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J. L. MAHEU

2,527,751

SPRING UNRAVELER

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Fig. 1

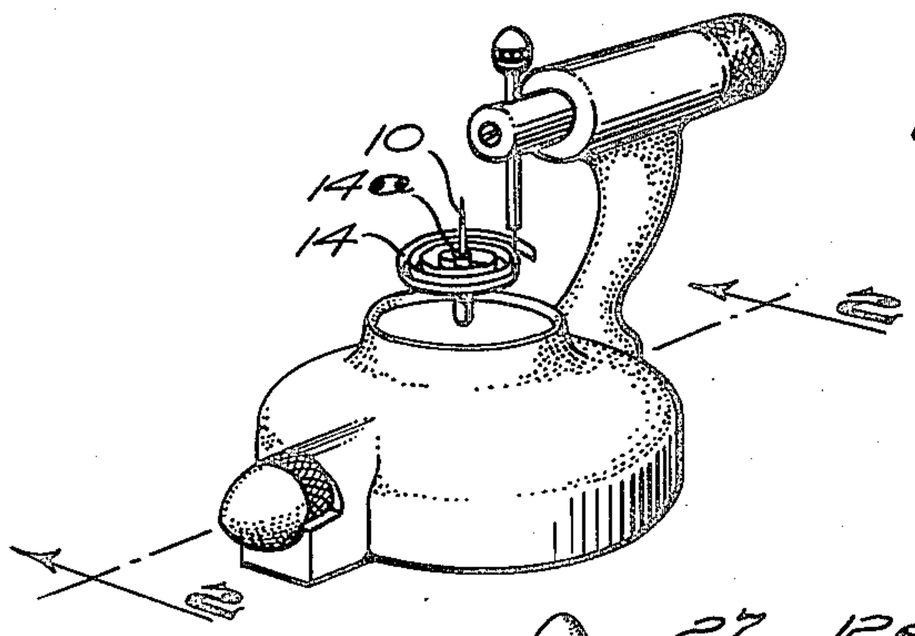


Fig. 2

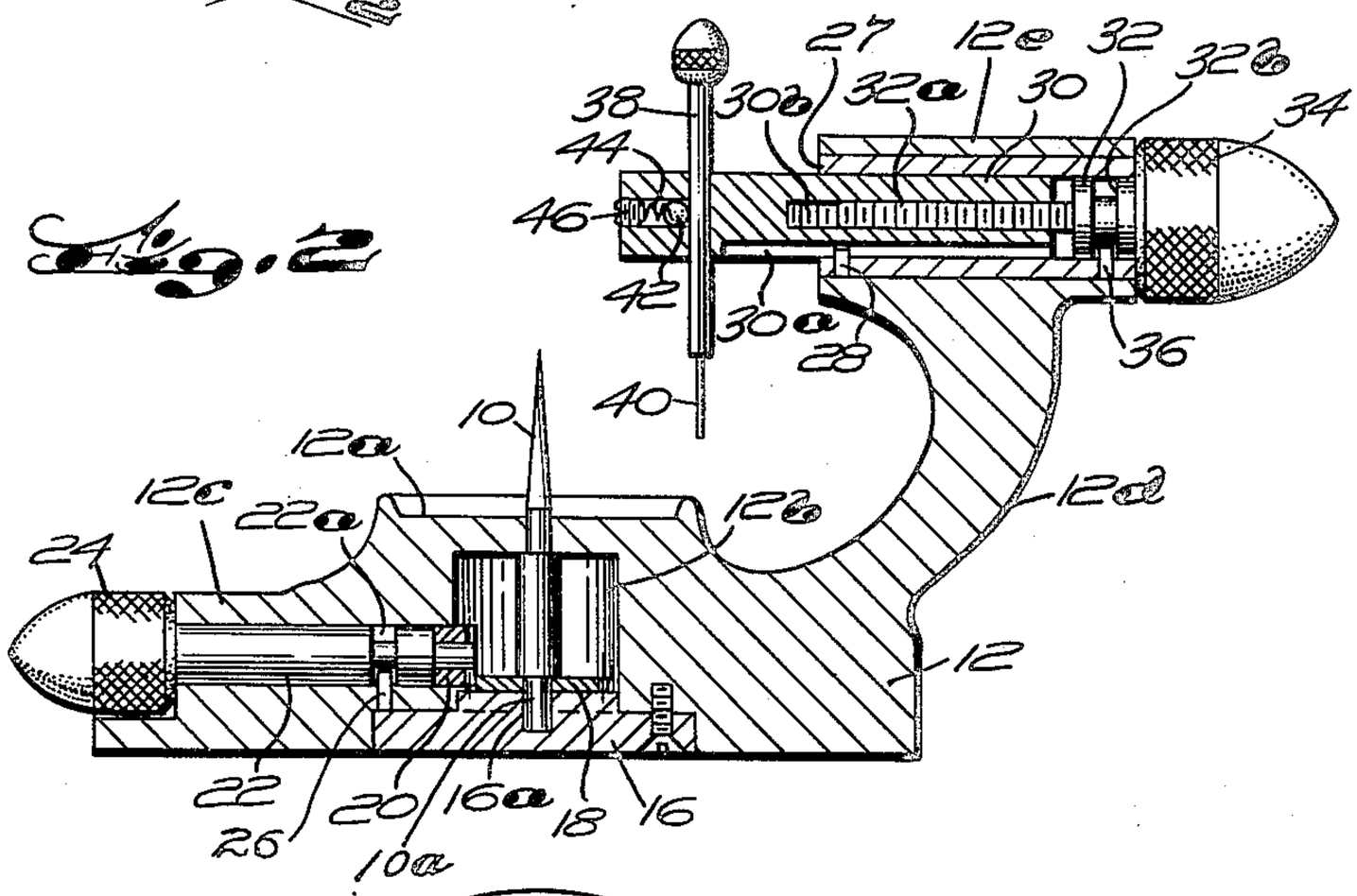
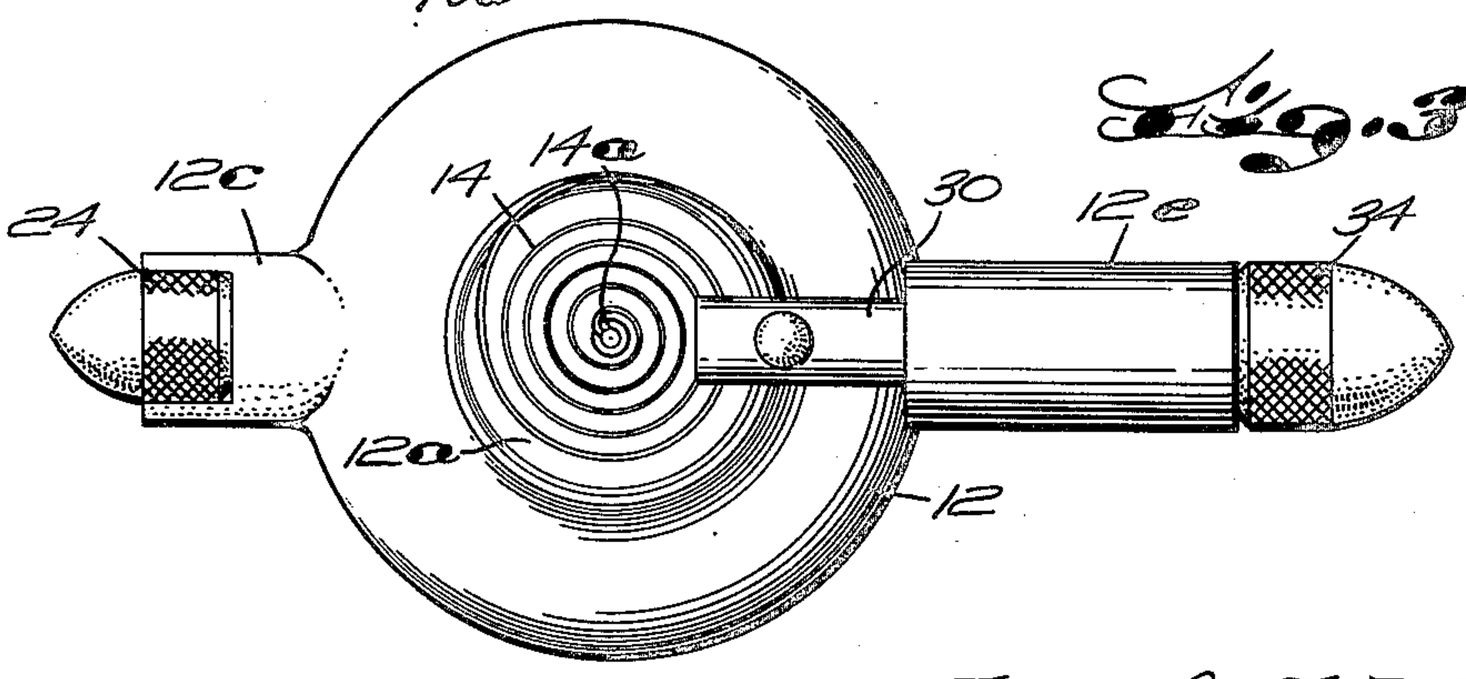


Fig. 3



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UNITED STATES PATENT OFFICE

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SPRING UNRAVELER

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2 Claims. (Cl. 81—6)

1

This invention relates to a spring unraveler. More especially the invention has to do with a device for unraveling a hairspring of a watch though the principles of the device are not to be deemed limited to such small sizes of springs.

