(No Model.) 3 Sheets—Sheet 1.

L. BÉGUELIN.

UNIVERSAL WATCH.

No. 345,406. Patented July 13, 1886.

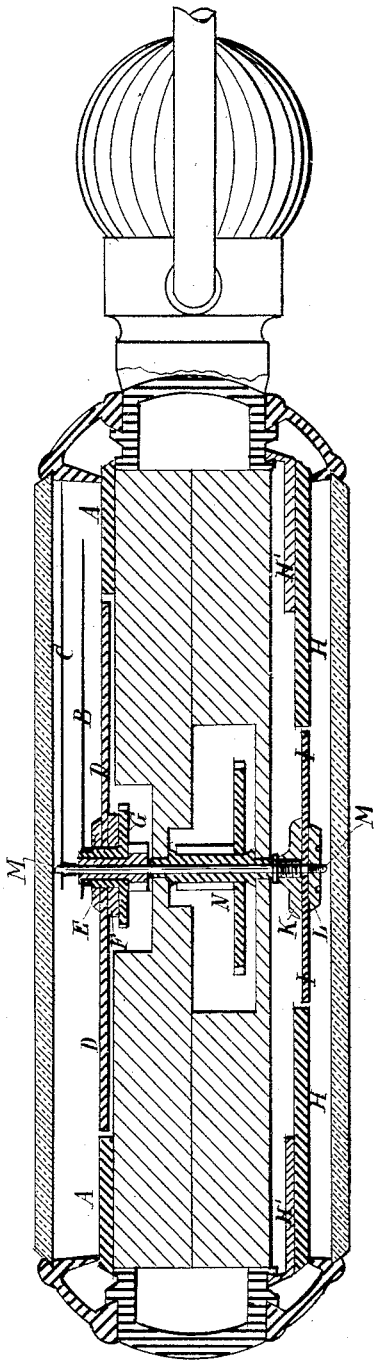


Fig. 1.

Witnesses
Chas. H. Smith
J. Stahl

Inventor
L. Beguelin
per Lemuel W. Serrell
atty

(No Model.)

3 Sheets—Sheet 2.

L. BÉGUELIN.

UNIVERSAL WATCH.

No. 345,406.

Patented July 13, 1886.

