

No. 767,096.

PATENTED AUG. 9, 1904.

A. BANNATYNE.
STEM WINDING AND SETTING WATCH.

APPLICATION FILED FEB. 23, 1904.

NO MODEL.

Fig. 1

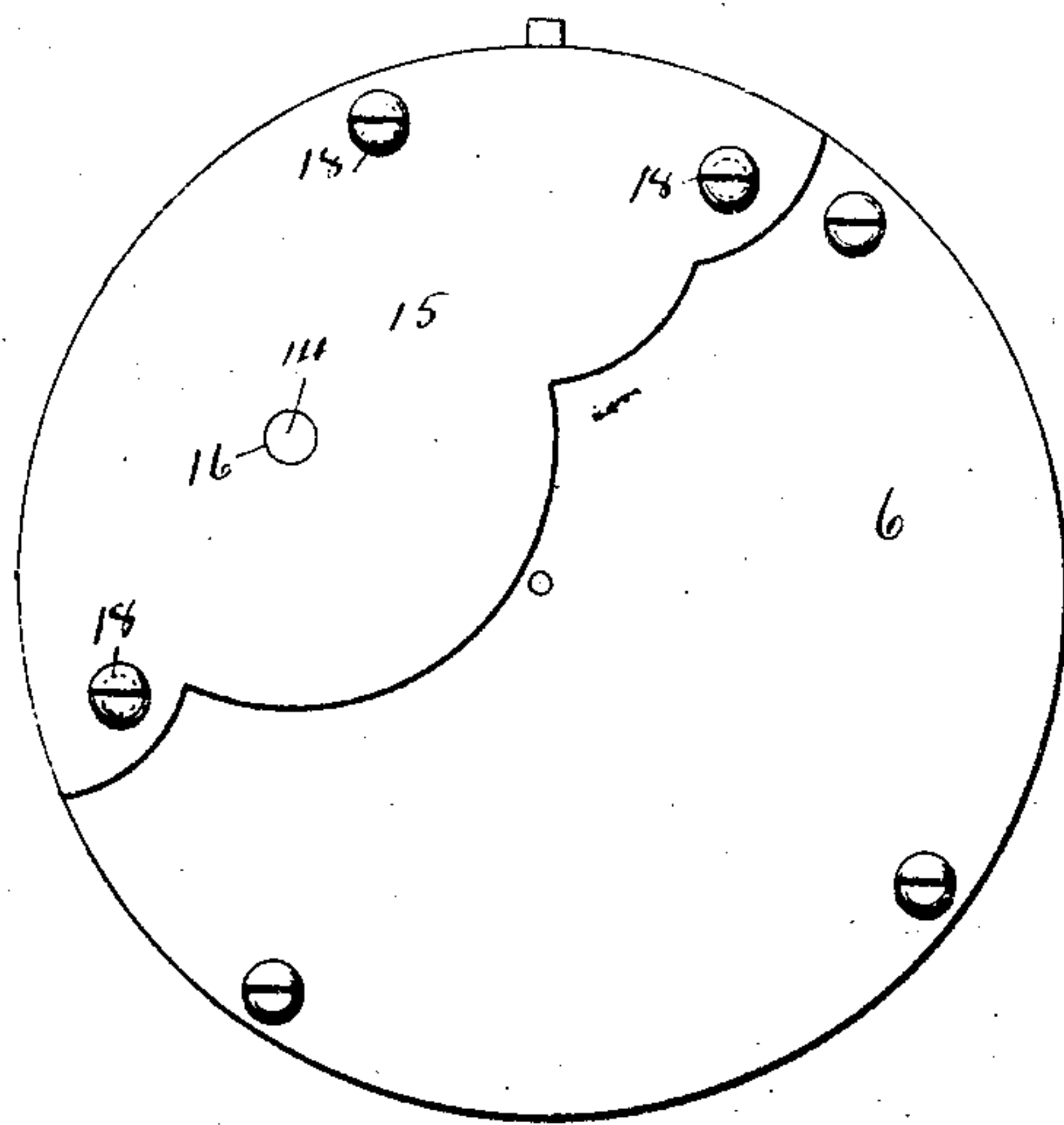


