J. S. DE WITT.

ALARM WATCH.

APPLICATION FILED NOV. 20, 1912.

1,098,369.

Patented June 2, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

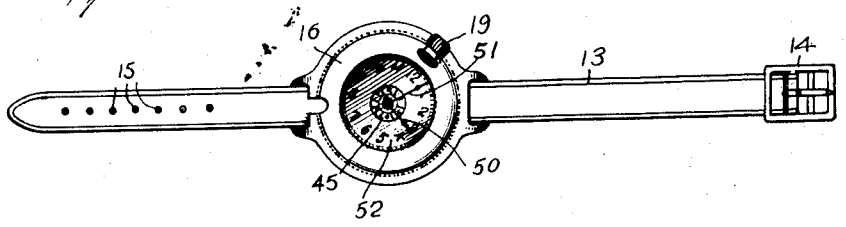


Fig. 2.

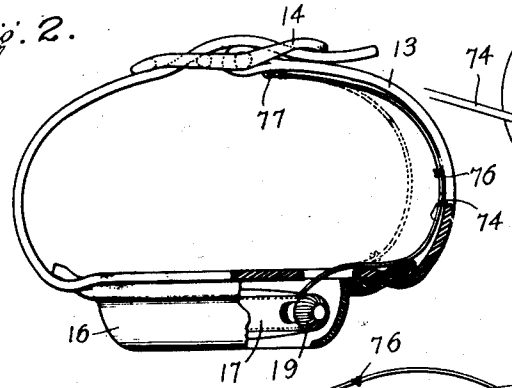


Fig. 6.

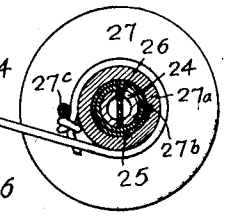


Fig. 3.

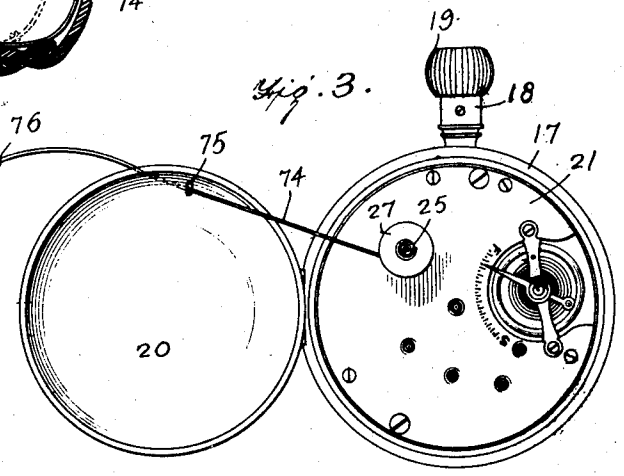


Fig. 7.

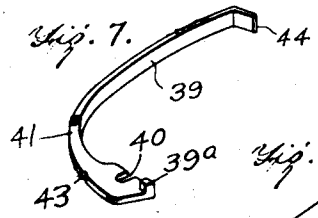


Fig. 8.

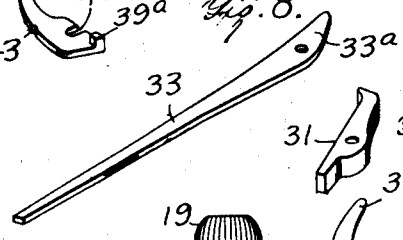


Fig. 9.

Fig. 10.

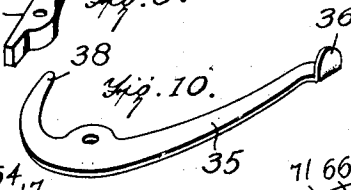


Fig. 4.

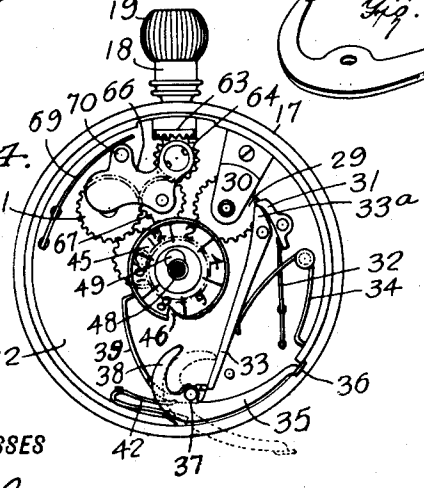
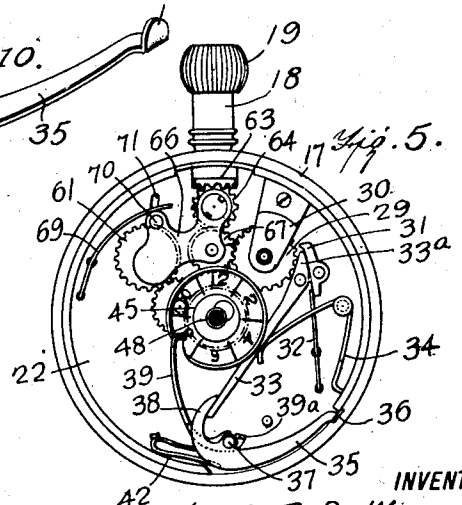


Fig. 5.



