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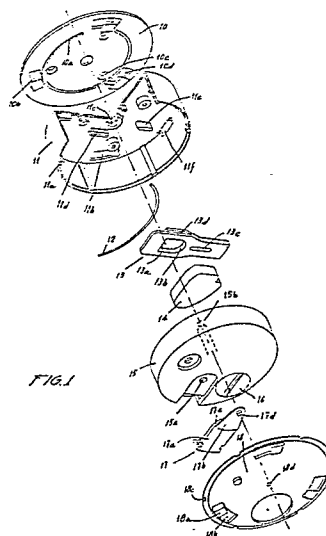
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⑤④ **Improved adjustment and balancing mechanism of clocks of the oscillating mass type.**

⑤⑦ With means for balancing of the hands which is effected by a balancing unit which is adjacent the mechanism with the thin disc (19) having pawl like projections (19a) and therebelow the generally periphery of said disc the notches (19c); said disc (19) is attached to the whole balancing unit formed by the balancers (20) and the discs (21), (22).

The time setting function is effected jointly by the brake (13) pressing it inwardly and allowing free rotation of the mechanism (15) shaft at the same time as the hands are set to the correct time in hours and minutes, after which the brake (13) is released and returns to its initial position.



Description

IMPROVED ADJUSTMENT AND BALANCING MECHANISM FOR OSCILLATING MASS TYPE CLOCKS

The present utility model consists, as indicated in its title, of an "IMPROVED ADJUSTMENT AND BALANCING MECHANISM FOR OSCILLATING MASS TYPE CLOCKS", the new constructional, conformation and design features of which fulfil the mission for which it has been specifically devised with maximum reliability and efficiency.

Utility model number 8702207 of the same applicant discloses an improved oscillating mass clock, formed basically by two hands, one of which marks the hours and the other the minutes, each having its corresponding clockwork mechanism, the main characteristic of the clockwork mechanism being that it does not cause the hands of the clock to rotate but that it is adapted to them and what causes the rotation is a shaft on which there has been mounted a counterweight located at a particular distance from the axis of rotation of such mechanism.

This oscillating mass clock has the peculiarity that when the corresponding hands are pushed, albeit brusquely, rotating around their own axis, they return to their position to mark not the time they were at before but the current time, after whatever time has elapsed, thereby continuing their regular uniform movement. With this arrangement, large size clocks may be made which are easy to instal, since the machinery is fixedly attached to the hands and does not require any type of special casing or container for such machinery.

For correct levelling of the hands there had been contemplated the existence in two lateral regions of respective adjusting mechanisms in which respective counterweights had been adapted whereby it was achieved that with moving only the counterweights in one direction or the other it was quite possible to balance the hand unit, so that both the upper and lower movements were uniform, at the same time as the hands operated independently and although they were moved sharply they returned to their correct position to show the corresponding time, precisely because the only member which made it operate is the counterweight which works in relationship with the axis of rotation of the hand.

The present utility model application has the object therefore of improving solely and exclusively the adjusting and time setting mechanism of the said oscillating mass clock, notably improving a part thereof which enormously facilitates the setting of the time of the said clock at the same time as the drive shaft of the machinery is supported by two centres.

To achieve said improvement, the system of levelling the hands on the basis of counterweights moving in the lateral regions is abandoned and this form of adjustment is replaced by two sets of balancers disposed in separate planes and which in turn may move relatively one to the other.

Other details and features of the present model will be disclosed in the description given hereafter in which reference is made to the drawings accompa-

nying this specification in which, schematically, there are shown the preferred details. These details are given as an example, referring to one possible embodiment, but it is not limited to the details given there; therefore this description should be considered from an illustrative point of view without limitations of any kind.

Figure no. 1 is an exploded ensemble in lateral perspective in which there may be seen the mechanism (15) which drives the clock together with the hand fixing support (10) and the casing (11) where the mechanism (15) is housed.

Figure no. 2 is an exploded ensemble in lateral perspective of the balancing unit housed in the casing (23).

In one of the preferred embodiments of the present utility model application, as we may see in figure no. 1, the support (10) is fixedly attached to either of the hands by through holes (10c) which allows the hands of the clock to be held immobile against the support (10) with the aid of conventional bolts or rivets. This support (10) is an extremely flat disk which is provided on one of its surfaces with the annular ridge (10a) of smaller diameter than (10), there being incorporated on the inner surface a plurality of pawl like projections (10d) leaving in the lower portion respective holes of rectangular perimeter (10c).

