F. S. BARNARD.

Damper.

No. 6,820. Patented Oct. 23, 1849.

Fig. 1

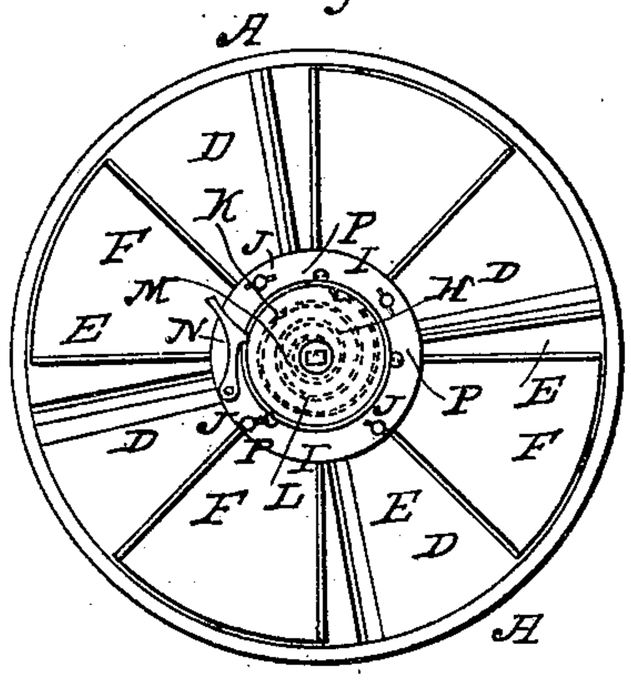


Fig. 2

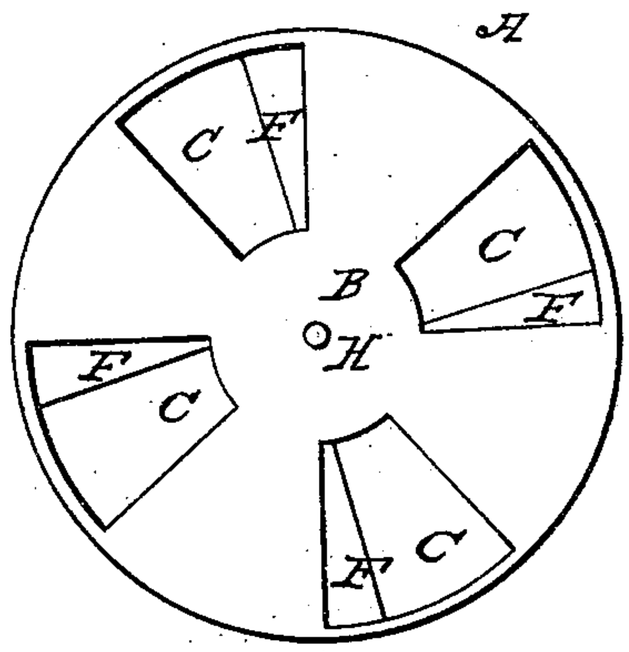


Fig. 3

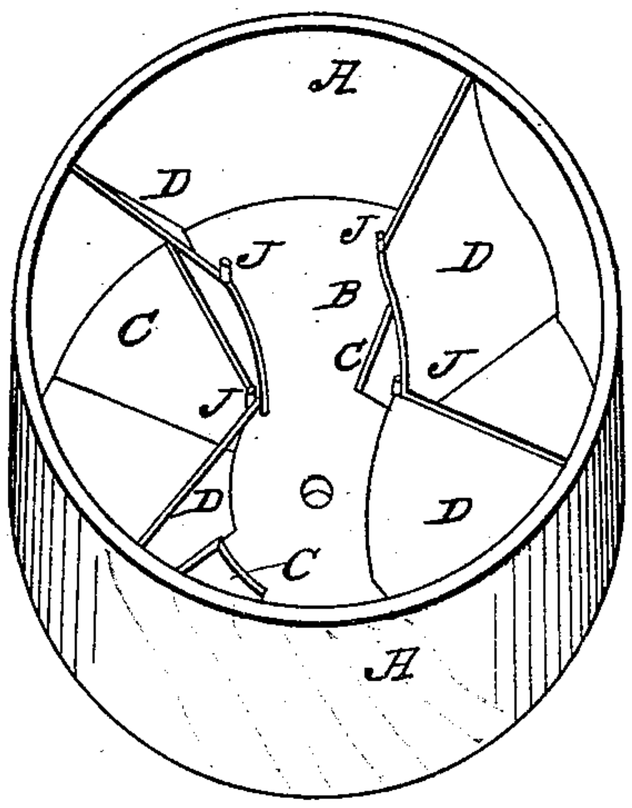
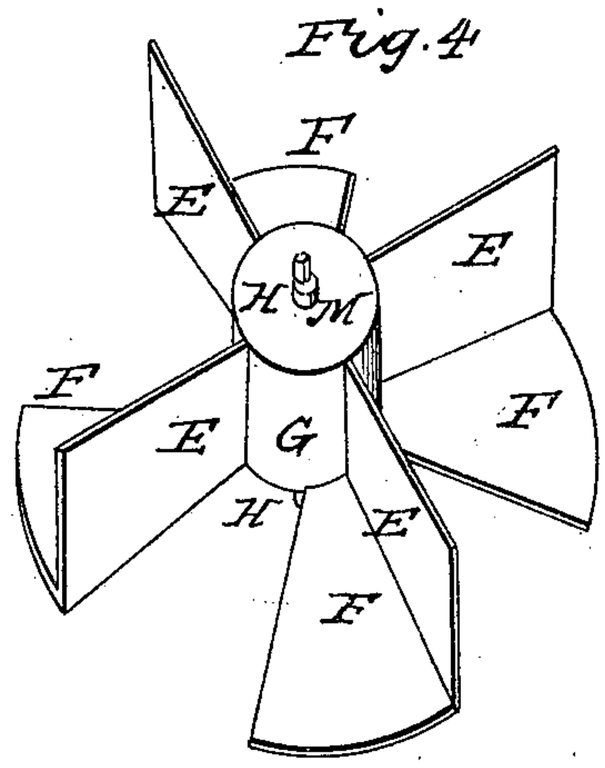


Fig. 4



UNITED STATES PATENT OFFICE.

