

A. L. DENNISON.

Watch.

No. 31,009.

Patented Jan. 1, 1861.

Fig. 1.

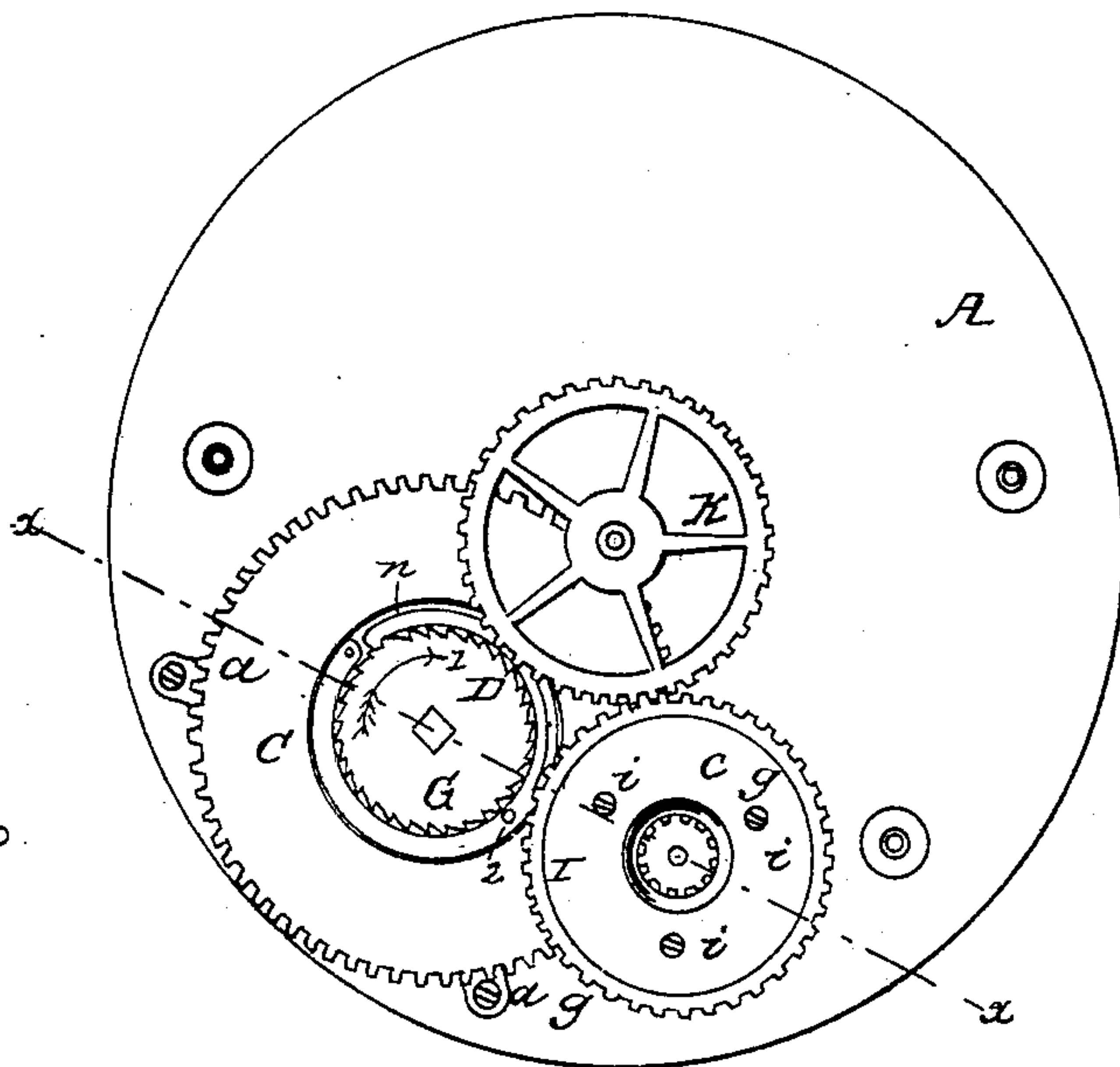


Fig. 4.

