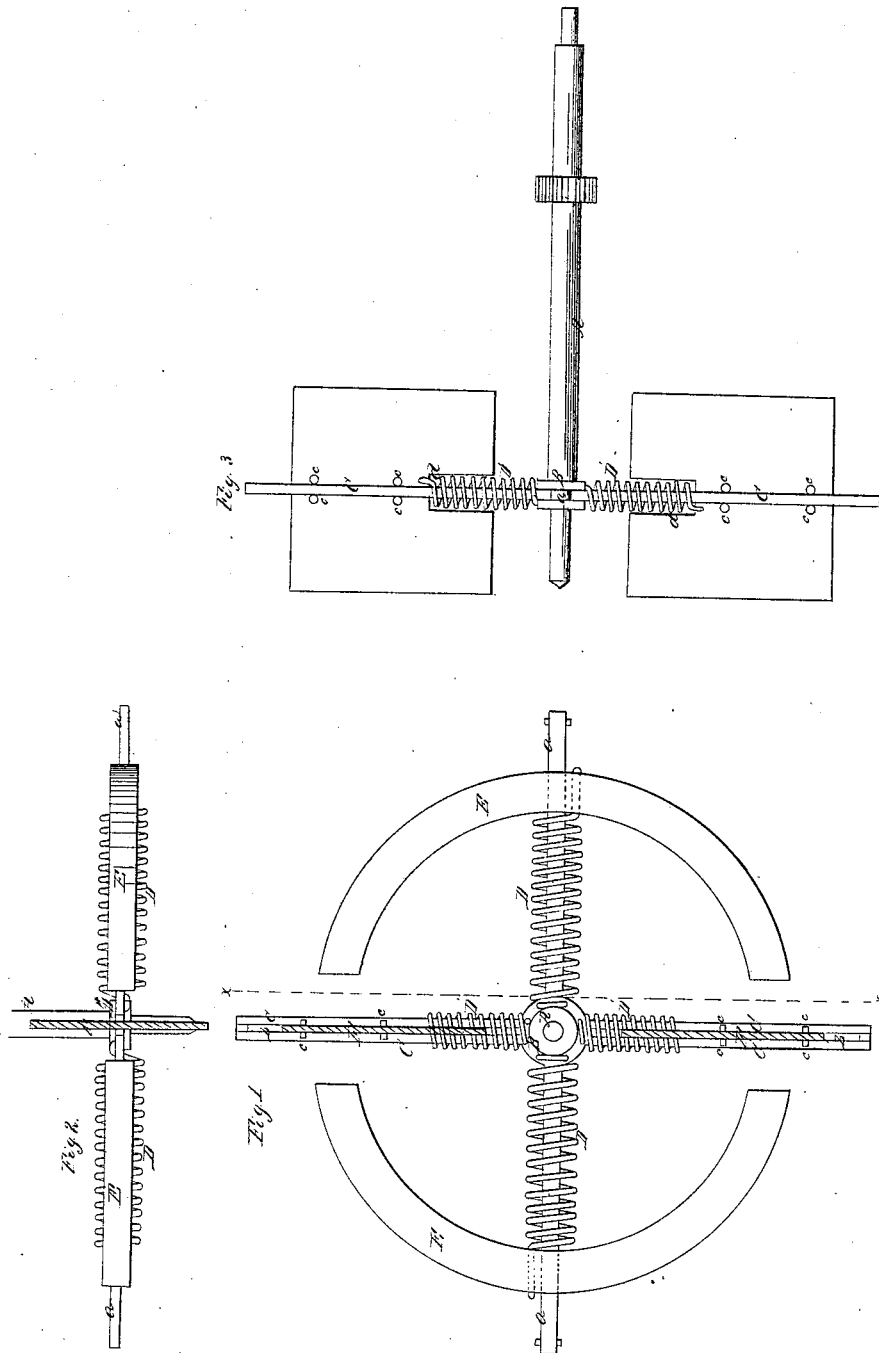


J. F. Mascher,

Governor.

No 6,849.

Patented Nov. 6, 1849.



UNITED STATES PATENT OFFICE.

J. F. MASCHER, OF PHILADELPHIA, PENNSYLVANIA.

REGULATOR.

Specification of Letters Patent No. 6,849, dated November 6, 1849.

