

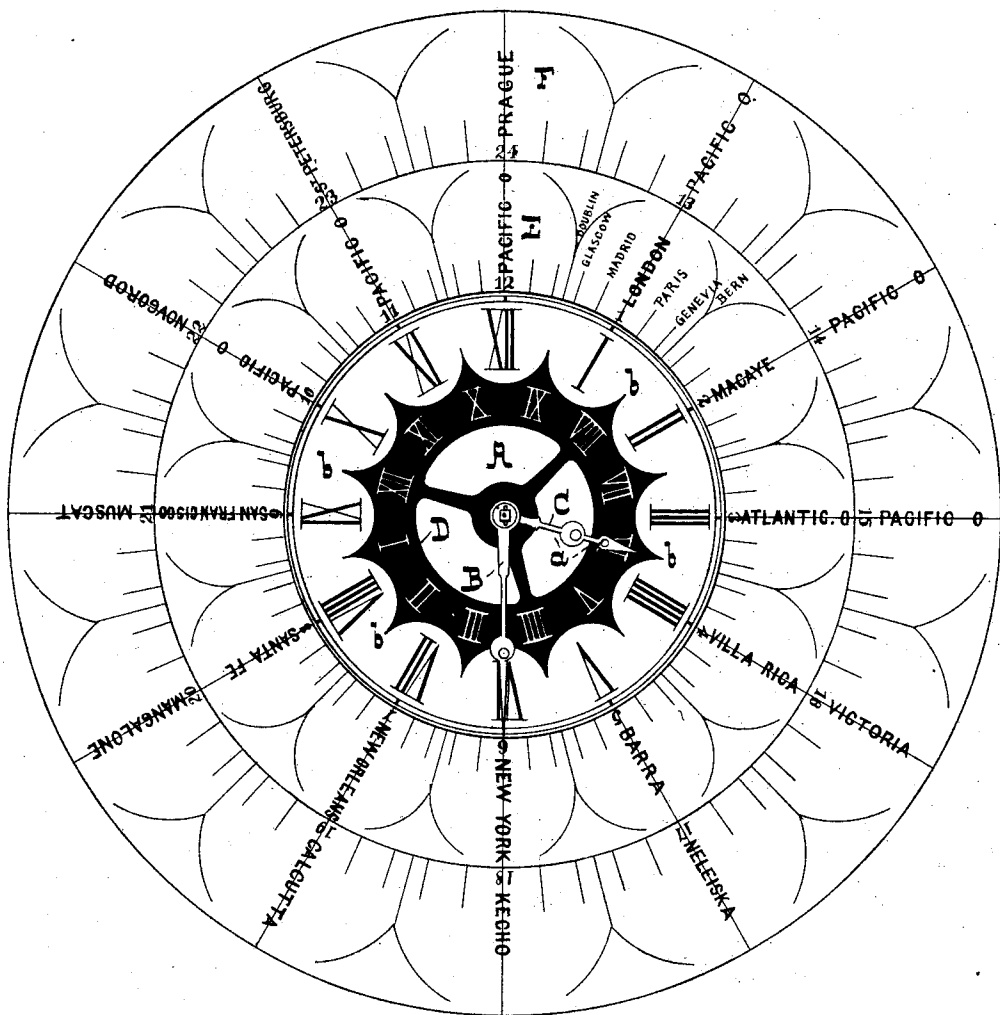
No Model.)

A. STAUBITZ.

CLOCK DIAL.

No. 372,642.

Patented Nov. 1, 1887.



-WITNESSES-

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UNITED STATES PATENT OFFICE.

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CLOCK-DIAL.

SPECIFICATION forming part of Letters Patent No. 372,642, dated November 1, 1887.

Application filed December 21, 1886. Serial No. 222,223. (No model.)

To all whom it may concern:

Be it known that I, ADAM STAUBITZ, of the city of Baltimore, in the State of Maryland, have invented certain Improvements in Clocks, of which the following is a specification.

