No. 614,937. Patented Nov. 29, 1898.

C. F. DIETZ.

TIMEPIECE DIAL.

(Application filed Feb. 5, 1898.)

(No Model.)

Fig. 1.

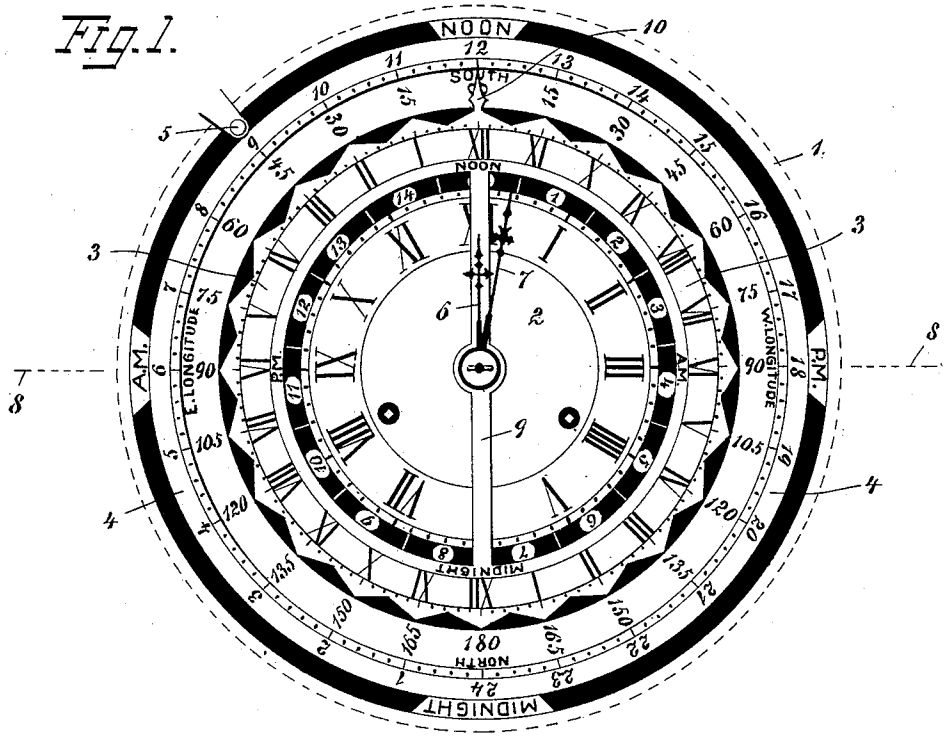


Fig. 2.

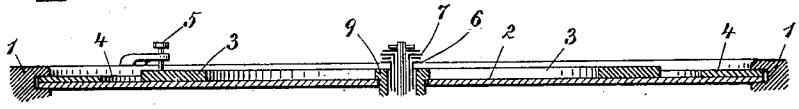


Fig. 3.

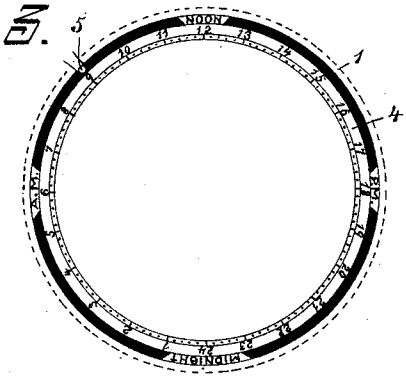
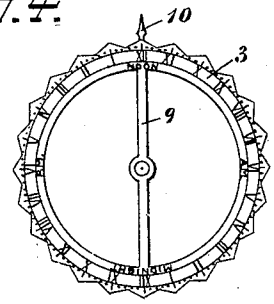


Fig. 4.



WITNESS:

Henry Graham

William Simpson

INVENTOR

Christopher F. Dietz

UNITED STATES PATENT OFFICE.

CHRISTOPHER F. DIETZ, OF NEW ORLEANS, LOUISIANA.