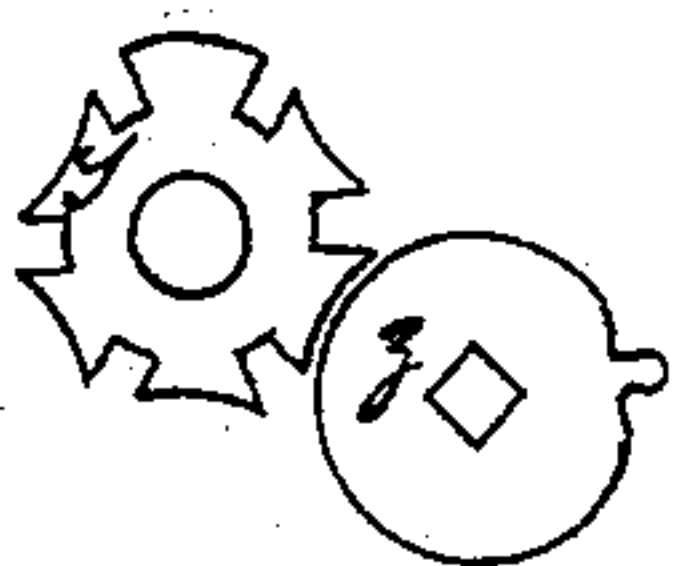


Fig. 8.

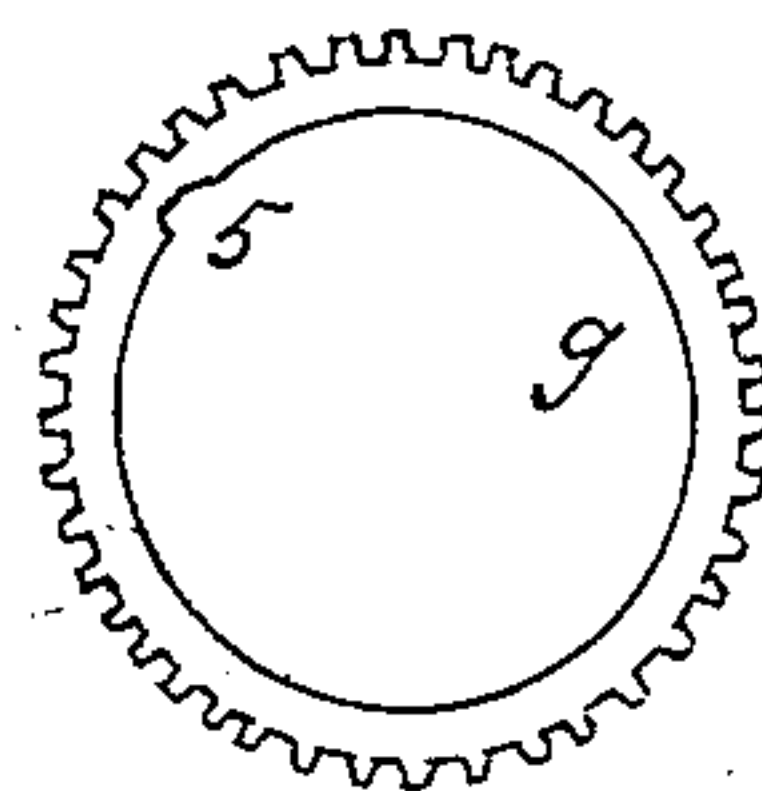


Fig. 6.

