No. 859,743. PATENTED JULY 9, 1907.

C. CONWELL.

CLOCK.

APPLICATION FILED DEC. 6, 1905.

Fig. 1.

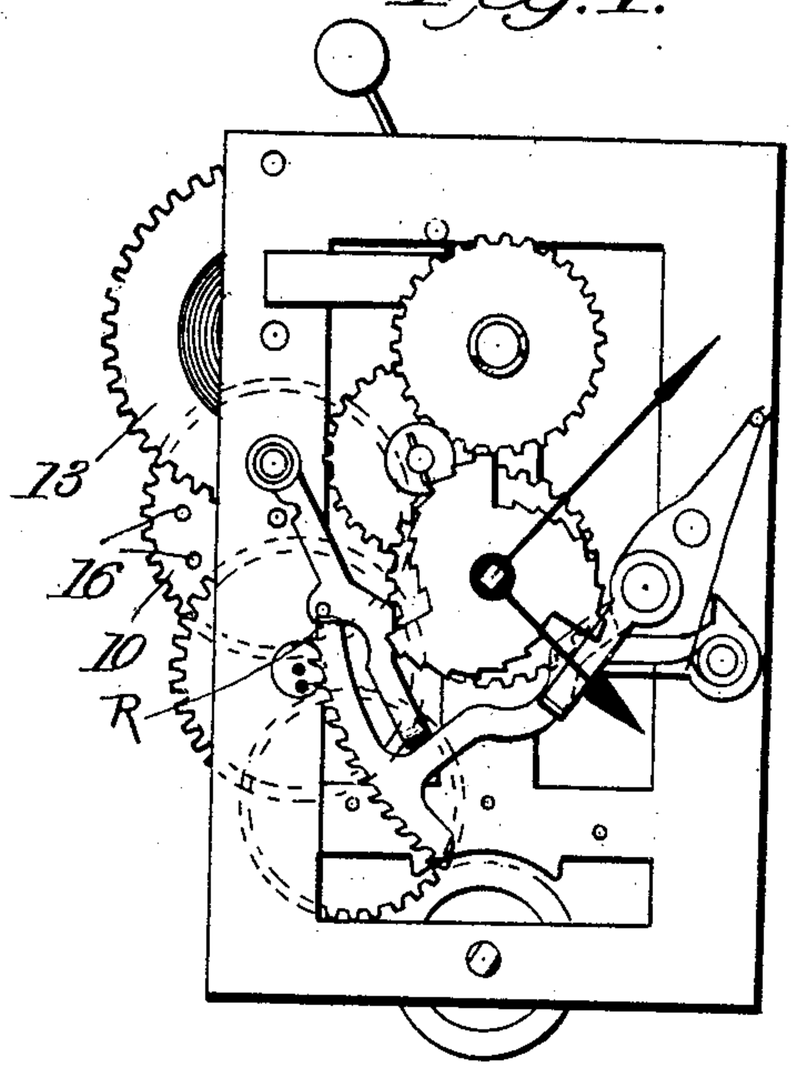


Fig. 2.

