G. F. KELLEY.

CLOCK REPAIRING DEVICE.

APPLICATION FILED NOV. 12, 1908.

924,470.

Patented June 8, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

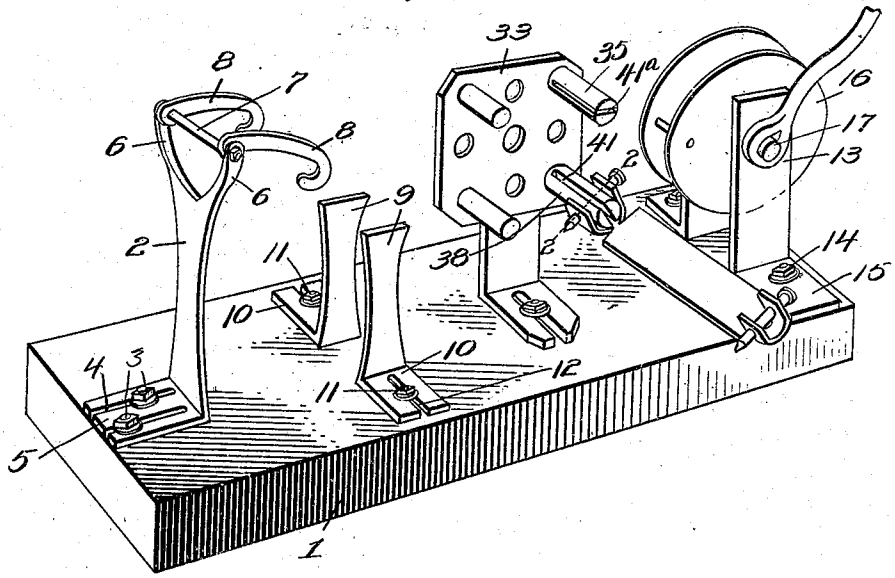


Fig. 2.

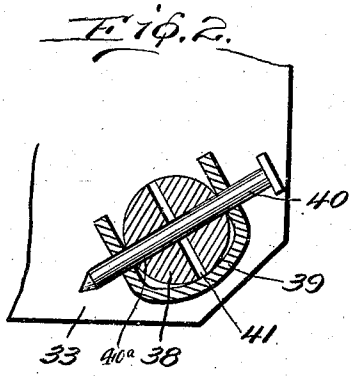


Fig. 3

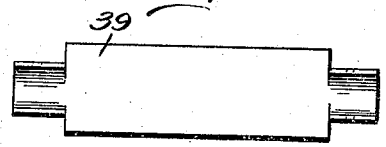
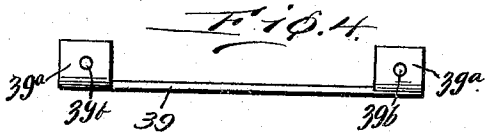


Fig. 4.



Inventor

Guy F. Kelley.

By Victor J. Evans

Attorney

Witnesses

F. C. Gibson.

J. F. Byrne.

THE NORRIS PETERS CO., WASHINGTON, D. C.

G. F. KELLEY.

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2 SHEETS—SHEET 2.

Fig. 5.

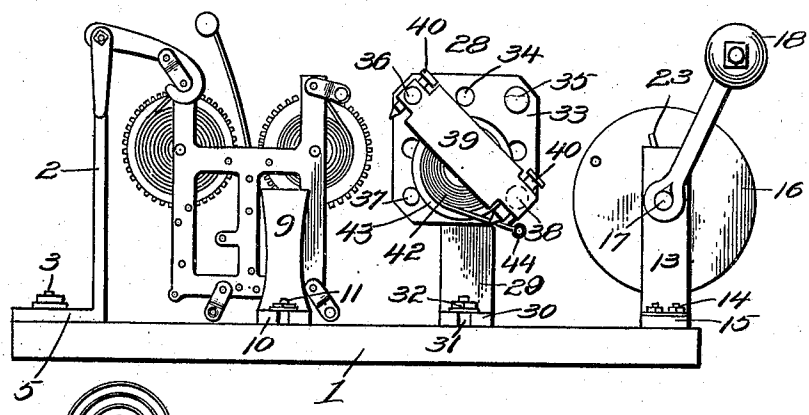


Fig. 7.