The object of this invention is to construct a clock or watch in such manner that, the meridian of any city or place being known, the time at that place can be instantly ascertained by an inspection of the dial.

The said invention consists in combining with the clock-dial a second dial having numerals as in the dial first named, but which are reversed in position—that is to say, the numerals from one to twelve increase in an opposite direction. In other words, when the dials are placed in such relative positions that the numerals XII are together, the XI of one dial is opposite the I of the other. The second dial is attached in any suitable manner to the hour-hand of the clock, and revolves with it. Around the first dial is an annular extension thereof, which is divided into a number of equal spaces, preferably twelve, and these spaces are subdivided into any number of equal parts. The division of the dial into twelve equal parts is in consequence of dividing one-half of the surface of the earth into twelve meridians, and this arbitrary number is selected in order that it may correspond with one-half of the hours of the day, thus dividing the day of twenty-four hours into twelve hours day and twelve hours night. Around this first annular extension is a second extension, divided, like the first, into twelve equal parts, which denote the twelve meridians in the remaining portion of the globe. Consequently, if the hours indicated on the inner extension represent the hours of the day, those of the outer one denote the hours of the night, and vice versa.

In the further description of the said invention which follows reference is made to the accompanying drawing, forming a part hereof, and which is a front view of a clock-face constructed in accordance with my invention.

In the said drawing, A is the clock-dial, having the hours and minutes arranged thereon in the usual manner.

B is the minute and C is the hour hand.

D is the second or reversed dial, which is provided with hour and minute spaces and numerals corresponding with those on the first or

main dial; but, as before stated, the positions of the numerals are reversed in direction of increase from I to XII.

The second dial is adapted to revolve about the hollow stem carrying the hour-hand; but when the said dial is in operation it is secured by means of a pin or screw, *a*, to the said hand, so as to turn with it. I do not, however, limit myself to any particular means of fastening the hour-hand to the movable dial, as such attachment can be accomplished in a variety of ways. It is, however, preferred that the connection should be of such character that any change in the relative positions of this dial and the hour-hand can be effected easily and rapidly.

E is the inner annular extension before referred to, which is divided into twelve equal parts to represent one-half of the twenty-four meridians into which the surface of the earth is arbitrarily divided.

F is the outer annular extension, similarly divided to the inner one.

On the twelve division-lines of the inner annular extension are inscribed the names of important cities or places on such arbitrarily-selected meridians of one half of the earth's surface, and on the corresponding lines of the outer annular extension are marked important points on the other half of the globe.

Supposing the improved clock is to be used in the city of New York, which in the drawing is shown as situated on the sixth meridian, the hour-hand must be set on the numeral VI of the movable dial. The clock is now in condition, without further alteration, to give at a glance the time at any moment at any point or place mentioned on either of the extensions, or, in fact, at any other point or place, provided that its position with reference to one of the meridians shown in the drawing is known.

The operation is as follows: By reference to the drawing it will be seen that the time in New York is three hours and thirty minutes, and, say, in the afternoon. Then suppose it is desired to ascertain the time at that moment in London, which is on meridian 1 of the drawing, it is only necessary to see at what portion of the movable dial a line extending from the first meridian toward the center of the dial will strike the periphery of the same. This, it will appear, is at a point between the numer-

als VIII and IX, which gives the time as between those hours, and the minutes past or to the hour are the same as it is in New York—that is to say, thirty minutes past the hour.

5 The time in London is therefore eight hours and thirty minutes the same day, the difference in time being about five hours. At points that are not exactly on a meridian shown in the drawing the time will vary in proportion to
10 their distances from the nearest meridian. For instance, at Berne, which is on a line half-way between the first and second meridians of the drawing, the time is exactly seven o'clock, instead of eight hours and thirty minutes, as at
15 London.

It will be understood that it is not necessary for a place to be marked on the disks in order to ascertain the time thereat, it being only necessary to know the meridian.