Fig. 2

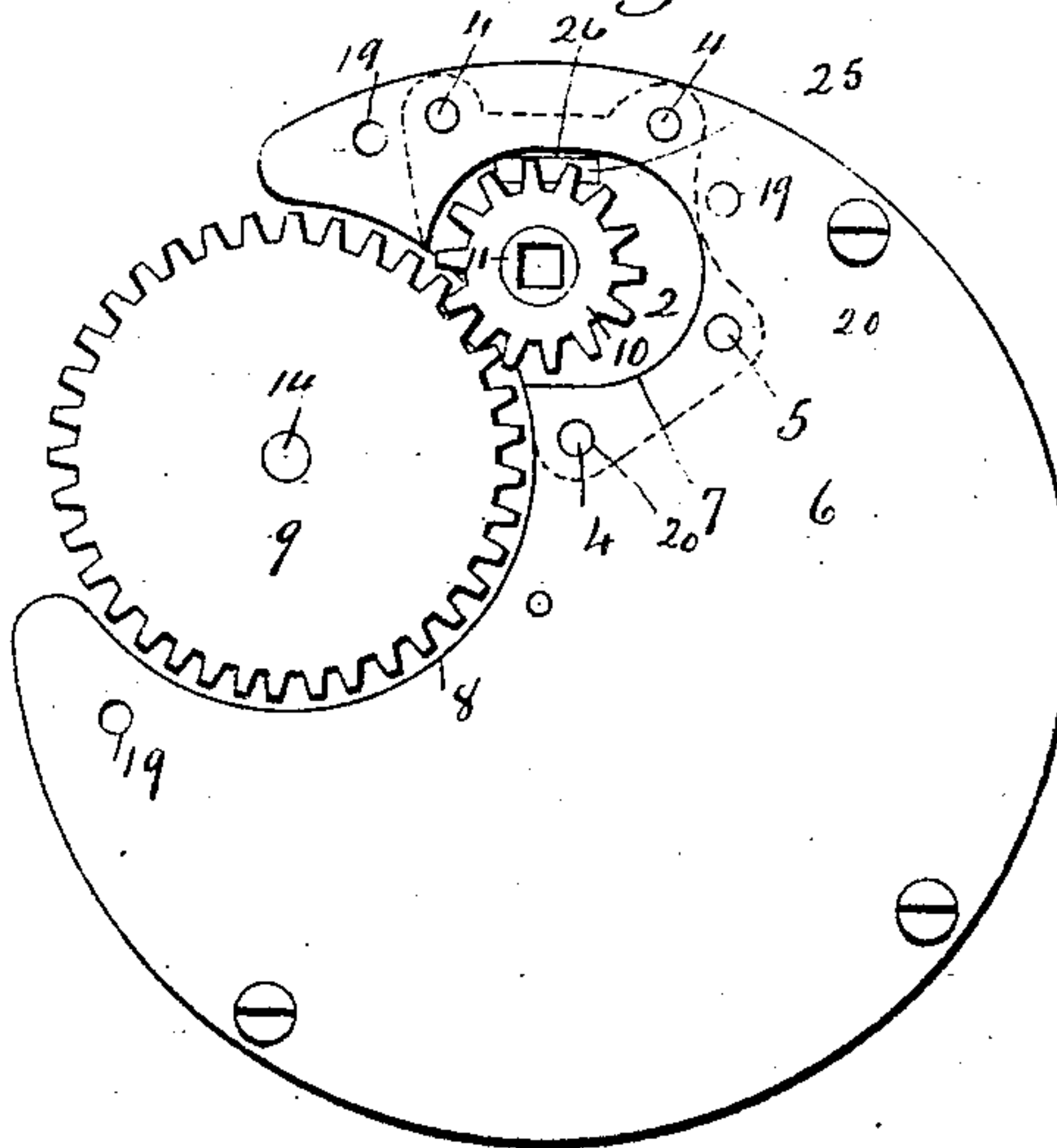


Fig. 3

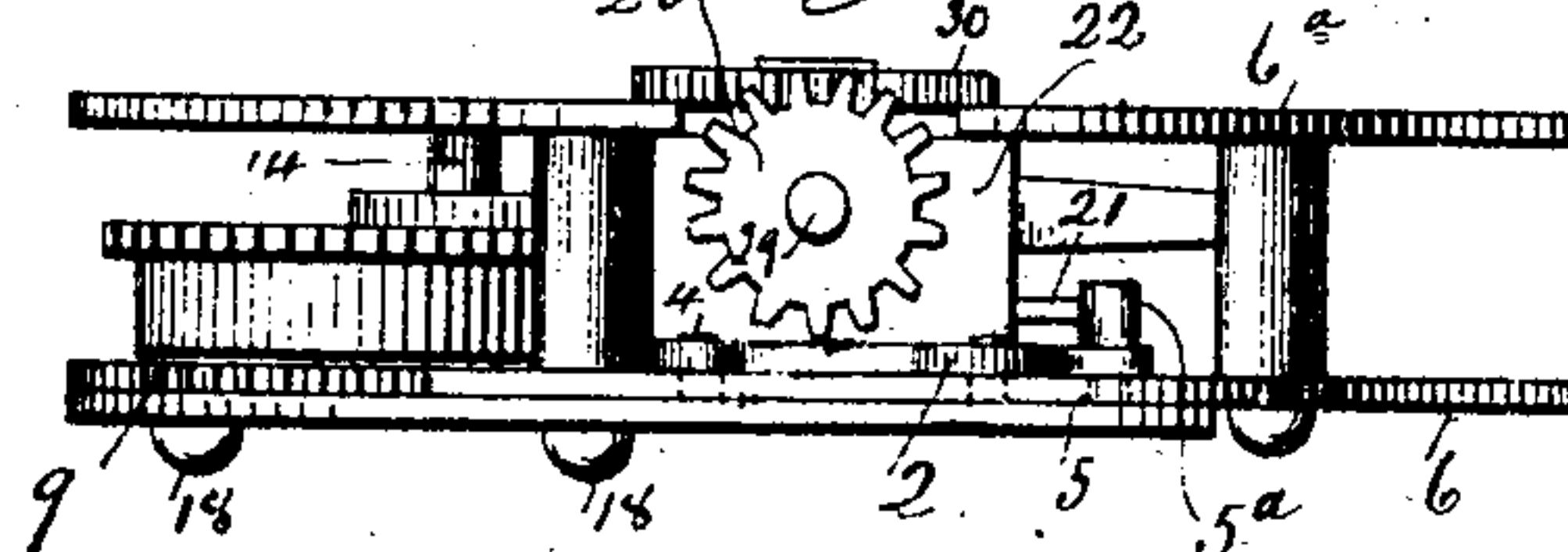


Fig. 4

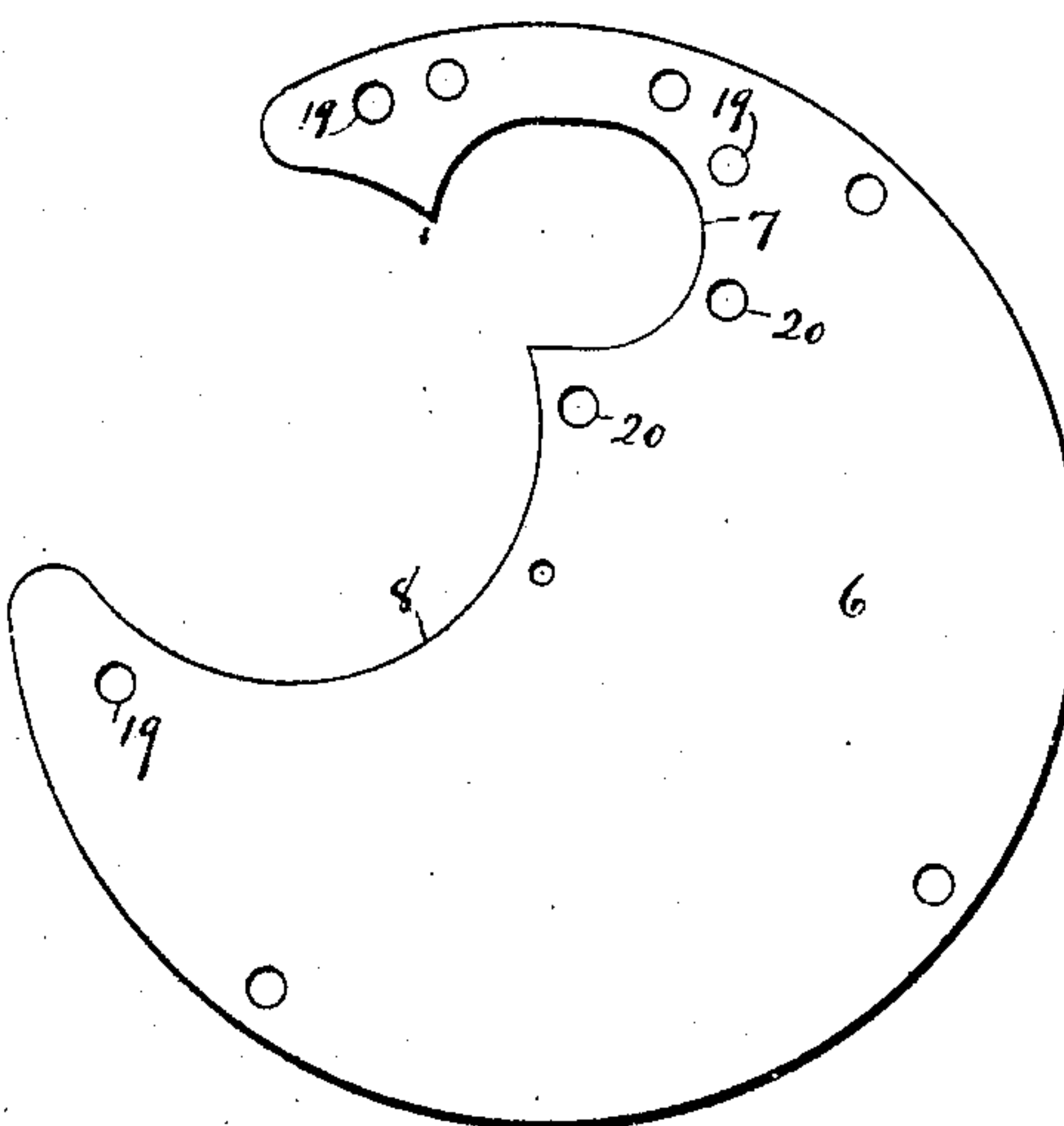


Fig. 5

