(No Model.) 2 Sheets—Sheet 1.

S. TIDEMAN.

MECHANICAL MOVEMENT.

No. 321,062. Patented June 30, 1885.

Fig. 1.

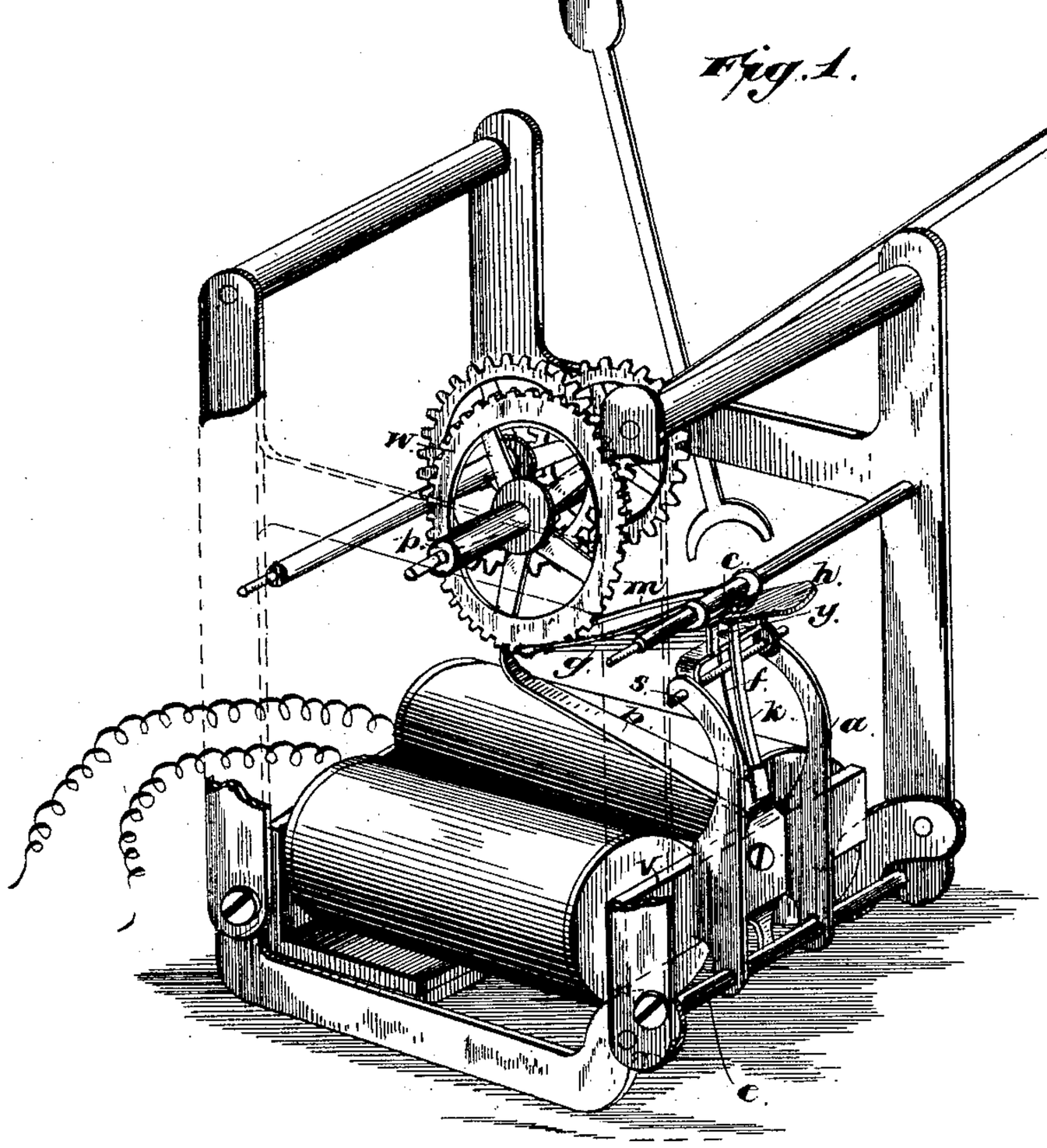
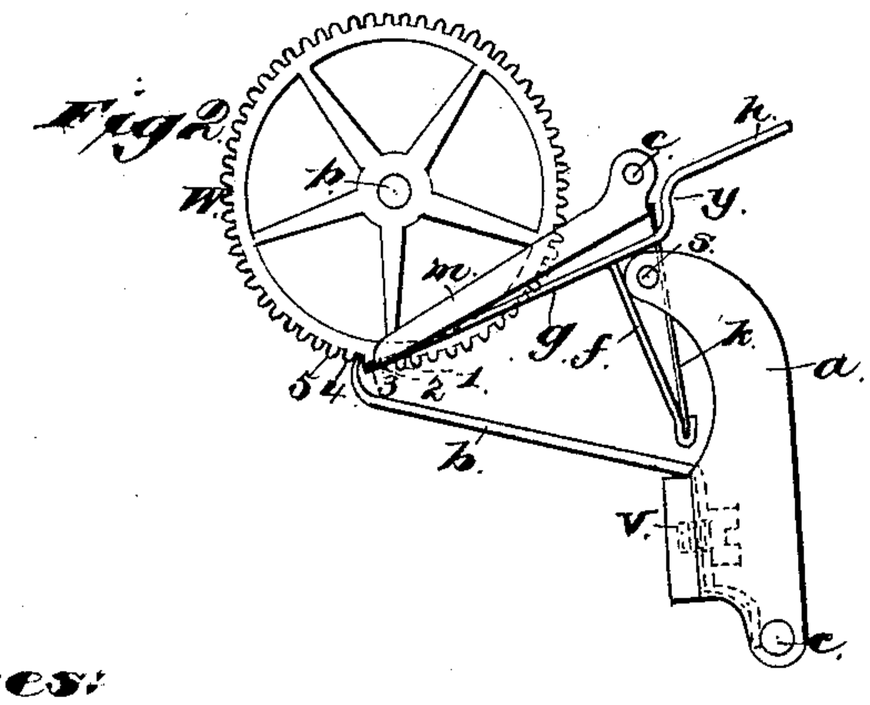


