Feb. 1, 1949. E. F. CARLSTROM 2,460,620

FLOATING PAWL

Filed June 14, 1945

FIG. 1.

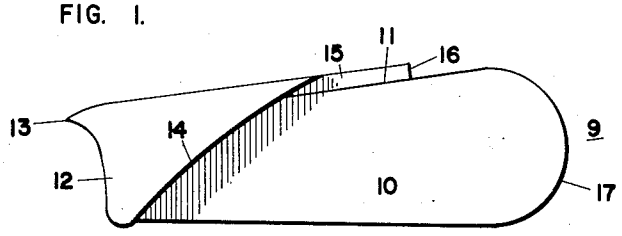


FIG. 2.

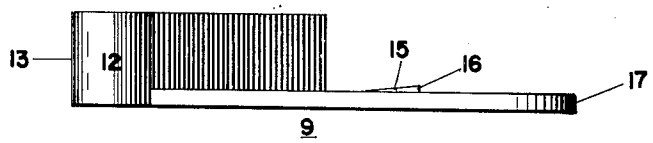


FIG. 3.

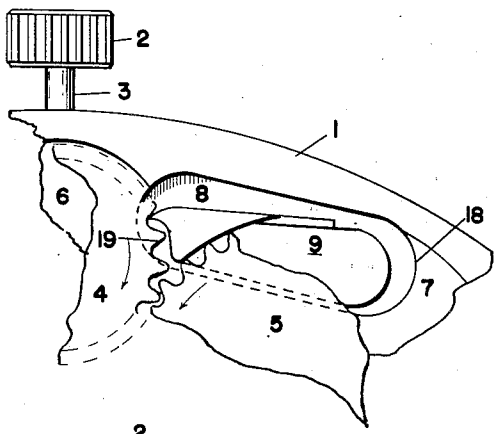


FIG. 4.

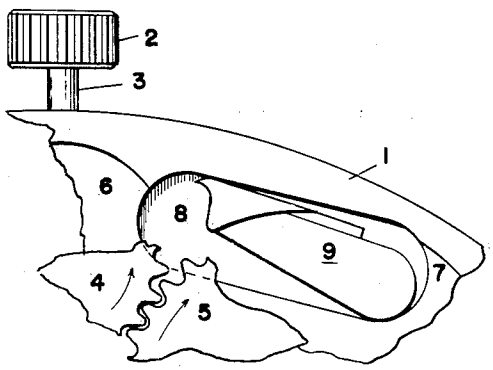
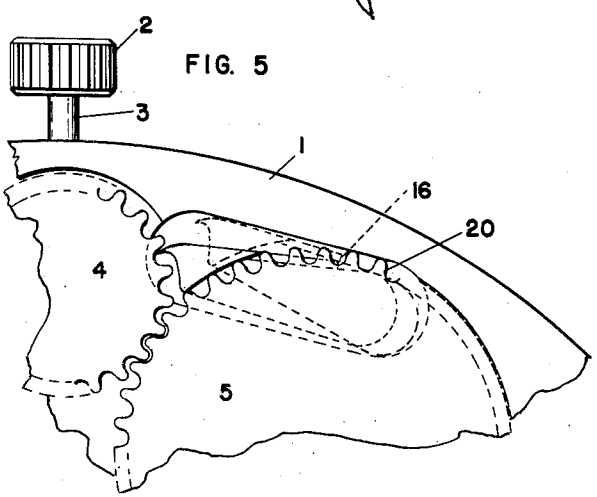


FIG. 5



INVENTOR.

ELIS F. CARLSTROM

BY Murray W. Gould

ATTY.

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FLOATING PAWL

Elis Fedor Carlstrom, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.

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7 Claims. (Cl. 58—83)

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This invention relates to a pawl to be used between a pair of meshing gears and is more particularly concerned with a pawl which floats between the gears rather than a pivoted pawl operating on a single gear.

The object of the present invention is to provide a pawl which serves as a stop between a pair of meshing gears.

A further object is to provide a pawl for a pair of gears, which pawl is not pivoted but floats within the confines of a recess between the gears, being held in place by an extension underlying one of the gears.

A further object of the present invention is to provide a pawl which is moved into and out of gear contacting position by movement of the gears themselves.

A further object is to provide a pawl retained within the confines of a recess underlying one of the gears, the pawl being provided with a springlike extension engaging the under surface of one of the gears, the frictional contact moving the pawl into and out of gear engaging position.

A still further object of the present invention is to provide a pawl formed with a flat springlike extension underlying one of a pair of meshing gears, said springlike extension being provided with an upturned portion adapted to engage the edge of the teeth of the gears to provide a positive action for forcing the pawl into locking position.

With the foregoing and other objects in view, the invention resides in the novel arrangement and combination of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein described may be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing in which:

Fig. 1 is a top plan view of the pawl.

Fig. 2 is a side view of the same.

Fig. 3 is a partial view of the pawl as applied to the winding gears of a watch mechanism, showing the pawl in locking position.

Fig. 4 is a similar view showing the pawl in position during the winding of the watch.

Fig. 5 is a composite view showing the pawl in locking position in full lines and in free position in dotted lines, the free position showing the upturned portion adapted to be engaged between each of the teeth.