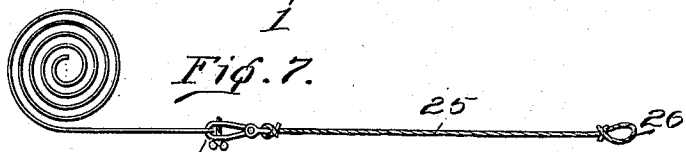


Fig. 6.

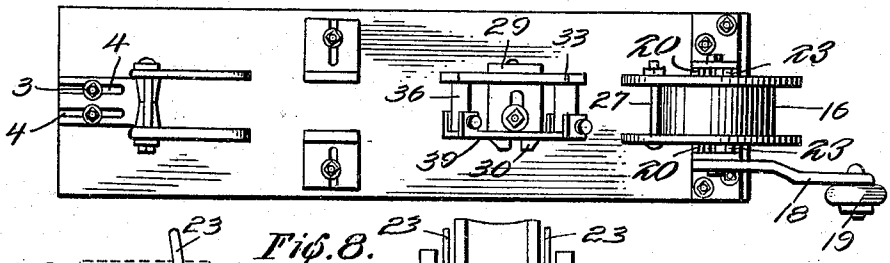


Fig. 9.

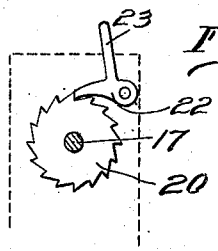
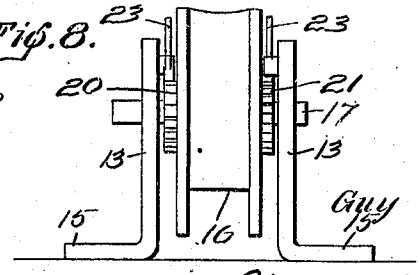


Fig. 8.



Witnesses

F. C. Gibson

J. F. Byrne.

Inventor

Guy F. Kelley.

By Victor J. Evans

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GUY F. KELLEY, OF SOMERSET, OHIO.

CLOCK-REPAIRING DEVICE.

No. 924,470. Specification of Letters Patent. Patented June 8, 1909.

Application filed November 12, 1908. Serial No. 462,298.

To all whom it may concern:

Be it known that I, GUY F. KELLEY, a citizen of the United States, residing at Somerset, in the county of Perry and State of Ohio, have invented new and useful Improvements in Clock-Repairing Devices, of which the following is a specification.

My invention relates to improvements in clock repairing devices.

The primary object of the invention is the provision of a clock repairing device in the use of which the broken spring of a clock may be removed and replaced without disassembling the works of the clock.

A further object of the invention is the provision of a clock repairing device which is simple, durable and efficient, and which may be manufactured and sold at a comparatively low cost.

With the above and other objects in view the invention consists in the construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, wherein:—

Figure 1 is a perspective view of a clock repairing device constructed in accordance with my invention. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is a detail plan view of the retaining arm of the spring carrier. Fig. 4 is a detail view in side elevation of the retaining arm. Fig. 5 is a view in side elevation of the repairing device, illustrating the manner in which a clock works and a new spring are adapted to be secured therein. Fig. 6 is a top plan view of the clock repairing device. Fig. 7 is a view illustrating the means by which the free end of the broken spring is secured to the reel of the repairing device. Fig. 8 is a view in end elevation of the repairing device, and Fig. 9 is a detail plan view illustrating one of the pawls and ratchets employed in connection with the reel.