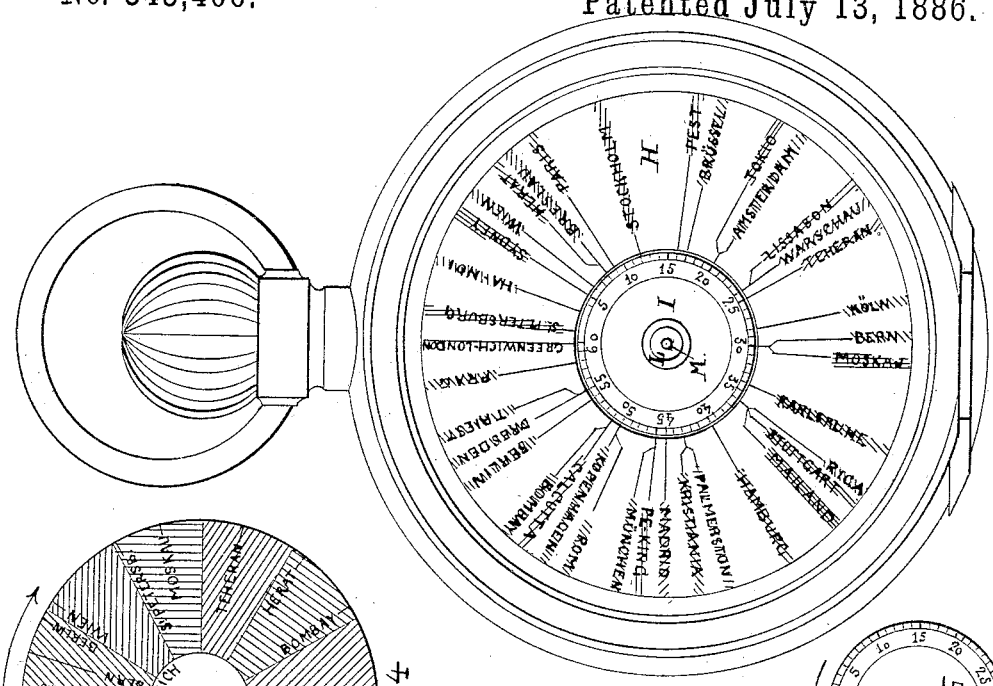


Fig. 3

Fig. 4

Fig. 5

Fig. 2

Witnesses

Chas. N. Smith

J. Stail

Inventor

L. Beguelin

per Lemuel W. Serrell

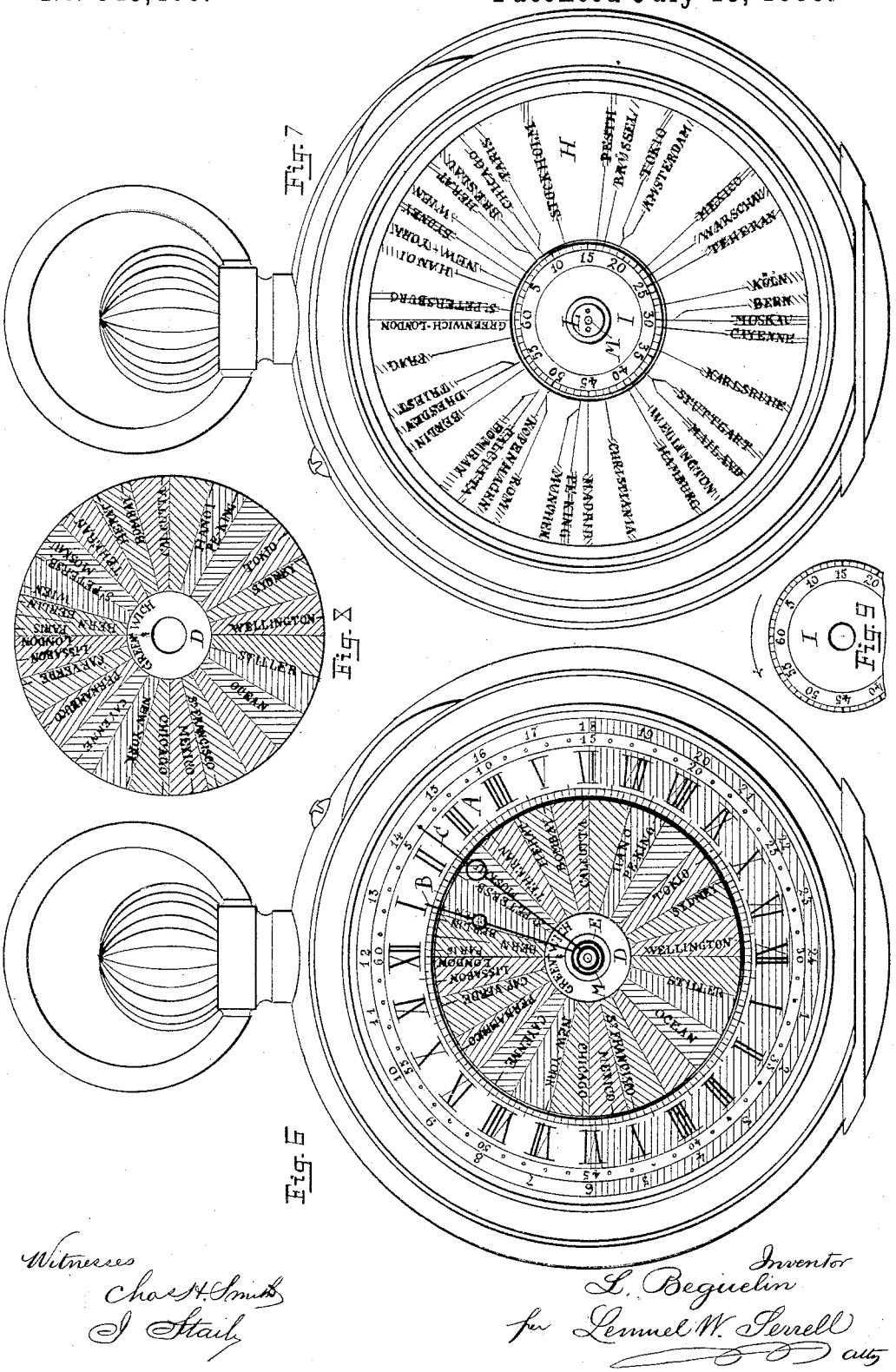
atty

(No Model.) 3 Sheets—Sheet 3.

L. BÉGUELIN.

UNIVERSAL WATCH.

No. 345,406. Patented July 13, 1886.



