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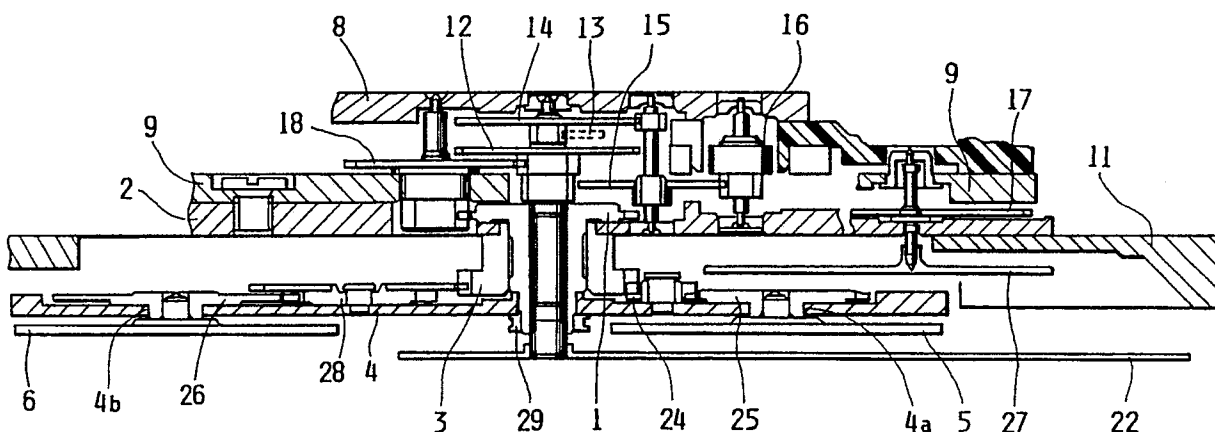
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54 Timepiece.

57 A timepiece having an hour wheel (1) and means (12-16,18) for rotating the hour wheel (1) characterised in that the hour wheel (1) is rotatably mounted in a fixed gear (3) and is drivingly connected to

an hour plate (4), there being at least one display plate (5,6,7) which is rotatably mounted on the hour plate (4) and which has a gear connection (24,25; 26,28) with the fixed gear (3).

FIG. 1



TIMEPIECE

This invention concerns a timepiece.

In Japanese Utility Model Laid-Open Specification No. 68577/1973, there is disclosed a timepiece which utilizes an hour hand disc, a minute hand disc, and a seconds hand disc. Such a disc indication type timepiece, however, uses these discs as time display means in place of the conventional hands (hour hand, minute hand, seconds hand) and the primary object of providing such discs is to impart novelty and originality to the time display system.

According to the present invention, there is provided a timepiece having an hour wheel and means for rotating the hour wheel characterised in that the hour wheel is rotatably mounted in a fixed gear and is drivingly connected to an hour plate, there being at least one display plate which is rotatably mounted on the hour plate and which has a gear connection with the fixed gear.

The gear connection may be such that the rotation of the hour plate by the hour wheel causes the display plate to rotate about its own axis.

Thus there may be a plurality of display plates at least one of which has a said gear connection such that it is rotated about its own axis and at least another of which has a gear connection such that it is not rotated about its own axis.

The timepiece may also be provided with a minute hand and a seconds hand.

Preferably, the hour plate is provided with an hour mark for cooperating with indicia on a dial to indicate the hour.

Preferably, the or each display plate carries pictorial or other material unrelated to providing an indication of the time.

In the preferred embodiment, the hour plate is fixed at an end part of the hour wheel, the fixed wheel being fixed to a base member of a timepiece body. The or each display plate is arranged to rotate on the upper surface of the hour plate, each display plate having a display plate gear which meshes with the fixed gear, the fixed gear and the display plate gear or gears being disposed on the back of the hour plate. By arranging different gear ratios between the various display plate gears and the fixed gear, the various display plates may rotate relatively to one another so as to accomplish various displays of figures, characters, and the like on the display plates in the course of the rotation of the hour plate once in 12 hours (or once in 24 hours in a 24-hour system timepiece).

The invention is illustrated, merely by way of example, in the accompanying drawings, in which:-

Figure 1 is a broken away sectional view of a timepiece according to the present device;

Figure 2 is a plan view of the timepiece of Figure 1.

