

No. 864,822.

A. BANNATYNE.  
WATCH.

PATENTED SEPT. 3, 1907.

APPLICATION FILED DEC. 21, 1905.

Fig. 1

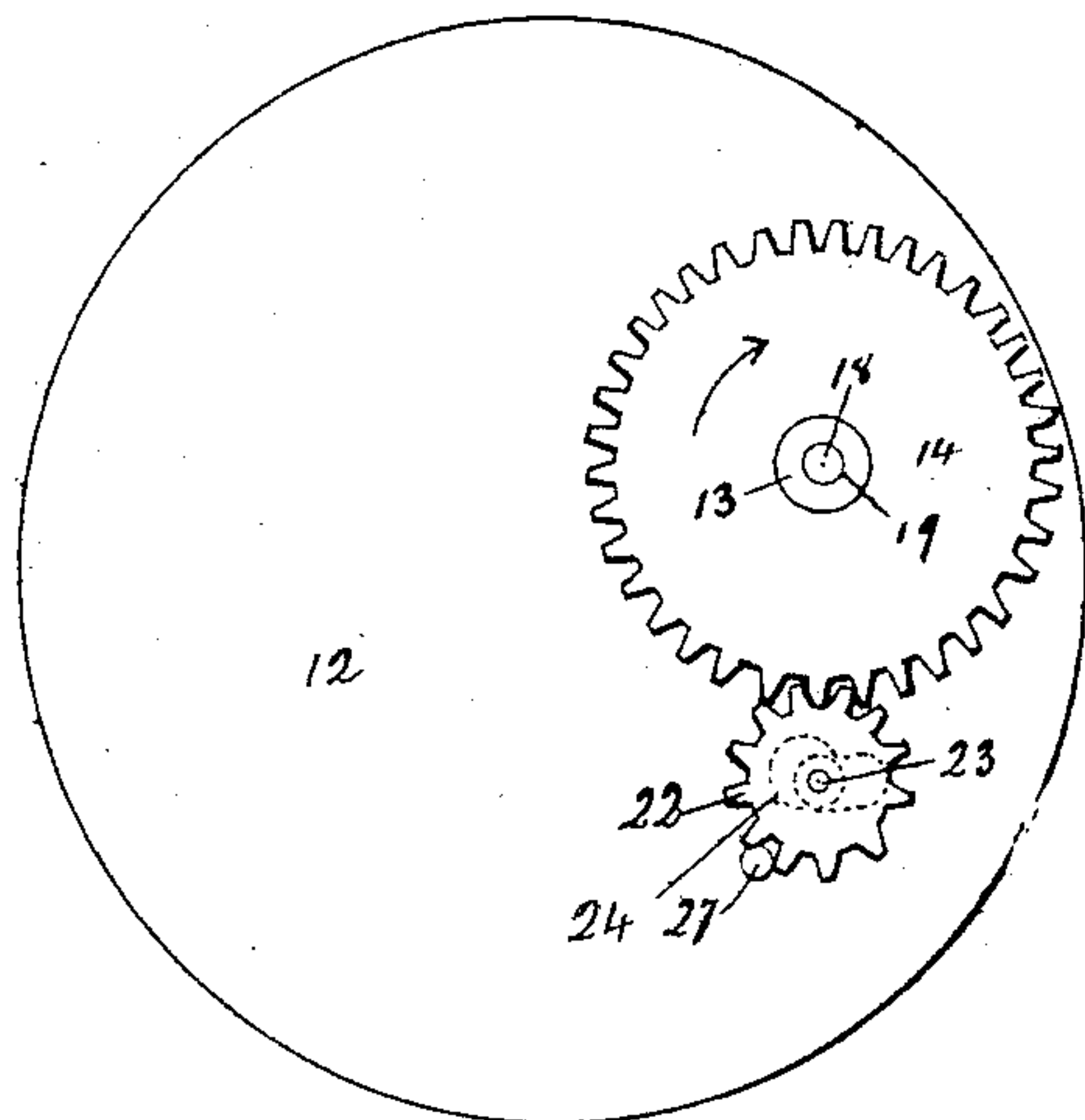


Fig. 2

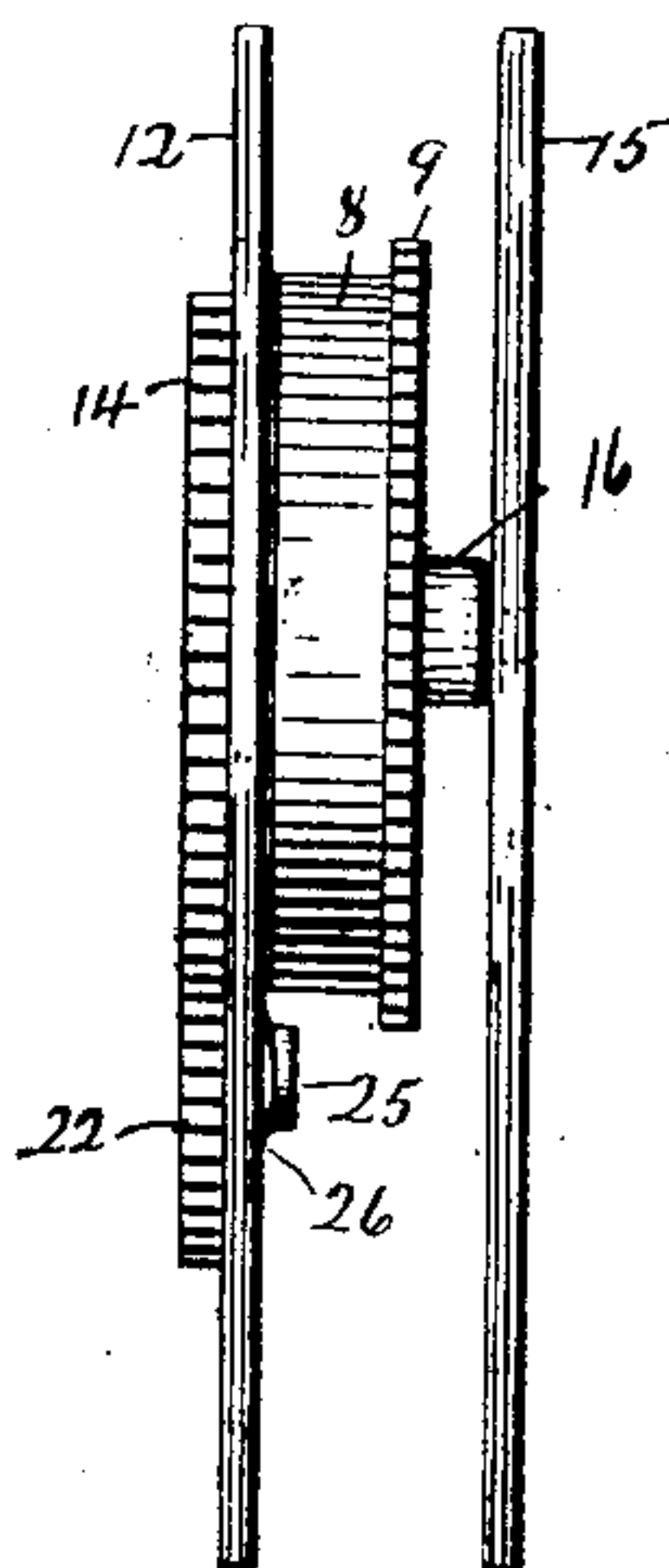


Fig. 3

