

No. 713,725.

Patented Nov. 18, 1902.

J. WALDRON.
BALANCE WHEEL.

(Application filed Oct. 16, 1901. Renewed Sept. 29, 1902.)

(No Model.)

Fig. 1.

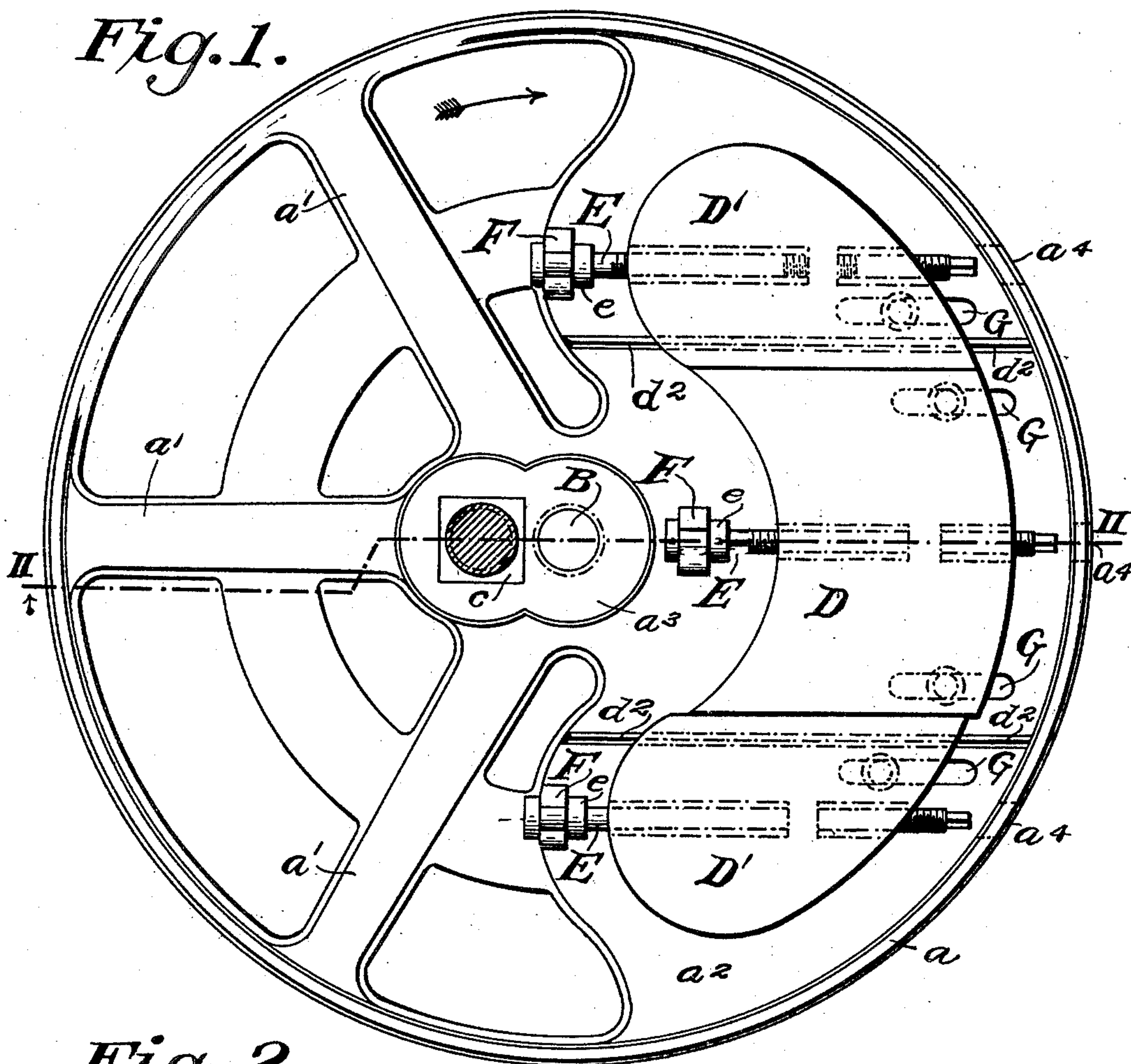
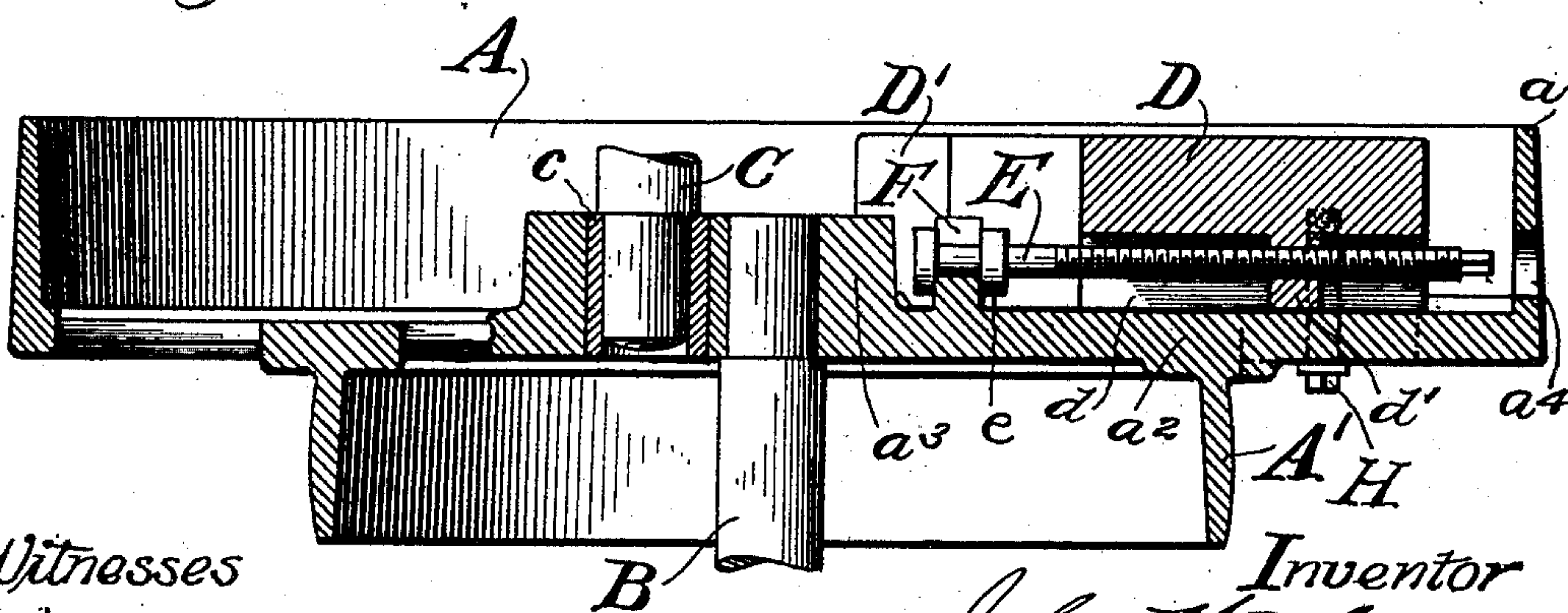