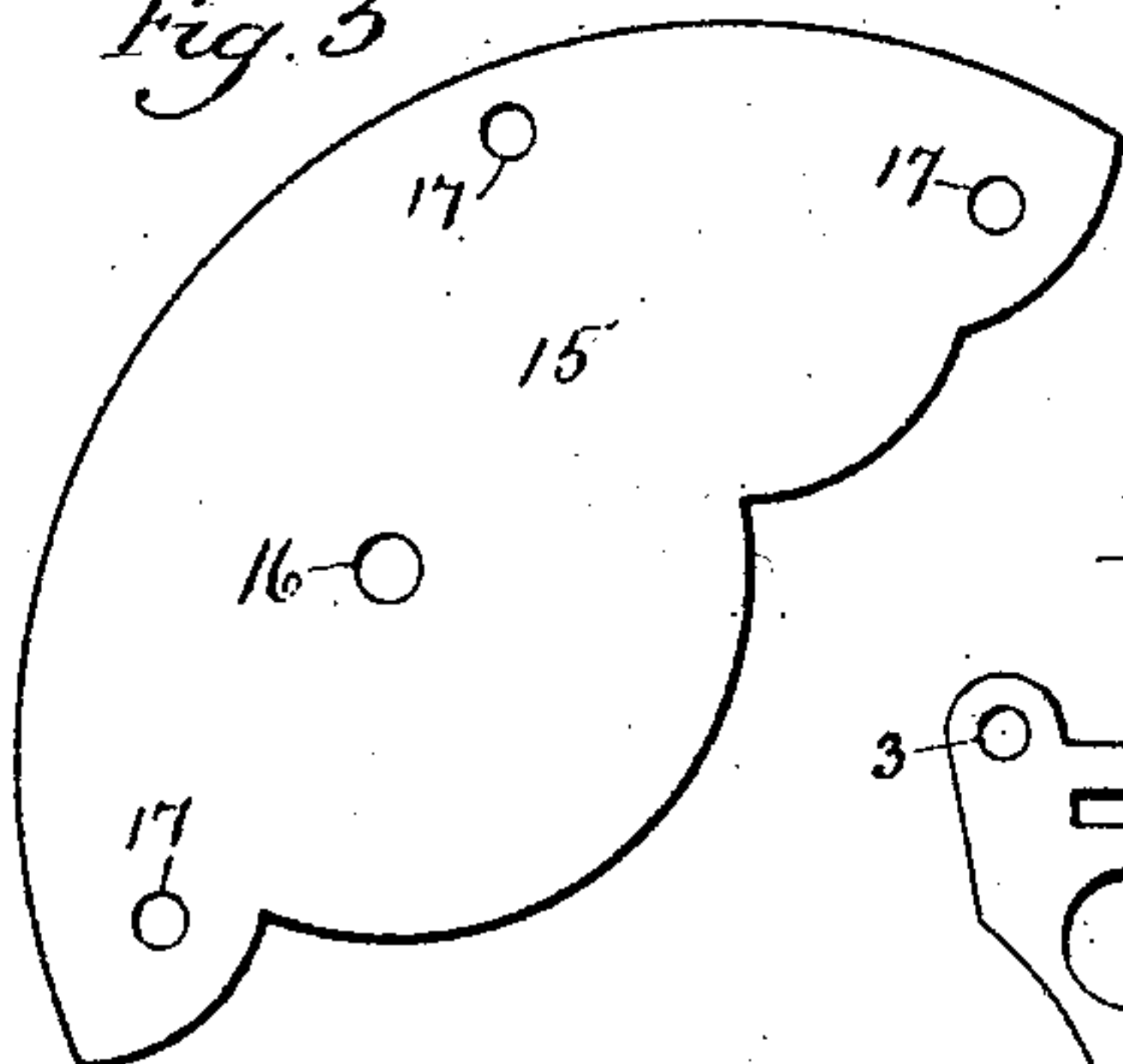


Fig. 6

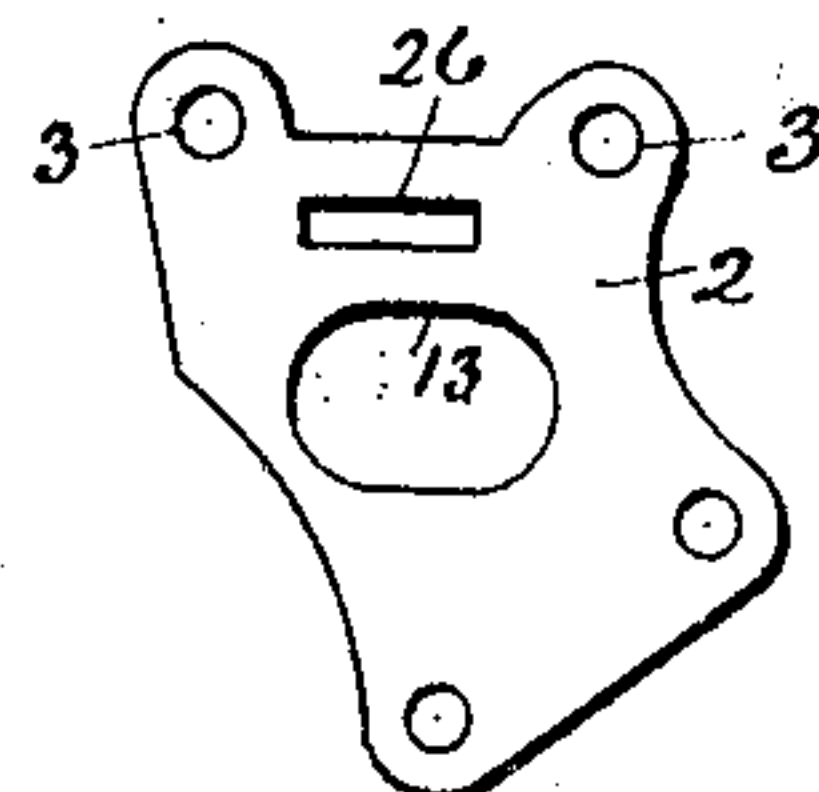


Fig. 7

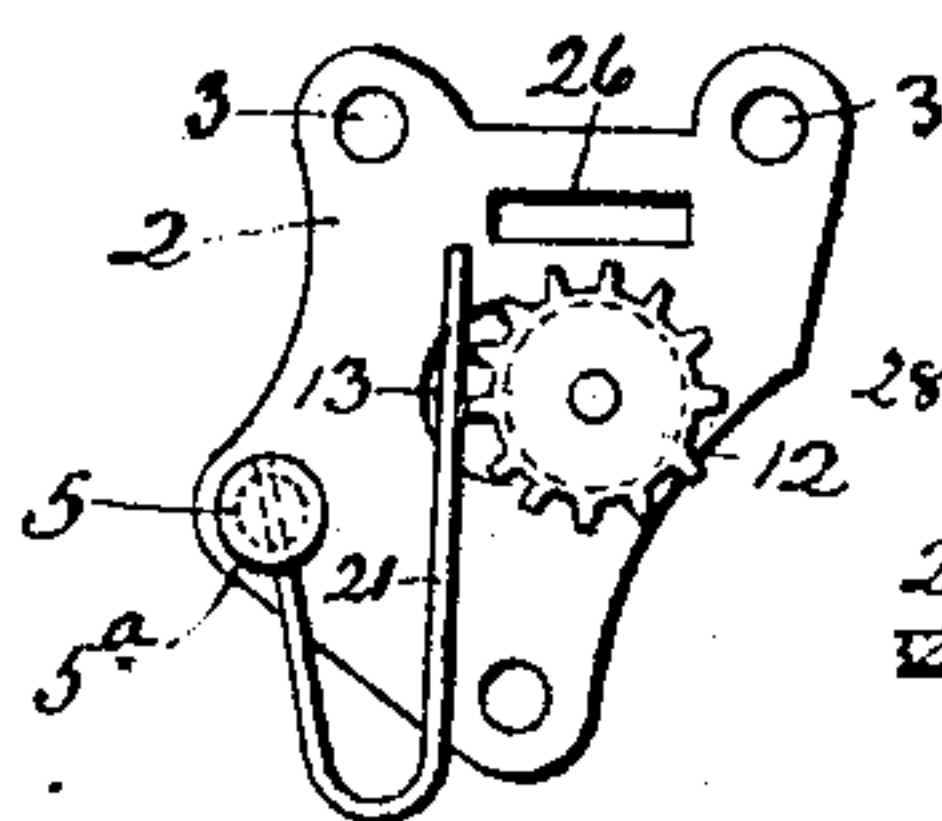


Fig. 9

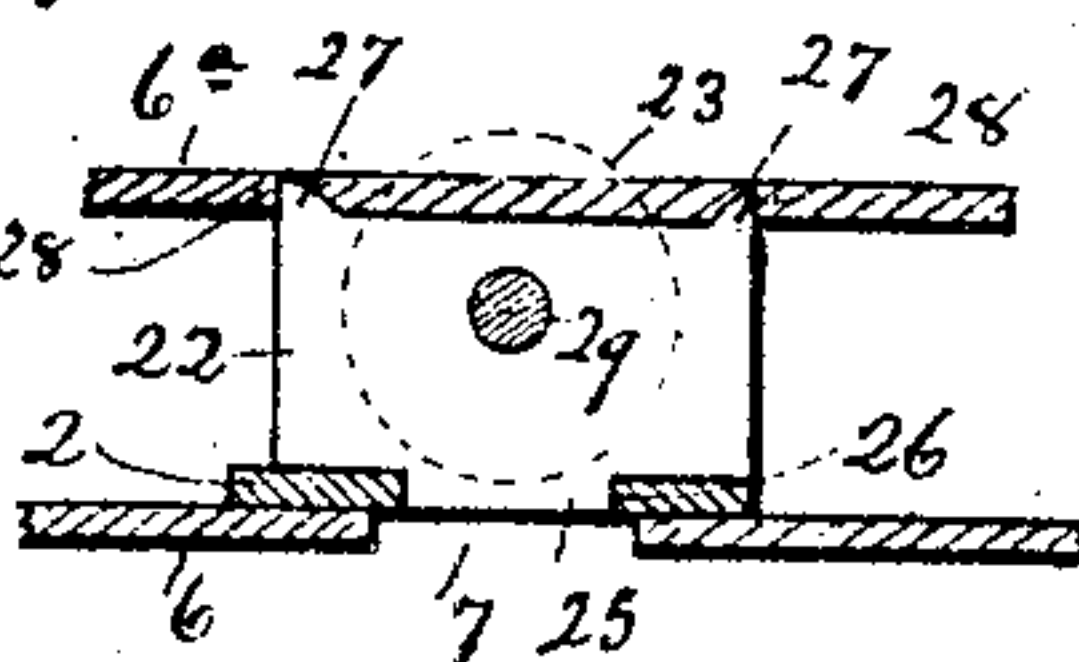


