element comprises a leading edge rotatably coupled to the bearing cage and a trailing edge configured to engage the contact surface when the rotary element is rotating in the first direction.

7. The system of claim 1, wherein the rolling bearing element assembly comprises a sealed rolling bearing element assembly.

8. A bearing system, comprising:

an outer race disposed in alignment with a bearing system axis;

an inner race concentric with the outer race and having an outer diameter less than an inner diameter of the outer race;

a rotary element coupled to one of the inner race or the outer race;

a plurality of rolling bearing elements disposed between and in rolling contact with the inner race and the outer race;

a bearing cage coupled to the plurality of rolling bearing elements, wherein the bearing cage is configured to keep the plurality of rolling bearing elements circumferentially spaced about the bearing system axis;

a spring loaded indexing element with a first end rotatably coupled to the bearing cage and a second end in contact with a contact surface of the inner race or the outer race;

wherein the indexing element is configured to engage the contact surface via the second end to enable rotation of the bearing cage in a first direction about the bearing system axis when the rotary element is rotating in the first direction, and wherein the second end of the indexing element is configured to slide along the contact surface to resist rotation of the bearing cage in a second direction about the bearing system axis opposite to the first direction when the rotary element is rotating in the second direction.

9. The bearing system of claim 8, wherein a frictional force between the second end of the indexing element and the contact surface causes the second end of the indexing element to engage with the contact surface when the rotary element is rotating in the first direction, thereby causing the rotation of the bearing cage and the plurality of rolling bearing elements in the first direction.

10. The bearing system of claim 8, wherein the contact surface comprises ratchet teeth, and wherein the indexing element is spring-loaded to interlock with the teeth when the rotary

element is rotating in the first direction, thereby causing the rotation of the bearing cage in the first direction.

11. The bearing system of claim 8, comprising a plurality of spring-loaded indexing elements each coupled to the bearing cage and disposed circumferentially about the bearing system axis.

12. The bearing system of claim 8, wherein the indexing element comprises an asymmetric shape wherein the first end comprises a rounded leading edge and the second end comprises a trailing edge configured to engage the inner race.

13. The bearing system of claim 8, wherein the rotary element is coupled to the inner race and wherein the inner race comprises the contact surface.

14. The bearing system of claim 8, wherein the rotary element is coupled to the outer race and wherein the outer race comprises the contact surface.