Fig. 2.



Witnesses

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BALANCE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 713,725, dated November 18, 1902.

Application filed October 16, 1901. Renewed September 29, 1902. Serial No. 125,335. (No model.)

To all whom it may concern:

Be it known that I, JOHN WALDRON, a citizen of the United States, residing at Muncy, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Balance-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to devices for counterbalancing fly-wheels or balance-wheels, and more especially to a balancing device for use in connection with the fly-wheel and driving mechanism of sieve-bolting machines, familiarly known as "bolters," "gyrators," and "sifting-machines" having rotary or gyratory motion.

The primary object of the invention is to provide an efficient and inexpensive balancing device for the fly-wheels of machines of the character referred to which may be easily and quickly adjusted in such manner as to secure a perfect balance at any time desired and under varying conditions and requirements incident to practical use, a very slight adjustment being required and which may be made with such exactness that a perfect running balance is easily obtained.

The invention will first be hereinafter more particularly described with reference to the accompanying drawings, which are to be taken as a part of this specification, and then pointed out in the claims at the end of the description.

In the drawings, Figure 1 represents a plan view of a balance-wheel embodying my invention; and Fig. 2 is a vertical sectional elevation of the same, the section being taken on the line II II of Fig. 1.

The letter A in the drawings denotes a fly-wheel having my improved balancing device applied thereto. This fly-wheel may be of any desired construction, but is preferably formed integrally with a driving-pulley A', which in the form shown consists of an annulus or flange cast on the bottom or under

side of the wheel, the latter also having a peripheral upstanding flange or rim a , spokes a' at one side and a web a^2 at the other side, and a hub portion a^3 . The part a^3 is bored to receive a reduced portion of the shaft or spindle B, on which the balance-wheel is mounted in such manner as to impart rotary or gyratory movement to the sieve frame or box by a crank-pin connection therewith, the sieve being sustained above the balance-wheel by hangers or struts in such manner as to relieve the shaft or spindle of its weight. At one side of the opening for the shaft or spindle B a second opening is provided in which may be fitted a metallic or brass lining or bushing c , in which may be fitted a stud or pin C, carried by the sieve-box, whereby when the balance-wheel is rotated a rotary or gyratory motion will be imparted to the sieve-box. The described arrangement also provides sufficient space within and below the upper edge of the rim of the fly-wheel to receive a series of adjustable weights D D' D'. In the form shown three weights are employed having their outer edges struck upon the arc of a circle described by the rim of the wheel and their inner edges similarly curved, the outer ends of the two outer or end weights D' D' being also preferably rounded or curved, as shown, in order to centralize the weight around and near the center or axis of rotation. Each weight or section of the composite weight is adjustably secured in position upon the web a^2 to adapt it to be moved in or out or toward and from the center or axis of rotation for the purpose of securing a perfect balance, each section being adjustable independently of the others. Such adjustments may be effected by providing a collar-bolt E for each weight having screw-threads the greater portion of its length and occupying a groove or concavity d on the under side of the weight, said bolt passing through a screw-threaded opening in a part or web d' , bridging or crossing said groove. The head end of the bolt is seated in a bifurcated lug F and has a collar e thereon, between which and the head of the bolt said lug

is located, so as to prevent endwise movement of the bolt, while permitting rotary movement thereof.

