

E. S. Pierce,
Balance Wheel,
No. 71,212, Patented Nov. 19, 1867.

Fig. 4.

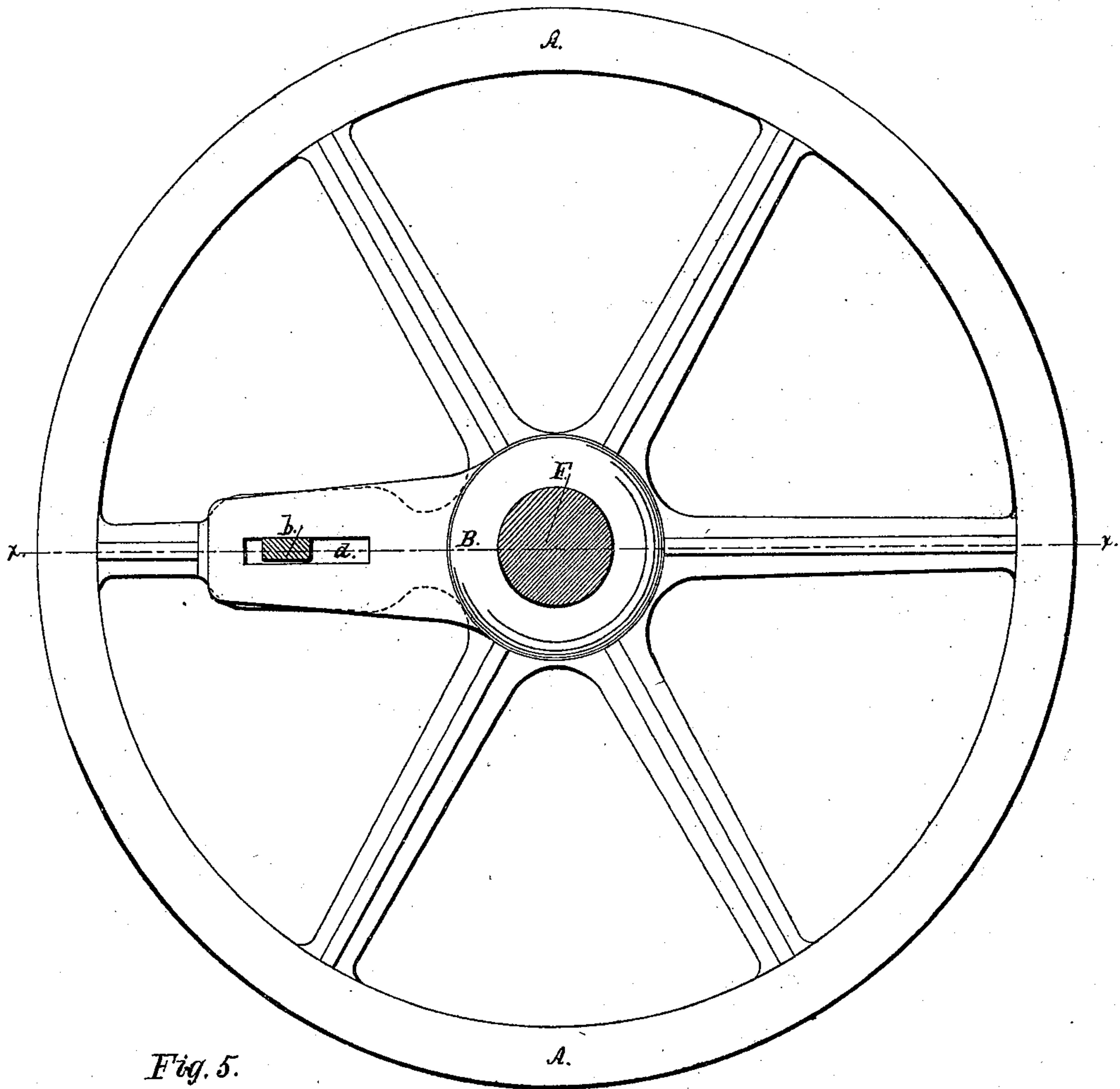


Fig. 5.

