Aug. 24, 1954 H. JUNGHANS ET AL 2,687,003

CLOCK

Filed June 12, 1951

FIG.1.

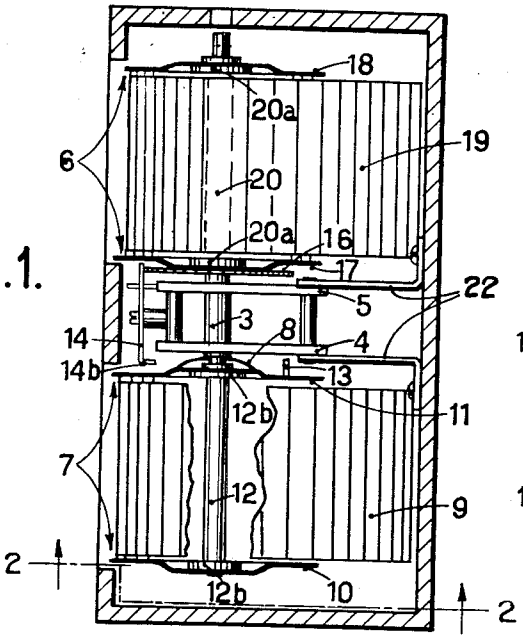


FIG.3.

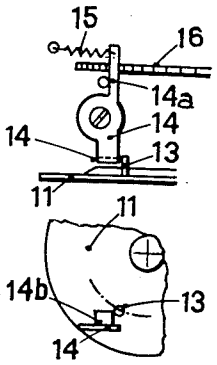
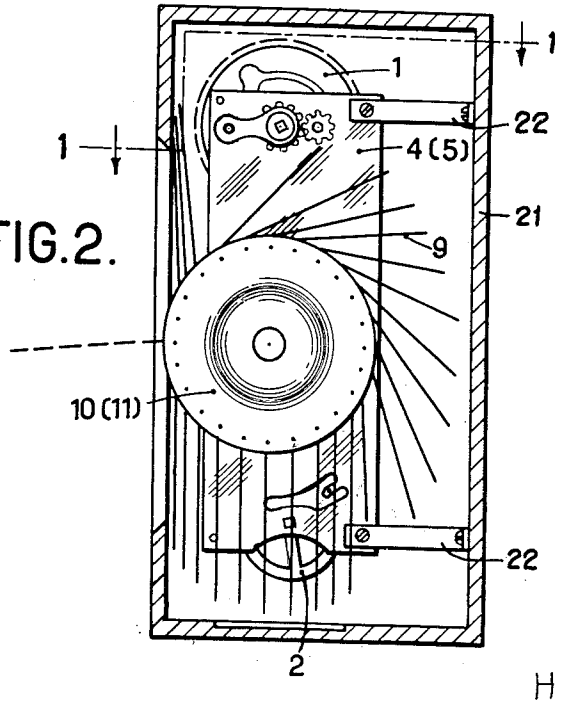


FIG.4.

FIG.2.



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Patented Aug. 24, 1954

2,687,003

UNITED STATES PATENT OFFICE

2,687,003

CLOCK

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Application June 12, 1951, Serial No. 231,084

3 Claims. (Cl. 58—125)

1

The invention relates to a clock and more specifically of the type in which the time is indicated on movable plates, discs or leaves on which the hour and minute numbers are individually indicated.

Clocks having number leaves which periodically fall exposing one after the other are known. In these known clocks the works are provided behind the drum for the hour and minute number leaves, so that the clock in its appearance and structure has a great thickness or depth and thus takes up a great deal of room or space.

The present invention solves the problem presented in the foregoing construction and obviates the drawback of the clock with the considerable depth. It is therefore an object of the invention to construct the clock so that it will have a shallow thickness and at the same time to simplify the construction. For this purpose the arrangement of the invention is such that the clock work is arranged between the numeral drums.

In accordance with the invention the clock work is so constructed that the driven main shaft projects beyond a pair of parallel plates which function as frame parts and having rotatable bearings on the projecting ends of the shaft on which the drum for the minute numbers are mounted, whereas the other bearing carries the drum with the hour number leaves. Thus it is an object of the invention to rotate the drum with the minute number leaves by friction from the main shaft of the clock works.

A further object of the invention resides in the drum for the hour number leaves being driven by the drum of the minute number leaves after each minute by automatic movement.