The bolts E are formed or provided with square or polygonal outer ends to adapt them to receive a socket-wrench or other suitable tool, which may be inserted through openings a^4 in the rim of the wheel for the purpose of turning the bolts, and thereby moving the weights in or out, as may be desired, in order to secure the desired balance. In order to cause the weights to move in parallel planes and to confine and hold the intermediate weight in proper position between the end weights, the latter may each be provided on its under side with a V-shaped groove, fitting a correspondingly-shaped rib or track d^2 on the web of the wheel. In the position shown in Fig. 1 the weights are arranged in proper position to secure a perfect balance when the wheel is rotating in the direction indicated by the arrow. As there is always a lead to the motion of the sieve-box caused by the resistance of the air, and as all portions of the balance-wheel may not be equal in weight, all of the weights for securing a balance cannot be used the same distance from the center; but by the described construction and arrangement the several parts or sections of the weight are grouped about the center and may be easily adjusted to secure a perfect-running balance, a very slight movement of the weights being necessary.

For the purpose of securing each weight or section of the composite weight in a fixed position the web a^2 may be provided with a series of slots G, through which set-screws or bolts H enter screw-threaded sockets on the under sides of the weights, so that by tightening said bolts the weights will be locked in the desired positions, but either weight may be easily and quickly adjusted as desired by merely loosening the bolt, moving the weight in or out, and again tightening the bolt, thereby securing a perfect balance.

The intermediate section of the composite weight is preferably provided with a locking device at each side of the adjusting-bolt, as shown, although one of said devices might be dispensed with, the weight being confined by contact of its ends with the parallel faces of the inner ends of the end weights. It is to be understood, however, that a greater or less number of weights might be employed and that they may be differently constructed and arranged, and various other devices may be employed for securing the desired adjustments without departing from the spirit and scope of my invention, and hence I do not desire to be limited to the exact construction and arrangement described and shown.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

65 1. In combination with a fly-wheel or bal-

ance-wheel, a counterbalancing device comprising a weight composed of a series of adjustable sections compactly arranged about the axis of rotation at one side only in such manner as to permit independent adjustment of the sections, means for adjusting the sections of the weight separately back and forth in the same direction, and means for securing the sections in fixed positions; substantially as described. 70 75

2. In combination with a fly-wheel or balance-wheel, a counterbalancing device consisting of a series of adjustable sections grouped about the center of rotation of the wheel at one side only thereof, each adapted to be adjusted independently of the others and in different but parallel planes, means for adjusting the sections separately, and means for securing the sections in fixed positions; substantially as described. 80 85

3. In combination with a fly-wheel or balance-wheel, a counterbalancing device consisting of a series of independently-adjustable weights grouped around or about the axis of rotation at one side of a plane passing through said axis, means for adjusting each weight independently of the others back and forth in the same direction, and means for securing the weights in different positions; substantially as described. 90 95

4. In combination with a fly-wheel or balance-wheel, a counterbalancing device consisting of a series of weights grouped around or about the axis of rotation at one side of a plane passing through said axis and adjustable in different but parallel planes, means for adjusting the several weights, and means for securing them in fixed positions; substantially as described. 100

5. In combination with the fly-wheel, the adjustable composite weight having a plurality of sections grouped in the form of a segment of a circle around the axis of rotation and each adjustable independently of the other sections, an adjusting device for each section, and means for securing the sections in their adjusted positions at any desired point within the range of adjustment, substantially as described. 105 110

6. In combination with the fly-wheel the balancing device comprising a composite weight constructed in independently-adjustable sections each provided with an adjusting-bolt, means for guiding said sections so as to cause them to move in parallel planes, and means for securing the sections in fixed positions, substantially as described. 115 120

7. In combination with the fly-wheel a series of weights adjustably mounted thereon, each provided with an adjusting device, consisting of a bolt having a screw-threaded portion engaging a threaded part of the weight and held against endwise movement, whereby it may be rotated to move the weight either toward or from the center, means for causing 125 130

the weights to move in parallel planes, and means for securing them in fixed positions, substantially as described.

8. In combination with a fly-wheel, a balancing device consisting of a weight in three sections compactly arranged to form the arc of a circle described by the rim of the wheel, the intermediate section being confined between and held by the two outer sections and
10 movable in a plane parallel therewith, means

for adjusting the sections separately, means for holding them parallel with each other, and means for securing the several sections in fixed positions, substantially as described.

In testimony whereof I affix my signature 15
in presence of two witnesses.

JOHN WALDRON.

Witnesses:

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FREDERICK C. PETERMAN.