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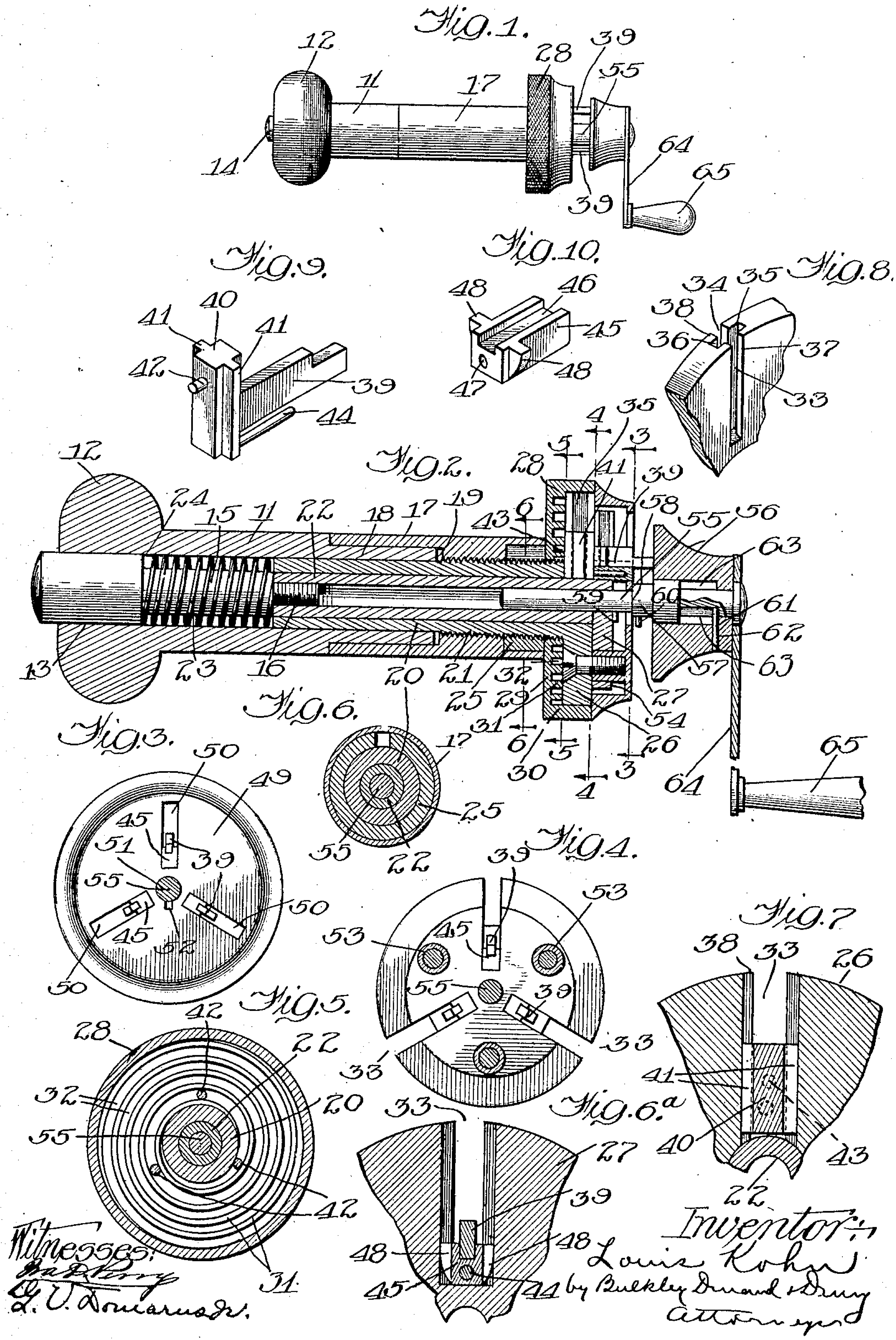
L. KOHN.
MAINSPRING WINDER.
APPLICATION FILED JUNE 7, 1907.



UNITED STATES PATENT OFFICE.

LOUIS KOHN, OF CHICAGO, ILLINOIS.

MAINSPRING-WINDER.

No. 872,135. Specification of Letters Patent. Patented Nov. 26, 1907.

Application filed June 7, 1907. Serial No. 377,734.

To all whom it may concern:

Be it known that I, LOUIS KOHN, a citizen of the United States of America, and resident of Chicago, Illinois, have invented a certain new and useful Improvement in Mainspring-Winders, of which the following is a specification.

My invention relates to an improvement in main-spring winders, and has for its object the production of a device by means of which the main-spring of a watch may be wound in any required diameter and afterwards forced into the barrel or casing.

A further object is the production of a simple and efficient device that is least liable to disarrangement of parts.