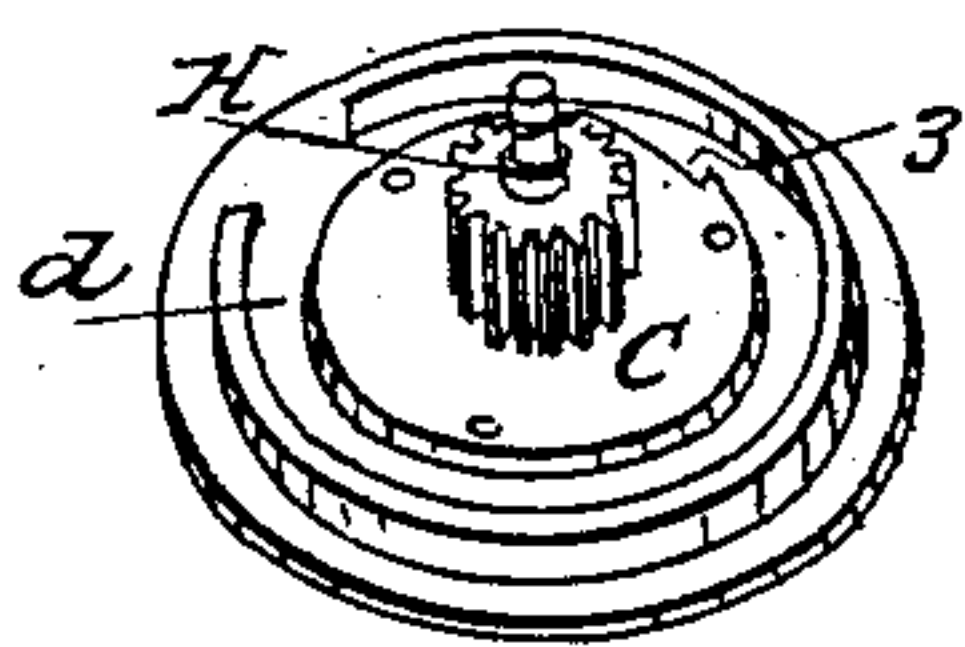


Fig. 2.