Fig. 8

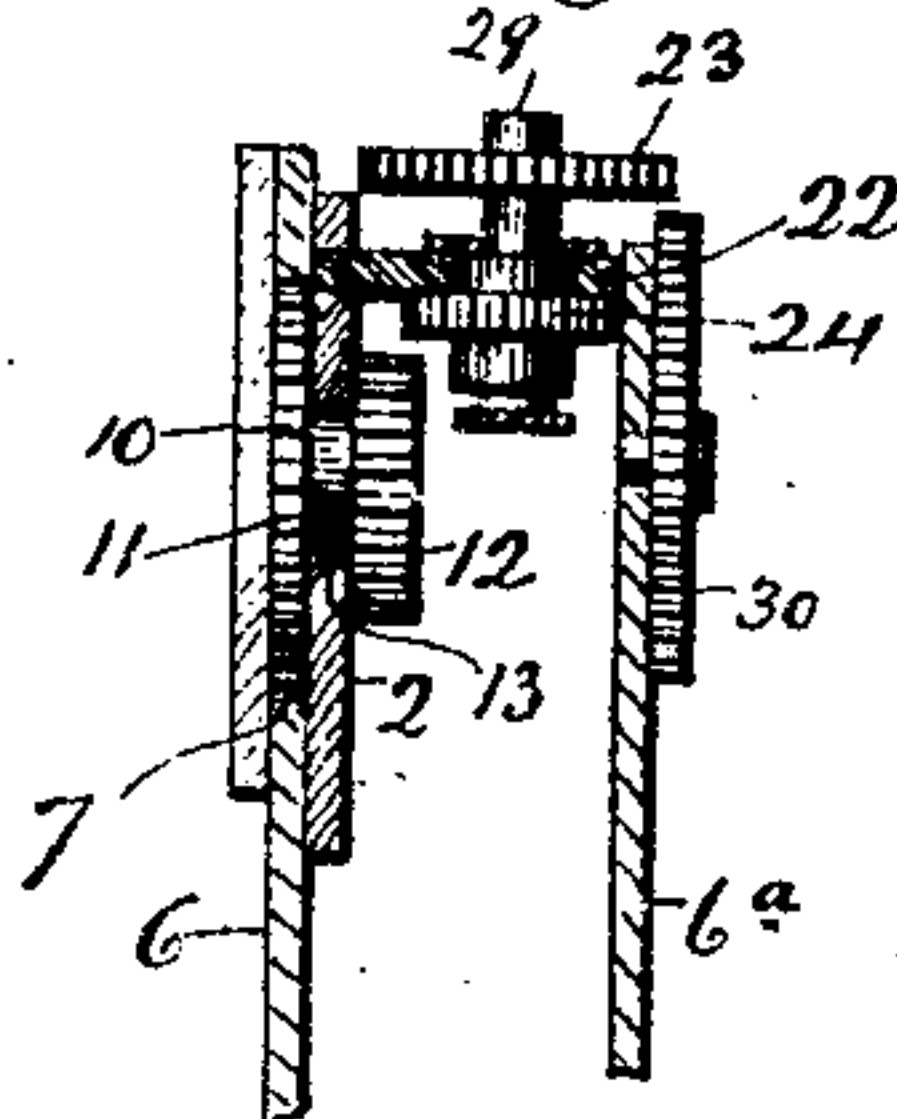
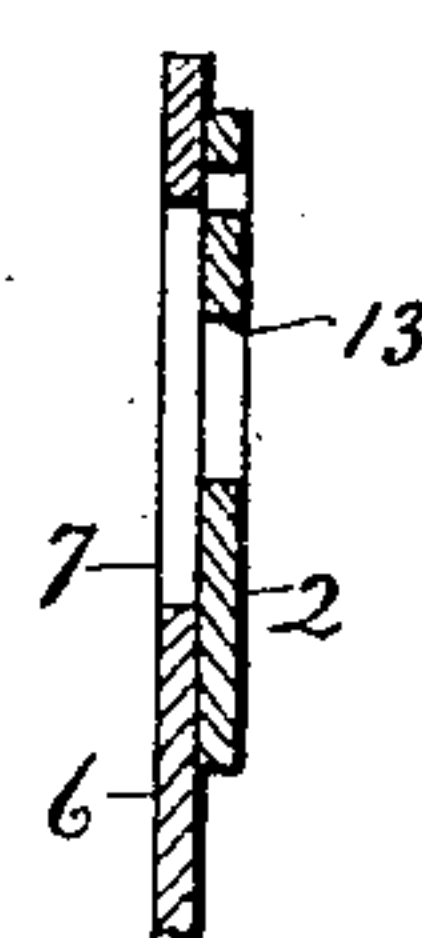


Fig. 10



Witnesses.

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UNITED STATES PATENT OFFICE.

ARCHIBALD BANNATYNE, OF WATERBURY, CONNECTICUT, ASSIGNOR TO
THE WATERBURY CLOCK COMPANY, OF WATERBURY, CONNECTICUT, A
CORPORATION.

STEM WINDING AND SETTING WATCH.

SPECIFICATION forming part of Letters Patent No. 767,096, dated August 9, 1904.

Application filed February 23, 1904. Serial No. 194,667. (No model.)