Witnesses
Chas. H. Smith
J. Stail

Inventor
L. Beguelin
per Lemuel W. Serrell
atty

UNITED STATES PATENT OFFICE.

LÉOPOLD BÉGUELIN, OF TRAMELAN, BERN, SWITZERLAND.

UNIVERSAL WATCH.

SPECIFICATION forming part of Letters Patent No. 345,406, dated July 13, 1886.

Application filed October 5, 1885. Serial No. 179,062. (No model.)

To all whom it may concern:

Be it known that I, LÉOPOLD BÉGUELIN, of Tramelan, in the Canton of Bern, Switzerland, have invented a new and useful Improvement in Universal Watches, of which the following is a specification.

Universal watches and clocks have been made heretofore for indicating the time of different cities. Universal clocks have also been made for denoting the time of places in connection with their degree of longitude.

My invention relates to a watch in which are pairs of moving and stationary dials, upon which are marked hours and minutes and names of places. Upon one side of the watch is an outer stationary ring-dial, upon which hours and minutes are marked, and within this ring-dial is a moving and, preferably, vari-colored dial divided into twelve or twenty-four equal spaces corresponding with the hours upon the outer dial, and marked with the names of different cities, and upon the other side of the watch is an outer stationary ring-dial, upon which are marked the names of the same places, preferably in different colors, and within this dial is a moving dial divided into minutes. These parts are operated by the usual train of gearing and movements of a watch.

My improvements are employed in connection with watch-works of any ordinary character, the dial-work being alone of a special construction.

In the drawings, Figure 1 is a vertical section of the watch, in which I have illustrated only the mechanism necessary for operating my improved devices. Fig. 2 is an elevation of the twelve-hour-dial watch, the hands, and name-dial. Fig. 3 is an elevation of the opposite dial, for indicating the time in units. Fig. 4 represents separately the movable name dial of the twelve-hour face, and Fig. 5 the movable minute-dial from the center of the name-dial, Fig. 3. Fig. 6 is an elevation of the twenty-four-hour-dial watch. Fig. 7 represents the opposite side and dial of the same watch. Fig. 8 shows the movable dial from within the twenty-four-hour dial of Fig. 6, and Fig. 9 the movable minute-dial from within the name-dial shown in Fig. 7.

In all the figures the same letters of reference denote the same parts.

The manner of determining the time of various places in my improved watch is as follows: The face of the watch, Figs. 2 and 6, shows a ring-shaped dial, A, fixed on the plate of the case, the same being divided into twelve or twenty-four hours, and into minutes upon the outer part of the ring, and upon the inner edge, between each hour-mark, there are twelve divisions on the twelve-hour dial, and six divisions on the twenty-four-hour dial. Upon this dial a certain local time is shown by an hour-hand, B, and a minute-hand, C, similar to common watches. Within or behind the opening of the dial A is a movable dial, D, fixed, by means of clamp-nuts E and F, to a tubular sleeve upon the hour-wheel G, which bears the hand B, and which surrounds the tubular sleeve upon the cannon-pinion. The movable dial D is divided into twelve equal parts in Fig. 2, and twenty-four equal parts Fig. 6, and represents geographical hours, and these divisions are radial upon the dial D, starting from the Greenwich meridian. (Shown by a special line.) Every segment or radial division of the dial D representing a geographical hour should receive a distinct and special color from the divisions at each side of it, and upon these divisions are placed the names of towns or cities whose time it is desirable to indicate, and the time is easily read and distinguished, because of the vari-colored spaces. The same colors should be repeated six geographical hours distant from each other, so as to avoid any confusion. The dial D is inscribed with the names of various cities according to their location, either east or west of the Greenwich meridian, and according to such location the names are inscribed upon the dial D representing their geographical hour, and alongside of each name is a line to the periphery of the dial D, the position of which line in relation to the divisions upon the inner portion of the dial A indicates the hour, and within five minutes of its time, upon the twelve-hour dial, and shows the hour, and within ten minutes of its time, upon the twenty-four-hour dial of the particular city whose time it is sought to ascertain. The back or opposite side of the watch carries a ring-shaped fixed dial, H, secured on a circle, H′, and snapped upon the case-ring in the usual manner. The names of the cities inscribed on the movable dial D are repeated on the dial