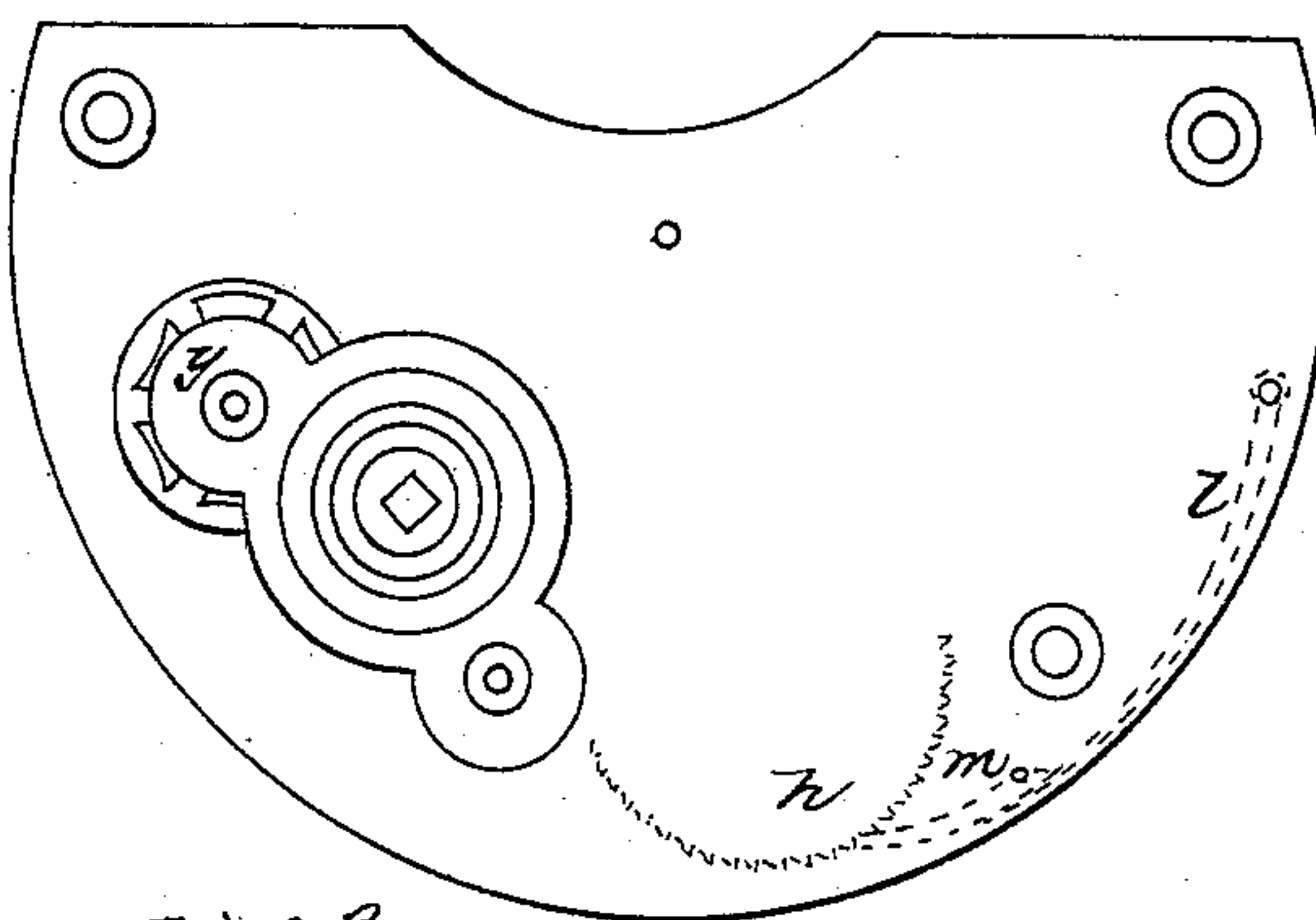


Fig. 5.

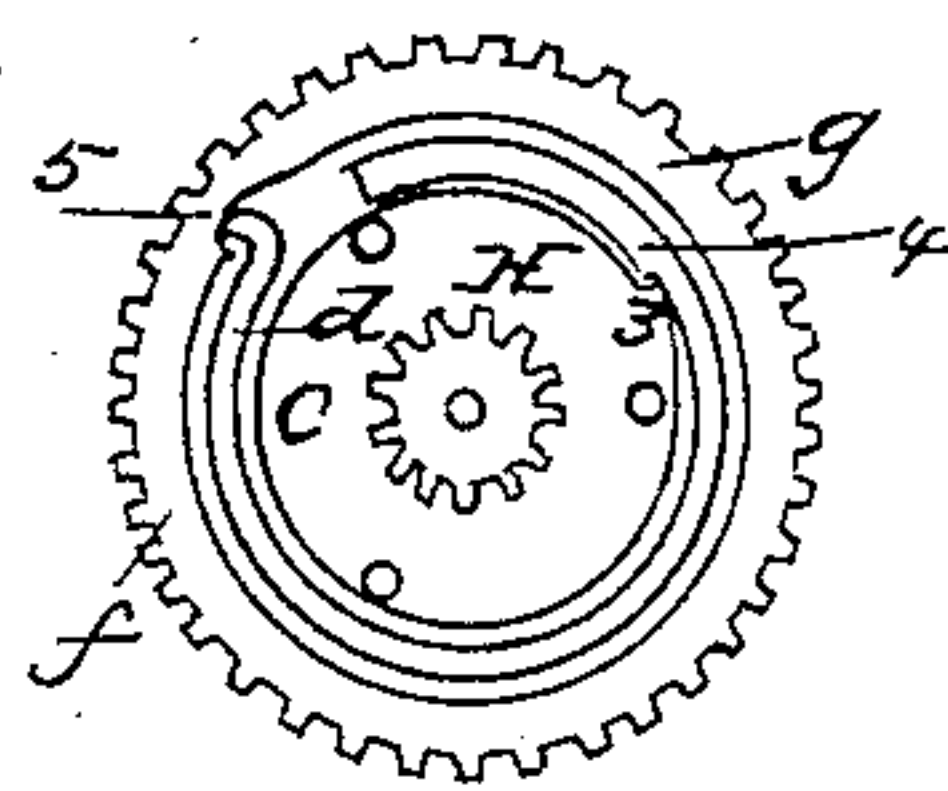


Fig. 7.

