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SHAO-TANG LEE
WATCH FOR SIMULTANEOUSLY INDICATING TIME
IN TWENTY-FOUR TIME ZONES

3,557,546

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2 Sheets-Sheet 1

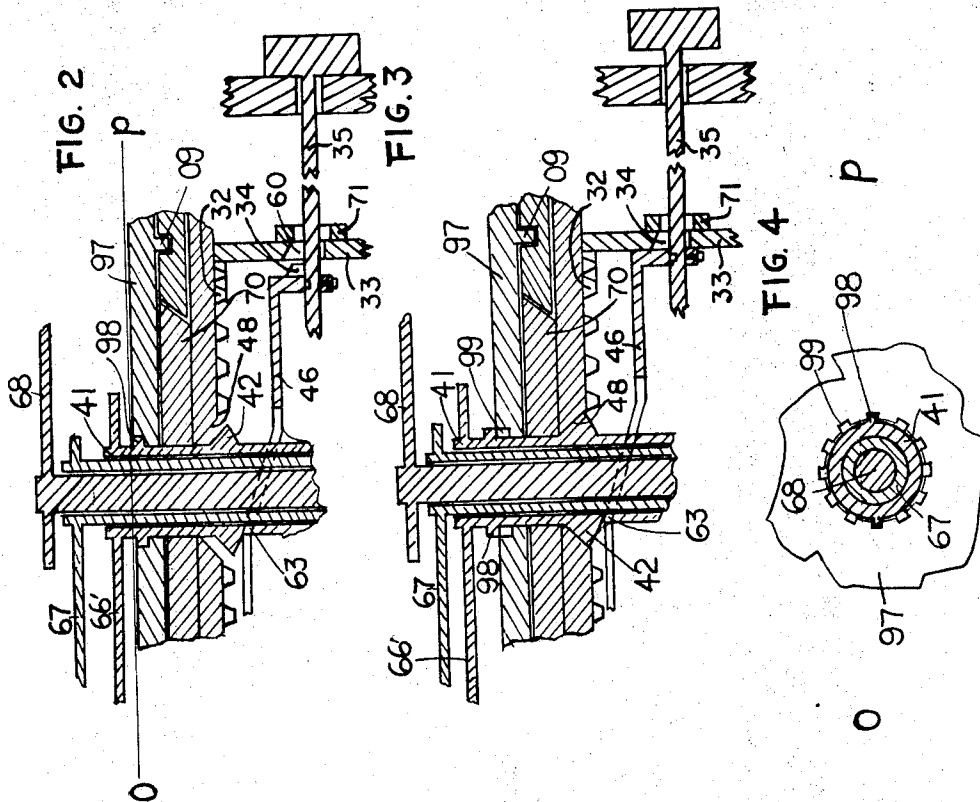
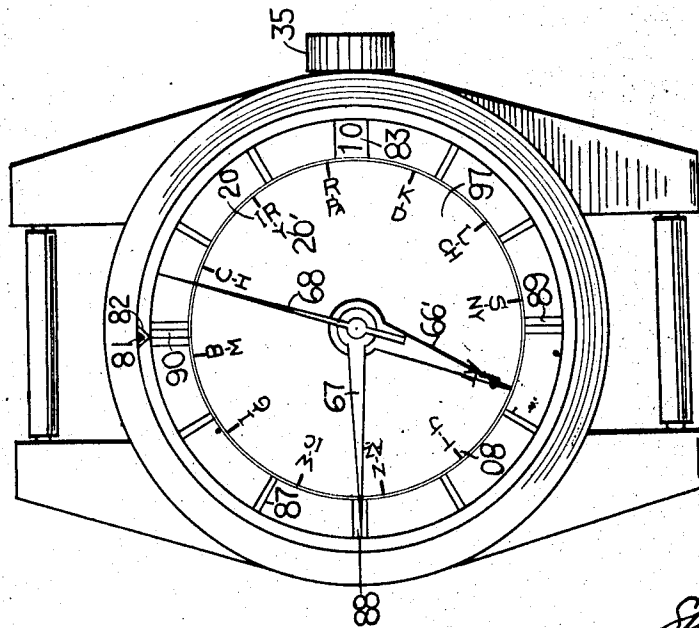