WITNESSES

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Fig. 11.

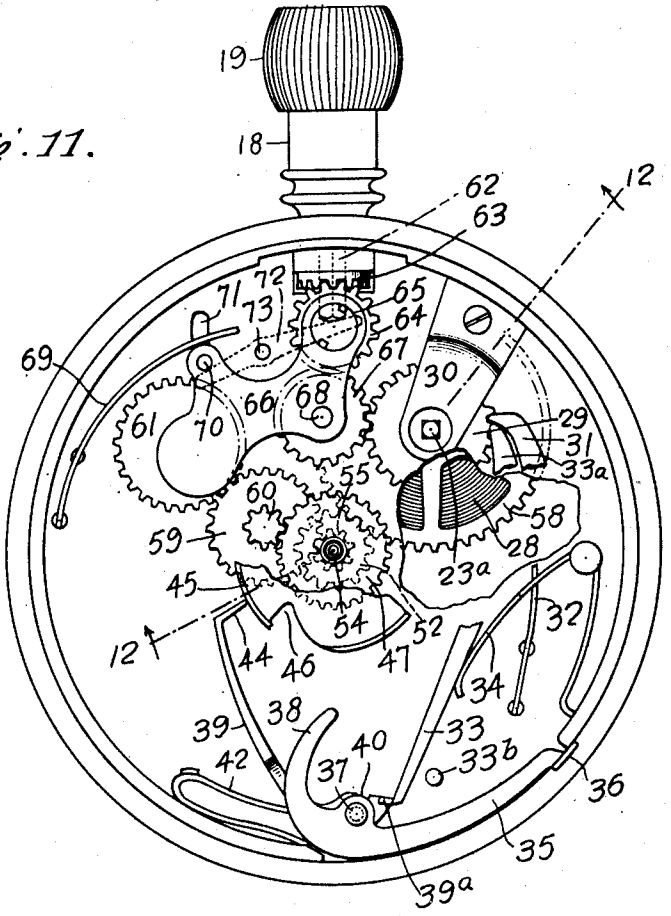
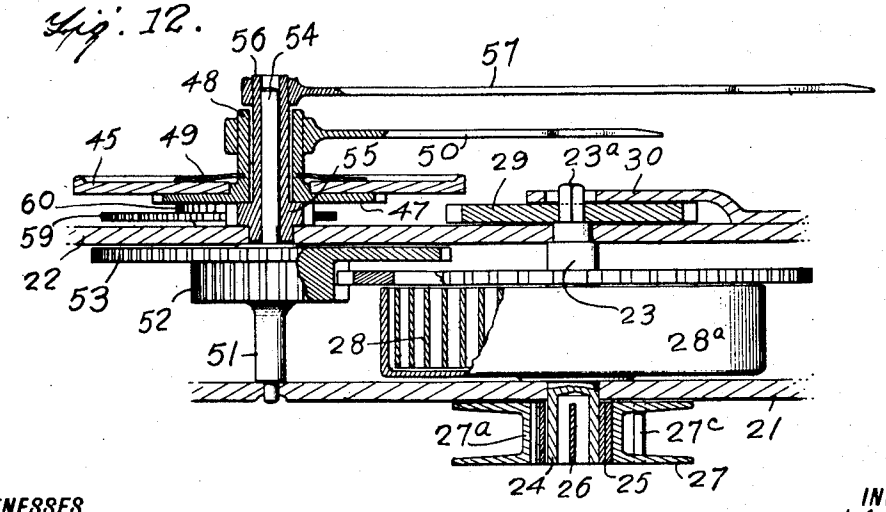


Fig. 12.



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JOHN S. DE WITT, OF POCATELLO, IDAHO.

ALARM-WATCH.

1,098,369. Specification of Letters Patent. Patented June 2, 1914.

Application filed November 20, 1912. Serial No. 732,451.

To all whom it may concern:

Be it known that I, JOHN S. DE WITT, a citizen of the United States, and a resident of Pocatello, in the county of Bannock and State of Idaho, have invented certain new and useful Improvements in Alarm-Watches, of which the following is a specification.

