

April 8, 1969

U. GIGER

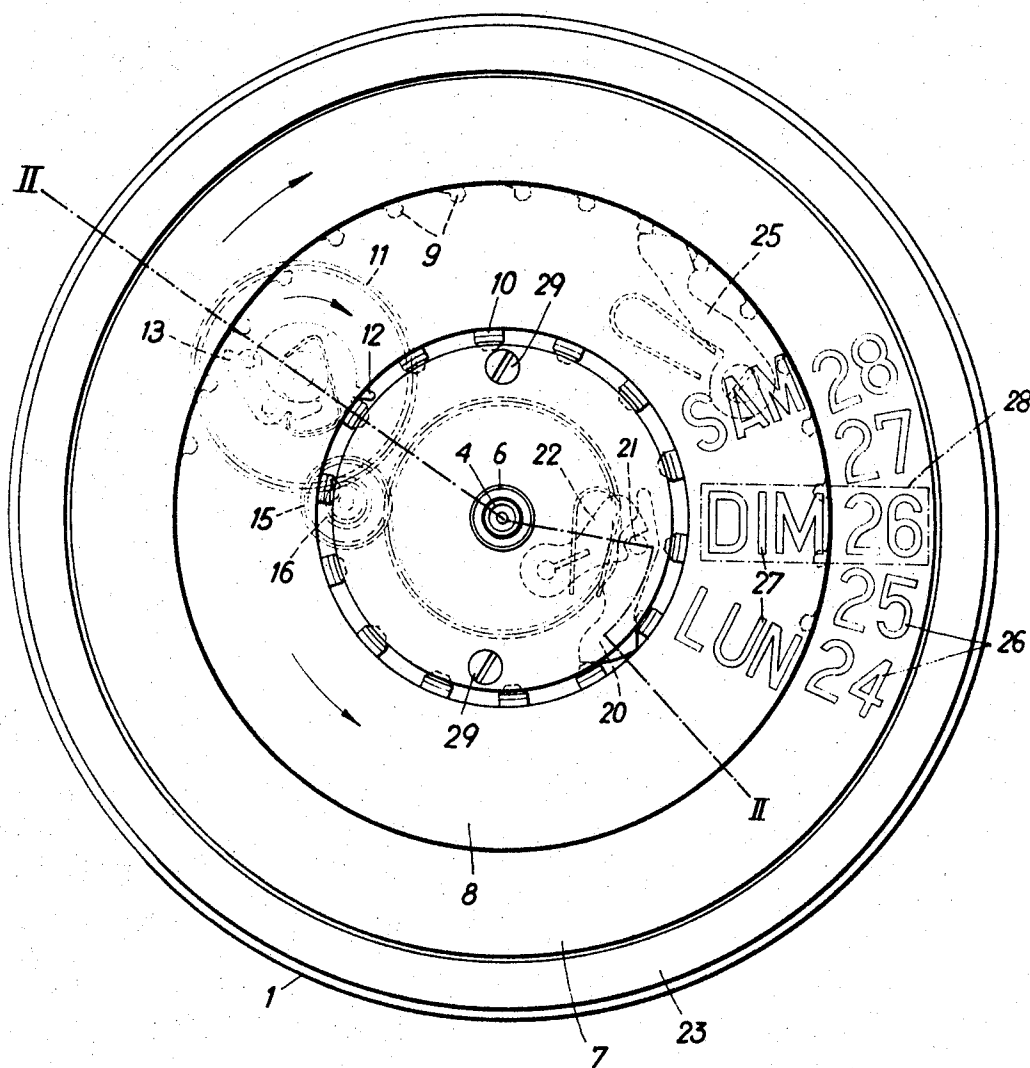
3,436,905

WATCH HAVING IMPROVED MEANS FOR DRIVING DATE
AND DAY-OF-THE-WEEK INDICATING MEMBERS

Filed Jan. 3, 1967

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FIG. 1



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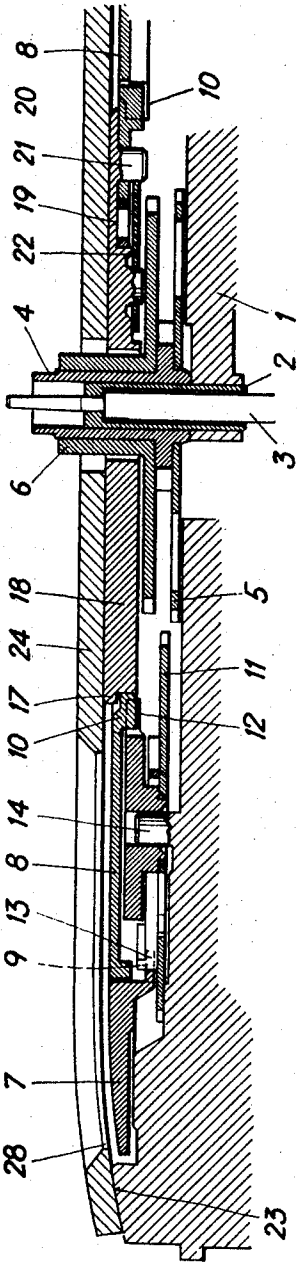
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FIG. 2



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WATCH HAVING IMPROVED MEANS FOR DRIVING DATE AND DAY-OF-THE-WEEK INDICATING MEMBERS

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11 Claims

ABSTRACT OF THE DISCLOSURE

Watch having date and day-of-the-week indicating members arranged concentrically in a common radial plane and a common driving means therefor arranged radially intermediate respective toothings on said indicating members.

