April 6, 1954 R. S. ISRAEL 2,674,085

TIME ZONE WATCH

Filed Oct. 8, 1952

FIG. 1

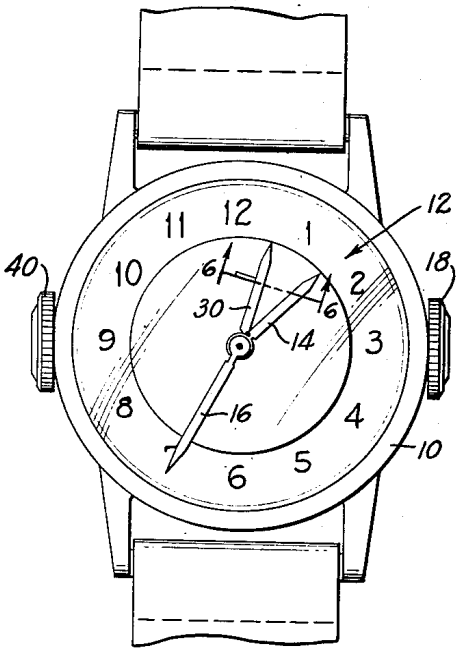
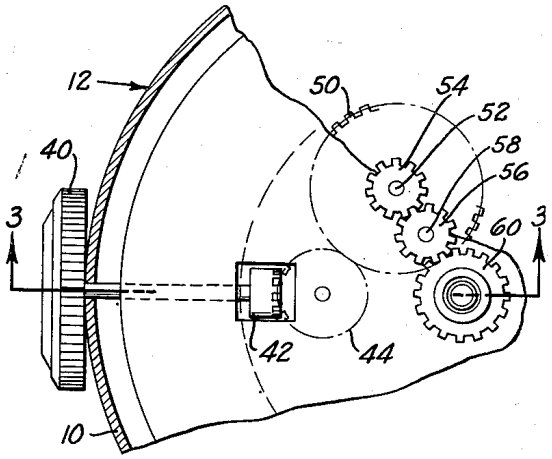


FIG. 2



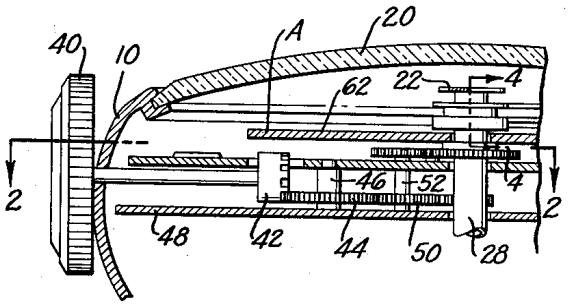
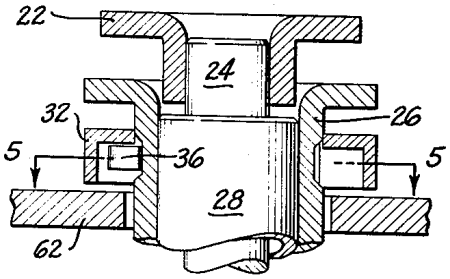


FIG. 3

FIG. 4



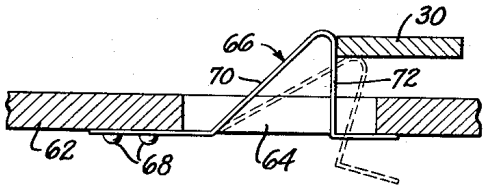


FIG. 6

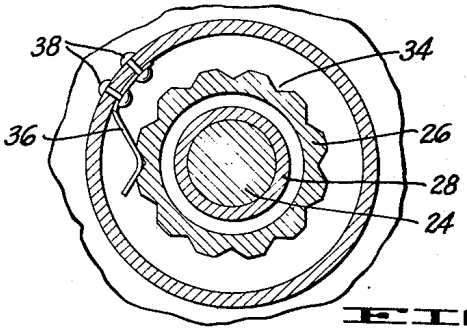


FIG. 5

INVENTOR.
Robert S. Israel

BY Naylor and Lassagne

ATTORNEY

Patented Apr. 6, 1954

2,674,085

UNITED STATES PATENT OFFICE

2,674,085

TIME ZONE WATCH

Robert S. Israel, Corte Madera, Calif.