Referring to the drawings by reference numerals, 1 designates the base of my improved clock repairing device, which is preferably constructed of wood and which is preferably rectangular in outline. A vertical standard 2 is secured to the base 1 by means of bolts 3. The bolts 3 pass through the base 1 and through elongated slots 4 formed in the base flange 5 of the standard 2. The upper end of the standard 2 is bifurcated, and the arms 6 of the bifurcation carry at their upper ends a pivot bar 7 upon which the hooks 8 are pivotally mounted. The standard 2 is located at a point adjacent one end of the base 1, and located at a point in advance of the standard is a pair of relatively spaced clamping arms 9. The clamping arms 9 are provided with base flanges 10, and are secured in applied position by means of bolts 11 which pass through the base 1 and through elongated slots 12 formed in the base flanges. When the repairing device is in use, the hooks 8 and the clamping arms 9 secure the clock works in the device, as fully illustrated in Fig. 5 of the drawings. As the bolts 11 pass through elongated openings 12 formed in the base flanges of the clamping arms 9, the clamping arms may be adjusted with relation to each other, and as the bolts 3 pass through the elongated slots 4, formed in the base flange of the standard 2, the standard may be adjusted with relation to the clamping arms. The adjustability of the standard 2 and the clamping arms permits the device to be used in replacing broken springs in clocks of various sizes.

Located at the end of the base 1 farthest remote from the standard 2 is a pair of relatively spaced supports 13 which are secured in applied position by bolts 14 which pass through the base and through the base flanges 15 of the supports. A reel 16 is journaled between the supports 13 upon a shaft 17 which is carried by the supports. The reel is adapted to be rotated through the medium of a lever 18 which is secured at its inner end to the shaft 17 and which is provided at its outer end with a hand grip 19. Secured upon the shaft 17 between the supports 13 and the reel 16 are ratchet wheels 20 and 21 controlled by pawls 22 pivotally mounted upon the supports. The pawls 22 are provided with rods 23 by means of which they may be thrown into and out of operative position. When the ratchet wheel 20 is engaged by its pawl, the reel 16 is held against rotation in one direction, and when the ratchet wheel 21 is engaged by its pawl, the reel is held against rotation in the reverse direction.

In removing the broken spring from the works of a clock, the pawl controlling the spring is thrown into inoperative position, and the support to which the outer end of the spring is secured is removed and such outer end disengaged therefrom. After the outer end of the spring is removed from its support, the broken section of the spring is removed,

after which the clamp 24 is secured to the free end of that portion of the spring remaining on the arbor. The clamp 24 is carried by a flexible element 25, which is provided with a loop 26. A pin 27 carried by the sides of the reel 16 is inserted through the loop 26 of the flexible element 25, the pawl of the ratchet wheel 20 is thrown into inoperative position, and the pawl of the ratchet wheel 21 is thrown into operative position, after which the drum is rotated through the medium of the lever 18. The rotation of the drum unwinds and disconnects the spring from the arbor.

A spring carrier 28 is secured to the base 1 at a point between the clamping arm 9 and the reel 16 by means of a supporting bar 29. The supporting bar 29 is provided with a base flange 30 having an elongated opening 31 through which a bolt 32 carried by the base 1 passes. The spring carrier comprises a plate 33 provided with a plurality of openings 34, studs 35, 36, 37 and 38 detachably secured in the openings, and a retaining arm 39. The retaining arm 39 consists of a flat oblong strip of metal provided at its ends with pairs of ears 39^a, the ears of each pair being relatively spaced. The pairs of ears 39^a are adapted to receive the studs 36 and 38, and are provided with openings 39^b to permit the passage of pins 40 which also pass through openings 40^a in the studs, said pins detachably securing the retaining arm in applied position. The studs 35 and 38 are provided with slots 41 and 41^a respectively, which extend longitudinally and open out through the outer ends thereof.