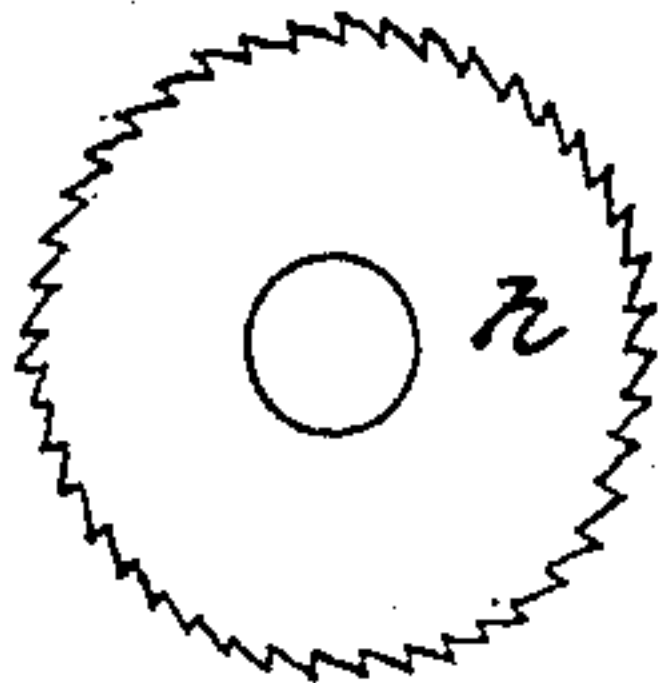


Fig. 9.

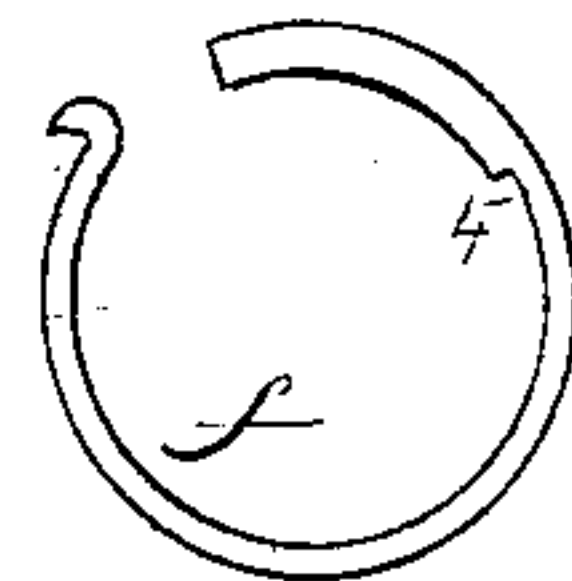
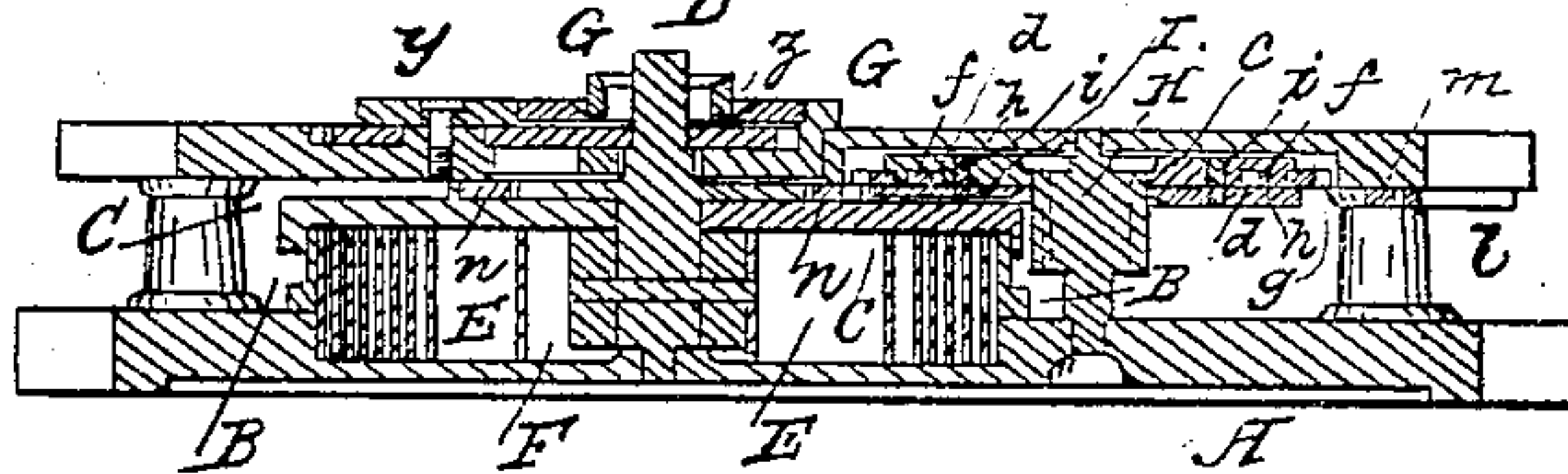