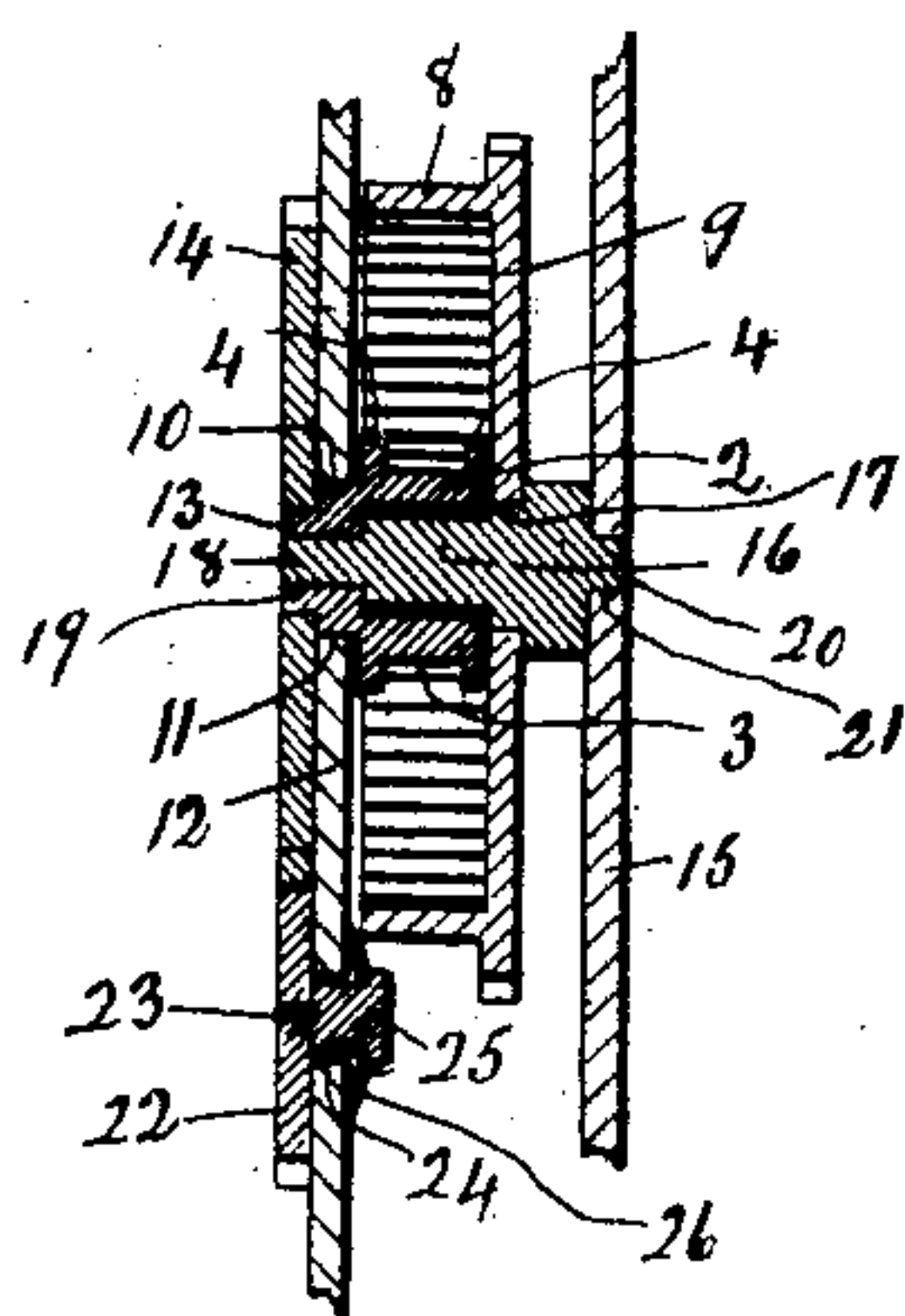


Fig. 4

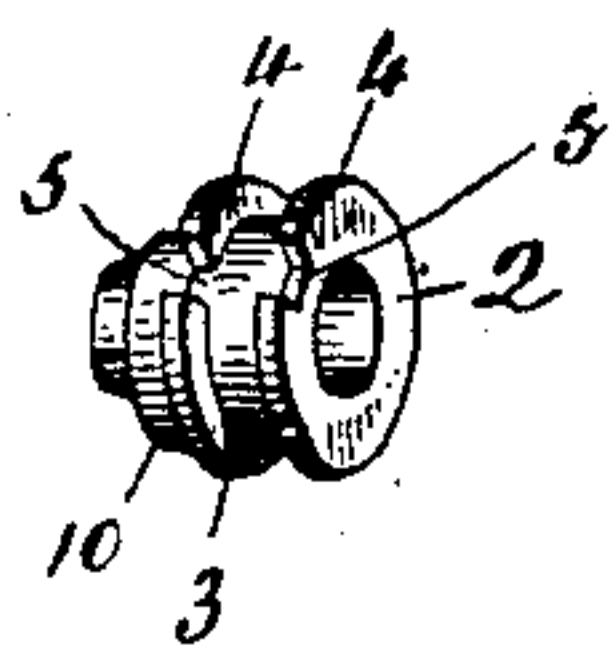
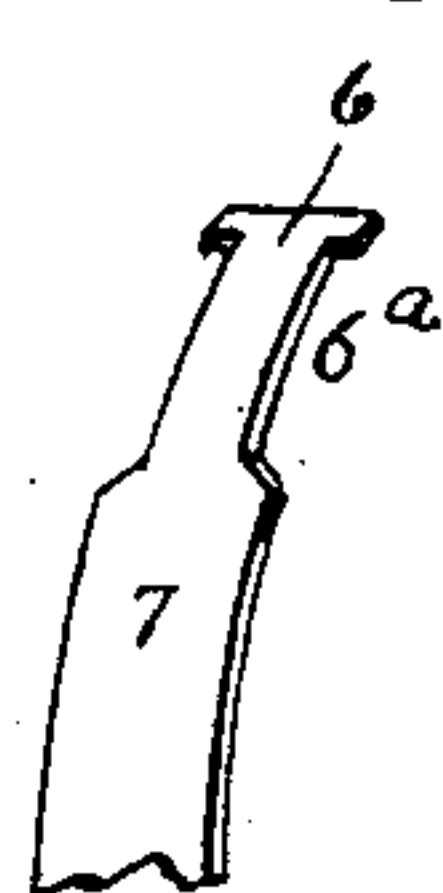