To all whom it may concern:

Be it known that I, J. F. MASCHER, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Fan and Fly Wheels for Regulating the Motion of Machinery, which I denominate "Mascher's Self-Regulating Fan and Fly," which is described as follows, reference being had to the annexed drawings of the same making part of this specification.

Figure 1 represents a front elevation of a self regulating fan and fly wheel combined on one shaft. Fig. 2 is a top or bird's eye view of ditto. Fig. 3 is a vertical section of ditto, at the line *xx* of Fig. 1.

Similar letters in the figures refer to corresponding parts.

The nature of this invention and improvement, consists, in dividing the rim or curb of a fly or balance wheel, into two or more parts, the one being independent of the other, and making the wings of a fan movable, and attaching the divided parts of the fly wheel, and the fan wheels, to the shaft, geared to the machinery of a clock, watch, musical clock or box steam engine, or other machinery whose motion is to be regulated, by means of spiral or other springs, in such a manner as to admit of the divided parts of the wheel, and the wings of the fan, to recede from the center of the shaft by centrifugal force, a sufficient distance to regulate the motion to the required speed; the former by inertia and the latter by the increased resistance of the air to their surfaces, in their passage through the same.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is a shaft or arbor, turning in either a horizontal or upright position, in suitable boxes, and geared to clock or watch work, the machinery of a musical box, steam engine, or other machinery where it is desirable to employ a regular motion.

B is a hub or small wheel secured to near the end of the shaft or arbor, and having radial arms (*a*), projecting from its periphery immediately opposite each other.

C are other arms projecting from the hub or wheel B, in pairs, midway between the arms (*a*) and likewise opposite each other, each pair being connected at their outer

extremities and arranged parallel to each other, so as to form slots or spaces (*b*) between each.

D, D', are spiral springs, surrounding the radial arms (*a*) and the arms C, arranged in pairs, secured at their inner ends to the periphery of the hub or wheel B, and extending outwardly in radial lines. The spiral springs marked D, surrounding the arms (*a*), are longer, of larger diameter, and stronger tension, than the arms C arranged in pairs.

E E are segments of a circular rim or curb, having square openings midway between their extremities, extending from their inner to their outer peripheries, through which are inserted the radial arms (*a*), which move loosely through the same. These segments are attached to the outer ends of the spiral springs D surrounding said arms (*a*).

F F are the wings of a fan made of thin material, of an oblong form and inserted in the spaces or slots (*b*), being held in their places, and guided in their movements outward from, and toward the shaft A, by small pins (*c*), projecting from both their surfaces, and bearing against the sides of the parallel arms C. The inner ends of these wings have slots or spaces (*d*) formed in them, midway between their sides, in which the spiral springs D' surrounding the parallel arms C fit, so as to admit of the outer ends of said springs being attached to the wings, at the outer end of the slots or spaces (*d*).

Operation: The machinery of a clock or other object, to which the above described self regulating "fan and fly" is geared; being in motion, the segments E of a rim or circular curb, and the fan wings F, will be thrown outward from the shaft A, by the centrifugal force exerted on them, (the spiral springs D D' to which they are attached yielding or expanding to allow such a result) to a distance proportionate with the regular motion of the machinery moving, and the inertia and resistance exerted by the segments and wings; should the motion of the machinery, however, decrease to below the regular speed, said segments and wings will be drawn toward the shaft A, by the centripetal force exerted by the spiral springs D D' operating against the centrifugal force exerted by the motion, and

a corresponding decrease of resistance will be offered to the movement of the segments and wings, when the motion of the machinery will be instantaneously brought to its proper and regular speed. In case the motion of the machinery should go beyond the regular speed, the segments and wings will be thrown outward from the shaft, by the increased centrifugal force, and a corresponding increase of resistance will be offered them in their motions, which will immediately bring the machinery to its regular motion.

By employing this method of regulating motion on musical boxes, watches and spring clocks, their movements at the time when they are first wound up, when their springs

exert the greatest expansive force, to the time of running down, will correspond.

The fan wings and segments of rims, may be used separately if desired.

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

The combination and arrangement of the radial arms (*a*), and arms C, arranged in pairs, spiral springs D D', surrounding the same, fan wings F, and segments E of a rim of circular curb, for regulating the speed of machinery, substantially in the manner herein set forth.

J. F. MASCHER.

Witnesses:

C. F. HELLWEG,
WILLIAM DEEDS.