

C. J. ADDY.  
Clock Escapement.

No. 26,150.

Patented Nov. 22, 1859.

Fig. 1

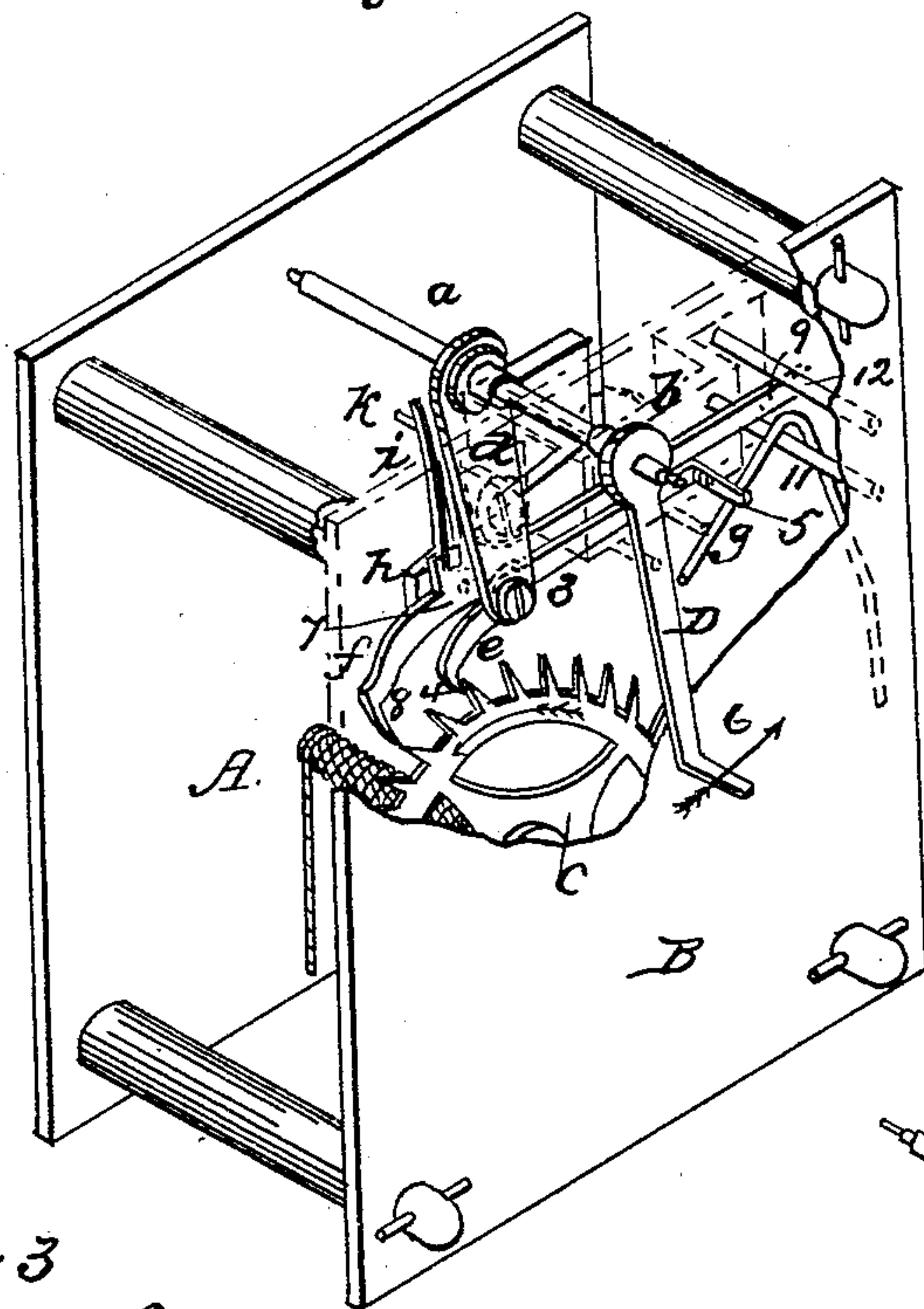


