C. H. JENKINS.

WATCHMAN'S CLOCK.

APPLICATION FILED NOV. 13, 1915.

1,370,543. **Patented Mar. 8, 1921.**

2 SHEETS—SHEET 1.

Fig. 1

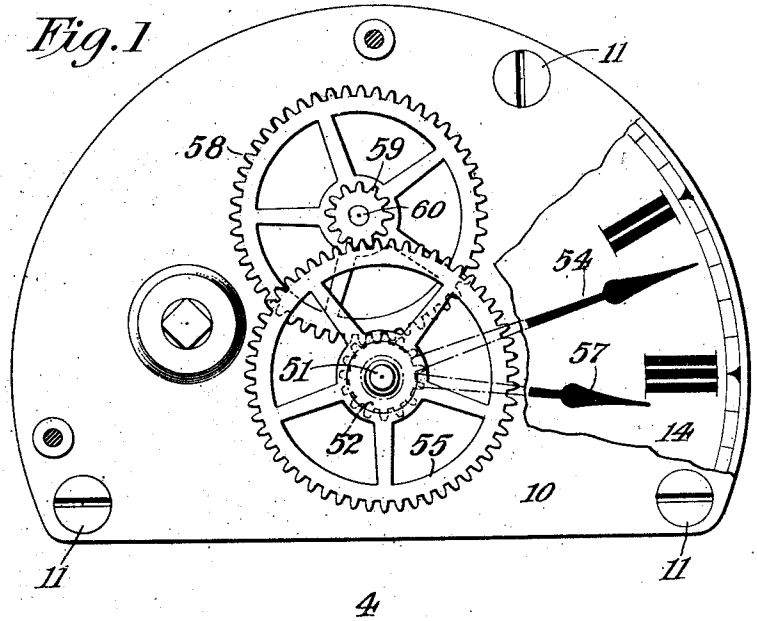
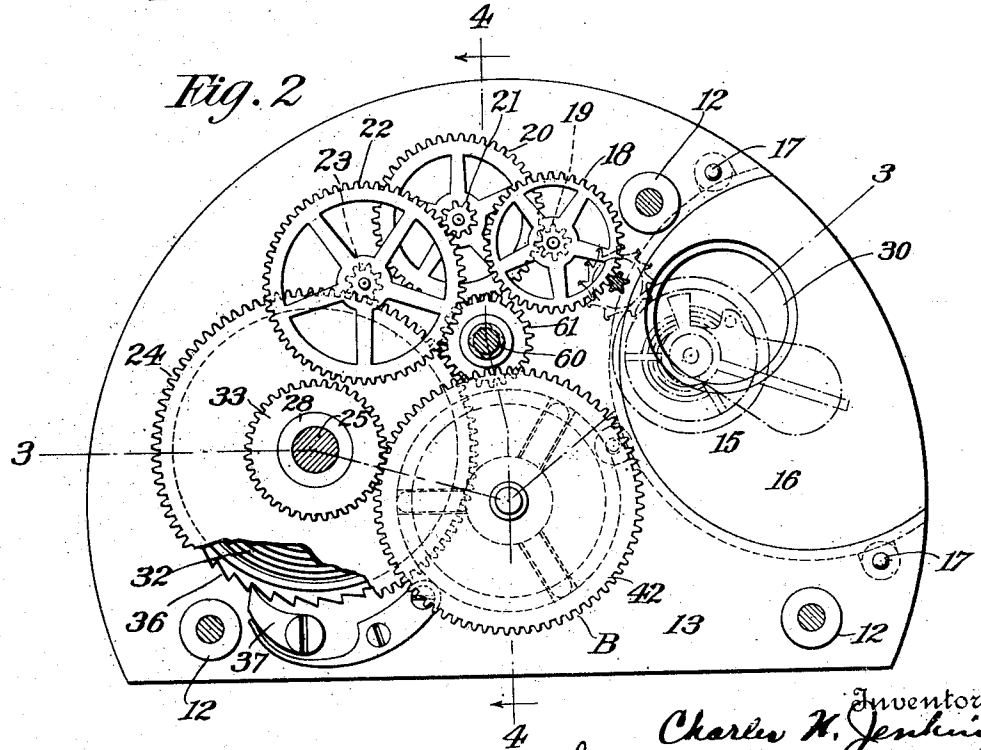


Fig. 2



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2 SHEETS—SHEET 2.