Fig. 5



Witnessed.  
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Charles L. Weed.

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# UNITED STATES PATENT OFFICE.

ARCHIBALD BANNATYNE, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE BANNATYNE WATCH CO., OF WATERBURY, CONNECTICUT, A CORPORATION.

## WATCH.

No. 864,822.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed December 21, 1905. Serial No. 292,685.

*To all whom it may concern:*

Be it known that I, ARCHIBALD BANNATYNE, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have  
5 invented a new and useful Improvement in Watches; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear,  
10 and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a view in front elevation of the front-plate of a watch-movement, showing the ratchet wheel and my improved vibratory locking pinion therefor. Fig.  
15 2 an edge view of the movement. Fig. 3 a sectional view through the movement-plates, barrel, main wheel, arbor, hub and vibratory locking pinion. Fig. 4 a detached perspective view of the hub. Fig. 5 a detached perspective view of the inner end of the spring.

20 My invention relates to an improvement in watches and more particularly to the parts thereof directly connected with the function of winding the main spring, the object being to provide an improved construction made with particular reference to reducing the friction  
25 of the parts, preventing the tilting of the main wheel and spring barrel, and securing an economy of space between the two plates.

With these ends in view my invention consists in a watch having certain details of construction and combinations of parts as will be hereinafter described and  
30 pointed out in the claims.

In carrying out my invention, I employ, as shown, a winding hub 2 formed with an annular groove 3 for the production of two flanges 4, 4, having slots 5, 5, for the  
35 reception of a T-shaped head 6 at the end of a neck 6<sup>a</sup> formed by suitably cutting away the inner end of a spring 7 wound upon the said flanges and having its outer end secured in any ordinary manner to a spring barrel 8 made integral with the main wheel 9. At its  
40 forward end the hub is formed with an annular bearing shoulder 10 which turns in an opening 11 in the front movement plate 12. At its extreme front end, the hub is formed with an extension 13 which projects through the front plate 12 and receives the ratchet-wheel 14  
45 which is rigidly secured to it. Under this arrangement, the ratchet wheel 14 is located outside of the front movement-plate 12 and secures an economy of space between the same and the rear movement-plate 15 by permitting the barrel to be located close to the rear face  
50 of the front plate 12 where the ratchet wheel 14 is ordinarily located. The hub 2 which is stationary except when the spring 7 is being wound, receives the main arbor 16 which is introduced into it through its rear end and which normally rotates within it. This arbor is

formed near its rear end with a shoulder 17 on which the  
55 main wheel 9 is staked so that the barrel 8, main wheel 9 and arbor 16 function as one piece. At its forward end the arbor is reduced in diameter to form a trunnion 18 which bears in a hole 19 extending through the shoulder 11 and extension 13 of the hub 2. At its rear end the  
60 arbor is formed with a trunnion 20 which bears in a hole 21 in the rear plate 15. Under this construction the arbor 16 revolves with the spring barrel 8 and main wheel 9 instead of with the hub 2 and reduces friction  
65 because the journals of the arbor are small and so separated from each other that the tendency of the barrel and main wheel to tilt and bind is reduced to the minimum.