H, and the same colors are used for the names of said cities on the dial H as are preferably used for the geographical-hour segment to which they belong; but they are placed in the order corresponding to their geographical minute, starting from the Greenwich meridian. The ring-shaped dial H, on account of its larger size, may also bear inscribed upon it the names of other important towns which could not be placed on the movable dial D. The color with which the names of those towns are inscribed on the dial H corresponds with the colors of the geographical-hour division upon the dial D to which it belongs, and this manner of grouping colors has been adopted to prevent confusion and to easily distinguish the segments and cities that belong in the same geographical hours. In the opening of this fixed dial H is a second movable dial, I, fixed by means of screw-nuts K and L to the arbor M of the minute-hand C. There is a toothed wheel, N, also mounted upon this arbor M, and said wheel meshes with the teeth of the wheels in the usual train of gearing The movable dial I is marked with divisions into sixty minutes, and it turns simultaneously with the minute-hand, and its divisions in relation to the radial lines to the names of the cities upon the dial H indicate the exact minute of time at the city whose time is being ascertained.

To read the exact time of any city on the watch having twelve hours, (Figs. 2 and 3,) St. Petersburg, for instance, will be found on dial D, Fig. 2, on the line between two o'clock and two hours and five minutes of the inner division of dial A. By looking at the reverse side of the watch it will be found, then, that the line of St. Petersburg on the dial H is in front of the first minute-division of dial I, so that the watch shows for St. Petersburg that exact time is two hours one minute when the meridian on the dial corresponds to twelve noon. Now, if we want to know, for instance, the right Paris time by the dials of the twenty-four-hour watch, we find in Fig. 6 of the drawings that the line from the name "Paris" in the geographical-hour segment in which Paris is inscribed (colored in blue, for instance) is placed between the XII and the I hour-mark, and between the first and second mark under XII. Then we find immediately on the other side of the watch that the line corresponding to Paris on the dial H is placed in front of the ninth minute-division of the moving dial I, that shows for the exact time of Paris twelve hours nine minutes, thus indicating that when it is twelve o'clock on the Greenwich meridian it is nine minutes past twelve in the city of Paris. The moving dial D bears in a blue segment, for instance, the names of Paris, Berne, and Berlin, and upon the dial H, I inscribe in the same blue color the names of the towns of Bruxelles, Amsterdam, Cologne, Carlsruhe, Stuttgart, Milan, Hambourg, Christiania, Munich, Rome, Copenhagen, Trieste, and Prague, Fig. 7. The coincidence in colors of the segments or the names of these cities on the dial H with the segment of corresponding color upon the dial D containing the names of Paris, Berne, and Berlin, is done to indicate that the longitude of those places is between that of Paris and Berlin, and that necessarily their geographical time is between that of those two places, the exact geographical time west of the Greenwich meridian being found by the means hereinbefore described. The names found on the right-hand side of dial H, Fig. 7—viz., Bruxelles, Amsterdam, and Cologne—belong to the first half of the geographical hour in question, while those written on the left-hand side of the dial H—viz., Carlsruhe, Munich, Rome, Copenhagen, Trieste, and Prague—belong to the second half of the same geographical hour. The geographical minute of the other cities upon the dials can be found in the same way as hereinbefore described by observing the hour and minute position of the name of the town on the dial H in regard to the exact minute-division of the moving dial I.

I do not claim a moving dial within a fixed dial.

In my improvement the colors on the moving dial facilitate the recognition of the hour-marks on the said moving dial.

I claim as my invention—

1. In a watch or clock, the combination of two annular ring-shaped fixed dials upon opposite faces of the time-piece, and two moving dials also upon opposite faces of the time-piece and within the fixed dials, the one being connected to and moving with the hour-hand, and the other being connected to and moving with the minute-hand, substantially as set forth.

2. The combination, in a watch or clock, with the fixed dial A and moving dial D, as set forth, of the fixed dial H upon the reverse side of the watch, and upon whose face are indicated names of cities corresponding with those on the dial D, and a moving dial, I, whose face is divided off into sixty minutes, as and for the purposes specified.

3. The combination, in watch or clock, with the fixed dials A and H, constructed as specified, of a moving dial, D, formed with radial vari-colored segments upon its face, and connected to the sleeve of the wheel moving the hour-hand B, and the minute-dial I upon the reverse side of the time-piece and connected to the arbor of the minute-hand C, as and for the purposes set forth.

Signed by me this 27th day of July, A. D. 1885.

LÉOPOLD BÉGUELIN.

Witnesses:
ELMER SCHNEIDER,
CHARLES NEFF.