Fig. 2

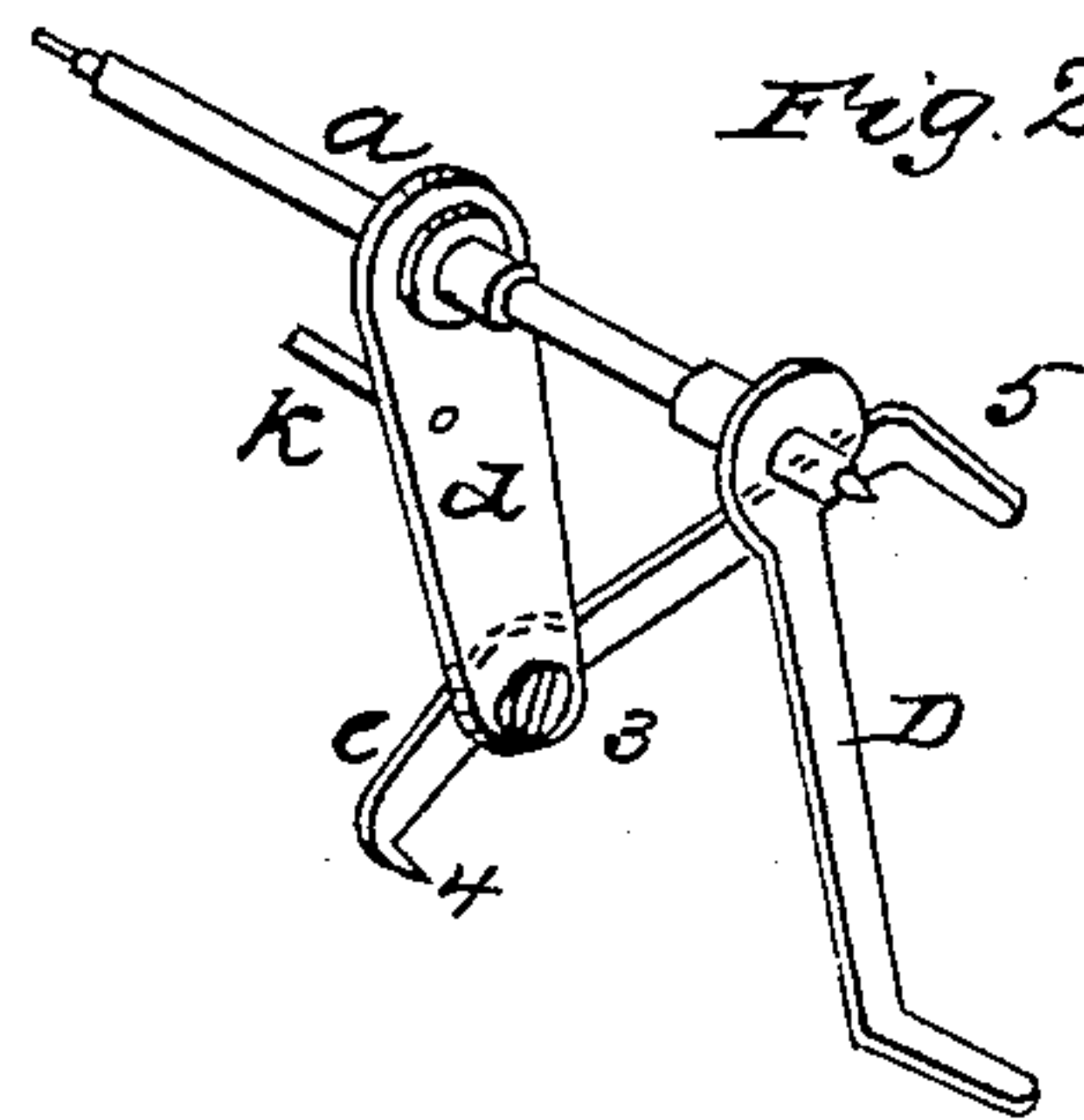
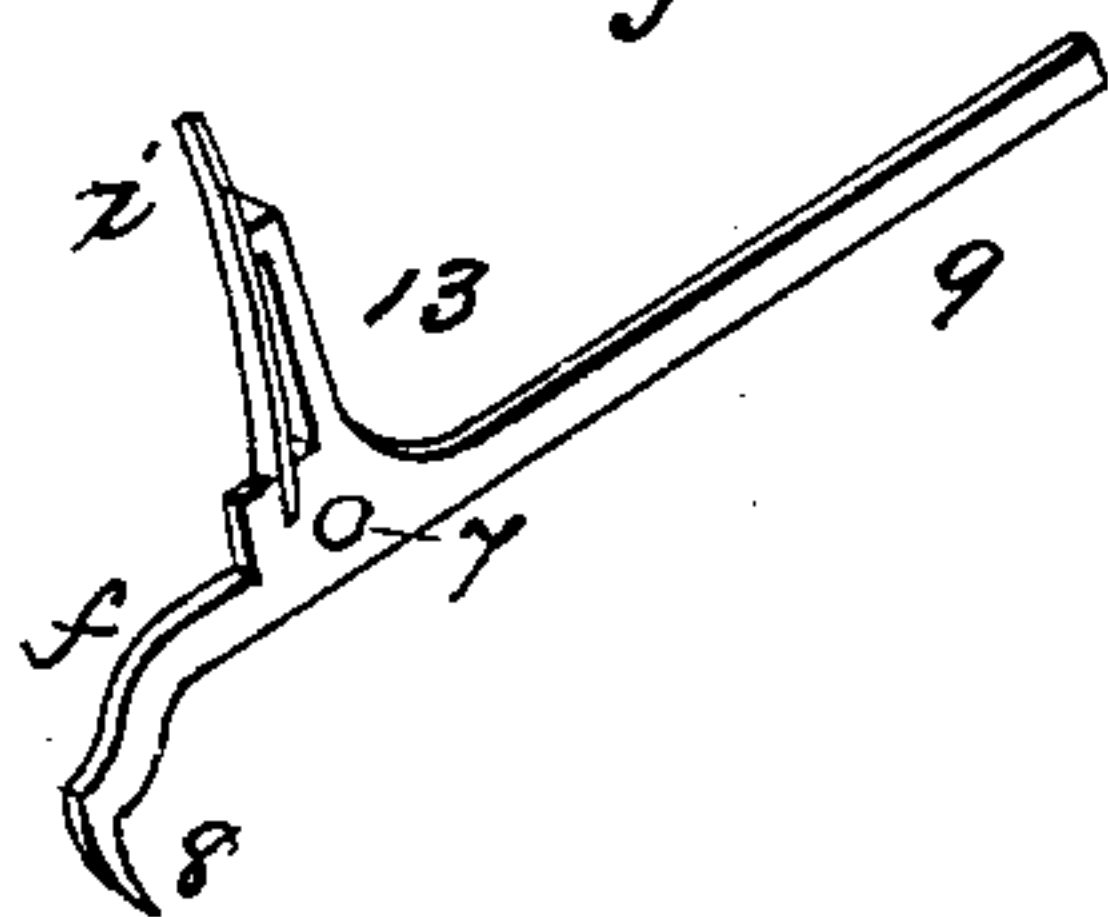


