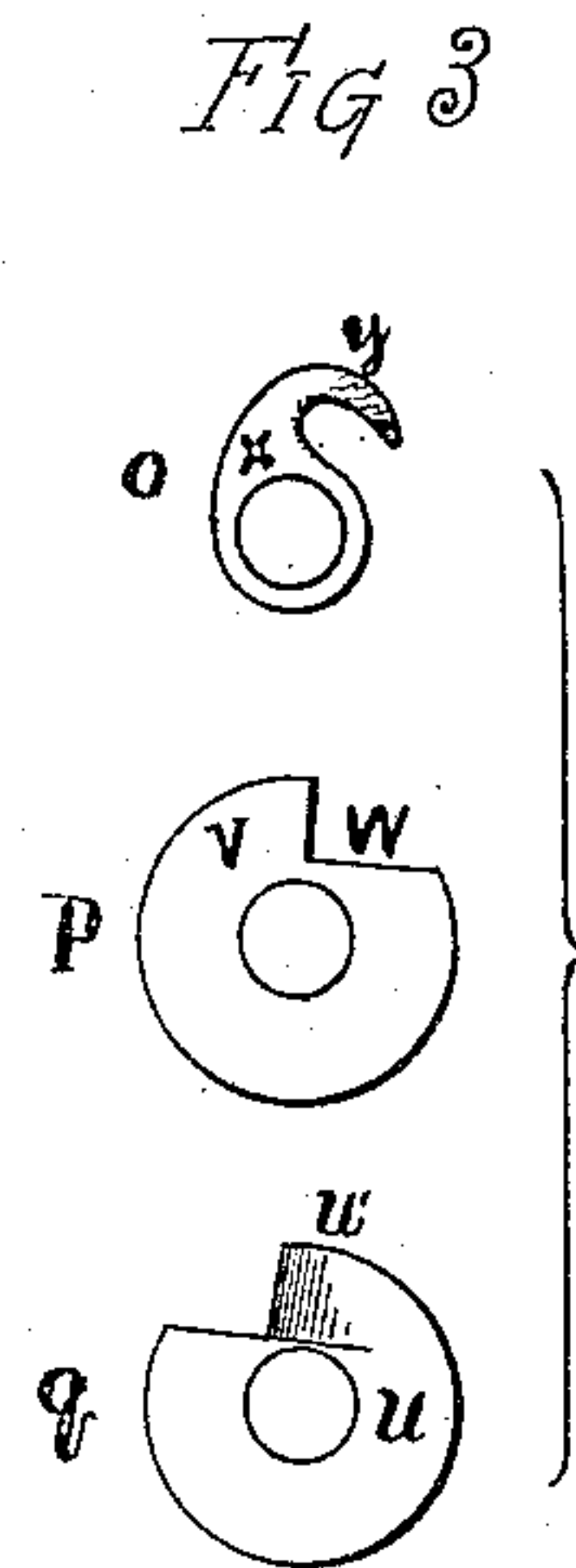
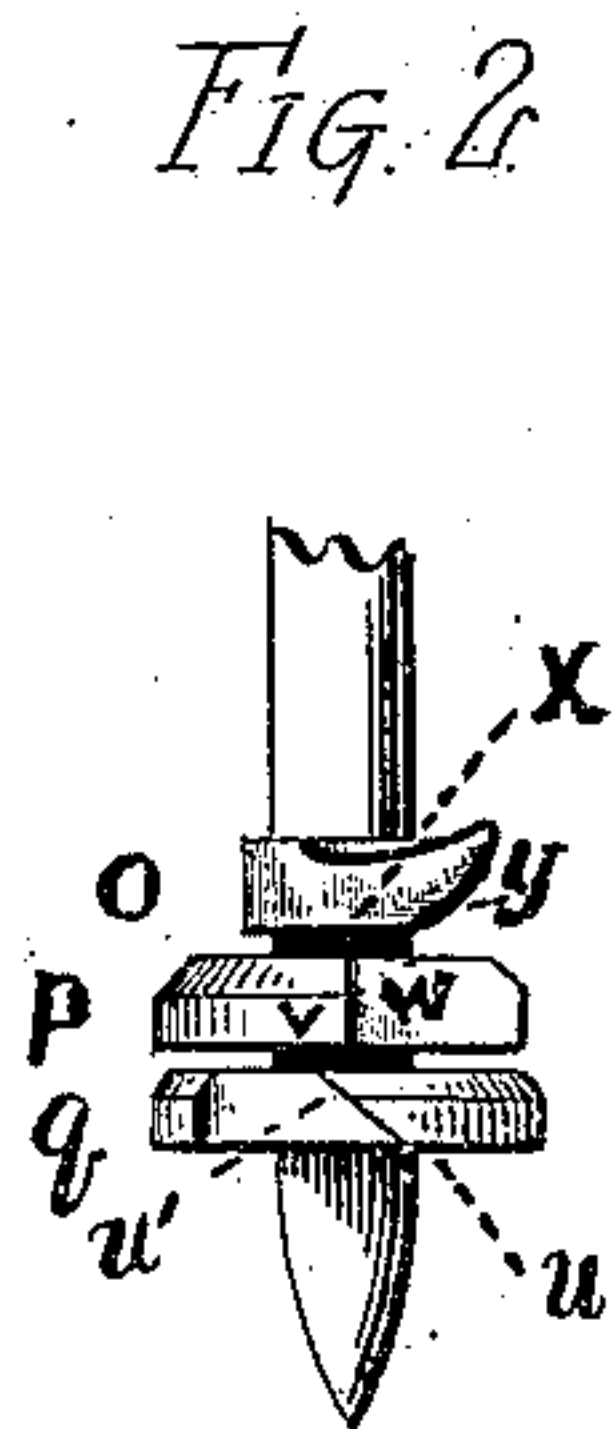