Fig. 3

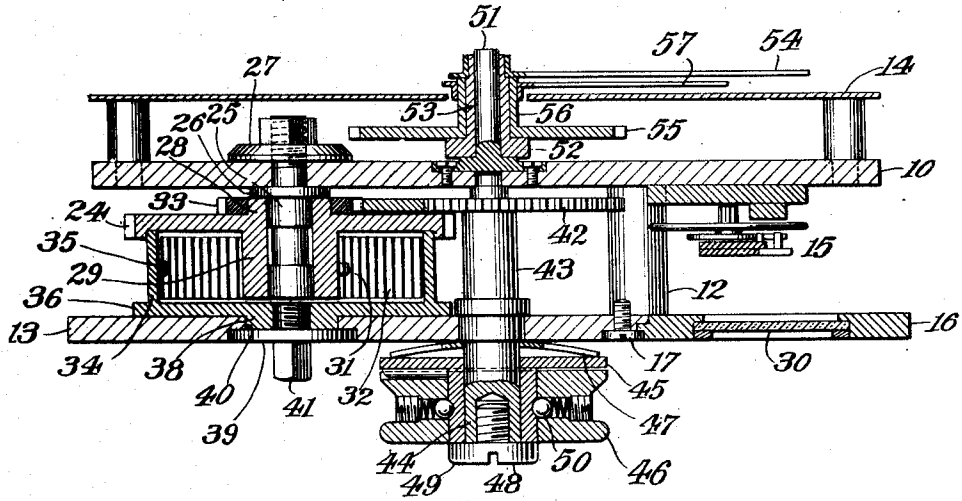


Fig. 4

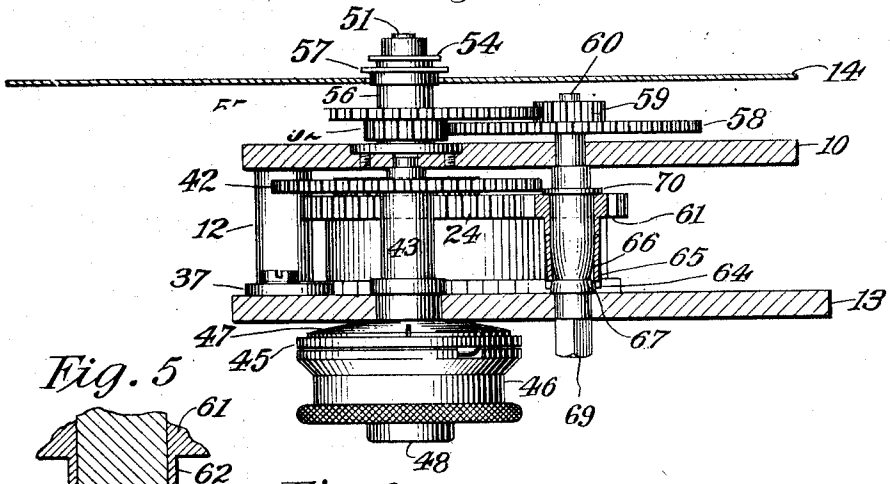


Fig. 5

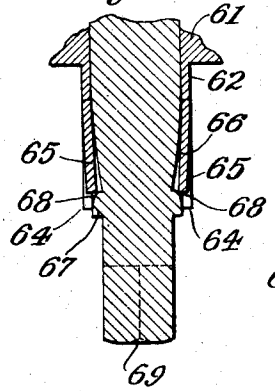
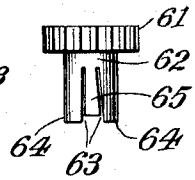


Fig. 6



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UNITED STATES PATENT OFFICE.

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WATCHMAN'S CLOCK.

1,370,543. Specification of Letters Patent. Patented Mar. 8, 1921.

Application filed November 13, 1915. Serial No. 61,212.

To all whom it may concern:

Be it known that I, CHARLES H. JENKINS, a citizen of the United States, residing at Belleville, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Watchmen's Clocks, of which the following is a full, clear, and exact description.

This invention relates to certain new and useful improvements in clock movements particularly adapted for use in portable clocks which are subjected to rough usage.

One object of my invention is to provide an improved mounting for the main spring which prevents damage to the train through recoil, should the main spring break. The improved mounting also prevents jars or impacts to the casing affecting the main wheel.

Another object of my invention is to provide a mechanism in which the driving ratio may be readily changed without the necessity of changing a large number of parts in the clock train. This permits the recording device to be easily changed, for instance, from a 24 hour recorder to a 48 hour recorder, and vice versa.

Another object of my invention is to improve the record dial carrier construction, so that the record dial carrier does not disassemble when the records are changed.

Other objects of my invention reside in the particular construction which makes it a simple matter to assemble and repair the clock, and which construction also is cheap to manufacture and not likely to get out of order.

In the drawings,

Figure 1 shows a front elevational view of my improved clock, the dial being broken away to show the mechanism below.

Fig. 2 shows a similar view with the front cover plate removed to show the clock train.