TIMEPIECE-DIAL.

SPECIFICATION forming part of Letters Patent No. 614,937, dated November 29, 1898.

Application filed February 5, 1898. Serial No. 669,272. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER FRIEDERICK DIETZ, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Universal Timepieces, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to timepieces provided with dials having a series of concentric suitably-graduated rings and adapted to show the time at any point of longitude, and is an improvement on my Letters Patent No. 328,112, dated October 13, 1885.

The said invention consists in the construction and combination of parts, substantially as hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 represents a front elevation of a dial constructed according to my invention. Fig. 2 represents a horizontal section of the same on the line 8 8 of Fig. 1. Fig. 3 represents a detail view of the outer dial-ring, which is movable by hand. Fig. 4 represents a similar view of the dial-ring which is driven by clockwork.

In the said drawings, 1 designates the annular dial-case. (Indicated by a dotted line in Fig. 1, but clearly shown in section in Fig. 2.) The fixed main dial 2, held within the said dial-case, is provided with a central opening, through which extends the tubular arbor 9, of large diameter, carrying a cross-bar 9^a, which extends diametrically across the central part of the face of dial *a* and carries a dial-ring 3, which is rotated over the face of the said dial by clockwork and carries an outwardly-extending pointer 10. The hour-hand 6 and the minute-hand 7 are mounted in the usual way on concentric arbors and driven by ordinary timepiece-clockwork. These arbors extend through the tubular arbor 9, and the said hands travel over the dial 2. Another ring 4, not operated by the clockwork, but movable by hand, is arranged on the face of the dial next to the casing 1 and fastened by an overhanging set-screw 5 in any position to which it may be turned. The face of this outer ring is graduated with the Arabic numerals "1" to "24," the word "Noon" being marked on it opposite "12," the word "Midnight" being marked on it opposite "24," and "A. M." and "P. M." being marked, respectively, on the two segments thus formed. Parallel to this series of graduations another and inner circle of graduations on the fixed dial-plate 2 is divided into three hundred and sixty degrees, indicated by numerals at intervals of fifteen, beginning at the top and extending therefrom in two reverse series, each of one hundred and eighty degrees, which meet opposite the "24" mark of the outer circle of graduations and have the mark "180" in common. The word "South" is marked at the top point of this series, the word "North" at the bottom, "W. longitude" at the right, and "E. longitude" at the left. The rotating ring 3 has two successive series of hour and minute graduations, running from right to left, each corresponding to the twelve hour graduations of an ordinary clock-dial, but being contained in half the space. Concentrically outside of this circle of graduations is a blank band on the said ring, having the words "Noon" and "Midnight" opposite to the characters "XII" on opposite sides of the circle and the letters "A. M." and "P. M." midway in the intermediate semicircles. That part of the fixed dial-plate 2 has the usual clock-dial graduations for hours and minutes of one-half the day, the series proceeding from left to right in the ordinary manner. Outside of this is another circle of graduations, sixty in number, beginning opposite the fixed mark "XII" of the said dial, each four degrees being indicated for convenience by a numeral "1, 2, 3," &c., proceeding from left to right, up to "15," which is omitted, as it corresponds to the starting-point. All of these concentric circles of graduation make up one composite dial to the eye.

The hands 6 and 7 are driven by the clockwork of an ordinary timepiece, and the ring 3 is driven by the additional train of wheels shown in Figs. 2 and 3 of my aforesaid patent, to the specification of which reference is hereby made as explaining arrangement, connection, and action thereof. The said ring 3 and its pointer, like the hand *f* of the said patent, make one revolution in twenty-four

hours. When the hour-hand is turned by hand in setting, the train of gearing will cause the ring 3 and pointer 10 to turn likewise.