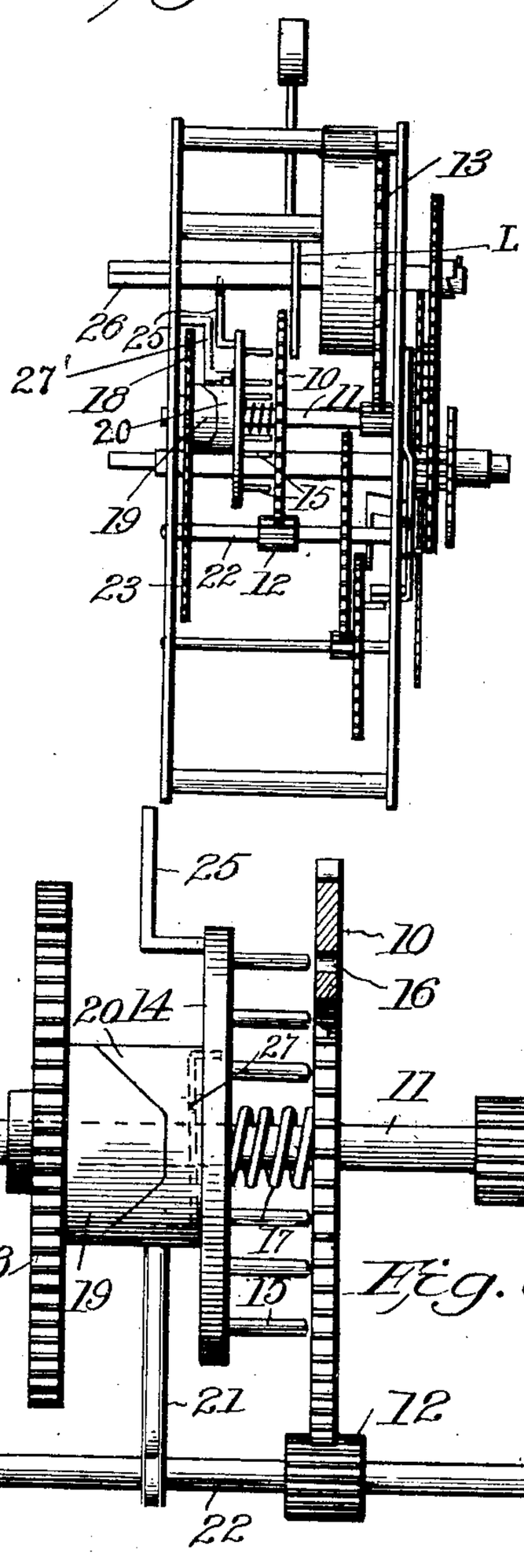


Fig. 3.

Fig. 4.

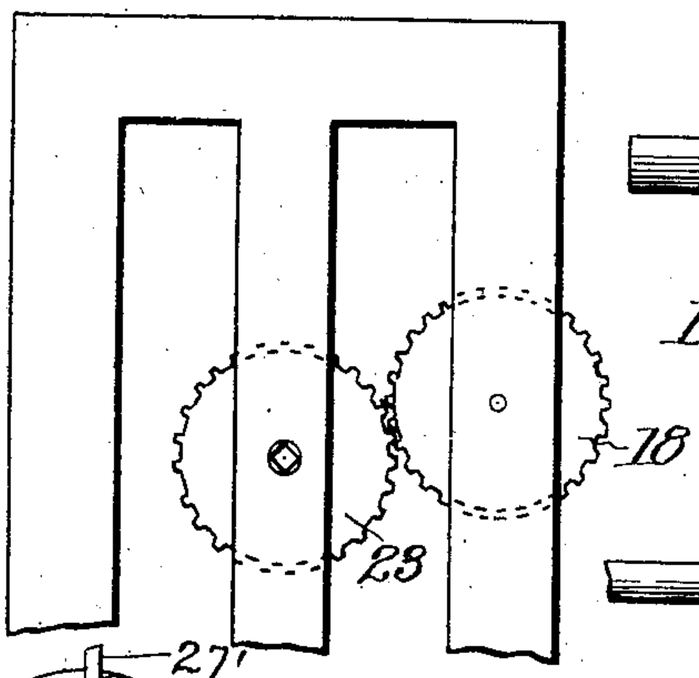


Fig. 7.

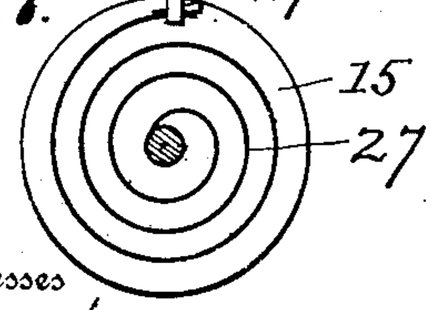


Fig. 5.

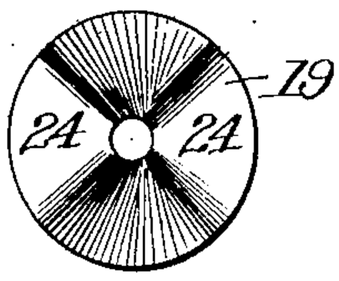
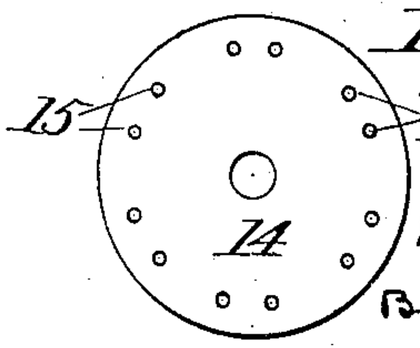


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

CLARKE CONWELL, OF LARCHMONT, NEW YORK, ASSIGNOR TO HELEN M. O'KANE CONWELL, OF LARCHMONT MANOR, NEW YORK.