To all whom it may concern:

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

Figure 1, a view in rear elevation of a stem-winding and stem-setting watch-movement embodying my invention; Fig. 2, a corresponding view with the cap removed; Fig. 3, a plan view thereof, not, however, showing all of the train; Fig. 4, a detached view of the rear movement-plate; Fig. 5, a corresponding view of the cap; Fig. 6, a corresponding view of the bearing-plate or pinion-carrier; Fig. 7, a detached view in side elevation of the bearing-plate or pinion-carrier, showing the spring secured to it and in engagement with the inner intermediate winding-pinion; Fig. 8, a broken view of the movement, partly in vertical section and partly in elevation, on the line *a b* of Fig. 3; Fig. 9, a broken view, in horizontal section, on the line *c d* of Fig. 1, showing the mounting of the single bridge in the front movement-plate and in the bearing-plate or pinion-carrier; Fig. 10, a detached broken view in vertical section, showing the application of the bearing-plate or pinion-carrier to the inner face of the rear movement-plate.

My invention relates to an improvement in stem-winding and stem-setting watches of the type shown in my prior patent, No. 672,728, granted April 23, 1901, the object being to produce at a low cost for manufacture a simple, compact, and reliable watch composed of comparatively few parts, not liable to derangement, and constructed with particular reference to securing a thin-plate watch without reducing the distance between the front and rear movement-plates and without increasing the cost of production.

With these ends in view my invention consists in a stem-winding and stem-setting watch having certain details of construction and combination of parts, as will be hereinafter described, and pointed out in the claims.

In carrying out my invention as herein shown I employ a thin sheet-metal bearing-plate or pinion-carrier 2 in the nature of a supplemental rear movement-plate, though much smaller than any movement-plate and irregular in form rather than round. As shown, this bearing-plate 2 is formed at its four corners with rivet-holes 3 for the reception of three ordinary rivets 4 and one special rivet 5, by means of which it is rigidly secured to the inner face of the rear movement-plate 6, at a point near the top thereof, and so as to "close in," so to speak, the bottom of a clearance-opening 7, formed therein and opening at the left when viewed from the back of the rear movement-plate into a larger clearance-opening 8, formed in the said plate to receive the main winding-wheel 9. The said opening 8 may therefore properly be designated as the "main winding-wheel clearance" opening, while the said opening 7 may properly be called the "outer intermediate winding-pinion clearance" opening for the reason that it receives the outer intermediate winding-pinion 10, which is rigidly secured to the hub 11 of the inner intermediate winding-pinion 12. These pinions 10 and 12 must have not only rotary movement, but also vibratory movement to provide for "ratcheting back," and for this purpose the said plate 2 is formed with an oblong slot 13, through which the hub 11 passes and in which it is free to move sidewise as well as to rotate. It will thus be seen that the said opening 7 in the rear movement-plate 6 and the bearing-plate 2 form, in conjunction with each other, what is equivalent to a recess in the rear movement-plate 6, which is virtually thickened at that point by the attachment to it of the bearing-plate which carries the pinions 10 and 12 and forms just such a bearing or support for the pinions as would be formed by the bottom wall of a recess produced for the reception of the pinion 10 in a much thicker

rear movement-plate. In other words, the use of the bearing-plate or pinion-carrier enables me to employ a thin rear movement-plate and does not contract the distance between the rear movement-plate 6 and the front movement-plate 6^a, except at a single point. My improved bearing-plate and the parts carried by it constitute, as it will be observed, a self-contained organization which is independent of the rear movement-plate, to which it may be applied and from which it may be removed without disturbing the same or any of the parts associated therewith. In the same way the large opening 8 in the rear movement-plate 6 provides a place for the reception of the main winding-wheel 9, which instead of being crowded into the space between the two movement-plates is thus allowed to occupy a space in the plane of the rear movement-plate, whereby economy of room is secured. This space 8 takes the place, as it may be said, of the deep circular main winding-wheel recess heretofore formed in the rear movement-plates or thick recessed cap of some watches in constructing which, of course, thick rear movement-plates or said recessed cap must be employed, obviously at a greater cost and with a greater loss of room. Now in order to provide a bearing for the outer end of the main winding-arbor 14 I employ a thin sheet-metal cap 15, having a bearing-opening 16 for the reception of the rear trunnion of the main winding-arbor 14 and provided with three screw-holes 17 for the reception of screws 18 for holding it in place, these screws entering screw-holes 19, formed in the rear movement-plate, which is also provided with rivet-holes 20 for receiving the three rivets 4 and the special rivet 5, by means of which the bearing-plate or pinion-carrier 2 is secured in place. The plate 15 is segmental in form and adapted in size and contour to completely close in from the outside, the two clearance-openings 7 and 8 extending through the rear movement-plate 6. When the cap 15 is in position, the pinion 10 will be confined within the chamber formed by the edges of the opening 7 by a portion of the rear face of the bearing-plate 2 and a portion of the inner face of the cap 15. This chamber opens to the left and downward to permit the teeth of said pinion 10 to mesh with the teeth of the main winding-wheel 9. The vibratory movement of the pinions 10 and 12, provided for by the oblong form of the opening 13, permits that sidewise vibration of the pinions required for the function of a stem-winding and stem-setting watch, known in the art as "ratcheting back," which is nothing more than the riding of the teeth of the pinion 10 over the teeth of the main winding-wheel 9 when the winding-crown is being turned reversely or from right to left, as provided for, for instance, in United States Patent No. 672,728, granted April 23, 1901, to

the Waterbury Clock Company on my application.