FREDERICK S. BARNARD, OF ZANESVILLE, OHIO.

SELF-ADJUSTING VALVE FOR REGULATING THE ADMISSION OF AIR TO FAN-BLOWERS.

Specification of Letters Patent No. 6,820, dated October 23, 1849.

To all whom it may concern:

Be it known that I, FREDERICK S. BARNARD, of the town of Zanesville, in the county of Muskingum and State of Ohio, have invented a new and useful self-acting and self-adjusting valve for regulating the admission of air to fanning-mills and other articles and steam, water, or air to wheels to be propelled or for other purposes or for regulating the discharge of fluids, which invention is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1, represents a plan of the valve. Fig. 2, a view of the valve inverted. Fig. 3, is a perspective view of a portion of the stationary parts of the valve showing the case, &c., the plate in which the discharge openings are made and the inclined conducting plates. Fig. 4 is a perspective view of the movable plate or winged portion of the valve showing the axle, hub, wings, and cut off plates.

The same letters of reference in the several figures refer to like parts.

A, represents the cylindrical case in which the valve turns or moves the segment of a circle according to the pressure of the fluid passing through the valve.

B, is the end plate of the aforesaid case (A), containing four, or any suitable number of segmental openings C, through which the fluid is to enter or escape.

D, are the stationary resisting plates against which the fluid presses, causing it to be condensed between said plates (D), and the movable valve plates E forcing said valve plates (E), around the segments of a circle carrying with them the cut off portions F of the valve plates E which reduce the openings (C), in the end plate of the case (A) through which the fluid passes.

G is a central hub to which the valve plates E, F are affixed.

H are the axles of the hub.

I is a circular plate secured to the stationary resisting plates (D) by the tenons J on the ends of said plates (D), in the center of which plate (I) is an aperture to admit one end of the axle (H), the opposite end of said axle H, turning in a similar aperture in plate B.

K is a circular box containing a helical spring L having one of its ends made fast to a cylindrical block M, slipped upon the square part of the shaft H, the other end of said spring L, being fastened to the inside of the said circular box K, so that as the box is turned to the left the spring is wound upon the cylindrical block M, aforesaid by which the force of the spring may be increased at pleasure for allowing a greater quantity of fluid to pass through the segmental openings C at a given pressure of fluid.

N, is a spring dog attached by one of its ends to the circular plate I, having its loose end made in the form of a tooth so as to enter a notch or hole, of a series, in the periphery of the circular box K to prevent the box from turning when set in the required position to give the necessary force to the spring. The circular box has a round opening through its center to admit the cylindrical spring block M to pass through and turn therein when the valve moves, said circular box K having a circular flange on its circumference which turns against the circular plate I; which flange also turns under and against the heads of screws P inserted into the fixed circular plate for the purpose of keeping the box against the said circular plate.

The valve as above described is more especially adapted for a machine for fanning and separating light seeds from chaff and dirt and for assorting and separating seeds wherein a regular and uniform column of air is desired and which this valve when inserted in a proper manner in the fan case will produce by having the usual openings for the introduction of air at the axles of the fan closed.

The manner in which the valve acts when thus placed is as follows. The usual fan, by its rotary motion, drives the air by centrifugal action from the fan case through the eduction tube against the descending columns of seed, &c., to be separated and cleaned, and at the same time creates a partial vacuum within the case which is instantly supplied by the rushing of the air through the valve which has been previously set so as to admit it at the required velocity. Should the action of the fan have a tendency to admit the air too freely then the valve will turn slightly and close partially the segmental openings in the end of the valve case, and thus partially to shut off the passage of the air. Then when the discharge of the air again becomes uniform the valve will turn in a contrary direction

and again open the segmental plates to the degree at which they were set.

When the valve is used as a governor or regulator for the admission of steam which operates upon the valve by its rushing properties as well as pressure from its expansive force the axle to which the spring is applied must be extended through the induction pipe to a box out of the reach of the steam. A cord weight and pulley may be substituted for the spring to act on the axle, which will operate with greater certainty.

Likewise when this valve is used as a governor for the admission and discharge of water the extended axle, cord weight and pulley may be substituted for the coiled spring, or a simple lever and weight may be used in combination with the axle to restore the valve to its required position.

The principle on which this valve works is to lessen or decrease the area of the openings in the end plate of the valve case against which the cut off plates move for decreasing or increasing the quantity of fluid or steam passed through said openings by the action of the fluid or steam in its passage through the case on the turning valve and thus to lessen or decrease the motion of the machinery to be acted on by the fluid or steam and thereby govern or regulate the action of the parts of the machine.

What I claim as my invention and desire to secure by Letters Patent is—

The combination of the case of resisting plates D and mortised end plate B with the turning valve E, F, when made with radial wings F and segmental cut off plates F retained in its required position by a spring, or by a weight, cord, and pulley, or other mechanical equivalent, said valve operating substantially in the manner and for the purposes herein set forth.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

FREDK. S. BARNARD.

Witnesses:
LUND WASHINGTON,
REUBEN CHALFANT.