Fig. 2.



Witnesses:
Charles S. Hoyer.
George F. Cardell

Inventor:
Sven Tideman.
By Munn & Co
Attys.

No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

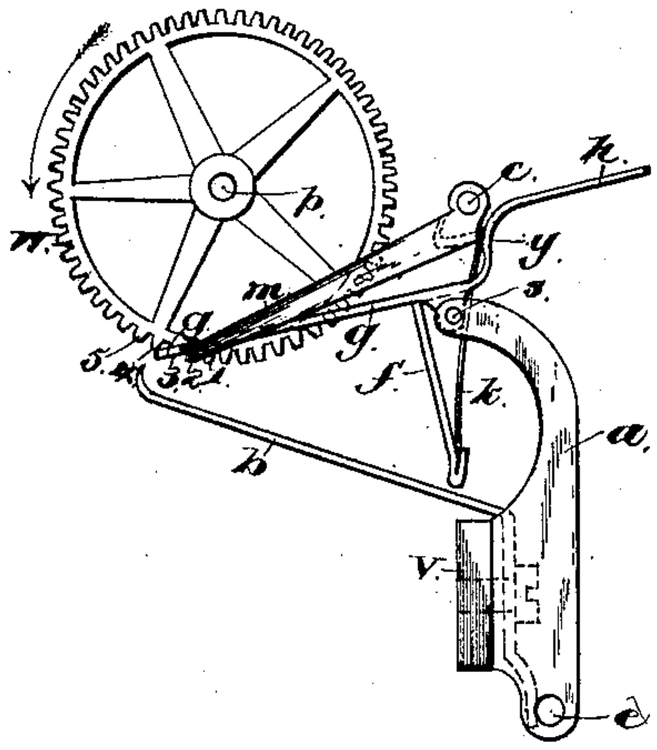


Fig. 4.

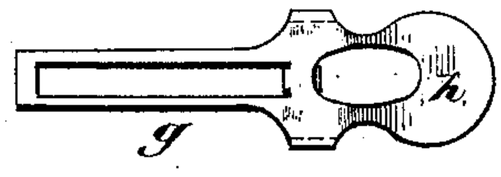


Fig. 5.

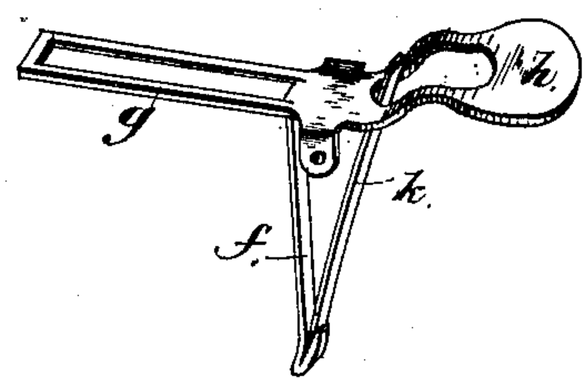
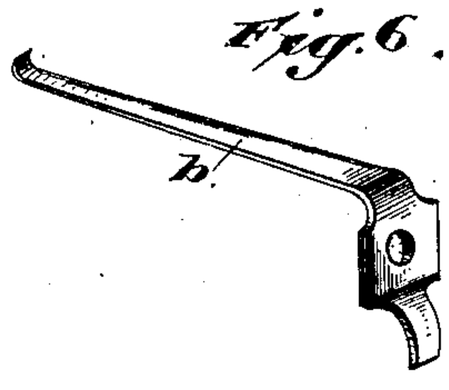


Fig. 6.