The pawl like projections (10d) engage with the container (11) of the mechanism by way of the holes (11b) provided on the inner surface of its sole end wall. The container (11) of the mechanism (15) has a cylindrical configuration of low height smaller than its diameter and open at one end. On the inner surface of its sole end wall there is a plurality of parallel projections (11d) forming a channel and together with the prismatic projection (11e) they form the guide members of the brake (13), which slides in said projections (11d) and is inserted through the hole (11f) in the side surface of the end wall (11). In the center of the end wall of (11) there is a semicylindrical boss (11c) which acts as support for the shaft (15b) of the mechanism (15).

The brake (13) is inserted through the hole (11f) of the end wall of the container (11) and is guided in its vertical upward or downward movement by the channel like projections (11d) and the guide (11e) which is inserted in the hole (13c) of the brake (13). In the normal operating position of the clock, the brake (13) is in the outermost position blocked by the force of the curved rod (12) which acts as a spring, which is trapped in the cavity formed by (13) and (13d). In the normal working position the brake (13) presses the surface (13a) against the drive shaft (15b) of the mechanism (15) blocking the end wall (11) of the mechanism which rotates fixedly with the shaft (15b) of the mechanism (15), when it is desired to reset the time, by pressing the brake (13) at the bottom it moves upwardly and allows free rotation between the mechanism container (11) of the shaft

of the machine (15b), the counterweight (14) moving to the lowermost position possible, at which time the upward pressure ceases and by the force of the spring (12) the brake (13) returns to its normal position and the mechanism container (11) becomes immobilized again fixedly to the shaft of the mechanism (15b).

The weight (14) is located inside the mechanism (15) and it is related with the hour position whereby the variation of the relative position of (14) to the position of the hands means the setting of the clock time.

To improve the mounting of the mechanism in its container (11) it has been disposed that the surface of the housing of the mechanism (15) be adhered to the support member (17) which is provided with an angular configuration having a rectangular surface extending in a further triangular surface, which in the proximity of its apex is provided with the boss (17d) which acts as a halfshaft fixed in the bore (18d) of the cover (18) of the mechanism (15). Said cover (18) is a small thin disk of the same diameter as the mechanism casing and is provided in the periphery thereof with notches (18c) and on the front wall with pawl like projections (18a) in the lower region of which there are through holes (18b) of rectangular perimeter.

Each of the hands is balanced by a balancing unit which is attached to the mechanism by the thin disk (19) having a plurality of pawl like projections (19a) and below these the substantially rectangular through hole (19b), there being provided notches (19c) in the periphery of said disk. To said disk (19) there is attached the complete balancing unit formed by the balancers (20) and the disks (21), (22) which act as conical spacers exerting an axial pressure on the balancers (20), the balancing unit being enclosed by the cover (23).

The balancers are provided in pairs between the conical spacers (21) and (22) and have generally any anchor shape on the slightly curved base of which there are provided the toothed portions (20b) for mutual engagement of each set of two balancers (20). In the lower portion of said balancer (20) there is a through hole (20a) by which, on inserting the corresponding tool therethrough the two balancers (20) mutually facing each other by their end walls and essentially by the toothed surface (20b) thereof, may be relatively moved.

The balancing units as may be seen in figure no. 2 are separated by thin spacing disks having a central bore (21b) and (22b) respectively and notches (22a) and (21a) in the perimeter.

The whole balancing unit, that is the two pairs of counterweights or balancers (20) together with their spacer disks (22) and (21) are lodged within the container (23) which is formed by a cylinder of very small height relative to its diameter provided with projections (23a) for engagement thereof with the notches (22a) and (21a) of the conical spacers.

The clock time is set jointly by pushing the brake (13) towards the interior and allowing free rotation of the mechanism (15) shaft at the same time as the hands are set to the right time, the brake (13) then being released and returning to its initial position. If it

is necessary to balance the hands by the corresponding tool this is inserted in the hole (20a) of the balancers (20) to vary the relative position of each pair, for which purpose each part of the same balancers (20) has relative movement thanks to the toothed surface (20b) situated at the end thereof, said balancers (20) oscillating since the same hole (20a) serves as support for projections (19d) emerging from the inner surface of the balancer cover (19).