Fig. 3



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHARLES J. ADDY, OF ROXBURY, MASSACHUSETTS.

## CLOCK-ESCAPEMENT.

Specification of Letters Patent No. 26,150, dated November 22, 1859.

*To all whom it may concern:*

Be it known that I, CHARLES J. ADDY, of Roxbury, in the county of Norfolk and State of Massachusetts, have invented an Improved Clock-Escapement, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view of a part of a clock having my improved escapement. Figs. 2 and 3 details to be referred to hereafter.

My invention has for its object to avoid as much as possible the friction between the teeth of the scape wheel and the face of the pallet as the wheel gives its impulse to the pendulum, and my invention consists in the employment of two independent pallets, one of which is pivoted to some permanent portion of the clock frame and is thrown down into the path of the teeth of the scape wheel by the movement of the pendulum; the other being pivoted to an arm which is vibrated with the pendulum and is carried along with the scape wheel while the latter is giving its impulse to the pendulum.

That others skilled in the art may understand and use my invention I will proceed to describe the manner in which I have carried it out.

In the said drawings A, is the front and B, the back plates of the clock frame, certain portions of the latter which are broken away to show the parts behind, being indicated in red; C the scape wheel which is revolved by the train in the direction of its arrow; D, the pendulum, the arbor *a*, of which has its bearings in the plate A, and in a bracket (*b*, shown in red) projecting from the plate B.

A pendent arm *d*, is secured to the arbor *a* and vibrates with the pendulum; (shown detached in Fig. 2). To the lower end of this arm is pivoted at 3, the recoil pallet *e*, the hook 4, of which is thrown down into the path of the teeth of the scape wheel C, in the following manner: The tail 5, of this pallet is heavier than the hook 4, and drops onto an inclined wire *g*, attached to the plate B, and as the pendulum swings in the direction of the arrow 6, the tail 5 which is bent around for the purpose of resting upon the wire *g*, slides up the incline and brings the hook 4 down into the path of the wheel C. Another pallet *f*, (shown detached in Fig. 3) is pivoted at 7 to a bracket *h* projecting from the plate A; this pallet is slightly bent

to bring its hook 8, into the plane in which the wheel C, revolves and is thrown down into the path of this wheel in the following manner: A spring *i* attached to the gravity pallet *f*, nearly over the pivot 7, is struck by a pin *k*, projecting from the arm *d* each time the pendulum D, swings in the direction counter to the arrow 6, and the hook 8 is thrown down to intercept a tooth of the wheel C. The tail 9, of the pallet *f*, (which is heavy enough to raise the hook 8 when released by the recoil of the scape wheel) plays between two pins 11 and 12, projecting from the plate B, the tail drops onto the lower pin 11, and the position of the upper pin 12, regulates the amount of hold the hook 8 shall take on the teeth of the wheel C. An arm 13, rises from the top of the pallet *f*, alongside of the spring *i*, and serves for the spring to rest against just before the pendulum has completed its vibration in the direction of the arrow 6.