The present invention is directed to a watch having an improved driving arrangement for driving the date and day-of-the-week indicating members.

In the known watches of this type, the date indicator is provided by a ring rotatably supported around the axis of the watch movement and the day-of-the-week indicator consists of a disc rotatably supported around the same axis. The initial letters of the days of the week are arranged radially on this disc. In order that these letters can be written as large as possible, in some of the known watches the day of the week is even outside the date ring, in which case, the surface bearing the date and day-of-the-week indications no longer lie on the same plane, since the spokes of the day-of-the-week indicator which extend from the hub seated on the hour wheel must extend beyond the date ring. For driving the two indicators in known devices, the date ring is provided with an inner tothing and the day-of-the-week indicator carries a spider. The drive fingers and lock lever cooperating with said inner tothing and the spider are arranged therebetween so that the dial side of the movement plate is almost completely covered by the calendar mechanism and the dial can be supported only along the edge of the watch movement. The arrangement of such a calendar mechanism on a watch movement results, furthermore, in a considerable increase in the structural height of the movement.

An object of this invention, therefore, is to provide a driving arrangement for the date and day-of-the-week indicating members which is simpler in construction and considerably less bulkier than in known watches.

Generally, these and other objects of this invention are realized through the provision of date and day-of-the-week indicators which comprise concentric, internally toothed rings, radially adjoining each other, and through the provision of driving means for said rings which comprise fingers mounted on a common drive member located in the radial spacing between the two aforementioned toothings.

The present invention and its aforementioned as well as other objects will be better understood from the following detailed description of a preferred embodiment which is referred to the accompanying drawings, wherein:

FIGURE 1 is a top view on the dial side of a watch movement with the dial removed, and showing the arrangement of this invention;

FIGURE 2 is a partial section along the line II—II of FIGURE 1.

The movement of the watch shown is one with center second hand and indirectly driven minute and hour hands.

Therefore, a central sleeve 2 extends through the movement plate 1, said sleeve internally serving as support for shaft 3 of the center second hand and said sleeve externally supporting an outer sleeve 4 around which are supported the minute wheel 5 as well as the hour wheel 6.

The calendar mechanism of the watch shown comprises a date ring 7 and a day-of-the-week ring 8, which have an internal tothing 9 and 10, respectively. While the day-of-the-week ring is actuated by a finger 12 which is firmly connected with a drive wheel 11, a finger 13 in the form of a spring loaded pawl also is arranged swingably on the wheel 11 and cooperates with the tothing 9 of the date ring to advance same. The drive wheel 11 which is rotatably supported around a fixed pin 14 on the movement plate is itself so driven by the hour wheel 6 via a transmission gearing including wheel 15 and pinion 16 that the wheel 11 makes one revolution in twenty-four hours. The toothings 9 and 10 are formed on angularly bent portions of the rings 7 and 8 so as to assure the holding thereof in axial direction. Thus, the day-of-the-week ring 8 is held against axial displacement by the outer edge 17 of the disc 18 which is fastened to the movement plate 1 by screws 29. The date ring 7, in turn, is held against axial displacement in similar fashion by the outer edge of bridges, not shown, which lie below the day-of-the-week ring. The fixed disc 18 has a recess 19 in which there is arranged a spring loaded lock lever 20 which cooperates with the tothing 10 of the day-of-the-week ring 8. The lock lever 20 is swingably supported about a fixed pin 21 of the disc 18 and is held fast axially by a swivel plate 22. With the date ring 7 there also cooperates a spring loaded lock lever 25 supported on the movement plate.

For the arrangement of the calendar mechanism described, the movement plate 1 is countersunk in such a manner that it has at the edge around the date ring 7 a supporting surface 23 for the dial 24. In addition to the surface 23, the surface of the disc 18 also serves as support for the dial 24 so that the latter does not bind against the rings 7 and 8 even when its curvature does not exactly correspond to the shape of the movement plate 1.

When the rings 7 and 8 are in any one of their rest positions, a single date numeral 26 and a single day indication 27 will appear radially alongside each other in the window 28. It will be noted in FIGURE 1, that the drive wheel 11 rotates clockwise and drives the date member 7 clockwise while it drives the day member 8 counterclockwise. In order for the finger 12 to be able to advance ring 8, said finger must engage one of teeth 10 for approximately the same extent of angular rotation of wheel 11 as finger 13 engages tooth 9, and this means that the pitch or distance between teeth must be approximately equal for teeth 10 as for teeth 9. It will be noted from FIGURE 1, that date ring 7 includes thirty-one teeth, one for each day of the month, while day ring 8 includes fourteen teeth since ring 8 makes one complete revolution every fourteen days.

