

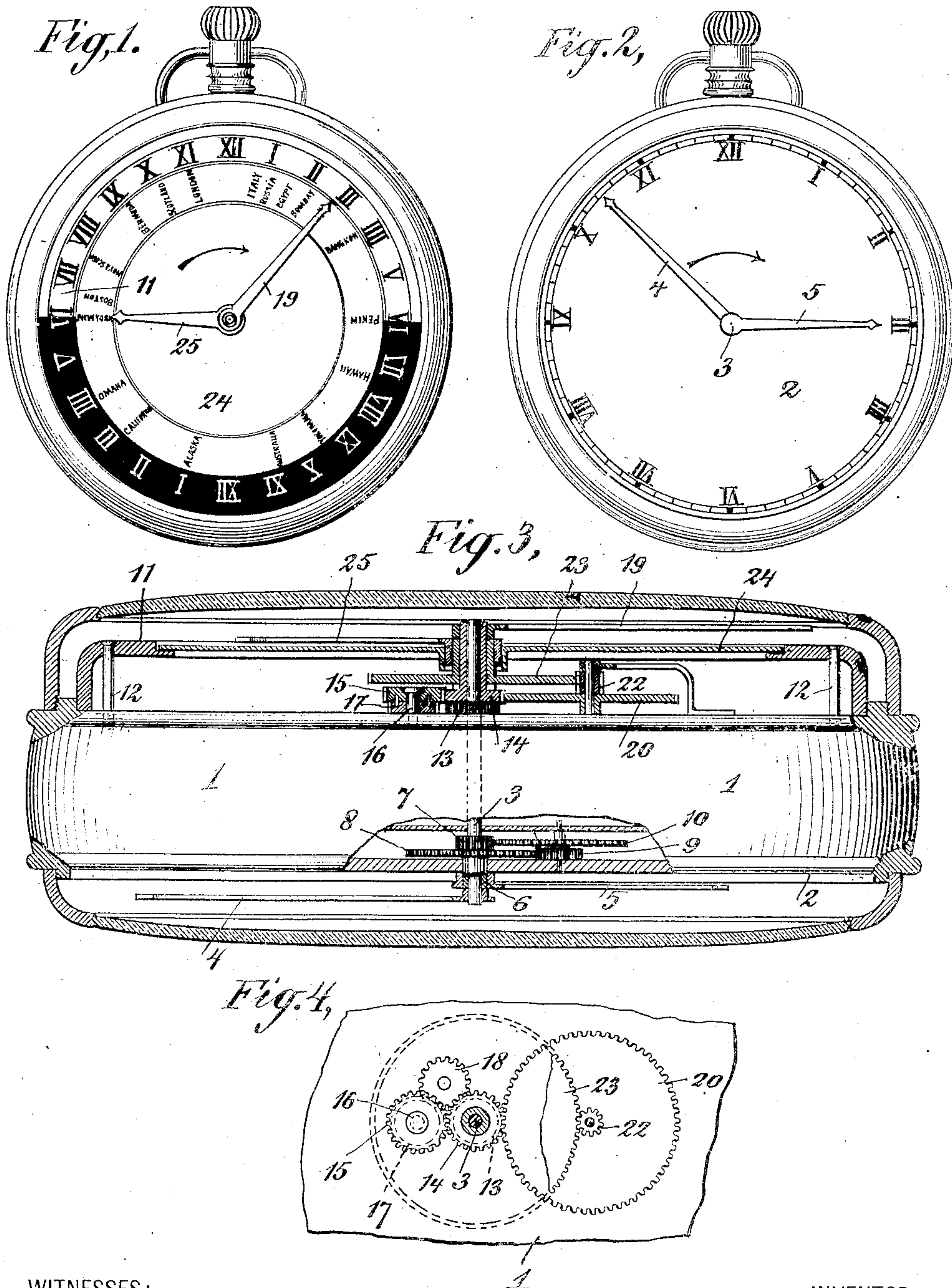
No. 701,853.

Patented June 10, 1902.

C. E. DAVIS.
GEOGRAPHICAL TIMEPIECE.

(Application filed Feb. 18, 1901.)

(No Model.)



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GEOGRAPHICAL TIMEPIECE.

SPECIFICATION forming part of Letters Patent No. 701,853, dated June 10, 1902.

Application filed February 18, 1901. Serial No. 47,889. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. DAVIS, a citizen of the United States of America, and a resident of New York city, county and State of New York, have invented certain new and useful Improvements in Geographical Timepieces, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in geographical timepieces, and particularly to watches having dials upon their opposite faces.

