

D. A. A. BUCK.
Watch-Escapement.

No. 203,999.

Patented May 21, 1878.

Fig. 1.

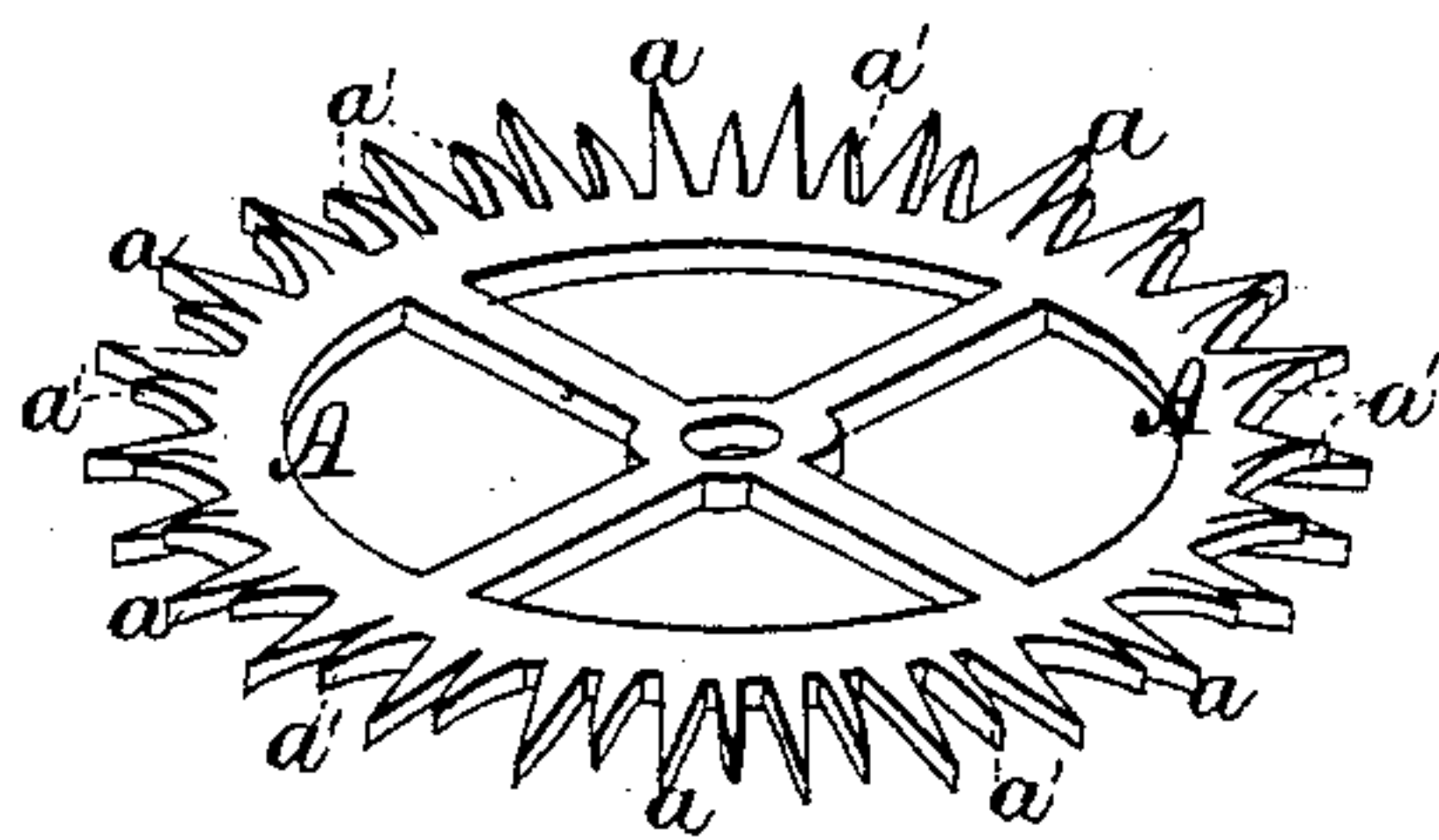


Fig. 2.