Fig. 3.



Witnesses

Chas. Cooper
J. H. Schenck

Inventor
A. L. Dennison

UNITED STATES PATENT OFFICE.

A. L. DENNISON, OF WALTHAM, MASSACHUSETTS.

WATCH.

Specification of Letters Patent No. 31,009, dated January 1, 1861.

To all whom it may concern:

Be it known that I, A. L. DENNISON, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Watches, 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 plan of the pillar plate with portions of the internal mechanism necessary to illustrate my invention. Fig. 2, a plan of the bridge plate. Fig. 3 a section upon the line $x x$ of Fig. 1. Fig. 4, a plan of the stop wheel. Fig. 5, plan of the underside of the intermediate wheel I, with the maintaining power spring. Figs. 6, 7, 8 and 9 details of the separate parts of which the intermediate wheel I, is composed and which will be referred to hereafter.

It is well known that it is desirable to reduce the size of watches that are to be carried about the person not only in thickness but also in diameter so far as this may be done without weakening or otherwise injuring the works. It is also very desirable that a watch should have a large barrel giving a large spring space also a large main gear and particularly that the pinion with which the main gear engages be large and that it possesses a great number of teeth. All these ends are accomplished by means of my present invention which consists in placing the pinion, which engages with the main gear, upon a supplementary arbor out of the center of the watch, which arbor carries an intermediate wheel that engages directly with the center wheel.

I am aware that both in clocks and watches intended to run for a number of days without winding, an intermediate wheel and pinion have been employed between the main gear and center wheel, but in such cases the intermediate wheel has engaged with a pinion upon the arbor of the center wheel and not with the wheel itself. But such device which was used only for the purpose of increasing the number of revolutions of the center wheel would not answer the end which I have in view, but would on the contrary defeat it, as the intermediate wheel and center wheel lie one over the other, and consequently increase the thickness of the watch, whereas by my arrangement the

thickness as well as the diameter of the watch is diminished.

In the accompanying drawings A, is the pillar plate B, the stationary barrel which is secured to the pillar plate by screws a . The cover plate for the barrel is formed by the main gear C, through the center of which passes the winding arbor D.

