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(No Model.)

C. E. EMERY.

CLAMP BARREL FOR CLOCK SPRINGS.

No. 391,885. Patented Oct. 30, 1888.

Fig. 1.

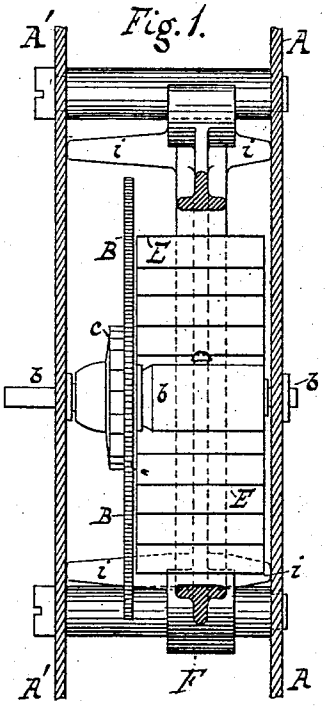


Fig. 2.

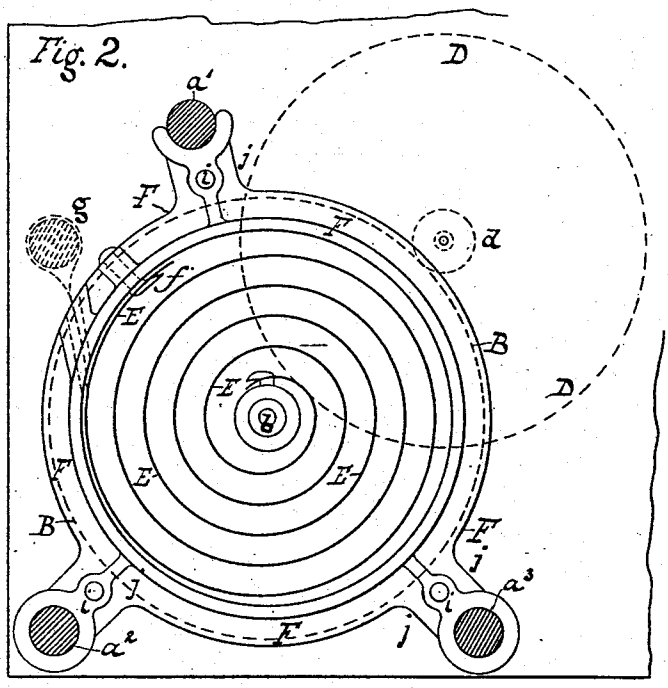
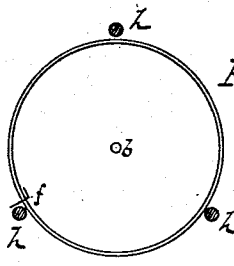


Fig. 3.



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CHARLES E. EMERY, OF BROOKLYN, NEW YORK.

CLAMP-BARREL FOR CLOCK-SPRINGS.

SPECIFICATION forming part of Letters Patent No. 391,885, dated October 30, 1888.

Application filed December 3, 1887. Serial No. 256,859. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. EMERY, of Brooklyn, Kings county, New York, (office, New York city,) have invented a new and useful Clamp-Drum for Clocks; and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings, forming part of this specification.

In the cheaper form of clocks, of what I call the "going-arbor type," it is customary to form a loop in the outer end of the mainspring, which is slipped over one of the posts of the frame, and the motion is communicated to the great-wheel arbor or staff by connecting the same with the spring at the center, the great wheel being driven through a pawl by a ratchet-wheel on such staff. In such an arrangement the great wheel is receiving no power from the spring during the operation of winding. In another plan used, called the "going-barrel," used in watches and marine clocks, the spring is coiled in and the outer end secured to a drum carrying the great wheel, while the center of the spring is secured to the staff, which is turned only during the operation of winding, and at other times is held fast by a ratchet-wheel on same engaging with a pawl on the frame. The latter plan has the advantage, first, that the winding is done in the same direction as the movement of the great wheel, so that the latter is receiving the force of the spring during the operation of winding as well as at other times, and, moreover, the outer coils of the spring are kept concentric with the axis and wound off regularly from the staff to the interior of the barrel, whereby a more uniform force is imparted to the train than by the method first described, in which the mainspring, as it runs down, is by its side attachment carried laterally through the openings between the posts of the frames, and which in case of breakage is liable to injure the mechanism of the clock. With a going-barrel the spring and barrel are removed together as a unit in taking down the clock. With the going-arbor form the spring ordinarily flies out as the plates of the clock are separated unless such spring be first wound tight and a clamp formed like the letter C be slipped over it and the spring released within it, in which case the staff, great wheel, spring, and clamp may be taken out together.