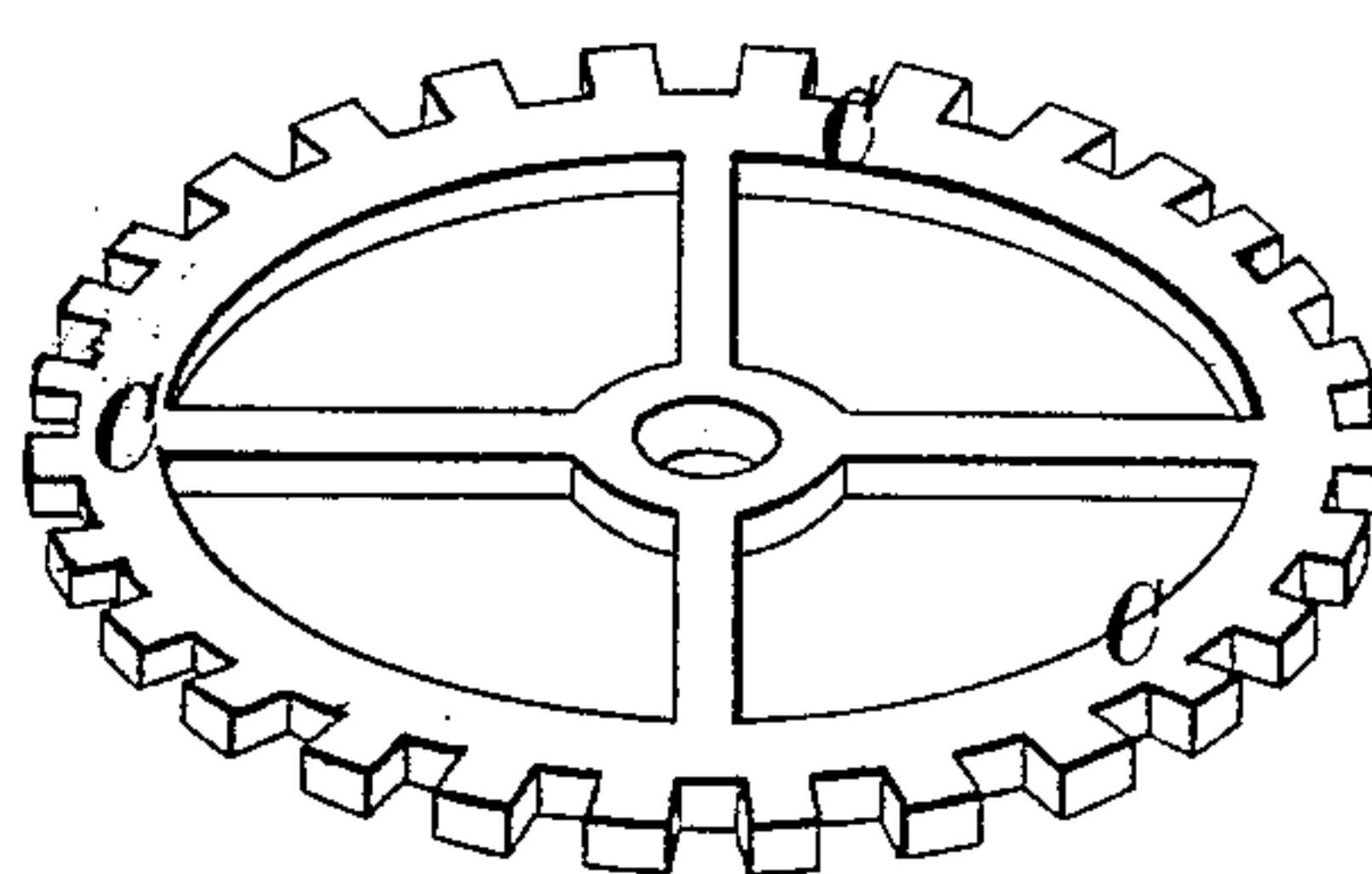


Fig. 3.