The main spring E, is connected at its outer end to the stationary barrel B, and at its inner end to a hub or collar F, secured to the winding arbor.

The power of the spring is transmitted to the main gear through the ratch G and spring n , the ratch being secured to the arbor and the spring to the gear at 2. The winding arbor and ratch are thus allowed to turn in the direction of the arrow 1, independent of the gear when the watch is wound up, and to communicate the recoil of the spring to the gear in the opposite direction when the watch is going. The main gear C, engages with a pinion H, upon the arbor of the intermediate gear I, which engages with the center wheel K. It will thus be seen that instead of the pinion which was heretofore placed upon the center arbor, and which limited the size that could be given to the barrel and main gear, there is only the arbor itself of the center wheel which being much smaller than the pinion, leaves much more space for the enlargement of the barrel and gear—or if the size of the barrel and gear remain the same, permits the diameter of the watch to be diminished. It will also be perceived that if the main gear was crowded by the pinion the latter was equally crowded by the gear and consequently the size of this pinion was reduced to the minimum but by the arrangement above described of an intermediate wheel between the main gear and center wheel, and engaging with the latter, I am enabled to enlarge the pinion with which the main gear engages to any desirable diameter and thus to reduce the disparity between it and its driving wheel to a degree that shall be practically unobjectionable. But as the pinion is enlarged the power of the main gear upon it increases. Consequently I am enabled to employ a much thinner spring than has heretofore been used which gives me a double advantage. 1st with a thin spring more turns may be given

to the barrel and main gear and thus the amount of motion lost by the use of the large pinion may be made up. 2nd the thin spring is far less liable to breakage and may
5 be tempered higher than one that is thicker.

The retaining power which drives the train while the watch is being wound up is attached to the intermediate wheel I, which is constructed as follows. The upper plate
10 or body of this wheel (*c*) Figs. 1 and 3) is attached to the pinion H and arbor, and has a recess or groove (*d*,) for the accommodation of the maintaining spring (*f*) a projection (3,) on the wheel engaging with
15 a corresponding notch (4) in the spring. The plate (*c*) is turned down upon its periphery to a depth equal to the depth of the groove (*d*) and upon the ledge (*x*) thus formed, is placed the toothed ring (*g*,)
20 having a notch (5) into which enters the hooked end of the spring (*f*). The under plate (*h*,) of the wheel is now secured to the plate (*c*) by screws (*i*) (Figs. 1 and 3) there being sufficient space between them to
25 prevent them from binding the ring (*g*) and allow the latter to move independently of the balance of the wheel. The plate (*h*,) is also the ratch of the maintaining power and is seen in section in Fig. 3, detached
30 in Fig. 7, and dotted in Fig. 2 together with its pawl (*m*) and spring (*l*). It will be seen on inspection of Fig. 3, that the wheel (I) lies partly within a recess turned in

the bridge plate so that the ratch (*h*) is brought upon a level with its pawl (*m*,) and
35 spring (*l*) which are secured to the under surface of the bridge plate. By thus placing the retaining power upon the intermediate wheel I am enabled to place the ratch of the retaining power in the same plane with the
40 ratch of the winding barrel and thus to save the space in the thickness of the watch heretofore occupied by one of them; were the maintaining power placed upon the winding arbor the two ratches would neces-
45 sarily fall one above the other and would occupy a double amount of space.

In Fig. 4, is seen detached the stop wheels *y*, and *z*, which are attached to the top of the bridge plate as seen in Figs. 2 and 3. 50

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

1. The intermediate wheel I in combination with the main gear C, and central wheel K, when the intermediate and central
55 wheels are in the same plane as set forth.

2. Combining the maintaining power with an intermediate wheel between the main gear and the central wheel, whereby the ratch of the winding arbor and the ratch of the main-
60 taining power are placed in the same plane for the purpose set forth.

A. L. DENNISON.

Witnesses:

WM. H. KEITH,
HENRY MARTYN.