These and such other objects as may hereinafter appear, are attained by my device, embodiments of which are illustrated in the accompanying drawings, in which

Figure 1 is a plan view of my device (full size). Fig. 2 is an enlarged vertical sectional view through the center of my device. Fig. 3 is a sectional view on the line 3—3 of Fig. 2, looking in the direction indicated by the arrows showing the slotted cap. Fig. 4 is a sectional view on line 4—4 of Fig. 2, looking in the direction indicated by the arrows. Fig. 5 is a sectional view on line 5—5 of Fig. 2, looking in the direction indicated by the arrows. Fig. 6 represents a sectional view on line 6—6 of Fig. 2, looking in the direction indicated by arrows. Fig. 6[a] is an enlarged detail showing a top view of one of the slotted plates with the guiding pin in position. Fig. 7 is a bottom view of Fig. 6. Fig. 8 is an enlarged perspective view showing a detail of one of the slotted plates. Fig. 9 is a perspective view of one of my improved guides. Fig. 10 is an enlarged perspective showing my improved plunger.

Like numerals of reference indicate like parts in the several figures of the drawing.

Referring now by figure to the accompanying drawings, the device comprises a handle 11 terminating in an enlarged end 12, and having an axial bore 13 through which extends a spindle 14. This spindle has a reduced portion 15, and terminates in a threaded end 16. A barrel sleeve 17 fits over the reduced end 18 of the handle, and is formed with an internal annular shoulder 19 forming a stop for the end of the handle. A tubular shaft 20 is provided with a threaded portion 21 adapted to screw into the barrel sleeve. A tubular sliding spindle 22 slides within the shaft 20, and is screwed onto the end 16 of the spindle 14. A spring 23 is seated on the reduced portion 15 of the shaft between the shoulder 24 and the end of the shaft 20. A collar 25 fits within the end of the barrel sleeve, and screws onto the end of the shaft 20. Placed upon the end of the shaft 20 is a slotted disk 26, and placed upon the end of the sliding spindle 22 is a similar disk 27, of a less diameter. A guiding cap 28 is seated on the shaft 20 between the collar 25 and the disk. This guiding cap comprises a circular bottom 29 and an annular flange 30. Extending spirally around the opening in the bottom 29 is a flange 31. This flange commences at the center adjacent to the shaft, and extends in a spiral path to the outer flange, forming a spiral track 32 between the whirls of the spiral flange. The disk 26 is seated within the guiding cap 28, and is provided with a series of radial grooves 33. These grooves are best illustrated in Fig. 8, and each comprises a slot 34 extending entirely through the disk with cross-grooves 35 and 36 extending preferably at right angles to the walls of the slot 34, thus leaving a series of radial flanges 37 and 38. The smaller disk 27 is also provided with a similar series of slots and grooves, adapted to register with those in the first-named disk.

Referring now to Fig. 9, which represents a guiding pin, comprising a pin proper or upright 39 and base 40. A vertical cross-section of the base corresponds to a vertical cross-section of the channel or slotted groove in the disks, so that the base may be slid within the slot 34 and the shoulders 41 entering within the grooves 35 and 36 hold the guiding pin securely in position. Extending downwardly from the base is a guiding pin 42 adapted to enter within the spiral channel 32. It will be noted, in Fig. 9, that the pin is located in one end of the base. In Fig. 7 the pin is located nearly at the center, as at 43, while in the device in question, in which there are three slots with three sets of pins, in the third pin proper the guiding pin in the base is located near the opposite end from that shown in Fig. 9. The purpose of this will be explained later. Extending upwardly from the base, and preferably parallel to the pin 39, is a pin 44.

In Fig. 10, is shown a plunger 45 provided with a channel 46, and a bore 47, and side lugs 48. This plunger is adapted to fit over

the pin proper, the guiding pin 39 moving in the channel 46 and the pin 44 entering the bore 47, when these two parts are together. At the same time that the base 40 enters the slot 34, the plunger 45 enters the corresponding slot in the smaller disk, the lugs 48 entering the corresponding grooves or channels therein. A cap 49 adapted to fit over the end of the smaller disk, is provided with slots 50—50, through which the ends of the bearing pins and plungers project, and also provided with a circular opening 51 having a radially extending slot 52. Secured to the inner faces of the cap 49 are threaded posts 53 adapted to pass through corresponding openings 54 in the smaller disk, and provided with screws passing through corresponding openings in the larger disk and into said posts. A rotary spindle 55 for winding the spring is surrounded by a collar 56. This spindle is provided with an enlarged portion 57, forming a shoulder 58. A pin 59 projects from the spindle proper, and a pin 60 projects from the enlarged portion 57. A pin 61 extends through a slot 62 in the collar 56, and enters a peripheral groove 63 in the spindle. This pin holds the spindle in place in the collar, but the groove permits a certain amount of longitudinal movement. A crank 64 provided with a handle 65 is rigidly secured to the collar 56. The spindle 55 is adapted to enter the opening 51 in the outer case 49, the pin 59 passing through the slot 52, the further passage of the spindle being prevented by the shoulder 58. The pin 60 is adapted to engage the end of the mainspring in order to hold the same securely while being wound.