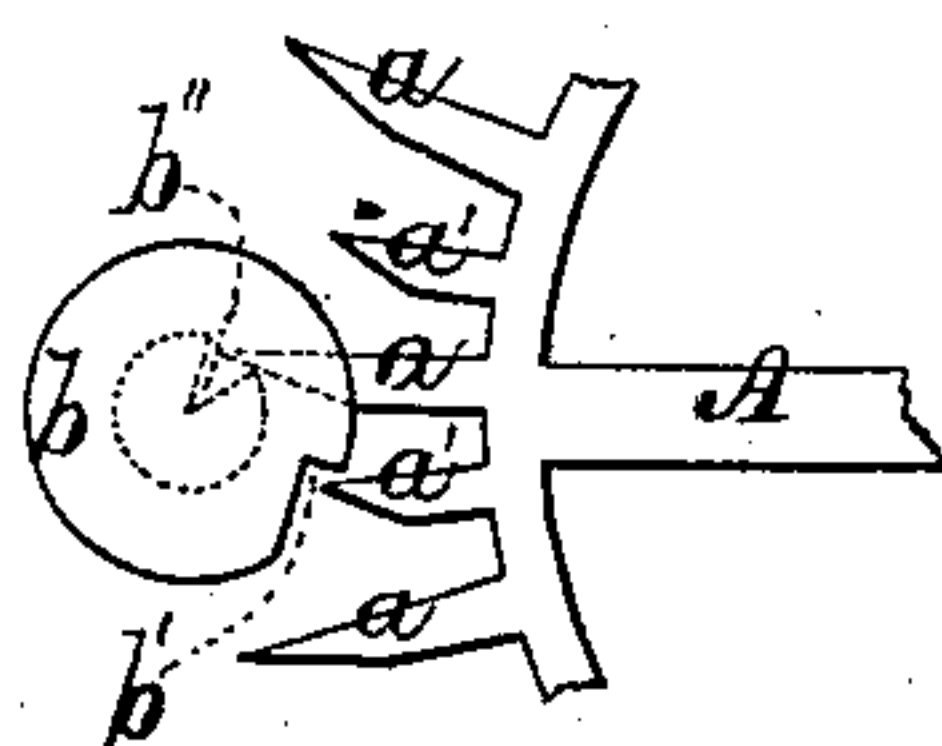
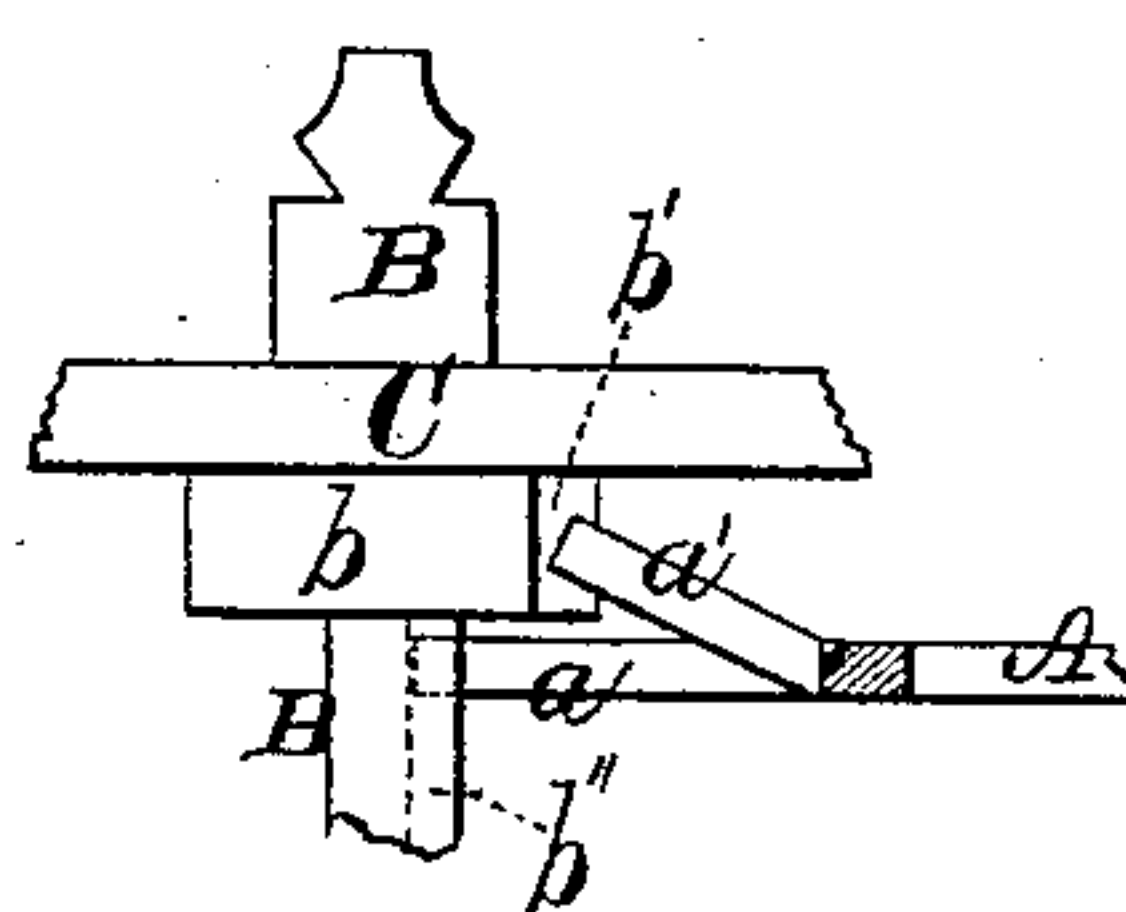


Fig. 4.



WITNESSES:
Jas. E. Hutchinson.
Henry C. Hazard.

INVENTOR.
D. A. A. Buck, by
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UNITED STATES PATENT OFFICE.