20 In ascertaining the time in places on meridians beyond the twelfth, it will be understood that the difference in time will be more than twelve hours. Consequently, if it is day in New York it will be night at such places. As
25 an illustration of this, supposing it to be still three hours and thirty minutes p. m. in New York, which is on the sixth meridian, it will be three hours and thirty minutes a. m. at Kecho on the eighteenth meridian, and nine
30 hours and thirty minutes p. m. at Prague, which is on the twenty-fourth meridian of the drawing. It is not, however, absolutely necessary in ascertaining the time at London to note at
35 what point on the periphery of the rotative dial the first meridian-line is opposite, as it can be accomplished in another way, which is as follows: Note between which numerals on the fixed dial the numeral I of the rotative
40 dial, which corresponds to the meridian of London, is situated, and the minute-hand, as in the example, gives the proportion of the hour which has passed in minutes.

From the foregoing description it will be seen that the time at any point on the globe
45 can be readily and correctly ascertained at any moment without any adjustment of the various parts which constitute the clock-face.

If the clock is to be used in London instead of New York, the hour-hand will have to be
50 changed from the numeral VI of the movable dial to the numeral I; or, in other words, the hour-hand will in all cases have to be set to a number on the revoluble dial corresponding to the meridian of the place in which the clock
55 is situated, except under the conditions hereinafter described.

If desired, the meridians which are now shown as on the annular extension may be marked on a disk corresponding in size to the
60 inner extension, and either placed over it at the moment when the time of some place marked thereon is to be ascertained, or it may be made to slide underneath the under disk, with the names adapted to come or show
65 through slots in the upper disk; but I do not, however, confine myself to the particular arrangements shown and described of the disks

containing the meridian-lines, as they can be adapted in various other ways to indicate the hours of the day and night corresponding to
70 the meridian of the place.

In the foregoing I have referred to the clock-dial as being of ordinary description—that is to say, with the dial divided into twelve hours; but it is evident that the invention is equally
75 applicable to clocks in which the numerals extend from I to XXIV. With this modification in the clock-dial one meridian-disk only would be necessary, and it would of course be divided into twenty-four meridians, to corre-
80 spond to the number of hours marked on the dial. Further, I have described the improved clock as adapted for local uses only, and have stated that in the transfer of the clock from
85 New York to London the hour-hand would have to be changed from the numeral VI to I. From this it would appear that the hour-hand is absolutely necessary to the operation
90 of the invention, while really it is merely employed as a convenience to assist the observer in ascertaining the time at his station.

It is evident that in ships' chronometers and in watches carried by travelers it is practically impossible to be constantly changing
95 the position of the movable dial with reference to the hour-hand. I therefore, in ships' chronometers and the like, dispense with the ordinary hour-hand and secure the revoluble dial to the stem instead of it. It will then be
100 only necessary in ascertaining the time at any point or meridian to use a point on the periphery of the movable dial opposite to the meridian of the place sought, instead of the
105 end of the hour-hand. With this view I have constructed the movable or revoluble dial with points *b*, which are directly opposite the numerals.

I claim as my invention—

1. In a clock or watch, a fixed dial having thereon numerals arranged in the usual man-
110 ner—that is to say, so as to increase from left to right on the half-disk above the horizontal diametrical line—combined with a second dial having numerals arranged in a direction the
115 reverse or opposite of those of the first dial, and attached to the stem of the hour-hand of the clock, so as to move with it, substantially as and for the purpose specified.

2. In a clock or watch, a fixed dial having thereon numerals arranged in the usual man-
120 ner—that is to say, so as to increase from left to right on the half-disk above the horizontal diametrical line—combined with a second dial having numerals arranged in a direction the
125 reverse or opposite of those of the first, attached to the stem of the hour-hand of the clock, so as to move with it, and a disk which surrounds the first dial, having meridian-lines inscribed thereon, substantially as and for the purpose specified.

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Witnesses:

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