The object of this invention is to provide for use in connection with the going-arbor arrangement a combined clamp and drum which will hold the spring within bounds the same as the ordinary jobber's clamp, but which may at the same time be secured in the case so as to hold the exterior of the spring, when in operation, concentric with the arbor, and thus secure three of the features of excellence of the going-barrel plan—to wit, the centering of the spring, the facility of removing same with the great wheel and its arbor, and the keeping of the spring in bounds in case of breakage, though not of itself forming a retaining-power, as in the case of the going-barrel.

In the drawings, Figure 1 is a side view, partly in section, showing the frames, pillars, and great wheel, with going-arbor and spring. Fig. 2 is a sectional elevation of a portion of the clock with the front plate removed and a shorter spring than would ordinarily be used applied to show the general features of construction. Fig. 3 is a face view of a clamp-drum of the simplest form.

A is the rear plate of the clock, to which are secured pillars a' a^2 a^3.

A' is the front plate of the clock, attached to the pillars by screws in the usual way.

B is the great wheel, and *b* its arbor, the two being connected on the going-arbor plan through a ratchet-wheel, *c*, and pawl on wheel, as is customary.

The dotted lines D are intended to show the location of the seconds-wheel and those marked *d* the location of the pinion on the seconds-wheel staff.

E represents the mainspring, and F the improved clamp-drum. The inner end of the mainspring E is to be secured to an enlargement of the main arbor or staff *b* of the great wheel in the customary way, and the outer end of same is preferably to be secured by causing a hole in the same to engage with a hook, *f*, on the interior of the clamp-drum F, thereby enabling the clamp-drum to be made a continuous ring. As shown by the dotted lines at *g*, the drum may have a notch cut through its

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side and the spring be run through the same, so that a loop thereon will engage with a pillar or stud in the customary way.

The general features of the clamp-drum in simple form are shown on a small scale in Fig. 3. Such drum may be simply a short cylinder of metal to contain the spring, provided with a hook, *f*, to receive the end of the spring, and means should be provided to keep the drum concentric with the staff *b* of the great wheel in any customary manner—as, for instance, by pins *h h h*, against either one of which the protruding end of a pin, *f*, or other projection may engage to prevent the drum from turning. In practice, however, it is preferred to make the drum a little casting of T-shaped section, provided with arms *j j j*, Fig. 2, to engage with the regular pillars necessary to secure together the plates of the clock, such as a' a^2 a^3, and as shown in Figs. 1 and 2. When but two pillars are available, the ends of the arms are to be formed into eyes to extend entirely around the same, as at a^2 a^3; but where three or more pillars are available and suitably located the ends of the arms may simply be notched to engage with them, as shown at a'. The thickness of the clamp-ring when formed of a casting, as shown at Fig. 1, need not be the entire width of the spring, but more resemble the ordinary clamp-ring, which is generally made of large wire. The clamp-drum is to be kept in position near the center of the spring by projections *i i* on either side, secured to the clamp drum or the arms of same, and abutting loosely against the plates A A', so that when the front plate, A', is in place the drum will be kept in position concentric with the staff *b* by the arms *j j* engaging with the pillars, and in proper position in relation to the depth of the clock by the projections *i i*. The projections *i i* may, however, be fastened to the frames and abut against the clamp-ring. The clamp-drum thus arranged will always keep the spring central, and thus permit it to be wound to and from the interior, as in the going-barrel system; and, moreover, when the front plate, A', is removed, the spring will simply lie closely against the clamp-drum, and the great wheel and its staff, together with the spring and clamp drum, may all be removed together by simply slipping the arms *j j j* off the pillars a' a^2 a^3—an operation as easy as the use of an ordinary clamp in jobbing work. The customary stop-motion on winding-arbors may in general be omitted when the clamp-drum is used.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A ring-clamp drum for clock-movements disconnected in construction from the plates but held in position between them by suitable projections in such manner that it may be removed with the spring and arbor, substantially as specified.

2. A non-revolving clamp-drum for clock-movements removable as a whole with the mainspring and provided with, first, a ring to receive the mainspring; second, arms or points of contact to engage with pillars or equivalents in the clock-frame, and, third, studs or projections to approximately fix the distance of the ring from the plates.

3. In combination with the spring-arbor of a clock and pillars or studs secured in the plates thereof, a non-revolving clamp-drum provided with arms *j j*, constructed and operating substantially as described.

4. In combination with the spring-arbor and the plates of a clock, and a non-revolving clamp-drum, projections *i i*, substantially as and for the purposes specified.

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