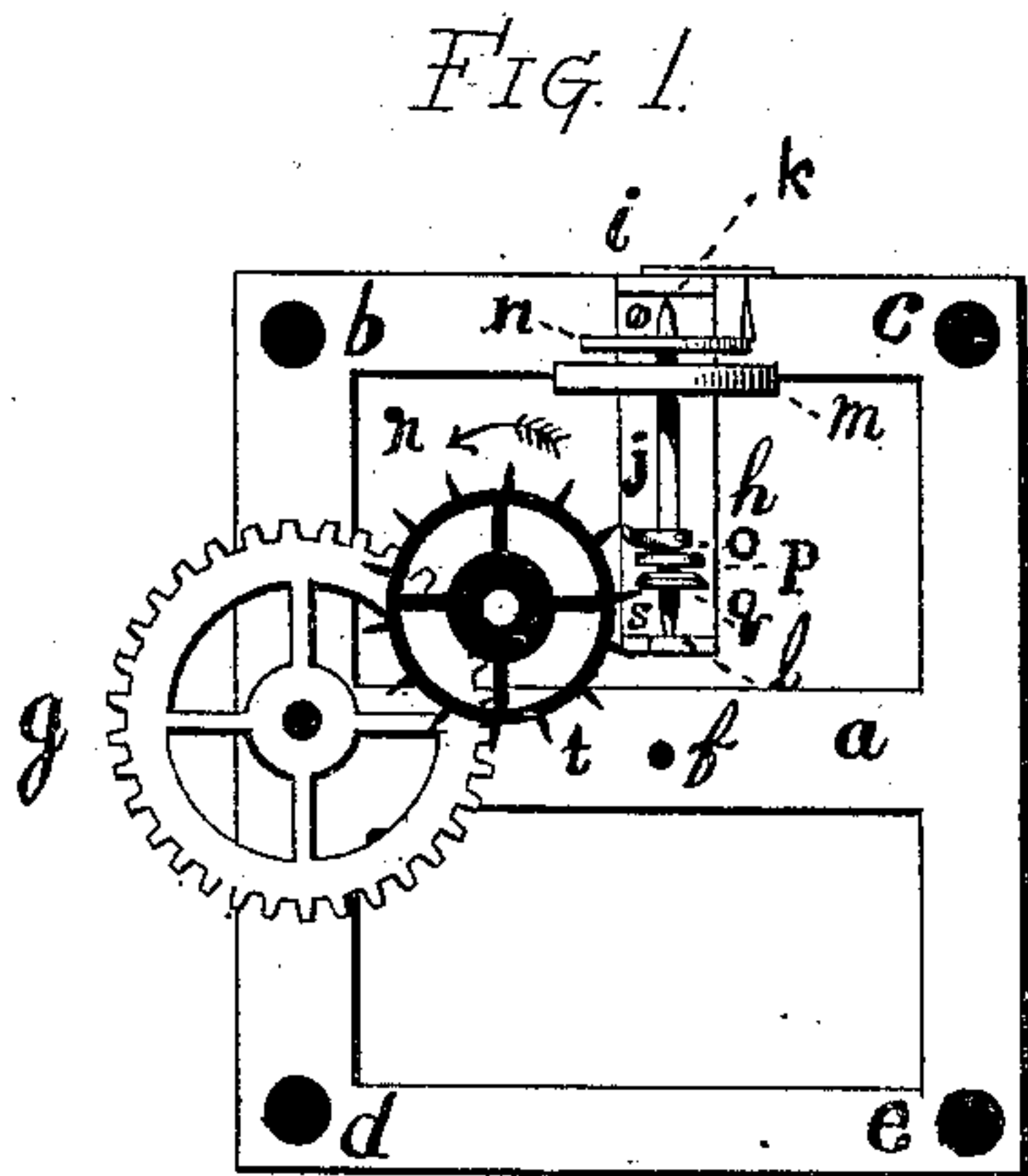