FIG. 1



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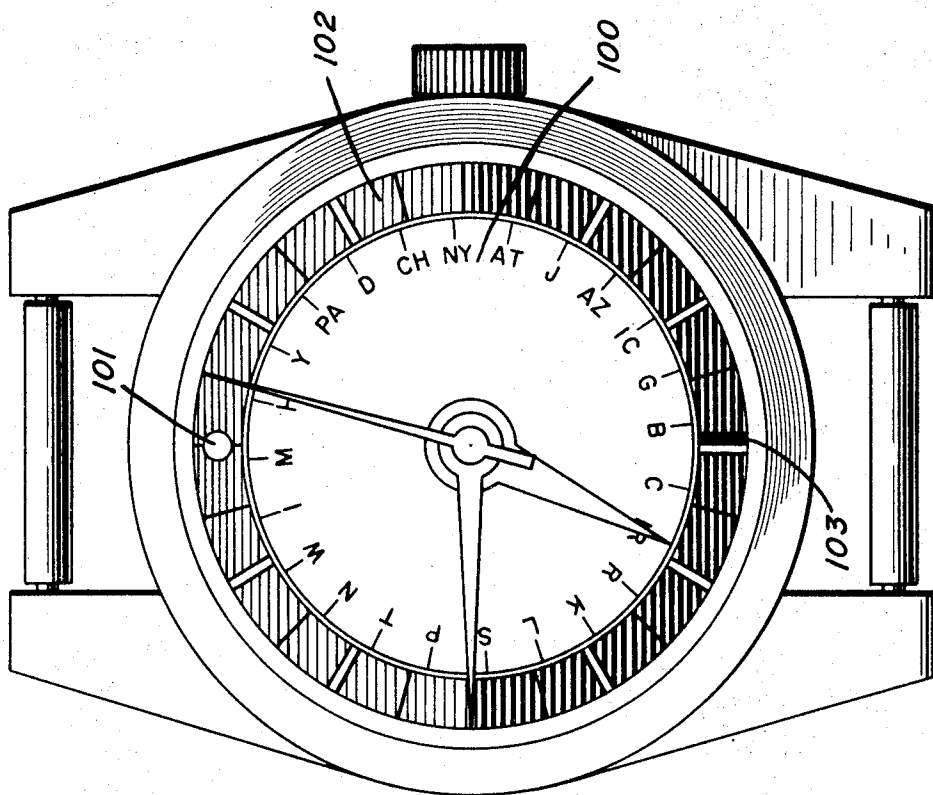


Fig. 5

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WATCH FOR SIMULTANEOUSLY INDICATING TIME IN TWENTY-FOUR TIME ZONES

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Continuation-in-part of applications Ser. No. 576,191, Aug. 29, 1966, now Patent No. 3,379,004, and Ser. No. 576,506, Aug. 29, 1966, now Patent No. 3,468,122, both being continuations-in-part of application Ser. No. 417,841, Dec. 11, 1964, now Patent No. 3,318,085. This application Jan. 12, 1968, Ser. No. 697,374

Int. Cl. G04b 19/22

U.S. Cl. 58—42.5

10 Claims

ABSTRACT OF THE DISCLOSURE

A multi-time zone watch including a time dial ring having hour designating indicia thereabout, a time zone disc received within said ring and mounted for coaxial rotation relative thereto, the disc having indicia about the periphery thereof designating the time zones about the search and orientated so as to relate in the manner in which the time zones relate to each other. A rotatably driven hour hand shaft is normally fixed to the disc for a driving of the entire disc in the manner of an hour hand with each particular time zone indicia on the disc acting in the manner of an hour hand for that particular zone as the disc rotates at the rate of an hour hand within the time dial ring. A driven minute hand is also provided so as to provide minute readings in connection with the hour reading in each time zone designated by the relationship of the particular time zone indicia to the hour designating indicia on the time dial ring. A separate hour hand can be fixed directly to the hour hand shaft, the hour hand shaft being disengageable from the time zone disc for a setting of the hour hand into alignment with a particular time zone indicia when such time zone is of primary concern to the user of the watch.

The instant invention, 24-time watch, is a continuation-in-part of applications—U.S. Ser. No. 576,191, filed Aug. 29, 1966, now Pat. No. 3,379,004, and U.S. Ser. No. 576,506, filed Aug. 29, 1966, now Pat. No. 3,468,122, both continuations-in-part of application Ser. No. 417,841, filed Dec. 11, 1964, now Pat. No. 3,318,085, and relates to a watch having specially designed universal circle (time dial ring), 24-time globe disc, a device for adjusting the hour hand separately and hourly, a rotatable central disc, and a separator. The last three items have been specified in detail in my above noted prior patents. A detailed reference to names of specific localities in the twenty-four standard time zones of the world is provided on the back of the watch. Once the disc, including indicating stripes indicia (or indicia pairs), minute hand and second hand are adjusted to indicate the local standard time of its owner's residing locality, all the times of the twenty four local standard time zones around the globe are indicated by the new watch. Namely, all the times of twenty four local standard time zones around the globe appear on a single 24-time watch.