The rings 7 and 8 are adjustable with respect to each other in a simple fashion by turning the watch hands a short distance back and forth around the midnight reading. Upon each movement back and forth of the hands, the fixed finger 12 moves the ring 8 once forward and then again backwards, while the finger 13 moves the ring 7 only forward because upon the return movement of the hands, the finger 13 jumps over the next tooth of the ring 7.

The watch described has the advantage that the two rings of its calendar mechanism are driven by the same member 11. In the case of this watch, simplification resides in the fact that the same tothing 10 of the day-of-the-week ring simultaneously cooperates with the corre-

sponding drive finger 12 lying outside of said toothing and with the lock lever 22 lying within said toothing. For the dial there are, furthermore, afforded two possibilities of support, one on the edge and one in the center, the latter being simultaneously utilized for receiving a member of the calendar mechanism.

What is claimed is:

1. A watch having date and day-of-the-week indication means in which the two corresponding indications are visible radially alongside each other, comprising: two concentric and coplanar rotatable indicating rings, a first of which surrounds the second immediately adjacent to an outer periphery of the second, a toothing on an inner edge of the first and an inner toothing on an edge of the second radially spaced from the toothing on the first ring, a drive member rotatable about an axis located radially between the said toothings, respective fingers mounted on said drive member respectively drivingly engageable with each said toothing.

2. Watch according to claim 1, a first of said fingers being engageable with one of said toothings and being adapted to drive the corresponding indicating member in either of two opposite directions, a second of said fingers being engageable with the other of said toothings and being adapted to drive the corresponding indicating member in only one direction.

3. A watch having date and day-of-the-week indication means in which the two corresponding indications are visible radially alongside each other, comprising: two concentric and coplanar rotatable indicating members, a first of which is annular and surrounds the second, a toothing on the inner edge of the first and a toothing on an edge of the second radially spaced from the toothing on the first member, a drive member rotatable about an axis located radially between the said toothings, drive means on said drive member respectively drivingly engageable with each said toothing, said drive means being comprised by a fixed finger engageable with the toothing on one of said indicating members and a pivoted finger on said drive member engageable with the other of said toothings, said pivoted finger being adapted to drivingly engage said other toothing pursuant to rotation of said drive member in one direction and to jump over said other toothing pursuant to rotation of said drive member in the other direction.

4. Watch according to claim 3, the two toothings being axially displaced from each other so as to lie in different axially adjacent planes.

5. Watch according to claim 1, said first indicating ring being the date indication ring and its toothing comprising thirty-one teeth, said second indicating ring being the day-of-the-week indication ring and its toothing comprising fourteen teeth, said drive member being driven by the watch movement to rotate one revolution every twenty-four hours, and said drive member driving each said first and second indicating rings one tooth step thereof for each revolution of said drive member.

6. The watch of claim 5, said drive member being arranged to drive said first and second indicating rings in opposite rotative directions relative to each other.

7. A watch having date and day-of-the-week indication

means in which the two corresponding indications are visible radially alongside each other, comprising: two concentric and coplanar rotatable indicating members, a first of which is annular and surrounds the second, a toothing on the inner edge of the first and a toothing on an edge of the second radially spaced from the toothing on the first member, a drive member rotatable about an axis located radially between the said toothings, drive means on said drive member respectively drivingly engageable with each said toothing, said second indicating member also being annular, a fixed supporting disc surrounded by said second indicating member, and said disc upper surface extending to a plane above that of the second indicating member, a dial resting against the upper surface of said disc.

8. A watch having date and day-of-the-week indication means in which the two corresponding indications are visible radially alongside each other, comprising: two concentric and coplanar rotatable indicating members, a first of which is annular and surrounds the second, a toothing on the inner edge of the first and a toothing on an edge of the second radially spaced from the toothing on the first member, a drive member rotatable about an axis located radially between the said toothings, drive means on said drive member respectively drivingly engageable with each said toothing, including a fixed supporting disc radially inwardly of said second indicating member and protruding axially above the upper plane of said first and second indicating members, a dial resting against said disc and spaced from said first and second indicating members.

9. Watch according to claim 8, including a fixed supporting surface radially outwardly of said first indicating member, said dial having an outer circumferential portion resting against said surface.

10. Watch according to claim 8, an axially extending recess in the lower face of said disc, a locking lever pivotally mounted in said disc in said recess, said lever being engageable with the toothing on said second indicating ring.

11. Watch according to claim 1, including a dial supporting disc positioned within the inner periphery of said second ring, a locking lever pivotally mounted on said disc about a pivot axis which is circumscribed by said edge along which extends said toothing on said second ring, said locking lever and a one of said fingers both being engageable with the same said toothing on said second ring, said one finger being supported on said drive member at a point radially outward of said inner edge of said second ring.

References Cited

UNITED STATES PATENTS

2,757,507 8/1956 Boyles ----- 58-5

FOREIGN PATENTS

367,760 2/1963 Switzerland.

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