Application October 8, 1952, Serial No. 313,729

3 Claims. (Cl. 58—80)

1

This invention relates to time keeping devices, and more particularly to a watch embodying novel means for visually indicating the difference in time between a given time zone in which the watch wearer may be temporarily located and the time zone in which he, for example, resides.

An object of the invention is the provision in a time-piece, such us a wrist watch, of a second, or auxiliary, hour hand and mechanism for setting this hour hand with respect to the main hour hand and for clutching the auxiliary and main hour hands together for joint movement.

The essential advantage of the watch of the invention is that the wearer thereof may determine at a glance what time it is in a time zone in which he is temporarily located while maintaining the main hands of his watch at the setting they had for his home time zone.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the drawing forming part of this specification, and in which:

Figure 1 is a plan view of a wrist watch embodying the invention;

Figure 2 is an enlarged detail view taken along lines 2—2 of Figure 3 and showing the speed reducer gear train and setting stem system for the auxiliary hour hand;

Figure 3 is a view in section taken along lines 3—3 of Figure 2;

Figure 4 is an enlarged view in section taken along lines 4—4 of Figure 3;

Figure 5 is a view in section taken along lines 5—5 of Figure 4 showing the clutch connection between the main and auxiliary hour hands; and

Figure 6 is an enlarged view taken along lines 6—6 of Figure 1.

Referring to the drawings, the wrist watch of Figure 1 comprises a case 10, a time face 12, a main, or regular, hour hand 14, a minute hand 16, a winding stem 18 adapted to set the hands 14 and 16, and a crystal 20 secured to the top of case 10. The minute hand 16 is secured to a hub 22 which in turn is secured to a pinion shaft 24, while the regular hour hand 14 is secured to a hub 26 which in turn is secured to a hollow pinion shaft 28 which is concentrically disposed with respect to pinion shaft 24. The pinion shafts 24 and 28 are driven by a conventional watch mechanism, not shown.

The watch is provided with an auxiliary hour hand 30 secured to a hub 32 which is freely sleeved on the main hour hand hub 26 for relative rotative movement with respect thereto, but which is secured to the hub 26 in such manner as

2

to prevent any free vertical movement between the two hubs.

Means are provided for frictionally connecting the hub members 26 and 32 together so that the hour hands 14 and 30 move conjointly, said means comprising twelve equi-spaced and equi-sized notches 34 formed in the periphery of hub 26, and a spring leaf detent 36 secured, as by rivets 38, to the hub 32 and yieldingly engageable within one of the notches 34 to clutch the hubs 26 and 32 together.

The watch further embodies means for adjustably setting the auxiliary hand 30 with respect to the main hand 14 by rotating the hub 32 with respect to hub 26 to bring the detent 36 into engagement with a predetermined one of the twelve notches 34, thus indicating a time differential between the hour hands 14 and 30, of from one to twelve hours. A preferred form of such adjustment means comprises: An auxiliary stem 40 rotatably mounted in casing 10 and carrying at its inner end a drum gear 42; a gear wheel 44 in mesh with drum gear 42 and having its pinion hub 46 journalled for rotation between a plate member 48, constituting the upper of the two enclosure plates for the main watch mechanism, not shown, and time face 12; a gear 50 in mesh with gear 44 and mounted on pinion shaft 52 journalled in plate 48 and extending through time face 12; a gear 54 secured to pinion shaft 52 above time face 12; gear 56 in mesh with gear 54 and freely rotatable on pin 58 fixedly secured to time face 12; gear 60 in mesh with gear 56, freely sleeved on pinion shaft 28, and fixedly secured to the underside of a false face 62 which is also freely sleeved on pinion shaft 28. Rotative movement of auxiliary stem 40 imparts a rotative movement to false face 62 through the gear train described.