Fig. 3 is a cross-sectional view of the train shown in Fig. 2, the view being taken on line 3—3 of that figure.

Fig. 4 is another cross-sectional view taken on line 4—4 of Fig. 2.

Fig. 5 is an enlarged detail view of the cannon pinion in place on its arbor.

Fig. 6 is another detail view of the cannon pinion removed from the arbor.

Referring to the drawings in detail, the reference numeral 10 designates the front cover plate which is secured by screws 11 to posts 12 extending upwardly from the back plate 13 (see Figs. 1 and 2). Suitably supported on the front cover plate is the dial 14 with suitable markings thereon to indicate hours, minutes, etc. Carried by the front cover plate is an escapement of well known form, as shown in dotted lines at 15, Fig. 2. For access to the escapement mechanism, the portion 16 of the lower plate 13 opposite the escapement 15 can be detached from the rest of the plate, as clearly indicated in Fig. 2. The detachable portion of the plate is preferably held to the remaining portion of the plate by the screws 17. This portion of the plate also contains a window aperture 30 through which the escapement may be inspected. Pivotally mounted between the front and rear cover plates are a number of intermeshing gears and pinions. The gear 18 meshes with the pinion on the escapement and carries a pinion 19 which intermeshes with a gear 20 which in turn carries a pinion 21 which meshes with the teeth on a gear 22. This train of gears and pinions, together with the escapement 15, form no part of my invention, as they are of a form well known in the art.

The gear 22 carries a pinion 23 which meshes with the teeth of a main wheel 24, the latter being rotatably mounted upon a stud 25. The stud carries a collar 26 which abuts against the plate 10. The outer end of the stud 25 is threaded to receive a cap nut 27 which holds the stud rigid on the cover plate 10. The stud 25 does not extend through the rear plate 13. It terminates some distance from this plate and this construction of carrying the stud on one plate serves, among other things, to prevent jars from damaging the main wheel.

The main wheel 24 is provided with two bosses 28—29. They surround (see Fig. 3) the stud 25, the lower one 29 being provided with a hook 31 which engages the inner end of a main spring 32. The upper boss 28 forms a mounting for an intermediate wheel 33, which is secured to the boss by pinning or in any other desired manner. The main spring 32 is carried in a barrel 34, and at its outer end engages a hook 35 on said barrel. The base of the barrel is extended and is provided with ratchet teeth 36, adapted to

be engaged by a spring pressed pawl 37, which serves to hold the main spring against retrograde movement after the main spring is wound up. The arrangement of the ratchet with the barrel in close proximity to the plate 13 gives a solid construction and prevents the ratchet and pawl from accidentally disengaging.

In axial alinement with stud 25 is an annular boss 38, which extends from the base of the barrel and is journaled in the back plate 13. For holding the barrel in position and for winding up the main spring, I provide a member which is screw threaded into the boss 38 and which has a collar 39 to engage the lower face of the boss and a shoulder 40 formed in the back plate 13. A squared extension 41 extending outwardly from said member serves for the reception of a key for winding the main spring. It will be understood that the threads which secure the member to the boss 38 and main spring barrel are left hand, so that the winding up of the spring does not unscrew the member.

Meshing with the intermediate gear 33 is a gear wheel 42 which is rigidly secured on an arbor 43. This arbor is journaled in the front plate and also is journaled and projects through the back plate. Here, the extended end shown at 44 in Fig. 3 forms a support for a record dial carrier, which is of the type shown and described in my prior Patent No. 1,088,994, to which reference may be made for a detailed description. Should it be desired that the record dial carrier be rotated at a slower or faster speed, *i. e.*, for record cards of different periods of time, say 24 and 48 hours, it is a simple matter to change the gear ratio between gear wheel 42 and the intermediate gear 33; that is to say, by increasing the size of one and diminishing the size of the other. It will be understood that this change may be made without affecting the clock train in any way.

It has been found that it is advantageous to secure the record supporting plate 45 to the arbor 44 in some manner which would prevent the accidental displacement of said plate, when the cap 46 is removed for changing records. I accordingly provide a circular plate spring 47 having radial slots and placed on the arbor between the plate 45 and the shoulder of the arbor 43. The end of the arbor is drilled and threaded to receive a cap screw 48. This cap screw, when in place, crowds the record plate 45 against the spring 47, and holds it securely to the arbor. The cap portion of the screw is of such size that the cap 46 can pass thereover when it is removed for changing records. The rounded corners 49 of the cap screw 48 also facilitate the replacing of the cap 46 since they act as cams to force the spring actuated plungers 50 inwardly.