My invention relates to alarm watches, my more particular purpose being to provide a watch with means for mounting it upon a person's wrist or ankle and providing said watch with additional means for producing a gripping or squeezing effect upon the wrist or ankle for the purpose of attracting the attention of the wearer and thus serving the purpose of an alarm.

My invention further contemplates various improvements in alarm mechanisms for watches and analogous other time pieces in order to improve the general efficiency of such mechanisms.

Reference is made to the accompanying drawings forming a part of this specification and in which like letters indicate like parts.

Figure 1 is a plan view of the alarm watch, and a bracelet for carrying it upon the wearer's wrist; Fig. 2 is a view partly in elevation and partly broken away showing the watch and bracelet and also the alarm cord for tightening upon the wearer's wrist; Fig. 3 is a rear elevation of the watch, the back lid thereof being open; Fig. 4 is a front elevation of the watch, the dial and hands being removed; Fig. 5 is a view somewhat similar to Fig. 4 but showing certain movable parts occupying positions different from those they occupied in said figure; Fig. 6 is a detail showing in section the drum and alarm cord controllable by the same; Fig. 7 is a detail showing in perspective the alarm lever; Fig. 8 is a detail showing in perspective the releasing lever; Fig. 9 is a perspective showing a dog for preventing premature retrogression in the winding of the spring; Fig. 10 is a perspective of the shifting lever; Fig. 11 is a view of the front portion of the watch, the dial being removed and certain parts being broken away; and, Fig. 12 is a fragmentary section on the line 12—12 of Fig. 11 looking in the direction of the arrow.

The band 13, which may be made of any suitable material but is in this instance constructed of leather, is adapted to be worn around the wrist, ankle or other appropriate part of the body and is provided with a buckle 14 and with holes 15 for securing the band in position. Slidably mounted upon the band 13 is a pocket 16 which holds a watch 17. This watch is provided with a stem 18 and with a revoluble head 19. The watch is further provided with a back lid 20, a back plate 21, and a front plate 22.

Extending through the front plate 21 and back plate 22 is a winding arbor 23 provided at one of its ends with a hollow extending cylindrical portion 24. A spiral spring 25 encircles the cylindrical portion 24 and is provided with a straight portion 26 extending diametrically through the cylindrical portion 24 and secured in slots for this purpose as will be understood from Fig. 12. The spring 25 is encircled by a drum 27 having a cylindrical portion 27^a, the latter being provided internally with a shoulder or notch 27^b. This shoulder or notch mates the outer end of the spring 25. Except for the spring 25, the drum 27 is loose upon the cylindrical portion 24 of the winding arbor. The arrangement of these parts can best be understood from Fig. 6. According to this figure, the arbor is free to turn in a clockwise direction without causing the rotation of the drum but if the arbor be turned in a contraclockwise direction, the outer or free end of the spring 25 lodges in the notch 27^b and tends to cause the drum to rotate. The drum carries a pin 27^c merely as a means for fastening a flexible connection to the drum as hereinafter described. The main spring of the watch which in this instance serves the double purpose of propelling the general gearing of the watch and of actuating the alarm is shown at 28 and is carried in a winding barrel 28^a as will be understood from Fig. 12. The winding arbor 23 is provided with a square portion 23^a which may be turned by application of a key thereto if desired, though the watch is a stem winder. Mounted rigidly upon the square portion 23^a of the winding arbor is a ratchet wheel 29 and at 30 is a guard plate disposed adjacent to the ratchet wheel 29 for holding the latter in position. A dog is shown at 31 and is adapted to engage the ratchet wheel 29 to prevent retrograde movement thereof. A leaf spring 32 engages the dog 31 and normally tends to force the latter into engagement with the ratchet wheel. A releasing lever is shown at 33 and is provided with a portion 33^a for engaging the dog 31 in order

to force the same out of contact with the ratchet wheel. A spring 34 presses constantly upon the releasing lever 33 and tends to force it to the left according to Figs. 4 and 5.

A shifting lever is shown at 35 and is provided with a thumb piece 36 by aid whereof it may be moved as indicated by dotted and full lines in Fig. 4. The shifting lever is mounted upon a pivot 37 and is provided with a curved portion 38 for engaging the releasing lever 33. The alarm lever is shown at 39 and is provided with a notch 40 which fits partially around the pivot 37, the alarm lever thus being pivoted upon the pin. The alarm lever is provided with a thin portion 41 which extends beneath the shifting lever 35. A leaf spring 42 engages the alarm lever 39 the latter being provided with a notch 43 for this purpose. The alarm lever is further provided at one of its ends with a lug 39^a, and at its other end with a lug 44, these lugs being integral with the lever and having the form shown more particularly in Figs. 4, 5, and 7.

