WHAT IS CLAIMED IS:

1. A door operator comprising a chain disk, a rotary shaft, and a locking mechanism, the chain disk being adapted to rotate the rotary shaft, and the locking mechanism being adapted to lock the rotary shaft, the locking mechanism comprising:

an end disc having an axial hole at the center, and a positioning ring at one end face thereof for surrounding the axial hole, the other end face of the end disk being connected to the chain disk;

a hollow outer ring portion having one end positioned in the positioning ring of the end disk, thereby defining a central receiving portion within the outer ring portion, wherein the rotary shaft having one end pivoted in the axial hole and one other end extends beyond the central receiving portion;

a bidirectional rotary block received in the central receiving portion and fixedly connected to the rotary shaft, the bidirectional rotary block comprises a plurality of axial slots and a plurality of radial arc faces arranged in an alternate fashion, one side of each radial arc face intersects with one side of each axial slot adjacent thereto to form a latching angle which is spaced from an inner wall of the outer ring portion by a first distance, a midpoint of each radial arc face is spaced from the inner wall of the outer ring portion by a second distance, and each radial arc face has a radius greater than a radius of the inner wall of the outer ring portion;

a plurality of push pins equidistantly spaced from each other being axially arranged along the inner circumference of the central receiving portion to correspond to the plurality of the axial slots, each of the plurality of push pins is secured on the end disk at the one end facing the end disk; each axial slot is spaced from the inner wall of the outer ring portion by a third distance, and each push pin has a diameter greater than the first distance and lesser than the third distance, so that each push pin is slidable on each axial slot and can be locked at the latching angle;

a plurality of anti-rotation posts arranged in pairs of two, each anti-rotation post has a diameter greater than the first distance and lesser than the second distance, each pair of the anti-rotation posts is provided on

respective radial arc face, a spring is arranged between two anti-rotation posts of each pair to provide a potential energy to the posts so that the posts are slidably moved constantly in the direction of the latching angle; and

a cover plate rotatably covering the other end of the outer ring portion, and being securely connected to the other end of the plurality of push pins by means of a fastener; whereby

when an external force is applied to rotate the chain disk, the plurality of push pins urge the bidirectional rotary block to rotate, thereby rotates the rotary shaft, but when the rotary shaft rotates, the plurality of anti-rotation posts lock the bidirectional rotary block, so as to preclude the rotary shaft from rotating.

2. The door operator according to claim 1, wherein both side edges of each axial slot comprises a fillet each, the fillet has a radius that is the same as that of the pushing pin.

3. The door operator according to claim 1, further comprising an outer cover, an output wheel, and a substrate, wherein the outer cover is disposed outside the locking mechanism and having a central shaft hole, one end of the rotary shaft is pivotally disposed at the central shaft hole, and extends through the central shaft hole to connect with the output wheel; and the substrate is connected to the outer cover and the outer ring portion by means of the fastener.

4. An electrical door operator comprising an electric motor, a rotary shaft, a locking mechanism, and a manual mechanism, the electric motor having a drive shaft engageable to and disengageable from the rotary shaft in a controlled manner, the locking mechanism being adapted to lock the rotary shaft, and the manual mechanism being adapted to rotate the rotary shaft; wherein the locking mechanism comprising:

an outer ring portion having one end provided with an annular seat

which defines a central receiving portion within the outer ring portion;

an inner ring portion received in the receiving portion, and rotatably abuts the seat;

a bidirectional rotary block having a spline shaft hole through which a first end of the rotary shaft formed into a spline shaft is axially and slidably insertable, the bidirectional rotary block comprises a plurality of axial slots and a plurality of radial arc faces arranged in an alternate fashion, one side of each radial arc face intersects with one side of each axial slot adjacent thereto to form a latching angle which is spaced from an inner wall of the outer ring portion by a first distance, a midpoint of each radial arc face is spaced from the inner wall of the outer ring portion by a second distance, and each radial arc face has a radius greater than a radius of the inner wall of the outer ring portion;

a plurality of push pins equidistantly spaced from each other being axially arranged along the inner circumference of the central receiving portion to correspond to the plurality of the axial slots, each of the plurality of push pins is secured at the inner ring portion; each axial slot is spaced from the inner wall of the outer ring portion by a third distance, and each push pin has a diameter greater than the first distance and lesser than the third distance, so that each push pin is slidable on each axial slot and can be locked at the latching angle;

a plurality of anti-rotation posts arranged in pairs of two, each anti-rotation post has a diameter greater than the first distance and lesser than the second distance, each pair of the anti-rotation posts is provided on respective radial arc face, a spring is arranged between two anti-rotation posts of each pair to provide a potential energy to the posts so that the posts are slidably moved constantly in the direction of the latching angle; and

a cover plate rotatably covering the other end of the outer ring portion, and being securely connected to the plurality of push pins, the cover plate has external gears at the outer circumference to operatively connect with the manual mechanism;