(Model.)

C. REINHARDT.
CLOCK ESCAPEMENT.

No. 251,379.

Patented Dec. 27, 1881.



Witnesses.

Arthur E. Hopkins.
John et Andrews

Inventor.

Christian Reinhardt

UNITED STATES PATENT OFFICE.

CHRISTIAN REINHARDT, OF NEW HAVEN, CONNECTICUT.

CLOCK-ESCAPEMENT.

SPECIFICATION forming part of Letters Patent No. 251,379, dated December 27, 1881.

Application filed January 31, 1881. (Model.)

To all whom it may concern:

Be it known that I, CHRISTIAN REINHARDT, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Clock-Escapements; 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, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to an improved escapement for clocks and that class of time pieces or movements which have a balance-wheel and hair-spring, the object being to provide a cheap, simple, and effective escapement; and to this end my invention consists, first, in the combination of an escape-wheel and a balance-shaft arranged horizontally with the escape-wheel, and provided with three collets or pallet-disks which engage directly with the escape-wheel.

It also consists in the first collet having a dead-surface and an impulse-surface, also a notch to allow the teeth of the escape-wheel successively to drop from the first collet upon leaving the impulse-surface to a second collet. The second collet has a dead-surface, and also has a notch to allow the teeth to pass thence to a third collet, which has an impulse-surface acting upon the balance-wheel in an opposite direction to the first impulse-surface.

It also consists in several details of construction and combination of parts, as will more fully appear in the following description and claim.

In the drawings, Figure 1 is a plan view of my invention, the front plate of the movement having been removed. Fig. 2 is a detached and enlarged view of the lower end of the balance-shaft and collets on the same. Fig. 3 shows the collets more clearly, being removed from the shaft.

I have deemed it necessary to show only part of a movement in illustrating my invention, as the movements to which my escapement can be applied are already well understood.

a designates the rear plate of a movement.

b, *c*, *d*, and *e* are holes for the pillars, and *f* the position of the center.

g is the wheel next to the escape-wheel *t*, and meshes into a pinion on the escape-wheel shaft.

h is a small frame, attached to plate *a* at *i* by means of a screw. The frame *h* supports the balance-shaft *j* in two bearings, *k* and *l*.

m is the balance-wheel, and *n* the hair-spring. Near the lower end of the balance-shaft, and fast upon it, are the collets *o*, *p*, and *q*, which engage with the teeth of the escape-wheel when the device is in operation.

The arrow *r* shows the direction in which the escape-wheel turns.

It will be seen in Fig. 1 that the tooth *s* of the escape-wheel *t* will first engage the collet *q* on the under side. This collet is so adjusted on the balance-shaft that the tooth *s* will strike at point *u*. (More clearly seen in Figs. 2 and 3.) Now, as the collet turns to the right by motion of the balance in that direction the tooth *s* will pass upward over the inclined surface *w'* and give an impulse to the balance-wheel toward the right. Then the tooth *s* will leave the collet *q* and be arrested by the collet *p* at the point *v*, and will continue to rest on the dead-surface of collet *p* until the rotation of the balance-wheel toward the right has been overcome by the hair-spring, and caused in an opposite direction and until the collet thereby has rotated sufficiently toward the left to allow the tooth *s* to pass through the notch *w* and engage the collet *o* at the point *x* and pass over the inclined surface *y*, giving an impulse to the balance toward the left. It will be observed that at this point the next tooth of the escape-wheel will engage the collet *q* as did the tooth *s*, and that successively the remaining teeth will act on the collets in a similar manner, and thus a continuous and complete escapement is obtained.

My improvement is adapted to be applied to marine movements and watches, also to toy movements and others requiring a cheap and effective escapement. One important and valuable feature in the improvement is that it does not require skilled labor to make or adjust it, and is light running, and can be made at a small initial cost.

It is evident that many slight changes may

be made both in details of construction and
arrangements of parts without deviating from
the spirit of my invention, and hence I do not
limit myself to the exact construction shown
5 and described—as, for instance, the collets
might be made of one piece instead of sepa-
rately, or two of them might be made in a
similar manner. Again, the collets might be
made of one piece with the balance-shaft by
10 suitable machinery; but I have shown the
above as the better construction.

Having described my invention, what I claim
as new, and desire to secure by Letters Pat-
ent, is—

15 In a clock-escapement, the combination,
with an escape-wheel, of a balance-shaft placed

horizontally with the escape-wheel, and hav-
ing three collets which directly engage the
teeth of the escape-wheel, said collets being
constructed as follows: the first having a dead 20
surface and an inclined or impulse surface, the
second having a dead-surface only and a notch
through which the teeth drop upon leaving it,
and the third being provided with an inclined
surface for receiving an impulse in an oppo- 25
site direction to the first, as herein described.

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

CHRISTIAN REINHARDT.

Witnesses:

JOHN F. BISHOP,
ARTHUR E. HOTCHKISS.