The false face 62, so called because it serves to mask from view the underlying elements of the gear train and auxiliary stem system which would otherwise be exposed to view because they either extend through or are disposed above time face 12, is provided with a thin slot 64. Extending through this slot into the path of movement of the auxiliary hour hand 30 is a clutch element 66 in the form of a resilient finger, said finger being secured to the underside of false face 62, as by stud 68, and having a camming face 70 and a clutch face 72.

When the false face is rotated in a clockwise direction, with reference to Figure 1, with respect to the auxiliary hour hand 30, the clutch face 72 of resilient finger 66 is brought into engagement

with the hand 30, and further movement of the false face in the same direction is effective to move the hand 30 with respect to the regular hour hand 14 against the lesser opposing force provided by the engagement of clutch detent 36 of the auxiliary hour hand hub 32 with a notch 34 of the main hour hand hub 26. In this manner, the auxiliary hour hand is set at a predetermined position with respect to the main hour hand so as to indicate from one to twelve hours time difference between the settings of hands 14 and 30.

As the auxiliary hand moves conjointly with the main hour hand it traverses the resilient finger 66 by engaging the camming surface 70 of the finger to cam the finger downwardly to the dotted line position shown in Figure 6. The resistance to movement of hand 30 offered by the camming surface 70 of the finger is not sufficient to break the clutch connection between the two hour hands constituted by detent 36 and a notch 34. The path of movement of the main hour hand 14 is disposed above the resilient finger 66.

From the foregoing description of the time zone watch of the invention and its mode of operation, it will be seen that I have provided a novel mechanical arrangement of parts which very simply adapts an auxiliary hour hand to be adjusted with respect to the main hour hand of the watch and to be coupled with the main hour hand for joint movement therewith. While a specific and preferred embodiment of the watch has been shown and described, it is to be understood that all substantial equivalents thereof are within the spirit and scope of the invention.

What is claimed is:

1. In combination with a timepiece having a casing, a time face, concentrically mounted hour and minute indicating hands, and means for driving said hands; an auxiliary hour hand concentrically mounted with respect to said hour and minute hands, friction clutch means for connecting said hour and auxiliary hour hands together so that the included angle therebetween is a multiple of 30°, a disc concentrically positioned with respect to said hands and mounted within said casing beneath said auxiliary hand and above said time face for rotative movement, a resilient finger carried by said disc and disposed in the path of movement of said auxiliary hand, said finger being operable upon rotative movement of said disc in one direction with respect to said auxiliary hand to move said auxiliary hand in relation to said hour hand by overcoming said friction clutch connection between said hands, said auxiliary hand being operable during movement thereof in the same direction with respect to said disc to cam said finger out of its path of movement, and means for rotating said disc comprising an externally accessible rotatable stem carried by said casing and gear train means disposed within said casing interconnecting said stem and disc.

2. The combination set forth in claim 1, with at least a portion of said gear train means extending through and disposed above said time face, said disc being in overlying relation to said portion of said means to mask said portion from view.

3. A time zone watch operable to indicate the differential in hours between one time zone and any selected one of the remaining time zones comprising a casing, a time face disposed therein, a pinion shaft extending through said face, a hub fixed on said pinion shaft, an hour hand secured to said hub, drive mechanism for said pinion shaft, a second hub concentrically disposed with respect to said pinion shaft, an auxiliary hour hand secured to said second hub, friction clutch means securing said hubs together for conjoint rotative movement, a rotatable disc member freely sleeved on said pinion shaft, means carried by said disc member providing a one-way connection between said disc member and auxiliary hand upon rotative movement of said disc member relative to said auxiliary hand, and means for rotating said disc member.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,378,085	Balch	May 17, 1921
1,419,029	Doll	June 6, 1922
2,461,599	Graef	Feb. 15, 1949