My invention consists in providing a timepiece with dials upon opposite faces thereof, one of the dials being divided off into the twelve hours of the day or night and having the ordinary minute and hour hands for use in connection therewith and the other of said dials divided off into the twenty-four hours of the day and night and having a geographical disk on which is denoted various localities throughout the world, said disk adapted to make one revolution every twenty-four hours and to rotate in proximity to the said twenty-four-hour dial and preferably having a minute-hand to rotate in connection therewith.

The main object of my invention is to provide a simple and convenient form of timepiece by which the time at one locality may be told, as in watches of ordinary construction, and also in which the relative time may be told for other localities throughout the world.

A further object of my invention and one which is attained by the particular construction and arrangement of parts employed is to be able to connect my geographical time mechanism with timepieces of ordinary construction, such as are commonly in use.

To this end my invention comprises certain novel features of construction and combination of parts, as will hereinafter be more fully set forth.

I will now proceed to describe my invention with reference to the accompanying drawings and will then point out the novel features in claims.

In the drawings, Figure 1 is a face view of the obverse side of a timepiece embodying my

invention. Fig. 2 is a face view of the reverse side thereof. Fig. 3 is a side elevation, partially in central transverse section, of the same. Fig. 4 is a detail view of certain gearing employed.

The timepiece comprises the ordinary case 1 of a watch, having a stationary dial 2 upon one side thereof of ordinary form and which is divided off into the twelve hours of the day or night. A minute-spindle 3, deriving motion from the usual watch-spring and through the ordinary train of gears, (not shown,) makes one revolution for every hour, the direction of rotation being, as is usual, from left to right with respect to the stationary dial 2, or in the direction of the arrow in Fig. 2. A minute-hand 4 is secured to rotate with the minute-spindle 3 and indicates minutes upon the stationary dial 2 in the usual manner. An hour-hand 5 is secured to an hour-sleeve 6, loosely mounted upon the minute-spindle 3 and geared to rotate therewith by the ordinary train of reducing-gears 7, 8, 9, and 10, so that the said hour-hand 5 will rotate in the same direction as the minute-hand 4, but at one-twelfth the speed. The gear-wheel 7 is fastened upon the minute-spindle 3 and has a ratio of one to four with the intermediate gear-wheel 10. The intermediate gear-wheel 9 is secured to rotate with the intermediate gear-wheel 10 and has a ratio of one to three with the gear-wheel 8, which is mounted fast upon the hour-sleeve 6, and a ratio of one to twelve between the minute-spindle 3 and the hour-sleeve is thereby attained.

As so far described the mechanism is that of an ordinary timepiece, and the parts shown and described are merely intended to represent the parts of a timepiece of any ordinary or well-known construction. Upon the opposite face of the said timepiece I have secured a stationary dial 11, said dial being divided off into the twenty-four hours of the day and night. I have secured the said dial to the case of the watch by bolting-screws 12. I have extended the minute-spindle 3 through the rear face of the timepiece and have secured to rotate therewith a pinion 13, and I have loosely mounted upon the said minute-spindle another pinion 14, said pinion having an uprising sleeve connected therewith. The

said pinion 14 engages with an intermediate gear-wheel 15, mounted upon an independent stud 16, and secured to rotate with the said intermediate gear-wheel 15 is another intermediate gear-wheel 17. An idler gear-wheel 18 is independently mounted and meshes with the said intermediate gear-wheel 17 and the pinion 13, which is secured to the minute-spindle 3. The pinion 13, idler 18, and intermediate gear-wheel 17 are all of the same size as each other, as are also the pinion 14 and intermediate gear-wheel 15. The effect of this will be that the pinions 13 and 14 will rotate at the same rate of speed with respect to a fixed point, but in opposite directions.

A minute-hand 19 is mounted upon the sleeve of the pinion 14 and rotates therewith, and the said hand and sleeve will, by reason of the gearing just described, make one revolution per hour. The direction of rotation will be from right to left with respect to the twenty-four-hour dial 11, or in the direction of the arrow shown in Fig. 1. The pinion 14 meshes also with a gear-wheel 20, said pinion and gear-wheel having a ratio of one to three. The gear-wheel 20 carries with it a small pinion 22, which meshes with a gear-wheel 23, loosely mounted upon the sleeve of the pinion 14. The ratio of the pinion 22 and the gear-wheel 23 is as one is to eight. The gear-wheel 23 will hence rotate in the same direction as the pinion 14, but will make but one revolution for every twenty-four revolutions made by the said pinion 14. The pinion 22 carries a geographical disk 24, which is secured to rotate therewith, and the said geographical disk has denoted thereon various localities throughout the world. The gear-wheel 23 also preferably carries an hour-hand 25, which is secured to rotate therewith and which will be initially set with respect to the geographical disk opposite the point at which is denoted the locality at which the timepiece is to be used. Fig. 1 shows the said hand registering with the words "New York" upon the disk 24, the watch illustrated being intended for use in New York.