Referring in detail to the drawings a pillar plate 1 of a watch mechanism is shown having

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a crown to a winding stem 3, a winding gear 4 and a mainspring gear 5. Gears 4 and 5 are set in recesses 6 and 7 milled in the pillar plate 1. Slightly below the lever of the recesses 6 and 7 an elongated shaped recess 8 is milled to receive a pawl 9.

The pawl 9 is formed with a flat body portion 10 split at 11 and formed with an integral lip 12 having a tooth engaging spur 13 and a riding edge 14. On the body portion 10 the split 11 extends to the riding edge 14 forming a narrow spring finger 15 which projects slightly above the surface 10 to form a tooth engaging edge 16. The back end of the body portion 10 is rounded as at 17 to conform to the curve 18 of the milled recess 8.

The operation of the pawl, which is carried in a milled recess 8 and beneath the gear 5, and because of the depth of the recess 8 has frictional contact with the gear 5, freely floating within the confines of the recess, is shown in Fig. 3 for locking, and in Fig. 4 for free winding of the watch. Referring to Fig. 4, the pawl is shown in its uppermost position, at which time it is disengaged from the gears 4 and 5. The frictional contact between the spring finger or strip 11 and the undersurface of gear 5 is sufficient to move the pawl to the position shown in Fig. 4 immediately with the turning of gear 5. The distance which the spur point 13 is moved away from the teeth 79 of the gear 4 during disengagement is very important as this determines the back movement of the gears 4 and 5 previous to being held by the pawl. This is particularly important as it prevents too tight winding of the mainspring.

Referring to Fig. 3 the pawl is shown in the position which it will take upon the release of the winding moment and the tendency of the gear 5 to turn in the direction of the arrow shown in Fig. 3 under the influence of the mainspring. This tendency of gear 5 to turn counterclockwise under the influence of the mainspring moves the pawl by its frictional contact into the position shown in Fig. 3, allowing the gears to backtrack a distance of approximately two teeth before locking. This is known as recoil action.

Referring particularly to Fig. 5 the position of the pawl with relation to the teeth of the gear 5 is shown, the edge 16 of the pawl engaging the edge of the teeth 20 of the gear 5, thus assuring positive action of the pawl should the frictional contact be too slight to throw the pawl into locking position. It must be realized that this is an extremely small piece of mechanism and

the spring tension on the finger 15 is extremely slight although sufficient to insure the positive working of the pawl.

What is claimed is:

1. In a winding mechanism, a pair of meshing gears, a pawl formed with an elongated flat portion adapted to underlie one of the gears, an upstanding wedge shaped portion adapted to be moved into and away from locking position through frictional contact between the flat surface of the pawl and the undersurface of one of the gears.

2. In a winding mechanism, a pair of meshing gears, a pawl formed with an elongated flat portion adapted to underlie one of the gears, an upstanding wedge shaped portion adapted to be moved into and away from locking position between said gears, said flat portion having integral therewith a spring finger projecting slightly above the surface of said flat portion to provide frictional contact between the undersurface of one of said gears and the flat surface of the pawl.

3. In a winding mechanism, a pair of meshing gears, a pawl formed with an elongated flat portion adapted to underlie one of said gears, an upstanding wedge-shaped portion being formed with a gear riding surface and a gear engaging spur, means integral with said flat surface and projecting slightly above said flat surface to engage the underside of one of said gears, whereby the pawl is moved into and out of locking position through rotational movement of the gear.

4. In a watch movement, a pillar plate formed to receive a pair of meshing gears and also formed with a recess extending under said gears, a pawl having an elongated flat portion housed in said milled recess, said elongated flat portion underlying one of said gears, the pawl movable freely within the confines of said recess and a spring extension formed integral with said elongated flat portion and extending slightly above the surface of said elongated flat portion to provide frictional contact between the pawl and the undersurface of one of said gears, whereby the pawl is moved into and out of locking engagement with the gears.

5. In a watch movement, a pillar plate having a pair of circular recesses therein to receive a pair of meshing gears, said pillar plate being also formed with an elongated recess partially underlying said gears, a pawl partially housed and restricted in movement by said last mentioned recess, a certain portion of said pawl underlying one of the gears, means carried by said pawl and providing frictional engagement with the undersurface of one of said gears, whereby movement of the gears swings the pawl into and out of locking engagement with the gears.

6. In a watch movement, a pillar plate formed with a pair of circular recesses to receive a pair of meshing gears, said pillar plate being also formed with an elongated recess partially underlying said meshing gears, a pawl formed with an elongated flat portion and an upstanding gear engaging wedge-shaped portion, said elongated flat portion of the pawl being carried within said recess, the recess restricting the movement of said pawl to in and out of locking engagement with the gears and means integral with said elongated flat portion to provide frictional contact between the pawl and the under-surface of one of said gears.

7. A pawl formed from a single piece of metal having an elongated flat portion and an upstanding wedge-shaped portion, said wedge-shaped portion being formed with a gear tooth riding face and a gear engaging spur, said elongated flat portion being formed with an integral spring extension to project slightly above the surface of said elongated flat portion.

ELIS FEDOR CARLSTROM.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Country	Date
120,027	Switzerland	July 1, 1927