Another object of the invention resides in the provision of a pin mounted in one of the side members of the drum for the minute number leaves which operates and functions with a spring urged lever of which one arm cooperates with a contact wheel secured to the hour numeral drum.

Further objects will be apparent from the following description when considered in connection with the accompanying drawing in which:

Fig. 1 is a horizontal cross section taken on line 1—1 of Fig. 2 in the direction of the arrows,

Fig. 2 is a vertical cross section taken on line 2—2 of Fig. 1 in the direction of the arrows, and

Figs. 3 and 4 are plan views of certain details.

In the structure illustrated on the drawing a spring housing 1 is secured at the upper part of and between two plates 4 and 5 which latter are secured in spaced relation in the main casing 21 by means of brackets 22. At the lower end of the plates a balance wheel 2 is mounted together

2

with the regulating members. Between the spring housing 1 and the balance wheel 2 the various operating gear wheels of the clock works are mounted in the usual manner but not shown on the drawing.

The shaft 3 driven by the clock work extends laterally from both sides of plates 4 and 5 and in one hour performs a complete revolution equal to the revolution of the shaft on which the minute hand of an ordinary clock operates. Drums 6 and 7 are mounted on the respective projecting ends of the shaft 3 and which carry the minute number plates 9 and the hour number plates 19. The drum 7 for the minute number plates 9 is set in rotation by means of friction set up by a bowed spring 8 from the shaft 3. The drum 7 carries between its two drum discs or plates 10 and 11 sixty minute number plates 9 which are rotatably mounted between the dums discs. Each individual number plate 9 is provided with a pair of laterally projecting portions by means of which the plates are mounted or project in suitable holes in the drum discs. The drum discs 10 and 11 are secured by any suitable means such as soldering on a shaft or bearing 12 and the latter which on each end has a flange 12b, is mounted to rotate on the shaft 3 and receives its rotation by the spring 8. The manual setting of the drum 7 for the minute number leaves is carried out by rotating drum disc 10 or 11 and for this purpose the discs are provided around their periphery with knurling or the like.

A pin 13 is mounted in the drum disc 11 which upon every revolution of the drum will move a two armed lever 14 around a definite angle, Figs. 3 and 4, whereby a spring 15 secured to one of the arms 14a will be tensioned. The arm 14a of the lever 14 which is springy itself, will grip a toothed contact wheel 16 which latter is secured to the drum disc 17 of the drum 6. As soon as the pin 13 passes the lever 14 and its bent over projection 14b, the lever 14 will snap back to its original position by the spring 15 and thereby the wheel 16 will be rotated the distance of one tooth, so that the drum 6 for the hour numeral leaves will be rotated a distance equivalent to one leaf section. The elements 16 and 14 act as a pawl and ratchet mechanism in which the pawl is the member 14 and the ratchet the element 16.

The twenty-four leaves 19 for the hour numerals are rotatably mounted between the drum discs 17 and 18 and the latter are securely mounted on a bearing 20 which latter is provided with flanges 20a at its ends. The bearing 20 is freely mounted on the shaft 3.

In order to prevent backward rotation of the

hour number leaves, there is suitably provided a lock lever or any other member which will grip the contact wheel 16.

The spring in the clock works is wound up in the usual manner by means of a key which is suitably accomplished from one of the side of the clock rather than from the back of the clock housing.

I claim:

1. A clock comprising two spaced leaf drums, one having 24 hour numeral leaves and the other having 60 minute leaves rotatably mounted in their respective drums, a clockwork mounted in the space between the leaf drums and having spaced side frame plates and including a shaft which projects beyond each side of the clockwork and through the frame plates, said hour leaf drum being freely mounted on one end of the shaft and the other end of the shaft having the minute leaf drum mounted thereon, means to couple the shaft with the minute leaf drum to rotate therewith, and means in the space between the two drums and connected thereto and operable by the minute leaf drum to rotate the hour leaf drum one twenty-fourth of a revolution upon each revolution of the minute leaf drum, said drums being

entirely supported on said shaft and the latter being entirely supported in the frame plates.

2. A clock according to claim 1, in which a spring of the clockwork is provided at the top thereof and a balance wheel at the bottom thereof so that the overall width of the clock does not exceed the leaf drums.

3. A clock according to claim 1, in which said last-mentioned means includes a pin mounted in the minute numeral drum, a ratchet wheel mounted on the hour numeral drum and a spring-urged pivoted lever mounted on the clock work so that said pin will actuate the lever upon each revolution of the minute numeral drum by contact with the ratchet wheel.

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