To set the clock for any degree of longitude — for example, seventy-five degrees west—I proceed as follows: It being known that the hour is eight p. m. at such point of longitude when it is noon at the point of observation, the outer ring 4 is turned to the right until the word "Noon" thereon is opposite the number "75" marked on the dial 2. The hour-hand 6 is then turned until both it and the pointer 10 point at the number "8" on the said ring 4.

The operation of my improved universal timepiece is as follows: It being accurately set for the longitude of Washington, for example, and the observer desiring to set it at 11.30 a. m. for longitude seventy-five degrees west he will first bring the hour and minute hand, the pointer 10 of the inner ring 3, and center of the word "Noon" of the ring 4 upon the same radial line with the zero-mark of longitude in the outer series of numerals marked on the main dial 2. He then turns the outer ring 4 until the center of the word "Noon" is on the same radial line with the mark "75 W. longitude" and clamps it by the set-screw 5 as thus adjusted. He then turns the minute-hand until the pointer 10 is in the same radial line with a point half-way between "11" and "12" on the outer dial-ring thus adjusted. The minute-hand will then be at the bottom of the circle. As the inner ring 3 will have been moved correspondingly with the movement of the hands, the relative positions of the series of twenty-four marks on the inner ring and of the said pointers will not have been changed. In consequence the hour and minute hands while traveling over the said dial will point out the number of hours and minutes since any chosen point of time within the past twenty-four hours. This indication is quite independent of longitude and gives the correct interval by universal time. By the addition of these twenty-four numerals in hour-indicating circular series to the clockwork-driven inner ring and by making the outer ring circularly adjustable and graduated both for hours and for longitude, as shown, I am enabled to easily set the clock for any longitude, while at the same time retaining undisturbed universal-time indications. If the rings were fixed and only the pointers movable, as in my former patent, hereinbefore mentioned, the timepiece would show only the time of one longitude until set for another longitude and there would be no way to ascertain the universal time except by a tedious and uncertain exercise of memory with addition and subtraction.

The train of wheels whereby the ring 3 is driven consists of a wheel of twenty-four teeth meshing with that wheel of the clock-train which makes two revolutions in twenty-four hours, a wheel of forty-eight teeth sleeved concentrically with the one first above mentioned and turning independently in contact with its face, and three intermediate wheels, one being of twenty-four teeth and the two others of forty-eight teeth each, for transmitting motion from one of said wheels to the other to drive the inner ring 3, the hub 9 of the latter being fast on the sleeve of the first-named wheel of forty-eight teeth and practically integral with the said wheel. As these parts and the construction and arrangement of the same, including the train of five wheels, may be found in my hereinbefore-mentioned patent, where they are used for driving the hand *f*, it has been deemed unnecessary to illustrate them again in the drawings of this application.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a timepiece adapted to show simultaneously the universal time and the time of any desired longitude, the movable ring 3 adapted to be driven by clockwork and to turn with the hour-hand in setting and provided with a pointer 10, corresponding in position to the said hour-hand as well as a series of twenty-four graduations running from "XII" to "I" in reverse order and duplicated, a concentric, circularly-adjustable ring provided with a circular series of graduations with numerals from "1" to "24," a fixed dial with the usual hour-marks and a concentric series of graduations for longitude arranged as described and the ordinary hour-hand and minute-hand traveling over the face of the dial substantially as set forth.

2. In a timepiece adapted to show simultaneously the universal time and the time of any desired locality, a movable ring 3, adapted to be driven by clockwork and to turn with the hour-hand in setting, and provided with a pointer 10, corresponding in position to the said hour-hand as well as a series of twenty-four graduations running from "XII" to "I" in reverse order and duplicated, a concentric ring, circularly adjustable by hand, provided with a circular series of graduations indicated by numerals from "1" to "24," a screw for clamping this ring in any position of such adjustment, a fixed dial having the usual hour-marks and a concentric series of graduations for longitude arranged as described and the hour-hand and minute-hand traveling over the face of the dial substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTOPHER F. DIETZ.

Witnesses:
THOMAS MCCARTY,
C. G. REBENTISCH.