CLOCK.

No. 859,743. Specification of Letters Patent. Patented July 9, 1907.

Application filed December 6, 1905. Serial No. 290,653.

To all whom it may concern:

Be it known that I, CLARKE CONWELL, of Larchmont, in the county of Westchester, State of New York, have invented certain new and useful Improvements in Clocks, of which the following is a specification.

This invention pertains to certain new and useful improvements in clocks, and relates more particularly to that class of clocks which are adapted for striking ship's time.

The invention has for its object the production of a clock of this character which will strike the hours and half hours in close imitation to the usual bell strokes by which time is indicated on shipboard.

A further object is to provide means which will cause the initial stroke of the striking hammer to always occur upon the first portion of a double stroke.

A further object is to provide means whereby a double stroke is secured with a single hammer.

A further object is to provide an improved pin disk for operating the striking hammer, together with means for automatically placing said pin disk into and out of operative relation with said hammer.

A further object is to provide pin mechanism which will automatically return to a normal position after each operation of the striking mechanism.

In carrying out my invention I provide a gear meshing with the striking train, said gear being keyed to a suitable shaft and provided with spaced apart openings to receive the pins of a pin disk loosely mounted on the same shaft, said gear and pin disk being normally held separated by any suitable means, such as a spring. Suitable means, operated by the hour hand shaft, is provided to move the pin disk toward the perforated pinion against the action of the separating means, whereby the pins of said disk protrude through the openings in the gear, this movement being timed to occur simultaneously with the operating of the striking train which rotates said gear. Upon completion of the striking operation the disk and gear are automatically separated, and said disk reversely rotated to its normal position by any suitable means, such as a spring or the like.

The invention will be hereinafter more fully described and particularly pointed out in the claims.

In the accompanying drawing:—Figure 1 is a front view of a clock with the face removed, illustrating my invention. Fig. 2 is an edge view thereof. Fig. 3 is an enlarged edge view of the pin disk and its adjuncts. Figs. 4, 5 and 6 are details.

Referring to the drawing, 10 designates a gear keyed to a shaft 11 and meshing with a pinion 12 of the striking train which latter may be of any preferred construction. The shaft 11 is also provided with a second gear meshing with the main driving gear 13 of the striking train. Mounted on shaft 11 adjacent gear 10 is a pin disk 14 which is free to rotate on said shaft and provided with a plurality of pins 15 arranged in pairs and adapted to protrude through openings 16 arranged in the gear 10. Said gear and pin disk are normally separated by any suitable means, preferably a spring 17, as shown. Mounted loosely upon shaft 11 is a cam gear 18 provided with a cam 19 which is adapted to engage a similar cam 20 also loosely mounted on said shaft 11 and interposed between the cam gear and the disk 14. The cam 20 is free to reciprocate upon the shaft 11 but is prevented from rotating thereon by means of an arm 21 engaging the shaft 22 of the pinion 12. The gear 18 is rotated by a similar gear 23 secured to the sleeve which carries the minute hand, said sleeve being rotated in the usual manner by the time train. By this arrangement the cam 19 is completely rotated once in each hour. In this connection it will be noted that I do not claim any specific time train and therefore have not illustrated the same in detail. The cams 19 and 20 are each provided with double cam faces 24, whereby the pin disk 14 is moved into engagement with the gear 10 once every half hour. The pin disk 14 is provided with a stop 25 which is held normally in engagement with the winding shaft 26 of the striking train by means of a coil spring 27.