D. AZRO A. BUCK, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN WATCH-ESCAPEMENTS.

Specification forming part of Letters Patent No. 203,999, dated May 21, 1878; application filed January 4, 1878.

To all whom it may concern:

Be it known that I, D. AZRO A. BUCK, of Worcester, in the county of Worcester, and in the State of Massachusetts, have invented certain new and useful Improvements in Watches; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a perspective view of my escape-wheel detached from its connecting mechanism. Fig. 2 is a like view of my balance-wheel. Fig. 3 is a side elevation of the balance arbor or staff, and also a vertical section of the engaging portion of the escape-wheel; and Fig. 4 is a plan view of said parts from the upper side.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to lessen the expense of watch-escapements; to which end it consists, principally, in the staff of a balance-wheel, having formed within its shoulder a notch for engagement with the impulse-tooth of an escape-wheel and within its periphery a notch for the passage of the locking-tooth of the same, substantially as and for the purpose hereinafter shown.

It consists, further, in an escape-wheel having radial peripheral teeth of different lengths, formed of the same plate, and having one or both sets of such teeth bent laterally at any desired angle to the face of said wheel, substantially as and for the purpose hereinafter set forth.

In the annexed drawing, A represents my improved escape-wheel, which, around its periphery, is provided with a series of longitudinally-pointed teeth, *a*, that incline slightly forward, while between each of said teeth *a* is another similar but shorter tooth, *a'*, that extends upward at an angle of about ten degrees from the face of said wheel.

The teeth of the escape-wheel are cut in the usual manner, after which one set—preferably the short teeth *a'*—are bent upward, so as to bring their ends into a different plane from that occupied by the long teeth *a*.

While the arrangement named is deemed most desirable, the long teeth may be bent up-

ward and the short teeth permitted to maintain their original positions, or one set of teeth may be bent upward and the other set bent downward, the only object of such change being to cause said teeth to occupy different planes, as before stated.

The escape-wheel thus constructed is secured to or upon an arbor, which is pivoted between the plates of the watch, and is connected with the train in the usual manner.

Near the periphery of the escape-wheel A is pivoted an arbor or staff, B, to which, at a point above said escape-wheel, is secured a balance-wheel, C, that is stamped out of sheet metal, and around its periphery is provided with a series of radial projections, *c*, that form part of said balance, and in plan view resemble the screws of an expansion-balance.

By this construction of a balance I am enabled to secure all necessary weight without causing the rim to present the bulky appearance which it would have if said rim had equal weight and were uniform in width.

Upon the staff B, immediately below the balance C, upon the same plane as that occupied by the short teeth *a'*, is provided a collar, *b*, which has such diameter as to cause its periphery to extend within the circle described by the ends of said teeth, and within said collar is formed a notch, *b'*, that in horizontal section has the form of a right angle, and is arranged, as seen in Fig. 3, with its forward side in a line with the radius, in which position one of said short teeth *a'* may enter said notch until its forward face, at its end, bears against the forward side of the latter.

The location of the staff B with relation to the arbor of the escape-wheel A is such as to cause about one-half its diameter below the collar *b* to be within the circle described by the ends of the long teeth *a*, and within such part of said staff is formed a V-shaped notch, *b''*, that is located about one-fourth the circumference of said staff in advance of said notch *b'*.

As thus arranged the operation of the escapement is as follows: When the balance is revolving backward one of the long or locking teeth *a* bears against the staff B, and prevents motion of the escape-wheel A; but as said balance-wheel revolves in an opposite or

forward direction said tooth *a* drops into the notch *b''*, and moves forward as the succeeding tooth *a*, in turn, bears upon said staff and again arrests the movement of said escape-wheel.

While the locking-tooth *a* is passing through the notch *b''* the short impulse-tooth *a'* immediately in its rear passes into its notch *b'*, and, bearing against the forward side of the latter, gives impulse to the balance, its engagement with said notch ceasing just before the next locking-tooth impinges upon the shaft B.

If desired, the notch *b'* may be omitted, and in its stead a pin or stud be placed in the upper side of the collar *b*, in which event said collar must be arranged so as to permit the impulse-teeth *a'* to pass freely above it.

The escapement thus constructed is exceedingly simple and effective, and will operate equally well whether the mainspring has more or less strength.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The staff of a balance-wheel, having formed within its shoulder a notch for engagement with the impulse - tooth of an escape-wheel and within its periphery a notch for the passage of the locking-tooth of the same, substantially as and for the purpose shown.

2. An escape-wheel having radial peripheral teeth of different lengths, formed of the same plate, and having one or both sets of such teeth bent laterally at any desired angle to the face of said wheel, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

D. AZRO A. BUCK. [L. S.]

Witnesses:

C. L. GORHAM,

J. HENRY MUZZY.