In Figure 1 there is shown a timepiece according to the present invention which is provided with a minute or centre wheel 12 which acts as a support shaft of a minute hand 22. The centre wheel 12 is driven from a rotor 16 by a train of wheels comprising a 5th wheel 15, a 4th wheel 14 and a 3rd wheel 13. The rotor 16 and each of the wheels 13-15 is rotatably mounted both in a wheel train support 8 and in an intermediate support 9.

An hour plate 4 is fixed integrally by a bush 29 to the end portion of an hour wheel 1 which is driven and rotated normally once in 12 hours (or once in 24 hours in a 24-hour system timepiece) through a minute wheel 18. The hour wheel 1 is rotatably mounted in a guide hole of a fixed gear 3 which is fixed to a base 2 of a timepiece body.

A seconds hand 27 is supported by a second wheel 17 which is rotatably mounted in the intermediate support 9 and in the base 2.

A first display plate 5 (coupled integrally to a first display plate gear 25) is rotatably mounted in a guide hole 4a formed in the hour plate 4. A second display plate 6 (coupled integrally to a second display plate gear 26) is mounted in a guide hole 4b in the hour plate 4. A third display plate 7 (which is shown in the plan view of Figure 2 but is not shown in Figure 1) is rotatably mounted in the hour plate 4 and is coupled integrally to a third display plate gear (not shown).

Rotatably mounted in the hour plate 4 is an idle gear 24 and a second intermediate gear 28 (together with a third intermediate gear, not shown), these gears meshing with the fixed gear 3 and with the first and second display wheels 25, 26 (and the third display wheel not shown), respectively, and at a respective predetermined gear ratio.

If the number of teeth of the first display plate gear 25 is equal to that of the fixed gear 3, the first display plate 5 which is integral with the first display plate gear 25 revolves about the axis of the centre wheel 12 but does not turn on its own axis when the hour plate 4 rotates. Accordingly, any figures, characters, and the like, that are bonded or printed on the surface of the first display plate 5 as shown in Figure 2 are in agreement with the erecting direction of the timepiece body. That is to say, any such figures, characters etc. on the first display plate 5 will at all times remain aligned with the direction in which the timepiece body is erected and will thus remain vertical if the timepiece body is disposed in the vertical plane.

On the other hand, the second display wheel 26 and the third display wheel have gear ratios with

respect to the fixed gear 3 such that they rotate n and m times more rapidly than the hour plate 4 respectively by reason of being driven through the second intermediate wheel 28 and the third intermediate wheel respectively. Therefore, any figures and characters bonded or printed on the surface of the second display plate 6 in Figure 2 and any figures and characters bonded or printed on the surface of the third display plate 7 will turn on their own axes, in accordance with their respective gear ratios, while revolving with the hour plate 4. In other words, in this embodiment, a photograph of a mother on the display plate 5 remains standing upright at all times while revolving about the axis of the centre wheel 12, and thus does not turn on its own axis. However, photographs of a girl and of a boy on the display plates 6, 7 turn on their own axes while revolving about the axis of the centre wheel 12.

A mark 4c on the hour plate 4 in Figure 2 is an hour mark for representing the hour, the hour mark 4c in operation moving past time indicia 11a on a dial 11.

Although the embodiment referred to above concerns a timepiece provided with a small seconds hand 27, the latter is not essential. It is therefore possible, for example, to fit an ordinary seconds hand by extending the tip of the shaft of the 4th wheel 14 in Figure 1 outwardly of a bore (not shown) through the minute wheel 12, or to replace the minute and seconds hands by transparent minute and seconds plates, respectively. The latter plates would be made transparent in order that the figures and characters on the display plates and the hour mark on the hour plate should be seen through them.

In the embodiment described above, the display plates turn or do not turn on their own axes while revolving at rotational speeds specific to them, respectively, on the surface of the hour plate. Accordingly, various display functions can be attained and a wide variety of timepieces can be provided having dynamic representations.

Claims

1. A timepiece having an hour wheel (1) and means (12-16,18) for rotating the hour wheel (1) characterised in that the hour wheel (1) is rotatably mounted in a fixed gear (3) and is drivingly connected to an hour plate (4), there being at least one display plate (5,6,7) which is rotatably mounted on the hour plate (4) and which has a gear connection (24,25; 26,28) with the fixed gear (3).