The operation is as follows:—The gears 18 and 23 being of the same size the cam 19 acts upon cam 20 to move the pin disk 14 into engagement with the gear 10 once every half hour. Simultaneously with the lateral movement of the disk 14 the striking train is released by the releasing mechanism R which may be of any preferred form common to striking clocks, whereupon gear 10 is free to revolve under the action of the driving gear 13. In this manner the pins 15 will trip the lever L of the striking hammer. The pins being arranged in pairs will cause said hammer to operate with a double stroke to correspond to the stroke of nautical bells which are struck in pairs. After the stroke has been made, the onward movement of the minute hand sleeve and gear 23 carries the gear 18 and its cam forward so that the cams 19 and 20 are in such position as to permit lateral movement of the cam 20 and disk 14, under the influence of spring 17, whereby the pins 15 are disengaged from gear 10. Just as soon as said disk 14 is disengaged from the gear 10, the disk is reversely rotated under the influence of spring 27 until the stop 25 engages shaft 26, said stop being so located as to always stop the disk 14 with its pins opposite the openings 16 in gear 10, the striking train being so constructed that the gear 10 always stops with its openings in the same relative position.

The advantages and operation of my improved clock are apparent from what has been said. It will be observed that by arranging the hammer operating pins in

pairs I am enabled to closely imitate the double stroke of nautical bells. It will be further noted that by reversely rotating the pin disk after each operation of the striking mechanism I have provided means that will insure that the initial stroke of the hammer will always occur upon the first portion of the double stroke. It will also be noted that by this arrangement I am enabled to secure the double stroke with a single hammer. It will be further observed that I have provided simple and efficient means for automatically placing the pin disk into and out of operative relation with the striking hammer, and have insured the returning of the pin disk to its normal position. It will be particularly observed that the parts are so arranged as not to be affected by pitching or rolling of the vessel in rough weather.

I claim as my invention:—

1. An improvement in clocks comprising a reciprocable pin disk provided with pins, and means for engaging said pins to operate said disk.

2. An improvement in clocks comprising a reciprocating disk provided with pins, and rotating means for engaging said pins to rotate said disk.

3. An improvement in clocks comprising a striking train including a disk provided with pins, means for engaging said pins to rotate said disk, and means for reciprocating said disk with relation to its rotating means.

4. An improvement in clocks comprising a striking train including a disk provided with pins, means for engaging said pins to rotate said disk, means for holding said disk normally separated from its engaging means, and means for periodically moving said disk to bring said pins into engagement with said rotating means.

5. An improvement in clocks comprising a pin disk provided with pins, means for engaging said pins to rotate said disk, and means for moving said disk laterally to engage said pins with said rotating means.

6. An improvement in clocks comprising a pin disk provided with pins, rotating means for said disk, means for reciprocating said disk to bring said pins into engagement with said rotating means, and means for periodically operating said rotating means.

7. An improvement in clocks comprising a striker, a disk having striker operating pins, a gear mounted independently thereof, and means for reciprocating said disk to bring said pins into and out of engagement with said gear.

8. An improvement in clocks comprising a striker, a disk having striker operating pins, a gear, and means for moving said disk laterally to bring said pins into and out of engagement with said gear.

9. An improvement in clocks comprising a striker, a disk having striker operating pins, a shaft upon which the same is loosely mounted, a gear secured to said shaft, and means for moving said disk to bring said pins into and out of engagement with said gear.

10. An improvement in clocks comprising a striker, a disk provided with striker operating pins, a gear provided with openings to receive said pins, and means for moving said disk to bring said pins into and out of engagement with the openings of said gear.

11. An improvement in clocks comprising a striker, a pin disk for operating the same, a gear for rotating said disk, and means interposed between said disk and gear for holding them separated.

12. An improvement in clocks comprising a striker, a pin disk for operating the same, a gear for rotating said disk, means interposed between said disk and gear for holding them normally separated, and means for causing said disk to periodically engage said gear.

13. An improvement in clocks comprising a striker, a disk provided with striker operating pins, a gear provided with openings to receive said pins, means interposed between said disk and gear to hold them normally separated, and means for periodically moving said disk towards said gear.

14. An improvement in clocks comprising a striker, a sliding pin disk for operating the same, a gear for rotating said disk, a spring interposed between said disk and gear to hold them normally separated, and means for periodically causing said disk to engage said gear.

15. An improvement in clocks comprising a striker, a pin disk for operating the same, a shaft upon which said disk is loosely mounted, a gear secured to said shaft, means interposed between said disk and gear to hold them normally separated, and means for causing said disk to periodically engage said gear.

16. An improvement in clocks comprising a striker, a shaft, a pin disk for operating the said striker, and slidably mounted upon said shaft, a gear secured to said shaft, a spring interposed between said disk and gear, and means for causing said disk to periodically engage said gear.