The geographical side of the timepiece—namely, that side which is illustrated in Fig. 1 of the drawings—will indicate the time for various localities throughout the world, such time being read by noting the hour and fractions of the hour opposite that point upon the disk 24 at which is denoted the locality at which it is desired to read the time. The hour and fractions of the hour at such point will denote the time at that locality with respect to the time indicated by the hour-hand 25. Upon turning the watch around the time may be read upon the dial 2 in the ordinary manner.

If desired, the time indicated upon the dial 2 may represent the time in one locality, while the time indicated by the hand 25 with respect to the dial 11 may represent the time in some other locality, and the relative times in the various other localities will be repre-

sented with relation to the time at the locality designated by the hand 25.

By my construction and arrangement of parts it will be seen that I am enabled to convert an ordinary timepiece of the watch type to a geographical timepiece by merely removing the back cover, lengthening the minute-spindle, and adding the gearing, dial, disk, and hands, as shown and described. All the added parts by reason of their construction and arrangement are placed outside the ordinary back of the watch, and the interior works of the timepiece are not deranged, nor do they require to be specially constructed. I am thus enabled to convert a timepiece of ordinary construction into a geographical timepiece with a small amount of trouble and expense.

It is obvious that various modifications and changes may be made in the construction shown and above particularly described within the spirit and scope of my invention.

What I claim is—

1. In a geographical timepiece, the combination with two fixed dials upon opposite faces thereof, one of said dials divided off into the twelve hours of the day or night, and the other of said dials divided off into the twenty-four hours of the day and night, of hour and minute hands for the twelve-hour dial, driving mechanism for driving the same, a geographical disk arranged to rotate in proximity to said twenty-four-hour dial, and a reversing gear-chain driven from the driving mechanism of the hands of the twelve-hour dial and driving said geographical disk adapted to drive the same at half the speed of the hour-hand of the twelve-hour dial, and composed entirely of continuous spur-gears whereby it is adapted to transmit motion continuously from said driving mechanism to the geographical disk, and to rotate the same in the opposite direction to the hands of the twelve-hour dial.

2. In a geographical timepiece, the combination with two fixed dials upon opposite faces thereof, of a minute-spindle, a pinion secured to rotate therewith, a pinion loosely mounted upon said minute-spindle, two intermediate gear-wheels secured to rotate together, one of said intermediate gear-wheels meshing with one of said pinions, an idler gear-wheel, independently mounted, and meshing with the other said pinion and with the other intermediate gear-wheel, the ratio of said gearing being such that the two said pinions rotate at the same rate of speed with respect to a fixed point, but in opposite directions to each other, and a hand secured to rotate with each said pinion, one in proximity with the said dial on one face of the timepiece and the other in proximity to the said dial on the opposite face thereof.

3. In a geographical timepiece, the combination with two fixed dials upon opposite faces thereof, one of the said dials divided off into the twelve hours of the day or night, and the other of the said dials divided off into the

twenty-four hours of the day and night, of a minute-spindle adapted to make one revolution per hour, in a direction from left to right with respect to the twelve-hour dial, a minute-hand secured thereon in proximity to the said twelve-hour dial, an hour-sleeve mounted on said minute-sleeve and geared to rotate thereon at a ratio of one to twelve therewith, an hour-hand mounted on said hour-sleeve, a pinion secured to said minute-spindle, a pinion loosely mounted upon said minute-spindle, two intermediate gear-wheels secured to rotate together, one of said intermediate gear-wheels meshing with one of said pinions, an idler gear-wheel, independently mounted, and meshing with the other said pinion and with the other said intermediate gear-wheel, the ratio of said gearing being such that the two

said pinions rotate at the same rate of speed with respect to a fixed point, but in opposite directions to each other, a minute-hand secured to rotate with the pinion which is loosely mounted upon the said minute-spindle, and in proximity to the said twenty-four-hour dial, another hour-sleeve loosely mounted upon the axis of the minute-spindle, and geared to rotate with respect to the last-mentioned pinion at the ratio of one to twenty-four, and a geographical disk, having various localities denoted thereon, secured to rotate with said last-named hour-sleeve, and in proximity to the said twenty-four-hour dial.

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