The operation of my device is as follows: The guiding cap 28 being in position surrounding the larger disk, the pins 42 and 43, together with any other in the series, are seated within the spiral groove 32. The edge of the guiding cap is preferably roughened or knurled, and by revolving the cap the pins are adjusted inwardly or outwardly. In this manner, the perimeter of the circle formed by the inner faces of the guiding pins is enlarged or decreased as desired, in order to provide for winding a spring of any desired diameter. This is accurately accomplished by placing the required case or barrel over the pins and turning the guiding cap until the pins strike the edges of the barrel. It is evident that if these small pins were all at an equal distance from the center, they would, in some cases, strike the flange instead of the guiding groove. So it will be noted that the pins 42 are located at varying positions on the bottoms of the guiding pins, and are so arranged that they will, when at the end of the grooves 50, enter the spiral groove 32. When the guiding pins have been shifted so as to provide for the proper diameter, the end of the spring to be wound is secured to the pin 60, the winding spindle passed through the opening 51, the pin 59 passing through the groove 52, the collar 56 is then forced against the tops of the guiding pins, and the spring wound about the spindle by means of the crank 64. The spindle is then removed, leaving the spring in place between the guiding pins. The barrel or case into which it is desired to discharge the spring is then fitted over the guiding pins, and the plunger shaft 14 pressed inwardly. This pressure is transmitted to the tubular plunger shaft 22, to the end of which is secured the smaller disk 27, carrying the discharge plungers 45. This movement forces the smaller disk 27 away from the larger disk, the plungers sliding along the sides of the pin proper 39, but held in place by means of the pins 44 and their position in the radial grooves. The ends of the discharge plungers are thus forced upwardly through the radial slots 50 in the outer cap, and press against the bottom of the spring wound between the guides. A further movement of the plungers discharges the coiled spring into the barrel or case.

It will be noted that while the mechanism involved in this structure is somewhat complicated, the operation is exceedingly simple, it being simply necessary to attach the spring and wind it, to press the plunger and discharge it. The mechanism is entirely protected by means of the outer casings, and there is absolutely no chance for any of the parts to be lost or displaced when the device is properly assembled. All the parts are of standard sizes, and easily replaceable, so that it makes the device practically indestructible as a whole.

I claim:

1. In a mainspring winder, the combination with a handle, a tubular shaft, a sliding shaft within said tubular shaft, disks secured to the ends of said shafts, means for winding a mainspring into any desired size, and means for transferring said wound mainspring into a barrel or case, said means comprising a series of adjustable plungers.

2. In a mainspring winder, the combination with a handle, a tubular shaft, a sliding shaft within said tubular shaft, disks secured to the ends of said shafts, means for winding a mainspring into any desired size, and means for transferring said wound mainspring into a barrel or case, said means comprising a series of radially adjustable plungers.

3. In a mainspring winder, adjustable mechanism for regulating the size of the mainspring, comprising a series of guides, a spiral track, and means on said guides for engaging the sides of said track.

4. In a mainspring winder, adjustable mechanism for regulating the size of the mainspring, comprising a series of radially

adjustable guides, a spiral track, and means on said guides for engaging the sides of said track.

5. In a mainspring winder, adjustable mechanism for regulating the size of the mainspring, comprising a series of guides, a spiral track, a series of pins extending downwardly from said guides entering said track.

6. In a mainspring winder, size-adjusting and spring-discharging mechanism, comprising a series of radially adjustable guides and flanges, a spiral track, and means on said guides for engaging said track.

7. In a mainspring winder, winding mechanism in combination with adjustable guiding pins, said pins comprising an upright, a flanged base, and an engaging pin extending downwardly therefrom.

8. In a mainspring winder, winding mechanism in combination with adjustable guiding pins, adjustable discharge plungers adjacent thereto having lateral flanges extending on opposite sides of said discharge plunger, said pins comprising an upright, a flanged base, and an engaging pin extending downwardly therefrom.

9. In a mainspring winder, winding mechanism in combination with adjustable guiding pins, adjustable discharge plungers in operative relation therewith, lateral flanges extending on opposite sides of said discharge plunger, said pins comprising an upright, a flanged base, and an engaging pin extending downwardly therefrom.

10. In a mainspring winder, winding mechanism in combination with adjusting mechanism, a guiding case comprising an annular flange, a circular bottom, a spiral flange on the inner face thereof, forming a track or groove, by means of which said adjusting mechanism is positioned.

11. In a mainspring winder, an outer case, an inner tubular shaft, a sliding spindle reciprocating therein, slotted disks secured to the ends of said shaft and spindle, a radially adjustable, spring adjusting and discharging means seated within the said disks, guiding mechanism for engagement therewith, a slotted plate, and winding mechanism.

Signed by me at Chicago, Illinois, this 17th day of April, 1907.

LOUIS KOHN.

Witnesses:
ALBERT JOHN SAUSER,
SARAH LEWIS.