Witnesses:
Charles S. Hyer.
George F. Cardella

Inventor.
Sven Tideman.
By Munn & Co
Attys.

UNITED STATES PATENT OFFICE.

SVEN TIDEMAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO EDMUND D. BARRY, OF GRAND RAPIDS, MICHIGAN.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 321,062, dated June 30, 1885.

Application filed May 16, 1885. (No model.)

To all whom it may concern:

Be it known that I, SVEN TIDEMAN, a subject of the King of Sweden and Norway, and residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification, reference being had therein to the accompanying drawings, in which similar letters represent similar parts throughout the several views.

The object of my invention is to convert reciprocating motion into circular motion in such a manner that a cogged wheel may at intervals be rotated a certain definite space and then detained.

Figure 1 represents a perspective view of my machine with a portion of the frame broken away. Fig. 2 is a side elevation of the working parts of the machine detached from the frame, and shows the position of those parts when the revolution of the wheel is stopped. Fig. 3 is a similar side elevation showing the position of the parts at the moment when the revolution of the wheel is to commence. Figs. 4 and 5 are respectively detail plan and perspective views of the dragging-pawl *g*, Fig. 2, which communicates motion to the wheel W. Fig. 6 is a detail perspective view of the detent *b*, Fig. 2.

The wheel W, Fig. 1, turns on a fixed center or arbor, *p*, working in suitable bearings in the frame. The impulse-lever *a*, Fig. 1, is attached to the arbor *e*, which works in fixed bearings in the frame. The detent *b*, Fig. 1, is rigidly secured to the impulse-lever *a*. The pawl *g* has its center cut away, as shown in Fig. 5, so as to allow it to straddle the wheel W and catch its teeth or cogs, as shown in Fig. 2. It communicates motion to the wheel by dragging the engaged cog toward the ratchet *m*. A portion of the metal cut from the pawl *g* is bent down to form the tongue *f*. The pawl *g* is hinged to the impulse-lever by means of the pin *s*, Fig. 2. The ratchet *m* also has its center cut away, so as to allow it to straddle both the pawl *g* and the wheel W, as shown in Fig. 2. It is attached to the arbor *c*. A flat spring, *k*, Fig. 2, is attached to the tongue *f* of the pawl *g*. The upper end of the spring *k* rests on the butt-end of the ratchet *m*, below the center of the arbor *c*, which works in fixed bearings in the frame. The tension of the spring, when in the position shown in Fig. 2, is such as to keep the ratchet in contact with the cogs of the wheel W.

When an impulse is given to the impulse-lever *a*, Fig. 2, so as to cause it to move on its center in the direction of the arrow, the detent *b* drops away from the cogs of the wheel, and the pawl *g* slides over the cog 3, on the top of which the tip of the pawl has rested until the motion was given. While the pawl *g* is moving forward, the ratchet *m* holds the cog *l* and prevents the wheel from moving backward with the forward motion of the pawl. When the power by which the impulse-lever *a* is actuated ceases to act, the spring *k* causes the various parts to return to the relative position shown in Fig. 2, the pawl *g* catching and dragging along with it the cog 3, the ratchet *m* passing over the cog 2, and the detent *b* falling between the cogs 4 and 5. With each forward and backward movement of the impulse-lever *a* the wheel W is turned the distance from the center of one cog to the center of the next, and is then detained until the next movement of the impulse-lever. The forward movement of the impulse-lever is stopped by that portion of the pawl *g* marked *y* coming in contact with the ratchet *m*, as shown in Fig. 3.

It will be noticed that the spring *k* has three offices in the movement. When the parts are in a state of rest, as in Fig. 2, the upper end of the spring *k* so presses against the ratchet *m* as to hold it in contact with the wheel; second, the spring also acts on the pawl *g* and keeps it close against the cogs of the wheel; and, third, when the impulse-lever *a* and the pawl *g* are driven forward to the position shown in Fig. 3 the spring *k* causes the parts to return to the position shown in Fig. 2 as soon as the impulse ceases.

I prefer to attach the spring *k* to the pawl *g* by means of the tongue *f*, as shown in Fig. 2, but I do not wish to limit myself to this

particular form, as the spring may be attached to other parts of the pawl *g* and work equally well.