The following is the operation of this "escapement:" The "scape wheel" C, is driven by the train in the direction of its arrow (for convenience it is shown in the drawing as driven by a cord upon its arbor). In the drawing the pendulum D, is represented as having just completed its vibration in the direction of the arrow 6. As the pendulum makes this vibration the tail 5 of the pallet *e* ascends the incline *g*, and the hook 4 is thrown down into the path of the wheel C, so that at the latter part of the vibration it will catch near the point of a tooth of the scape wheel, when the momentum of the pendulum will retract the scape wheel sufficiently to free the hook 8, of the pallet *f*, from the tooth with which it was engaged. The tail 9, of this pallet now drops onto the pin 11 and the hook 8 is raised clear of the scape wheel which again moves forward, carrying with it the pallet *e*, this vibrates the arm *d*, to which the pallet *e*, is pivoted, and thus the impulse is given to the pendulum D, which now makes its next vibration in the direction counter to the arrow 6. While it is moving in this direction and the wheel C is moving in the direction of its arrow the hook 4 remains in contact with the tooth with which it has engaged and the tail 5 of this pallet is held suspended. At the same time the pin *k*, projecting from the arm *d*, comes in contact with the spring *i*, and bears down the pallet *f*, until its tail 9, strikes the stop 12, when



the point of the hook 8, will be in a position to intercept a tooth of the wheel C. As the pendulum continues to move, the spring *i* is bent by the pin *k*, the train continuing to  
 5 operate upon the pendulum through the pallet *e*, during nearly the whole of its vibration. The wheel C is thus allowed to move gradually with the pendulum until one of its teeth rests without concussion or jar  
 10 upon the hook 8, by which the motion of the scape wheel is arrested. The pendulum now continues far enough to release the pallet *e* and its hook 4 is raised clear of the wheel C. When the pendulum commences to return  
 15 in the direction of its arrow, it receives an impulse from the spring *i* which continues to bear upon the pin *k*, until its spring rests against the stop 13.

It will be perceived that in the above  
 20 escapement there will be no sudden or useless motion of the wheel C, and no blow of the teeth upon the pallets as the scape wheel is operating to give the impulse to the pendulum, throughout the whole of its revolution,  
 25 by carrying the pallet *e*, with it until the wheel is arrested by the pallet *f*; also that the wheel C, does not drop onto the pallet *f*, with a jar and noise, but is lowered onto it gradually, the pallet *e*, remaining in contact  
 30 with the wheel until it is arrested by the pallet *f*, so that the wheel can move no faster than the pendulum.

As it is not intended that the teeth of the wheel C shall slide upon the face of the  
 35 pallet *e*, while it is carrying it forward, there will be no occasion for the use of oil at this point. In the ordinary escapement if the

oil be neglected, both the teeth of the scape-wheel and the pallets are worn and the rate of the clock is caused to vary. By pivoting  
 40 the pallet *f*, which arrests the "scape wheel" to a bearing connected rigidly with the case, and independent of the pendulum, the jar occasioned by the sudden arresting of the motion of the train, does not produce that  
 45 tremor in the pendulum rod which occurs with ordinary escapements, and which tends to interrupt that regular vibration of the pendulum so necessary to a correct time  
 50 keeper.

In lieu of throwing down the pallet *f*, to engage with the scape wheel, by the pin *k* moving with the pendulum; pins projecting from the face of the scape wheel, and bearing upon the pallet may be employed for  
 55 the purpose, without altering the principle of my invention. The pallet *e* also may be replaced by any other form of pallet that shall swing with the pendulum and retract the scape wheel, to permit the disengage-  
 60 ment of the pallet *f* therefrom, though I prefer the construction and arrangement of the pallet *e* shown in the drawings.

What I claim as my invention and desire to secure by Letters Patent is—  
 65

The independent gravity pallet *f* pivoted to a fixed bearing, in combination with a recoil pallet swinging with the pendulum in the manner substantially as set forth.

CHARLES J. ADDY.

Witnesses:

THOS. R. ROACH,  
 P. E. TESCHEMACHER.