With the modifications introduced in the present application with respect to utility model 8702207 of the same applicant, apart from providing the clock of model 8702207 with a more improved balancing system, a new time setting system has been created, achieving also greater solidity of the unit since the shaft (15b) of the mechanism (15) is supported at one end on the projection (11c) and, on the opposite side by the cylindrical boss (17d) in the hole (18d) of the cover (18) of the mechanism (15).

It will be understood after observing the drawings and the explanation we have given thereof that the model of the present specification provides a simple effective construction which may be reduced to practise with great ease, constituting without any doubt a new industrial result.

It is noted, for the pertinent effects, that in the object of the present utility model application there may be introduced all those variations and modifications of detail that the circumstances and practise may advise, provided that with the variations introduced, the essence as summarized in the following CLAIMS is not altered or modified.

Claims

1 - An "IMPROVED ADJUSTMENT AND BALANCING MECHANISM FOR OSCILLATING MASS TYPE CLOCKS", which comprise respective mechanism casings on the hour hand and on the minute hand, both hands rotating independently thanks to the movement which said mechanisms impress on the sole shaft in correspondence with the free play of a conventional weight located inside said mechanism, characterized in that said mechanism is composed of two container casings (11) and (23) with said casings containing the adjusting members formed by the brake (13) and the spring (12) and the balancing members formed by the balancers (20) in the interior of the container (11) of the mechanism (15) there is provided a brake (13) which acts on the shaft (15b) of the mechanism allowing the free rotation of said mechanism shaft (15b) in the interior of the machine container (11).

2 - An "IMPROVED ADJUSTMENT AND BALANCING MECHANISM FOR OSCILLATING MASS TYPE CLOCKS", characterized according to the previous claim in that in the upper end of the mechanism (15) there is disposed a slightly angled shaft support member (17) having a flat surface (17a) of generally rectangular perimeter which extends at one of its sides

into the triangular appendix (17b) which is provided close to its rounded apex with a thin small diameter cylindrical boss (17d) with engages in the cover (18) of the container (11) in the through hole (18b).

3 - An "IMPROVED ADJUSTMENT AND BALANCING MECHANISM FOR OSCILLATING MASS TYPE CLOCKS", characterized according to the first claim in that the balancing unit is formed by a cylindrical container (23) of low height relative to its diameters, two units of pairs of balancers (20) of substantially anchor shaped configuration with the curved lower end (20) in which there is the corresponding toothing and, in the proximity of said base the substantially circular holes (20a) except in the lower portion where there exist a small notch. Between each pair of counterweight units (20) there are located the spacer disks (22) and (21) which are thin relative to their diameter and have a substantially conical configuration with respective through holes in the central portion (22b) and (21b) and respective notchings in their perimeter (21a) and (22a), respectively.

4 - An "IMPROVED ADJUSTING AND BALANCING MECHANISM FOR OSCILLATING MASS TYPE CLOCKS", characterized according to the first claim in that the brake (13) is tuning fork shaped with a central hole (13b) and a longitudinal hole in the lower portion (13c) having a substantially rectangular perimeter with rounded ends. Said brake (13) is extended on one of its surfaces by two flanges (13d) parallel to the main surface of the said brake (13), the spring (12) being disposed between both flanges (13d).

5 - An "IMPROVED ADJUSTING AND BALANCING MECHANISM FOR OSCILLATING MASS TYPE CLOCKS", characterized according to the first claim in that the container (11) of the mechanism (15) having a cylindrical configuration and being of low height relative to its diameter, contains on the inner surface of its only end wall a plurality of channel like projections (11d) situated adjacent the center of said container (11) from which there emerges a semi-cylindrical protuberance (11c) and close to the periphery and disposed in parallel between the projections (11d) there is the projection (11e) and vertically aligned therewith the through orifice (11f) having a substantially rectangular perimeter.

6 - An "IMPROVED ADJUSTING AND BALANCING MECHANISM FOR OSCILLATING MASS TYPE CLOCKS", characterized according to the first claim in that the ensemble of the machine formed by the support (10), the container (11) of the mechanism (15) and the cover (18) once mounted with their accessories and the balancing unit formed by the container (23), the balancers (20), the cover (19) with its accessories are engaged together by the arrangement in the discs or covers (18) and (19) of respective projections (18a) and (19a) respectively in form of a pawl which correspond

below with respective through generally rectangular holes (18b) and (19b) disposed in the surface thereof.

An "IMPROVED ADJUSTING AND BALANCING MECHANISM FOR OSCILLATING MASS TYPE CLOCKS".