When it is desired to replace the broken spring of a clock, the broken spring is removed in the manner heretofore pointed out. After the removal of the broken spring, the spring carrier 28 is secured to the base, and the new spring 42 is inserted therein. After the new spring is inserted in the carrier 28, its retaining band 43 is removed, allowing the spring to expand, the expansion of the spring being limited by the studs 35, 36, 37 and 38. After the removal of the retaining band 43 of the spring 42, the retaining arm 39 is removed, and the pin 27 is inserted through the looped end 44 of the spring, after which the pawl of one of the ratchet wheels is thrown into inoperative position. When the spring is wound in one direction the pawl of the ratchet wheel 20 is thrown into inoperative position, and when the spring is wound in the reverse direction the pawl of the ratchet wheel 21 is thrown into inoperative position. The reel 16 is then rotated to wind the spring thereon. Just before the spring is completely wound upon the reel 16, the inner end thereof is inserted in either the slot 41 or 41^a of the studs, depending upon the direction in which the spring is wound, the passing of the inner end of the spring through the slot straightening the same. After the spring has been wound upon the reel 16, the inner end thereof is secured to the spring arbor of the clock, and the pawl controlling the spring is then thrown into operative position, and then the spring is wound from the reel upon the arbor by means of the clock key. As the bolt 32 passes through an elongated opening in the base flange 30 of the support 29, the spring carrier may be adjusted transversely of the base whereby to permit the spring to be placed in proper position with relation to the reel 16.

It should be apparent from the above description, taken in connection with the accompanying drawing, that I provide a clock repairing device in the use of which the broken spring of a clock-works may be readily and quickly replaced without disassembling the works of the clock.

It should also be apparent that the clock repairing device is simple of construction, and that it may be manufactured and sold at a comparatively low cost.

Changes in the form, proportions and minor details of construction may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new is:—

1. A clock repairing device comprising a clamp, a reel, and a spring holder, the holder comprising a plate provided with a plurality of studs, and a retaining arm detachably secured to the studs.

2. A clock repairing device comprising a pair of relatively adjustable clamping arms, a standard adjustable toward and away from the clamping arms, a hook pivotally secured to the standard, and a reel.

3. A clock repairing device comprising a clamp, standards, a shaft carried by the standards, a reel fixed on the shaft between the standards, ratchet wheels fixed on the shaft, pawls pivotally mounted upon the standards for engagement with the ratchet wheels, rods carried by the pawls, and a crank handle secured to the shaft.

4. A clock repairing device comprising a base, a standard adjustably mounted upon the base, a hook pivotally secured to the standard, clamping arms adjustably mounted upon the base, a spring carrier adjustably mounted upon the base, and a reel journaled upon the base.

5. A clock repairing device comprising arms adapted to engage and hold a clock works against movement in one direction, a standard, a hook carried by the standard and adapted to engage and hold the clock works against movement in another direction, and means by which the spring of the clock works can be unwound from its arbor.

6. A clock repairing device comprising

means adapted to hold a clock works against movement, means by which the spring of the clock works can be unwound from its arbor, and a spring carrier, the spring being adapted to be wound upon said second-named means and from said second-named means on to the spring arbor of the clock works.

7. A clock repairing device comprising a base, means mounted upon the base adapted to hold a clock works against movement, means by which the spring of the clock works can be unwound from its arbor, said means being mounted upon the base, and a spring carrier mounted upon the base between the first and second named means, the spring being adapted to be wound upon said second named means and from said second named means on to the spring arbor of the clock works.

8. A clock repairing device comprising a base, means adapted to hold a clock works against movement, said means being mounted upon the base, means by which the spring of the clock works can be unwound from its arbor, said means being mounted upon the base, and a spring carrier mounted upon the base and provided with a slotted stud, the spring being adapted to be wound upon said second named means and from said second named means to be wound on the spring arbor of the clock works, and during the winding of the spring from the carrier on to said second named means one end of the spring passing through the slot of the stud.

9. A clock repairing device comprising a clamp, a reel, and a spring holder, the holder comprising a plate provided with a plurality of studs and a retaining arm detachably secured to the studs, one of said studs being slotted.

In testimony whereof I affix my signature in presence of two witnesses.

GUY F. KELLEY.

Witnesses:

LORETTA SNIDER,

AUGUST BENDER.