Heretofore, a watchmaker has had a tedious task in attempting to unravel a tangled hairspring because such springs are tiny and possess considerable resiliency. To unwind a tangled hairspring by hands alone a horologer must possess nimble fingers and canny skill when handling the spring because the slightest overstretching of the tiny coils would exceed the elastic limit of the material and put a permanent set in the spring, thus rendering it unfit for further use. Considerable time is taken, the workman's patience is severely tried and not infrequently a spring is rendered useless.

It is an object of this invention to provide a device which can be easily operated to unravel or untangle a hairspring which has become tangled.

Referring to the drawings, in which is illustrated a preferred embodiment of my invention,

Fig. 1 is a perspective view of my spring unraveler;

Fig. 2 is a vertical sectional view taken as on line 2—2 of Fig. 1; and

Fig. 3 is a plan view of the device.

The device comprises a vertical tapered spindle 10 projecting above a dished surface 12*a* at the top of a bedplate or base 12. On this spindle 10 is placed a spring to be untangled, here shown as a hairspring 14. The split collet 14*a* of the spring grips the spindle with sufficient tightness to cause the spring to rotate with the spindle. The latter extends downward into a chamber 12*b* in the base and its lowermost reduced end 10*a* of the spindle rests in a socket 16*a* in a cover plate 16 which closes the chamber 12*b*.

A pinion 18 is attached to the spindle near its lower end and meshes with a second pinion 20 carried by a shaft 22 which extends outward horizontally from the chamber 12*b* through an offset portion 12*c* of the base. This shaft 22 has a knurled knob 24 by which the shaft can be easily rotated, and the shaft has a circumferential groove 22*a* into which projects the end of a pin 26 to prevent longitudinal displacement of the shaft. As the knob 24 is turned the spindle and hairspring are rotated at any speed desired.

On the side of the base opposite the offset portion 12C is another offset portion 12*d* which extends upward as an arm and terminates in a bearing piece 12*e* having a central horizontal

2

bore. Into this is frictionally pressed a sleeve 27 through the wall of which a pin 28 extends to engage a longitudinal groove 30*a* on a plunger 30. The latter has a central threaded hole 30*b* into which is screwed the stem 32*a* of a shaft 32. This shaft has a circumferential groove 32*b* interposed between the threaded stem 32*a* and a knurled knob 34 by which the shaft can be rotated. Another pin 36 in the sleeve 27 engages the groove 32*b* to prevent longitudinal movement of the shaft 32 while permitting rotation thereof.

Near the outer end of the plunger 30 is a vertically disposed hole through which extends a rod 38 carrying at its end an unraveling needle 40. This rod can be slipped upward or downward through the plunger against the frictional resistance imposed by a small ball bearing 42 which is backed up by a compression spring 44 retained in a horizontally disposed hole in the plunger by a set screw 46.

To unravel a tangled hairspring, the spring, as hereinbefore mentioned, is placed on the vertical spindle 10. The plunger 30 is then advanced or retracted by turning the knob 34 until the unraveling needle 40 can be pushed downward between the coils of the spring, somewhat back of or nearer the center of the spring than the outermost tangle. Then the spring is slowly rotated by turning the knob 24 and simultaneously the unraveling needle is drawn away from the spindle 10 by turning the other knob 34. As the unraveling needle thus relatively progresses along the coil of the spring the tangle is removed without the slightest strain on the spring and without throwing the spring out of true either in its plane or spiral shape. If a second tangle is in the spring, somewhat nearer its split collet than was the tangle first removed, the aforesaid operation is repeated, and so on until all tangles have been unraveled.

Although I have shown the principles of my invention applied to the unraveling of a hairspring, for which the device is especially adapted, the same principles may be embodied in a larger device for unraveling larger tangled springs. It is, therefore, intended that the patent shall cover by suitable expression in the appended claims whatever features of patentable novelty are disclosed in the invention as a whole.

I claim:

1. A spring unraveler comprising a base, a rotatable vertical spindle upstanding from the base to receive the spring to be unraveled, a movable horizontally disposed plunger carried by the base and in turn carrying a vertically dis-

posed needle adapted to be positioned between the coils of said spring; and means mounted in said base for rotating the said spindle and with it the spring and means associated with said plunger for moving the said plunger and needle to follow the normal spiral space between successive coils of the spring.

2. A spring unraveler comprising a base, a vertical spindle journaled in the base having a tapered end upstanding from the base to receive a spring to be unraveled; a horizontal shaft in said base having exposed means by which the shaft can be rotated; a driving connection between said shaft and spindle whereby upon rotation of the shaft the said spindle and spring are rotated; a horizontally disposed plunger carried by said base at an elevation above the spring; means for moving said plunger radially toward or from the axis of said spindle; an unraveling

needle adjustably mounted on said plunger so as to be moved in a direction parallel to the axis of said spindle to enter the spiral space between the turns of said spring, whereby upon the simultaneous rotation of the spring and the radial movement of said plunger and needle, the latter relatively traverses the said spiral space.

JOSEPH L. MAHEU.

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