In order to normally maintain the teeth of the pinion 10 in engagement with the teeth of the wheel 9, I employ a spring 21, arranged with the ends of the teeth of the pinion 12 and mounted in a post 5^a, which is a part of the rivet 5 before referred to as being one of the rivets employed to secure the bearing-plate 2 to the rear movement-plate 6. The power of this spring is communicated through the pinion 12 and its hub 11 to the pinion 10, which it holds up against the wheel 9 except during ratcheting back, when the spring 21 yields to permit the teeth of the wheel 10 to ride over the teeth of the wheel 9 in the well-known manner.

The bearing-plate 2 performs a further function in supporting one side of a single sheet-metal bridge 22, in which the setting-pinion 23 and the winding-pinion 24 are mounted. This bridge is located, as shown in the Bannatyne patent, at a right angle to the plane of the two movement-plates 5 and 5^a and close to the upper ends thereof. It is provided upon its rear edge with a wide tenon 25, which fits into a corresponding opening 26, formed in the bearing-plate 2 at a point above the oblong opening 13 therein, whereby the said plate 2 is made to take the place of the rear movement-plate 6 in supporting the bridge, which is also furnished with two fingers 27, formed at the corners of its front edge and entering notches 28, Fig. 9, formed for their reception in the front movement-plate 6^a. The setting-pinion 23 is rigidly secured to the upper end of a short spindle 29, mounted in the bridge 22, having longitudinal and rotatable movement therein and virtually constituting a continuation of the winding and setting pinion, which is not shown, but which will be readily understood by reference to my said patent. The said pinion 23 is arranged to be intermeshed with the intermediate setting-pinion 30, which turns the dial-work, not necessary to be described. The winding-pinion proper, 24, is loosely mounted upon the spindle 29, with which it is coupled and uncoupled, as required, and as also fully explained in my said patent.

It is apparent that in carrying out my invention some changes from the construction herein shown and described may be made. I would therefore have it understood that I do not limit myself thereto, but hold myself at liberty to make such departures therefrom as fairly fall within the spirit and scope of my invention.

I am of course aware of United States Patent No. 293,018, granted February 5, 1884, to George E. Hart, showing a double rear movement-plate composed of two full circular plates having their adjacent faces recessed for the reception and retention of parts.

Having fully described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a stem-winding and stem-setting watch, the combination with a front movement-plate, of a rear movement-plate having a clearance-opening, a bearing-plate or pinion-carrier located between the said front and rear movement-plates and secured to the inner face of the said rear movement-plate over the said clearance-opening therein, an outer and an inner intermediate winding-pinion mounted in the said bearing-plate or pinion-carrier for rotary and vibratory movement therein and respectively located upon the opposite sides thereof, and winding instrumentalities coacting with the said pinions.

2. In a stem-winding and stem-setting watch, the combination with a front movement-plate, of a rear movement-plate having a clearance-opening, a relatively small bearing-plate or pinion-carrier located between the said front and rear movement-plates and secured to the inner face of the rear movement-plate over the said clearance-opening therein, an outer and an inner intermediate winding-pinion rigidly connected together and mounted in the said bearing-plate or pinion-carrier so as to be free to vibrate as well as to rotate therein, and respectively located upon the opposite sides thereof, a main winding-wheel, and a spring carried by the said bearing-plate or pinion-carrier and normally holding the said outer intermediate winding-pinion into mesh with the said main winding-wheel.

3. In a stem-winding and stem-setting watch, the combination with a front movement-plate, of a rear movement-plate formed with an opening, a relatively small bearing-plate or pinion-carrier secured to the inner face of the rear movement-plate over the said opening and forming a bottom therefor, a

main winding-wheel, an outer intermediate winding-pinion and an inner intermediate winding-pinion rigidly connected together and mounted in the said bearing-plate for rotation, and "ratcheting-back" vibration therein, a single bridge located between the two movement-plates and supported by the front movement-plate and by the said bearing-plate or pinion-carrier, a rotatable and longitudinally-movable spindle mounted in the said bridge, and winding and setting pinions connected with the said spindle, the said bearing-plate and the parts carried by it constituting a self-contained organization independent of the rear movement-plate.

4. In a stem-winding and stem-setting watch, the combination with a rear movement-plate having a large and a small opening formed in it, of a main winding-wheel located in the said large opening, a relatively small bearing-plate or pinion-carrier secured to the inner face of the said plate over the said small opening and forming a bottom therefor, an outer and an inner intermediate winding-pinion rigidly connected together and mounted for rotation and for "ratcheting-back" vibration in the said bearing-plate, the outer pinion meshing into the main winding-wheel, and a cap applied to the outer face of the said rear movement-plate over the large and small openings therein, and forming a bearing for the rear end of the arbor of the main winding-wheel, the said bearing-plate and the parts carried by it constituting a self-contained organization independent of the rear movement-plate.

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

ARCHIBALD BANNATYNE.

Witnesses:

WILLIAM H. BASSETT,
A. J. STORZ.