In order to hold the ratchet wheel 14 and thus prevent the spring 7 from uncoiling after it has been wound  
70 up, except as it slowly uncoils in rotating the barrel, I employ in place of the usual spring-actuated dog or pawl, a pinion lock consisting of a vibratory pinion 22 meshing into the ratchet wheel 14 and rigidly secured to the reduced outer end of a stud 23 arranged to play  
75 back and forth in a segmental slot 24 in the front plate 12, the said stud being formed at its inner end with a head 25 which prevents it from being drawn through the slot 24 and forms an abutment for a friction spring 26 which is interposed between the said head 25 and the  
80 inner face of the said movement-plate 12. The teeth of the locking pinion 22 coact with a locking pin 27 mounted in the movement plate 12 with reference to the periphery of the wheel 14, so that when the pinion 22 is moved from right to left it will be jammed, as it  
85 were, between the wheel 14 and the pin 27 with the effect of locking the ratchet wheel 14 against rotation, and hence the hub 2. When, however, the wheel 14 is turned from left to right in the direction of the arrow *a* in Fig. 1 which is the direction in which it is turned in  
90 winding, it acts to pull the pinion 22 away from the pin 27, moving it from left to right until the stud 23 engages with the opposite end of the slot 24 after which the pinion 22 will revolve idly. The effort, however,  
95 of the main spring 7 to uncoil at once starts to turn the ratchet wheel 14 in the reverse direction, that is to say, from right to left, which is the direction of unwinding, and as the pinion 22 is restrained by the friction spring 28 from revolving freely it is carried along from right to  
100 left until it is jammed between the wheel 14 and the locking pin 27, whereby the ratchet wheel 14 is locked against rotation just as if the movement were furnished with an ordinary locking pawl or dog with the difference that the pinion 22 is noiseless in its action.

By constructing the winding hub 2 and the inner  
105 end of the main spring 7 as described, the latter is held against edgewise displacement whereby its edges are prevented from frictional engagement with the main-



wheel on the one hand or with the front movement-plate on the other hand. Furthermore the sinking of the extreme inner end of the spring into the groove 3 of the hub 2 secures, as might be said, a smooth coiling for  
5 the two inner coils of the spring, preventing the same from being broken by abrupt deflection at its inner end for it will be understood that although the head 6 and long neck 6<sup>a</sup> of the spring are located below the level of the flanges 4 thereof, the said flanges support the full  
10 width of the spring.

I would have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such departures therefrom as fairly fall within the spirit and scope of  
15 my invention.

I claim:

1. In a watch, the combination with the front and rear movement plates thereof, of a main arbor provided at its rear end with a trunnion which bears directly in the rear  
20 movement-plate, a main wheel staked directly upon the said arbor near the rear end thereof, a spring barrel formed integral with and carried by the said main-wheel, a normally stationary winding-hub journaled at its front end directly in the front movement-plate and forming at  
25 its front end a bearing for the front end of the main-arbor which enters the said hub from the rear end thereof, a main-spring located in the said barrel and having its outer end attached thereto and its inner end attached to the said hub, and a ratchet-wheel mounted directly upon

the projecting front end of the winding-hub and located 30 upon the outside of the front movement-plate.

2. In a watch, the combination with the front and rear movement plates thereof, of a main-arbor, a normally stationary winding-hub formed with a circumferential annular groove located between two flanges having registered 35 slots, a spring-barrel rotating with the said main arbor, and a spring having its outer end connected with the said barrel and its inner end formed with a T-shaped head located at the end of a neck narrower than the width of the spring, the said head being adapted to enter the said registered slots in the flanges of the hub, and the neck being 40 adapted to enter the groove in the said hub, whereby the spring is held against lateral displacement and its edges cleared from frictional engagement with the main wheel and the front movement-plate. 45

3. In a watch, the combination with a front movement-plate having a segmental slot, of a ratchet-wheel located on the outside of the said plate, a vibratory locking-pin 50 also located on the outside of the said plate, a vibratory stud located in the said segmental slot and carrying the said pinion, a friction spring carried by the inner end of the said stud and engaging with the inner face of the said front movement-plate, and a locking-pin or abutment arranged to jam the pinion upon a reverse movement of the ratchet-wheel, whereby the action of the ratchet-wheel in 55 winding is noiseless.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

ARCHIBALD BANNATYNE.

Witnesses:

FREDERIC C. EARLE,  
GEORGE D. SEYMOUR.