2. A timepiece as claimed in claim 1 characterised in that the gear connection (24,25; 26,28) is such that the rotation of the hour plate (4) by the

hour wheel (1) causes the display plate (5,6,7) to rotate about its own axis.

3. A timepiece as claimed in claim 2 characterised in that there are a plurality of display plates (5,6,7) at least one of which has a said gear connection (24,25; 26,28) such that it is rotated about its own axis and at least another of which has a gear connection (24,25; 26,28) such that it is not rotated about its own axis.

4. A timepiece as claimed in any preceding claim characterised in that the timepiece is also provided with a minute hand (22) and a seconds hand (27).

5. A timepiece as claimed in any preceding claim characterised in that the hour plate (4) is provided with an hour mark (4c) for cooperating with indicia (11a) on a dial (11) to indicate the hour.

6. A timepiece as claimed in any preceding claim characterised in that the or each display plate (5,6,7) carries pictorial or other material unrelated to providing an indication of the time.

7. A timepiece equipped with display plates (5-7) comprising:

an hour wheel (1) supported and guided pivotally by a guide hole of a fixed wheel (3) fixed to a base (2) of a timepiece body;

an hour plate (4) fixed integrally to an end part of said hour wheel (1);

at least one display plate (5,6,7) rotating on the surface of said hour plate (4); and

at least one train wheel (24,28) supported pivotally on said hour plate (4) and connecting said fixed wheel (3) and said display plate.

FIG. 1

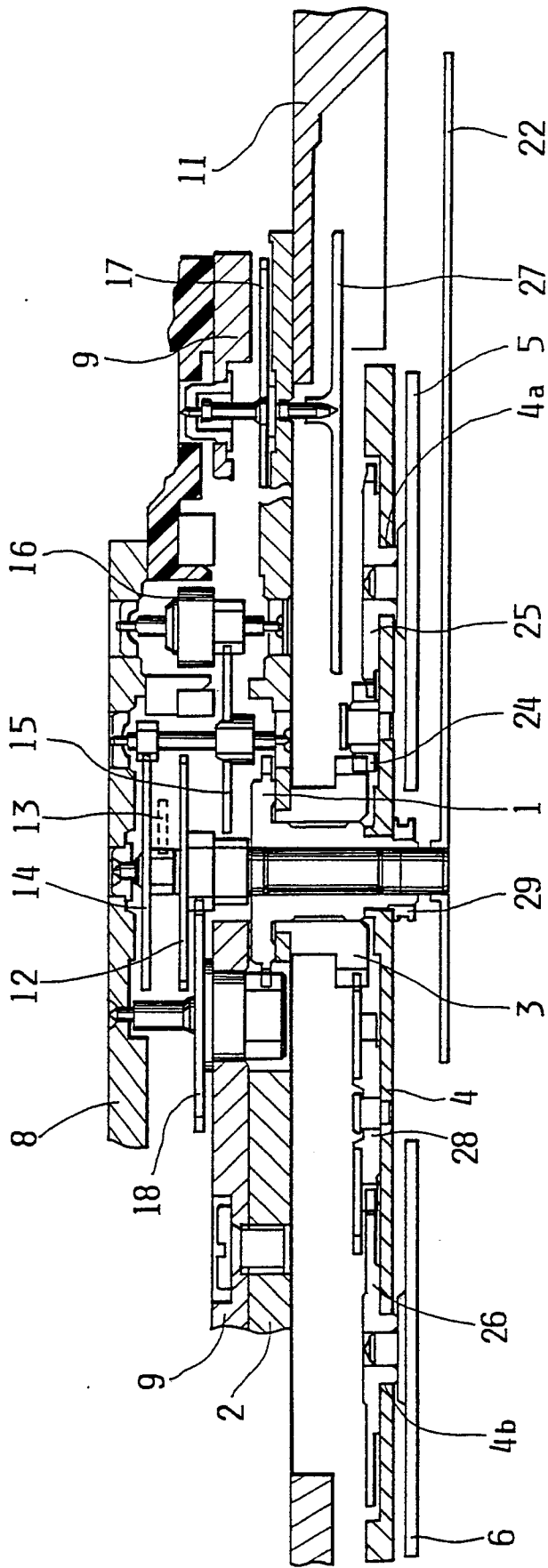


FIG. 2