FIG. 1 is a front face view of the new watch showing the details thereof;

FIGS. 2 and 3 are enlarged sectional views detailing the relative positions of the hour-sleeve, 24-time globe disc and the shaft-separator when the shaft-separator is at its normal position and its pulled position respectively;

FIG. 4 is a partial enlarged cross-sectional view of sleeves and 24-time globe disc at designated height 0-p in FIG. 2 showing the relationship between the hour-sleeve and 24-time globe disc.

Referring now more specifically to the drawings, in

this new watch, 24-time globe disc 97 is substituted for an hour hand and fixed on the hour hand sleeve or shaft 41 by projections 98 and incisions or recesses 99. The pairs of the representative indicia 20, 20' on the 24-time globe disc 97 and the indicating stripe 08 act as twelve (or twenty-four) hands for indicating times of twenty four local standard time zones around the globe respectively and simultaneously. The outer side indicia 20 are for indicating the localities of the eastern hemisphere and the inner side indicia 20' are for indicating the localities of local standard time zones of the western hemisphere. The names of the localities of twenty-four local standard time zones arranged in pairs or separately at the back of the new watch are for reference as in Pat. Nos. 3,318,085 and 3,379,004. Numerals 67, 68, 90, 89, 87, 83 and 35 indicate the minute hand, the second hand, triple stripes, double stripes, the single stripes, the calendar and stem winder as in the figures of my Pat. No. 3,379,004. In FIGS. 2, 3 and 4 the numerals 66', 67, 68, 41, 70, 48, 42 and 63(46) indicate the hour hand, the minute hand, the second hand, the hour hand shaft or sleeve, the central disc, the locking receiver, the upper locking collar and the shaft-separator respectively as in the figures of my U.S. Pat. No. 3,318,085. The numerals 97, 09, 99 and 98 indicate specially designed 24-time globe disc, short ribs, projections, and incisions or recesses in this new invention. In FIGS. 2 and 4 the shaft-separator is at its normal position and the ribs or projections 98 are fitted with incisions or recesses 99 and the 24-time globe disc 97 will be operated by the hour-sleeve 41. In FIG. 3 the shaft-separator is at its pulled position and the hour hand can be adjusted separately and hourly.

In FIG. 1 the new watch is indicating the times of twenty four local standard time zones around the globe simultaneously with the 24-time globe disc 97, the minute hand 67 and the second hand 68. Namely, the new 24-time watch in FIG. 1 indicates times of twenty four localities simultaneously and respectively as follows:

(1) Six o'clock forty five minutes and three seconds in the morning and afternoon of Peking and Atlantic local standard time respectively.

(2) Seven o'clock forty five minutes and three seconds in the morning and afternoon of Tokyo and Rio de Janeiro local standard time respectively.

(3) Eight o'clock forty five minutes and three seconds in the morning and afternoon of New Guinea and Azores local standard time respectively.

(4) Nine o'clock forty five minutes and three seconds in the morning and afternoon of Wake and Iceland local standard time respectively.

(5) Ten o'clock forty five minutes and three seconds in the morning and afternoon of Auckland and Greenwich local standard time respectively.

(6) Eleven o'clock forty five minutes and three seconds in the morning and afternoon of Berlin and Midway local standard time respectively.

(7) Twelve o'clock forty five minutes and three seconds in the afternoon and morning of Cairo and Honolulu local standard time respectively.

(8) One o'clock forty five minutes and three seconds in the afternoon and morning of Iraq and Yukon local standard time respectively.

(9) Two o'clock forty five minutes and three seconds in the afternoon and morning of Reunion and Pacific local standard time respectively.

(10) Three o'clock forty five minutes and three seconds in the afternoon and morning of Karachi and Denver local standard time respectively.

(11) Four o'clock forty five minutes and three seconds in the afternoon and morning of Lhasa and Chicago local standard time respectively.

(12) Five o'clock forty five minutes and three seconds

in the afternoon and morning Singapore and New York local standard time respectively.