The alarm dial is shown at 45 and is provided with ordinals indicative of the hours as will be understood from Figs. 4 and 5. The alarm dial 45 is provided peripherally with a notch 46 and has some of the functions of a cam, as is customary in alarm dials heretofore used. The hour wheel is shown at 47 and the hour wheel hub at 48. A fastening 49 having generally the form of an annular disk is detachably mounted upon the hour wheel hub 48 and presses the arm dial 45 gently against the hour wheel 47. The alarm dial is thus frictionally held in position upon the hour wheel hub. The hour hand is shown at 50 and is carried by the hour wheel hub 48. The center arbor is shown at 51, the center pinion at 52, and the center wheel at 53, these three parts being secured rigidly together and acting as a unit. The center arbor 51 is provided with a reduced portion 54. Frictionally mounted upon this reduced portion is the cannon pinion 55 having a tubular portion 56 upon which is mounted the minute hand 57, the tubular portion 56 being friction-tight upon the portion 54. Carried by the winding barrel 28 is the main gear 58 which meshes with the center pinion 52. The cannon pinion 55, which has a speed commensurate with that of the minute hand, meshes with an exchange pinion 60 which meshes with the hour wheel 47. Whenever the exchange wheel 59 is turned it causes the rotation of the cannon pinion 55 and the hour wheel 47 at the relative ratio of speed in which these members always travel. Meshing with the exchange wheel 59 is a gear wheel 61 which is idle and is normally turned by the exchange wheel 59 but which may be rotated at the will of the operator for the purpose of setting the alarm mechanism. Extending through the stem 18 and secured to the revoluble head 19 is a shaft 62 which is provided at its lower end with a square portion, the latter extending slidably through a crown pinion 63. This crown pinion meshes with a spur pinion 64, the latter being journaled upon a bolt 65. The setting lever is shown at 66 and carries a pinion 67 which meshes with the pinion 64 and is mounted upon a pin 68. A leaf spring 69 engages the setting lever 66 and by its pressure upon the same tends to maintain the gear 67 in mesh with the ratchet wheel 29. The setting lever 66 carries a pin 70 which extends through a slot 71 in the face plate 22. A lever 72 is pivotally mounted upon a pin 73 extending backwardly or inwardly from this plate the lever engaging the pin 70 and also engaging the shaft 62.

The operator by pressing the head 19 downwardly as indicated in Fig. 4 causes the setting lever 66 to rock slightly in a clockwise direction according to Fig. 11 so that the pinion 67 disengages the ratchet wheel 29 and meshes with the wheel 61. With the parts in this position if the stem 19 be turned the hour and minute hands are also turned and the alarm dial 45 is likewise turned at the same speed as the hour hand unless restrained by the alarm lever 39 as hereinafter explained.

In Fig. 4 the parts are shown as they appear when the alarm is being set.

In Fig. 5 the mechanism is shown as it appears immediately after the alarm has gone off.

Secured to the pin 27^c (see Fig. 6) is a cord 74 which is partially wound upon the cylindrical portion 27^a of the drum 27. This cord extends through a hole 75 in the back lid 20 of the watch and is provided with a knot 76. One end of the cord is connected at 77 with a bracelet 13.

The operation of my device is as follows:—The bracelet carrying the watch and other parts above described is mounted upon the wrist or ankle and the watch is wound and set. Upon the arrival of the time when the alarm is to be sounded, the alarm mechanism is actuated, the cord 71 is tightened, and the pressure of this cord thus actuated attracts the attention of the operator thereby serving the purpose of an alarm. In order to explain the winding and setting, I call attention to the relative positions of the several movable parts shown in Fig. 5, the alarm mechanisms being here shown as they appear when the alarm has just gone off, as above stated. To wind the watch, the operator grasps the thumb piece 36 and moves the shifting lever 35 slightly in a clockwise direction according to Fig. 4. This swings the adjacent end of the releasing lever 33 to the right according to Fig.