Rigidly secured to the cover plate 10 is a stud 51 which forms a support for a pinion 52 having an extended tube 53 which carries the minute hand 54. A gear wheel 55 has a tubular portion 56 which carries the hour hand 57. The tube 53 rotates freely about stud 51 and tube 56 rotates freely about 53. The minute hand pinion 52 and hour hand gear wheel 55 are driven by gear wheel 58 and pinion 59, respectively, which are rigidly mounted on the end of a friction or cannon pinion arbor 60. This cannon pinion, together with its associate mechanism, will now be described.

The cannon pinion is shown in Fig. 6. It comprises a small pinion 61 which has extending therefrom a tubular portion 62. This tube is slotted, as shown at 63. These slots split the tube into four parts. Two of these parts 64 I will term sleeves and the other two parts 65 tongues. The tongues are slightly shorter than the sleeves, as will be seen in Fig. 6. After the tube is slotted the tongues 65 are bent slightly inwardly, as shown in Fig. 5. The cannon pinion arbor 60 is tapered at 66, said taper terminating in a shoulder 67 which is slightly rounded adjacent the end of the taper, as shown at 68. The end of the arbor 60 is reduced and squared, as shown at 69, to receive a key.

In assembling, the cannon pinion is placed on the arbor 60 and forced along the same until the pinion 61 abuts against a shoulder 70 (see Fig. 4) on the arbor. When in this position, the sleeves 64 frictionally engage the top of the shoulder 67 and the tongues 65 have snapped down onto the curved portion 68 of the shoulder 67. The sleeves, by their frictional engagement with shoulder 67, serve to drive the arbor 60 in unison with the pinion 61; whereas the tongues lock the cannon pinion in position on the arbor and prevent any accidental lateral shifting of the pinion. When it is desired to set the hands of the clock by the application of a key to the squared end of the arbor, the latter may be turned without turning the pinion 61 or the clock train.

When placed in position, the cannon pinion arbor 60 is journaled in the front and back plates 10 and 13, and when in position the pinion 61 is in mesh with the main driving wheel 24. As previously explained, this arbor drives the clock hands 54 and 57.

It is to be understood that I do not limit myself to the exact construction shown and described, as many changes may obviously be made in point of detail and other embodiments resorted to without necessarily departing from the true spirit and scope of my invention.

What I claim is:

1. In a clock train for portable clocks, in combination, a back plate, a cover plate, a stud secured to the cover plate and extending toward the back plate, a main wheel

having an annular boss thereon, said main wheel and annular boss being revolubly mounted on the stud and said boss extending with said stud toward the back plate, a spring barrel revolubly mounted on the back plate and having the rim of the barrel concentric with the said annular boss, and a main spring connected with the rim of the barrel and said boss.

2. In a clock train for portable clocks, in combination a back plate, a cover plate, a stud secured to said cover plate, a main wheel revolubly mounted on said stud, means comprising a main spring and an escapement and gear train for driving said main wheel and controlling its movement, an intermediate gear wheel carried by the main gear, an arbor revolubly mounted in said plates, a gear wheel secured thereto meshing with the said intermediate gear, a record carrier mounted on said arbor, a stud mounted on the cover plate, a gear revolubly mounted thereon, and a cannon pinion and arbor revolubly mounted in said plates having a gear thereon meshing with the gear on the last mentioned stud member, said cannon pinion meshing with said main wheel and adapted to drive the hour and minute hands.

3. In a clock train for portable clocks, in combination, a plurality of supporting plates, a stud carried by one of the plates and extending adjacent the other plate, a main wheel carried by said stud, a spring barrel carried by said other plate in axial alinement with the aforesaid stud, a main spring in said barrel, a boss extending from said main wheel and revolubly mounted on the stud and concentric with the spring barrel and spring hooks on the said boss and said barrel whereby the said main spring when wound rotates the said boss and main wheel with respect to the barrel.

4. In a clock train for portable clocks, in combination, a pair of supporting plates, a stud carried by one of the plates and extending adjacent the other plate, a main wheel having an annular boss revolubly mounted on said stud and said boss extending away from the plate supporting the stud, a spring barrel revolubly mounted on one plate and in axial alinement with the stud extending toward said plate, and a main spring connecting at one end with the annular boss and at the other with the barrel.

5. In a clock train for portable clocks, in combination, a pair of supporting plates, a main spring carried in a barrel revolubly mounted in one of said plates, a main wheel revolubly mounted on a stud carried by the other of said plates, connecting means between said main spring and said main wheel, an intermediate gear carried by the main wheel, a record carrier, an arbor for said carrier journaled in the aforesaid plates, a gear secured to said arbor and meshing with the aforesaid intermediate gear, and a cannon pinion arbor journaled in said plates, and a gear on the said cannon pinion meshing with the main wheel.

In testimony whereof I hereunto affix my signature.

CHARLES H. JENKINS.