17. An improvement in clocks comprising a striker, a pin disk for operating the same, a gear for operating said disk, means for holding said disk and gear normally separated, and a cam gear for causing said disk and pinion to periodically engage.

18. An improvement in clocks comprising a striker, a pin disk for operating the same, a gear for operating said disk, means for holding said disk and gear normally separated, a gear provided with a cam for moving said disk into engagement with the first mentioned pinion, and means for rotating the cam gear in unison with the minute hand of the clock.

19. An improvement in clocks comprising a striker, a pin disk for operating the same, a gear for operating said disk, means for holding said disk and gear normally separated, a cam gear, and means interposed between the cam gear and disk for moving the latter into engagement with said disk operating gear.

20. An improvement in clocks comprising a striker, a pin disk for operating the same, a gear for operating said disk, means for holding said disk and gear normally separated, a cam gear, and a sliding cam interposed between said cam gear and said disk.

21. An improvement in clocks comprising a striker, a shaft, a pin disk for operating the striker, said disk being loosely mounted on said shaft, a gear for operating said pin disk and secured to said shaft, and a cam gear mounted to rotate on said shaft adjacent said disk, whereby the latter is moved into and out of engagement with its gear.

22. An improvement in clocks comprising a striker, a shaft, a pin disk for operating the striker, said disk being loosely mounted on said shaft, a gear for operating said disk and secured to said shaft, means interposed between said disk and gear to hold them normally separated, and a cam gear for moving said disk into engagement with said gear, said cam gear being also mounted on said shaft.

23. An improvement in clocks comprising a striker, a shaft, a pin disk for operating the striker and loosely mounted on said shaft, a gear for operating said disk, said gear being secured to said shaft, means for holding said disk and gear normally separated, a cam gear also loosely mounted on said shaft, and a cam interposed between said cam gear and said disk.

24. An improvement in clocks comprising a striker, a shaft, a pin disk for operating the striker, said disk being loosely mounted on said shaft, an operating gear for said disk secured to said shaft, means for holding said disk and gear normally separated, a cam gear mounted to rotate on said shaft, a sliding cam interposed between said cam gear and said disks, and means to prevent rotation of said cam.

25. An improvement in clocks comprising a striker, a shaft, a pin disk for operating the striker and loosely mounted on said shaft, an operating gear therefor, secured to said shaft, a spring interposed between said disk and gear, and a cam gear for moving said disk against the action of its spring, said cam gear being also mounted on said shaft.

26. An improvement in clocks comprising a shaft, a striker, a pin disk for operating the same loosely mounted on said shaft, an operating gear for said disk secured to said shaft, a spring interposed between said disk and gear, a cam gear, and a cam interposed between said disk and said cam gear.

27. An improvement in clocks comprising a shaft, a

striker, a pin disk for operating the same loosely mounted on said shaft, an operating gear therefor secured to said shaft and provided with openings to receive the pins of said disk, a spring interposed between said disk and gear, a cam gear, and a sliding cam interposed between said disk and cam gear.

28. An improvement in clocks comprising a pin disk, means for rotating said disk, and means for reversely rotating said disk to return the same to its normal position.

29. An improvement in clocks comprising a pin disk, means for rotating the same, a spring for returning the same reversely to its normal position, and a stop for limiting the reverse rotation of said disk.

30. An improvement in clocks comprising a pin disk, a gear for rotating the same, means for causing said disk to periodically engage said gear, and means for reversely rotating said disk to its normal position when disengaged from said gear.

31. An improvement in clocks comprising a single striker, rotary means for imparting single and double strokes thereto, and means for reciprocating said operating means into and out of engagement with said striker.

32. An improvement in clocks comprising a striker, rotary means for operating the same, and means for reciprocating said operating means laterally into and out of engagement with said striker.

33. An improvement in clocks comprising a single striker, means for imparting double and single strokes thereto, and means for causing each operation of the striker to commence upon the primary step of a double stroke.

34. An improvement in clocks comprising a single striker, a pin disk provided with striker operating pins arranged in pairs, and means for causing the primary pin of one of said pairs to impart the initial stroke to the striker at each operation of said disk.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

CLARKE CONWELL.

Witnesses:
H. M. O'KANE CONWELL,
SAMUEL R. BELL.