4 so that it lodges upon and is held by the lug 39ª, so that the dog 31, now out of engagement with the ratchet wheel 29 is brought into engagement with the latter. The operator now grasps the stem 19 and turns the same in a clockwise direction. Motion is transmitted through gear pinions 63, 64, 67, and ratchet wheel 29 to winding arbor 23 and thence to the main spring 28, the latter being thus wound from its inner end. During the winding of the watch, the cord 74 is relaxed and as the spring 25 slips idly past the notch 27ᵇ as above explained the drum 27 has little or no tendency to rotate with the winding arbor. The retrogression of the cord 74 relieves the pressure of the cord upon the wrist or ankle of the wearer. The dog 31 being now in engagement with the ratchet wheel 29 prevents retrogression of the winding arbor. The watch being wound, the alarm may be set or not as desired. In order to set the alarm, the operator presses the head 19 downwardly and turns it in such direction as to rotate the hands of the watch backwardly. In the particular instance now under consideration, the head 19 is for this purpose turned in a contraclockwise direction. The gear 67 is now disengaged from the ratchet wheel 29 and is in engagement with the gear 61. Rotation of the head 19 causes the hour and minute hands to turn backwardly but the lug 44 of the alarm lever 39 now occupies the notch 46 of the alarm dial 45 and consequently the alarm dial is unable to turn backwardly. The stem 19 is turned backwardly until the hands of the clock indicate the time at which the alarm is to be actuated. While the stem is thus being turned and the hands are being carried backwardly, the alarm dial 45 tends to turn in a contraclockwise direction according to Fig. 5 but being held by the lug 44 while the hour wheel 47 and the hour wheel hub 48 are thus turned backwardly, the alarm dial is virtually displaced relatively to the position of the hour wheel 47 and the hour hand 50. The hands having been set backward, the downward pressure upon the head 19 is continued but the head is turned in the contrary direction to that in which it was turned in setting the hands back—that is to say—the head 19 is now turned in a clockwise direction. The alarm dial 45 now turns with the hour wheel 47 and hour hand 50 for the reason that, owing to the shape of the notch 46, the lug 44 does not prevent the rotation of the alarm dial—that is to say, in a clockwise direction according to Figs. 4 and 5. The alarm lever 39 is thus forced outwardly until it rests upon the outer peripheral edge of the alarm dial as indicated in Fig. 4. The rotation of the head 19 is continued until the hands occupy their original positions—or in other words, until they indicate the correct time, or at least the proximate time they indicate before they were disturbed in the setting of the alarm mechanism. This leaves the alarm dial turning at the same speed as the hour hand, the notch 46 as a consequence gradually approaches the lug 44. When the time arrives for the alarm to be actuated, the lug 44 snaps or drops abruptly into the notch 46. This allows the alarm lever 39, under tension of the spring 42, to turn slightly in a clockwise direction according to Figs. 4 and 5. The lugs 39ª thereupon disengages the adjacent end of the releasing lever 33. This lever under tension of the spring 34 is thereupon rocked slightly in a clockwise direction according to Fig. 5. The dog 31 is thus forced out of engagement with the ratchet wheel 30 and as the ratchet wheel in question is thus released, the winding arbor 23 begins to turn, being driven in a clockwise direction according to Figs. 4 and 5 by the partial unwinding of the main spring 28. The rotation of the winding arbor 23, due to the action just stated causes the spring 25 to turn the drum 27 in a contraclockwise direction according to Figs. 3 and 6. This causes the drum 27 to wind up a portion of the cord 74 thereby causing the cord to attract the attention of the wearer of the watch as above described. The knot 76 serves as a limiting stop for preventing the entire cord from being wound upon the drum 27 and when this knot 76 reaches the hole 75 in the back lid 20 so that the drum 27 can turn no farther, the rotation of the winding arbor 23 is brought to a stop and the main spring 28, though partially unwound, still remains under tension and the general mechanism of the watch continues to operate so that the watch runs continuously.

The alarm having gone off so that the parts now appear as indicated in Fig. 5 the watch may be rewound and the cycle of operation above described may be repeated indefinitely.

I do not limit myself to the precise construction shown as variations may be made therein without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent is as follows:—

1. The combination, with a watch having alarm mechanism and a spiral main spring for actuating said alarm mechanism, of an arbor connected to the inner end of said spring for the purpose of winding the same, a drum mounted loosely upon said arbor, means controllable by said arbor for locking said arbor and said drum together and for rendering them loose relatively to each other, and a cord partially wound upon said drum and controllable by rotation thereof for attracting a person's attention.

2. The combination, with a watch having time indicating mechanism and alarm mechanism and a single main spring for actuating said time indicating mechanism and said alarm mechanism, of an arbor connected with said main spring for winding the same, a drum mounted loosely upon said arbor, means controllable by rotation of said arbor relatively to said drum for locking said drum upon said arbor when said arbor is turned in one direction and for disconnecting said drum from said arbor when said arbor is turned in the opposite direction, and a cord wound partially upon said drum and controllable thereby for attracting a person's attention.

JOHN S. DE WITT.

Witnesses:
WILLIAM W. MACE,
JACK M. DE WITT.