The immediate use contemplated by me for this movement is for propelling the wheels of a clock by means of an electro-magnet placed so as to draw on the armature *v* attached to the impulse-lever; but I do not wish to limit myself to this use or to an electro-magnet as a means of actuating the impulse-lever, as it is evident the movement has many uses and may be actuated by various means.

It will be seen that in my movement the force which actuates the lever does not act directly on the wheel. The wheel, in fact, does not commence to move until after such force ceases to act, and is then drawn by the spring *k* acting on the impulse-lever *a* and the pawl *g*. Any variation of the force with which the impulse-lever is moved has therefore little effect on the wheel.

The arrangement of the parts in the movement is such that the detent *b*, the pawl *g*, and the ratchet *m* may all together be thrown away from contact with the wheel by a slight upward pressure on the thumb-piece *h*, Fig. 2, and the wheel thus be left loose to turn in either direction.

It is obvious that various mechanical changes can be made in the construction and arrangement of the parts without departing from the nature or principal of my invention, and hence I do not limit myself to the construction of parts.

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

1. In a mechanical movement, the combination of an impulse-lever, a pawl connected thereto and engaging with a wheel, a spring for returning said impulse-lever to its normal position, and means for actuating said lever, substantially as described.

2. In a mechanical movement, the combination of an impulse-lever, a pawl connected thereto and engaging with a wheel, a spring for supporting said pawl and returning said impulse-lever to its normal position, and means for actuating said lever, substantially as described.

3. In a mechanical movement, the combination of an impulse-lever having a detent attached thereto, a pawl hinged to said lever and engaging with a wheel, a spring for returning said impulse-lever to its normal position, and means for actuating said lever, substantially as described.

4. In a mechanical movement, the combination of an impulse-lever having a detent attached thereto, a pawl hinged to said lever and engaging with a wheel, a spring for supporting said pawl and returning said impulse-lever to its normal position, and means for actuating said lever, substantially as described.

5. In a mechanical movement, the combination of an impulse-lever, a pawl hinged thereto and engaging with a wheel, a ratchet for preventing the backward movement of the wheel, a spring for returning said impulse-lever to its normal position, and means for actuating said lever, substantially as described.

6. In a mechanical movement, the combination of an impulse-lever, a pawl hinged thereto and engaging with a wheel, a ratchet for preventing the backward movement of the wheel, a spring for supporting said ratchet and for returning said impulse-lever to its normal position, and means for actuating said impulse-lever, substantially as described.

7. In a mechanical movement, the combination of an impulse-lever, a pawl hinged thereto and engaging with a wheel, a ratchet for preventing the backward movement of the wheel, a spring for supporting said pawl and ratchet and for returning said impulse-lever to its normal position, and means for actuating said lever, substantially as described.

8. In a mechanical movement, the combination of an impulse-lever having a detent attached thereto, a pawl hinged to said lever and engaging with a wheel, a ratchet for preventing the backward movement of the wheel, a spring for returning said impulse-lever to its normal position, and means for actuating said lever, substantially as described.

9. In a mechanical movement, the combination of an impulse-lever having a detent attached thereto, a pawl hinged to said lever and engaging with a wheel, a ratchet for preventing the backward movement of the wheel, a spring for supporting said ratchet and for returning said impulse-lever to its normal position, and means for actuating said lever, substantially as described.

10. In a mechanical movement, the combination of an impulse-lever having a detent attached thereto, a pawl hinged to said lever and engaging with a wheel, a ratchet for preventing the backward movement of the wheel, a spring for supporting said pawl and ratchet and for returning said impulse-lever to its normal position, and means for actuating said lever, substantially as described.

11. In a mechanical movement, the combination of an impulse-lever, a pawl hinged thereto and engaging with a wheel, a ratchet, and a spring for operating each of said parts, substantially as described.

12. In a mechanical movement, the combination of an impulse-lever having a detent attached thereto, a pawl hinged to said lever and engaging with a wheel, a ratchet for preventing the backward movement of the wheel, and a spring for supporting the pawl and ratchet and operating each of said parts, substantially as described.

13. In a mechanical movement, the combination of an impulse-lever having a detent attached thereto, a pawl hinged to said lever, a ratchet, a spring for operating said lever,

pawl, and ratchet, a wheel engaging with the detent, pawl, and ratchet, and means for actuating said lever, substantially as described.

14. In a mechanical movement, the combination of a lever, *a*, having a detent, *b*, a pawl, *g*, ratchet *m*, spring *k*, wheel W, and means for operating the same, substantially as described.

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

SVEN TIDEMAN.

Witnesses:
LEWIS D. WEBSTER,
LUMLEY INGLEDEW.