

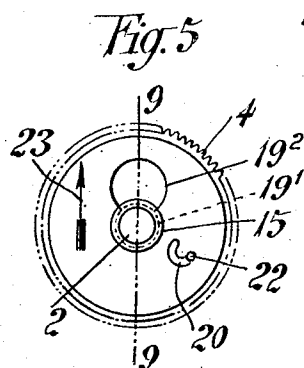
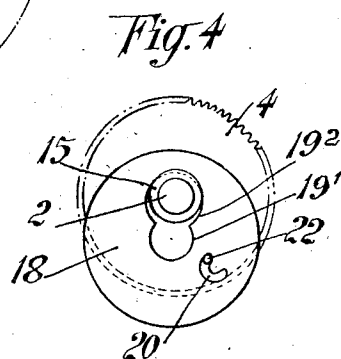
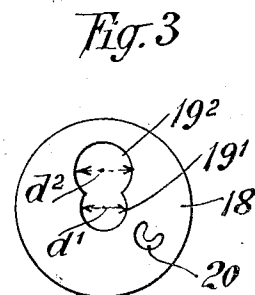
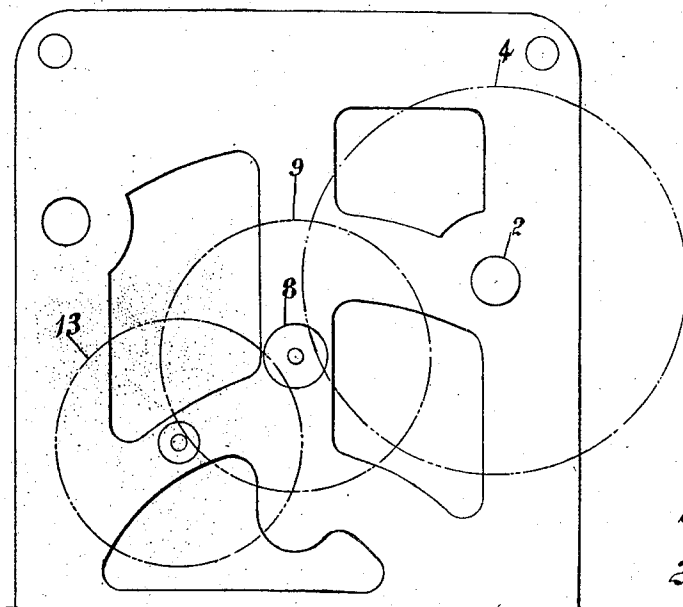
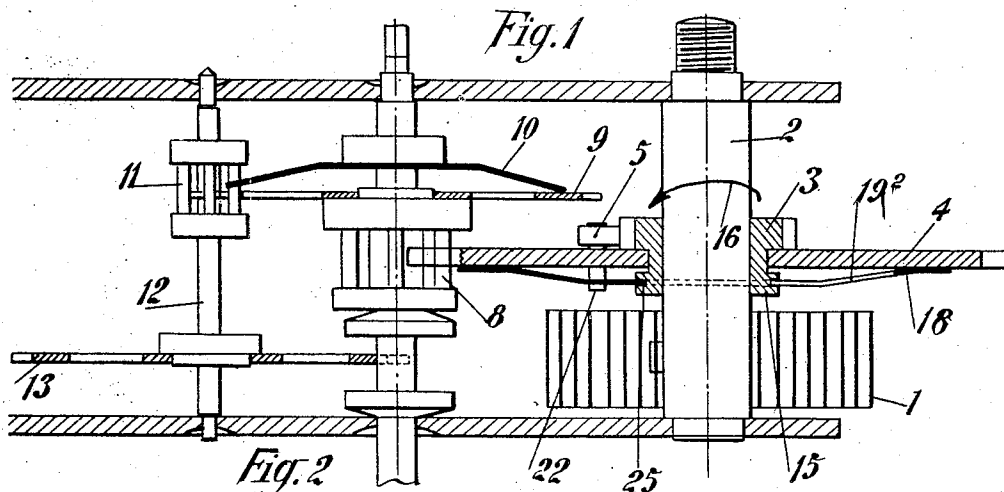
Feb. 8, 1927.

F. I. BENEL

1,616,569

TIME TRAIN

Filed March 18, 1926



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UNITED STATES PATENT OFFICE.