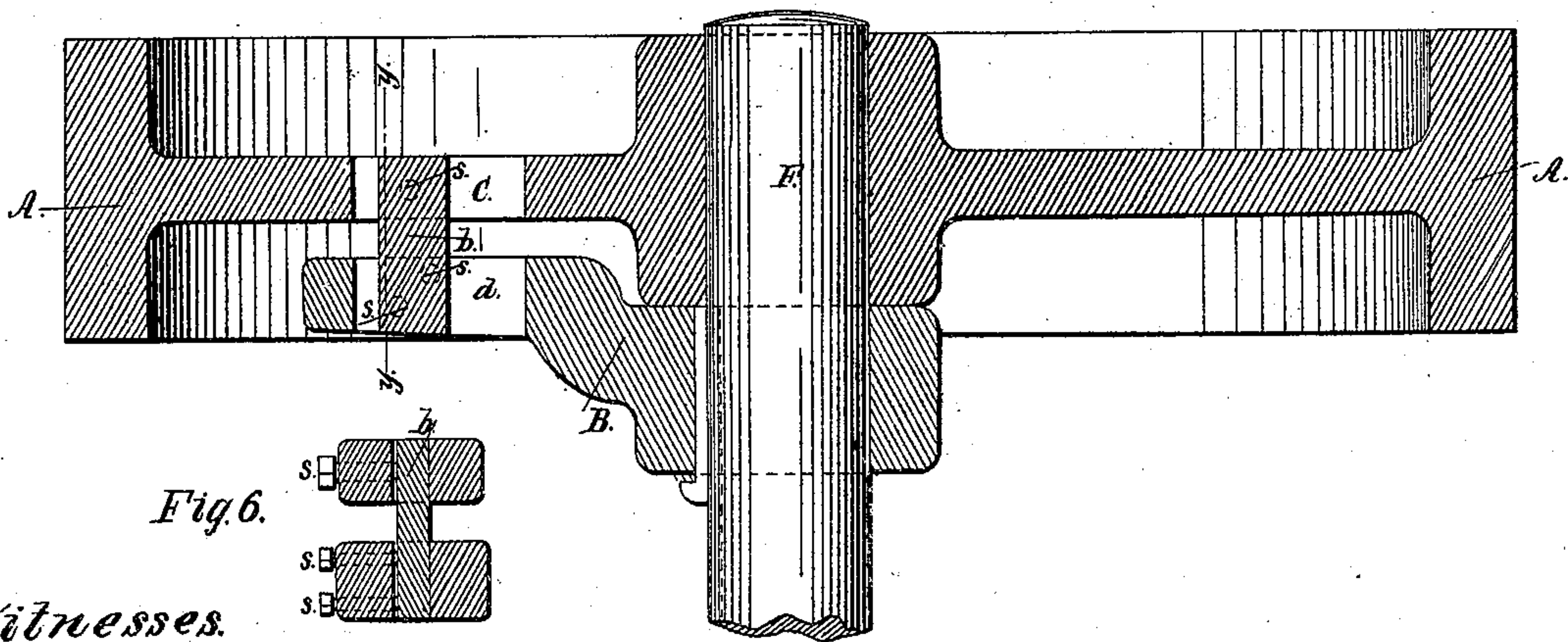


Fig. 6.

Witnesses.

L. Haplin.
Geo. G. Ellis

Inventor.

E. S. Pierce

United States Patent Office.

ELIJAH S. PIERCE, OF HARTFORD, CONNECTICUT.

Letters Patent No. 71,212, dated November 19, 1867.

IMPROVEMENT IN BALANCE-WHEEL.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ELIJAH S. PIERCE, of Hartford, in the county of Hartford, and State of Connecticut, have invented a new and improved Balance-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 4 is a front view of the improved balance-wheel, showing the arrangement of the parts.

Figure 5 is a cross-section of the same on the line *x x*.

Figure 6 is a cross-section on the line *y y*, fig. 5.

Like letters in the several figures indicate like parts.

My invention consists in constructing a balance or fly-wheel in such a manner that the exterior portion of the wheel A shall be a separate piece from the axis F or part joined to the axis B, and shall be connected with it by some part intervening between the rim A and the axis F, or by some device, *b*, the breakage of which shall liberate the wheel, being a contrivance to regulate the resistance between the parts, so that the balance-wheel, acting as a reserve force, can be made to exert more or less of its accumulated power, as may be desired.

In figs. 4, 5, and 6, the wheel A moves freely on the shaft F, and the part B is keyed or otherwise fixed to the shaft adjoining the wheel A. Between the part B and the balance-wheel a small connecting-piece, *b*, is inserted, which is intended to be of such strength that it shall be broken by any force applied to the wheel greater than the desired limit. In the drawings, figs. 4 and 5, this connecting-piece *b* is secured in the slots *d* and *e* by means of the screws *s s s*. By moving the piece *b* more or less distance from the centre, a greater or less degree of force in the wheel will be required to break it.

The operation of my invention is as follows: When the wheel is in motion and a certain amount of power has been accumulated, should any force or work to be done retard its motion, or any resistance check its speed, the heavy rim A will act with a force sufficient to break the piece *b* to overcome that resistance, and it will exert no greater force, for if the axis be stopped and brought to rest suddenly, the rim or wheel A would continue to revolve until its momentum was overcome by friction. This arrangement admits of a balance-wheel of great weight and accumulated power being used, which cannot exert more than a given amount of force upon the machinery in the direction in which it is moving, but whose whole accumulated force can be used so long as that limit is not at any time exceeded.

My improved balance-wheel is especially useful in all machinery where it is desired to use a heavy fly-wheel to obtain uniformity of motion, and where any sudden stoppage or obstruction is likely or possible to occur by which the machine would be broken or deranged in consequence of the inertia of the balance-wheel keeping it in motion. With my improved balance-wheel the limit of resistance can be regulated and arranged so that the machinery would not be injured by the most sudden stoppage.

I do not limit myself to the peculiar arrangement of parts shown in the drawings to accomplish the purpose described, nor to the particular form of wheel shown.

Claim.

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

An improved balance-wheel, in which the outer rim or wheel is separate from the hub or axis, upon which it can turn when disconnected, and to which it is attached by the devices herein described, or their mechanical equivalents, for the purpose herein set forth.

E. S. PIERCE.

Witnesses:

S. HAFELIN,

THEO. G. ELLIS.