CLAIMS

1. A blade opening and closing device comprising:

a drive body including a rotor;

a drive lever rotatable in a first rotation direction from a first rotation position to a second rotation position and a second rotation direction from the second rotation position to the first rotation position;

an opening and closing blade that is operated in a closing direction of closing an opening in accordance with a rotation operation of the drive lever in the first rotation direction, and is operated in an opening direction of opening the opening in accordance with an operation of the drive lever in the second rotation direction; and

a blade return spring that biases the opening and closing blade in the opening direction, and biases the drive lever in the second rotation direction,

wherein the drive lever is configured to be integrally rotated with the rotor in the first rotation direction by a driving force of the drive body, and

the drive lever is configured to rotate, independently of the rotor in the second rotation direction, by at least a biasing force of the blade return spring.

2. The blade opening and closing device according to claim 1, wherein

the drive lever is made rotatable in the first rotation direction independently of the rotor when the drive body is not energized.

3. The blade opening and closing device according to claim 2, wherein

a center of gravity of the rotor is located on a rotation axis.

4. The blade opening and closing device according to claim 1, wherein

a rotation axis of the rotor and a rotation axis of the drive lever are identical.

5. The blade opening and closing device according to claim 1, wherein

the rotor is provided with a pressing part,

the drive lever is provided with a pressed part pressed by the pressing part, and

when the pressed part is pressed by the pressing part, the drive lever is rotated in the first rotation direction by a driving force of the drive body.

6. The blade opening and closing device according to claim 1, further comprising

a brake lever operable between a deceleration start position and a rotation stop position,

wherein when the brake lever is operated from the deceleration start position toward the rotation stop position, a rotation speed of the drive lever is reduced at a time of rotation in the first rotation direction.

7. The blade opening and closing device according to claim 6, further comprising

a lever support part formed on the brake lever,

wherein the drive lever rotated in the first rotation direction is supported by the lever support part.

8. The blade opening and closing device according to claim 7, further comprising

a brake stopper that presses the brake lever and stops the brake lever at the rotation stop position,

wherein the brake lever is stopped at the rotation stop position by the brake stopper, the drive lever being held at the second rotation position.

9. The blade opening and closing device according to claim 7, wherein

the rotor is provided with an acting part,

the brake lever is provided with an operated part,

the brake lever is operated from the rotation stop position toward the deceleration start position by the operated part being pressed by the acting part, and

a support state of the drive lever by the lever support part is released along with an operation of the brake lever from the rotation stop position toward the deceleration start position.

10. The blade opening and closing device according to claim 9, wherein

when the drive lever is pressed by the operated part, the support state of the drive lever by the lever support part is released.

11. The blade opening and closing device according to claim 9, wherein

the drive lever is provided with a deceleration function part that comes into contact with a part of the brake lever when rotating in the second rotation direction, and

the drive lever is decelerated between the first rotation position and the second rotation position by contact of the deceleration function part with a part of the brake lever.

12. The blade opening and closing device according to claim 11, wherein

the deceleration function part is brought into contact with the operated part.

13. The blade opening and closing device according to claim 1, wherein

a support base on which the drive lever is rotatably supported is provided,

the drive lever is provided with a connecting shaft to which the opening and closing blade is connected,

a position holding part that holds the drive lever at the first rotation position is formed in the support base, and

the drive lever is held at the first rotation position by pressing the connecting shaft against the position holding part by a biasing force of the blade return spring.

14. The blade opening and closing device according to claim 1, further comprising

a biasing spring that is supported between the rotor and the drive lever and biases the drive lever in the

second rotation direction.

15. The blade opening and closing device according to claim 14, wherein

the rotor and a part of the drive lever are positioned to be opposite to each other in a rotation axis direction of the rotor, and

the biasing spring is disposed between the opposed rotor and a part of the drive lever.

16. The blade opening and closing device according to claim 14, wherein

a biasing force of the biasing spring and the biasing force of the blade return spring are both used to bias the drive lever in the second rotation direction.

17. An imaging device comprising:

a blade opening and closing device that controls light taken in through an optical system; and an imaging element that photoelectrically converts the light taken in through the optical system,

wherein the blade opening and closing device includes:

a drive body including a rotor;

a drive lever rotatable in a first rotation direction from a first rotation position to a second rotation position and a second rotation direction from the second rotation position to the first rotation position;

an opening and closing blade that is operated in a closing direction of closing an opening in accordance with a rotation operation of the drive lever in the first

rotation direction, and is operated in an opening direction of opening the opening in accordance with an operation of the drive lever in the second rotation direction;

a blade return spring that biases the opening and closing blade in the opening direction, and biases the drive lever in the second rotation direction,

the drive lever is integrally rotated with the rotor in the first rotation direction by a driving force of the drive body, and

the drive lever is rotated independently of the rotor in the second rotation direction by at least a biasing force of the blade return spring.

18. The imaging device according to claim 17, wherein

the blade opening and closing device includes a drive block including the drive body and a mechanism block including the opening and closing blade,

a size of the drive block is smaller than a size of the mechanism block in a moving direction of the opening and closing blade,

the drive block is positioned on an outer peripheral side of the mechanism block, and

terminal parts are disposed on an outer peripheral side of the mechanism block on opposite sides of the drive block in the moving direction of the opening and closing blade.