FRANCOIS IVAN BENEL, OF PARIS, FRANCE, ASSIGNOR TO COMPAGNIE INDUSTRIELLE
DE MECANIQUE HORLOGERE, OF PARIS, FRANCE, A LIMITED JOINT-STOCK COM-
PANY.

TIME TRAIN.

Application filed March 18, 1926, Serial No. 95,713, and in France March 27, 1925.

The object of the present invention is to reduce the friction which, in known alarm clocks, is produced between the dome spring and the barrel wheel when the alarm clock is wound up. Its object is also to facilitate the replacement of a worn dome spring by a new dome spring.

An alarm clock according to the invention is characterized by the feature that the dome spring is loosely mounted upon an extended portion of the ratchet and is secured in a removable manner to the barrel wheel so that in order to wind up the clock it is possible to turn the barrel or main spring shaft without causing the dome spring to turn. This dome spring thus remains pressed upon the barrel wheel so that all friction between these two members is obviated.

The invention also comprises other features described hereinafter and the various combinations of them.

A device according to the invention is illustrated by way of example in the accompanying drawing in which:

Figs. 1 and 2 respectively show a section and a diagrammatic elevation of an alarm clock according to the invention.

Fig. 3 is a view in elevation of the dome spring entering into the construction of the clock.

Fig. 4 is a view in elevation of the dome spring at the commencement of the operation for mounting it upon the ratchet.

Fig. 5 is a view in elevation of the dome spring completely mounted upon the said ratchet.

According to the invention, the dome spring 18 (Fig. 3) is provided with a double slot 19¹, 19², the diameter d^1 of 19¹ being smaller than the diameter d^2 of 19².

Further, a small slot 20 of crescent shape is formed in the dome spring 18. A pin 22 mounted upon the barrel wheel 4 is adapted to engage in this slot.

In order to mount the above described dome spring upon the barrel wheel, this spring is slipped by means of its slot 19² (Fig. 4), over the end 15 of the ratchet 3, which is provided with an annular groove 25 (Fig. 1).

A pin 22 provided upon the barrel wheel 4 engages at the same time in the crescent-shaped slot 20 so as to secure the spring 18 upon the said barrel wheel.

The dome spring 18 is then pushed in the direction of the arrow 23 in such a way that the narrowed portion 19¹ of the double slot engages in the annular groove 25 formed in the ratchet wheel; the pin 22 which slides in the crescent-shaped slot 20 does not oppose this movement.

The dome spring 18 thus takes up the position shown in Figs. 1 and 5; it is then completely mounted in position.

The device hereinbefore described presents numerous advantages. In the first place the dome spring 18 can be mounted and dismounted readily, as explained above; it is thus a simple matter to replace a worn spring by a new spring.

Further, as the dome spring 18 freely engages by means of its slot 19¹ in the groove 25 upon the ratchet 3, and as this spring is secured by its crescent-shaped slot 20 upon the pin 22, this dome spring 18 is not driven by the ratchet 3 when this ratchet turns in the direction of the arrow 16 with the barrel shaft 2, tensioning the main spring 1 when the clock is wound up.

Consequently during this winding up operation any movement of the dome spring 18 relatively to the barrel wheel 4 and consequently all production of friction between these two parts is obviated. The clock is thus wound up very easily without it being necessary to exert an excessive amount of force, the barrel 4 actuating, through a pinion 8, a centre or hour wheel 9 provided with a spring 10; this hour wheel itself controls, through a pinion 11, a shaft 12, called the third wheel shaft upon which is mounted a third wheel 13, these various members forming in the known manner the clockwork mechanism of the alarm clock.

What I claim is:—

In a time train the combination of a barrel shaft, a ratchet mounted upon said shaft and provided with an extended hub portion having a groove therein, a barrel wheel mounted upon said ratchet, a pin attached to

said barrel wheel, a pawl pivoted on said pin for coacting with the ratchet, a dome spring provided with an elongated slot of varying width for engagement with the groove in the extended portion of the ratchet, and also provided with a crescent shaped slot which is adapted to engage said pin when said dome spring is engaged over the extended portion of the ratchet and slid to engage the groove, substantially as and for the purposes set forth. 10

In testimony whereof I affix my signature.

FRANCOIS IVAN BENEL.