In FIG. 1 the AM-PM-indicator 81 and calendar date 83 are indicating afternoon of 10th day of Greenwich mean time. Suppose the owner of this new watch needs mostly one local standard time in his every day living, an hour hand 66' may be used as shown in FIG. 1. If the owner of this new watch is travelling from Taipei to Chicago and arrives at the above mentioned time, the owner can change the hour hand to the position of L-Ch and its corresponding stripe 08 rapidly by pulling and turning the winder 35 as suggested in FIG. 3 and in accordance with the teaching in Pat. No. 3,318,085. The watch will then indicate the time—four o'clock forty five minutes and three seconds in the afternoon and morning of Chicago and L has a local standard time as a conventional three hand watch does and the AM-PM-indicator 81 and date calendar 83 for Greenwich mean time remains unchanged. In pulling the winder 35, the collar 42 is pressed or cammed upwardly by the bent part 63 of the separator 46 into engagement with the locking receiver 48 of the disc 70 for a friction joining thereof. A gear track having depending teeth 32 is provided about the undersurface of the disc 70, these teeth meshing with the teeth of a gear wheel 33. The gear wheel 33 is mounted about the stem by member 71. When the winder 35 is pulled, a key or lug 34 thereon engages in an incision or recess 60 in the gear so as to enable a turning of the gear 33 upon a turning of the winder 35. This in turn causes a rotation of the disc 70 and, through the engaged collar 42 and receiver 48, a rotation of the hour hand sleeve or shaft 41 independently of the disc 97 from which it has been disengaged. This construction and operation has been disclosed and detailed in applicant's Pat. No. 3,318,085.

Further, while a twelve hour watch has been described, as in FIG. 5, it will be appreciated that a twenty four hour watch can similarly be provided, this of course requiring a setting up of the indicia of twenty four localities on the 24-time globe disc 100 as appeared in FIG. 1 of Pat. No. 3,318,085 and arranging the names as in FIG. 2 of U.S. Pat. No. 3,318,085. The indicia and names of twenty four localities can be written about the periphery of the disc 100 with a transparent center exposing the o'clock numerals. The number of incisions 99 will be twenty four in this twenty four o'clock watch instead of twelve as shown in FIG. 4. In this twenty four hour watch a sun mark 101 will be at the top of the time dial ring 102 instead of the numeral 12. Light and dark oblongs 103 will be provided at the bottom of the same ring 102. A light sky blue color will be used on the upper half of the ring 102 for indicating day time, and a dark sky blue color will be used on the lower half of ring 102 for indicating night time. Once the watch is adjusted, the globe disc 100 will always maintain a constant relationship similar to that of the globe with the sun.

Since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to exact construction and operation shown and described, accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of invention.

What is claimed as new is as follows:

1. In a multi-time zone watch, a time dial ring having hour designating indicia thereabout, a time zone disc mounted for coaxial rotation relative thereto, an elongated rotatably driven shaft extending coaxially relative to

said disc, means engaging said disc with said shaft for a rotational driving of said disc with said shaft, and means for selectively disengaging said shaft from said disc for enabling a rotatable movement of the shaft independently of the disc.

2. The construction of claim 1 wherein said shaft constitutes an hour hand shaft whereby the disc engaged therewith rotates at the rate of an hour hand.

3. The construction of claim 2 wherein said shaft extends coaxially through said disc, said means engaging said disc with said shaft comprising first interlocking means on the upper portion of said disc about said shaft and second interlocking means on said shaft generally above said disc and in engagement with the first interlocking means, said means for selectively disengaging said shaft from said disc effecting the disengagement by an elevating of said shaft relative to said disc for a vertical separation of said second interlocking means from said first interlocking means.

4. The construction of claim 3 wherein said first interlocking means comprises a series of recesses in the top of the disc arranged about the shaft and radiating outwardly therefrom, said second interlocking means comprising at least one outwardly projecting rib on said shaft engageable selectively in said recesses.

5. The construction of claim 4 wherein the number of recesses in said disc relates to the number of time zones about the earth.

6. The construction of claim 5 wherein the disc includes indicia designating the time zones about the earth and orientated so as to relate in the manner in which the time zones relate to each other.

7. The construction of claim 6 including a minute hand overlying the disc in spaced relation thereabove, and a rotatably driven minute hand shaft secured thereto and extending coaxially with the hour hand shaft and rotatable independently thereof.

8. The construction of claim 7 including an hour hand fixed to said hour hand shaft between the disc and the minute hand for movement with the hour hand shaft.

9. The construction of claim 7 wherein said means for selectively disengaging said shaft from said disc includes an enlarged collar-like portion mounted on said hour hand shaft in spaced relation below said disc, and a laterally sliding separator positioned beneath said collar and engaged therewith, said separator including an upwardly offset portion thereon whereby upon a lateral sliding of the separator a vertically upward shifting of the collar, and hence the hour hand shaft, will be effected, this in turn disengaging the shaft from the disc for an independent rotation thereof.

10. The construction of claim 2 wherein the disc includes indicia designating the time zones about the earth and orientated so as to relate in the manner in which the time zones relate to each other.

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