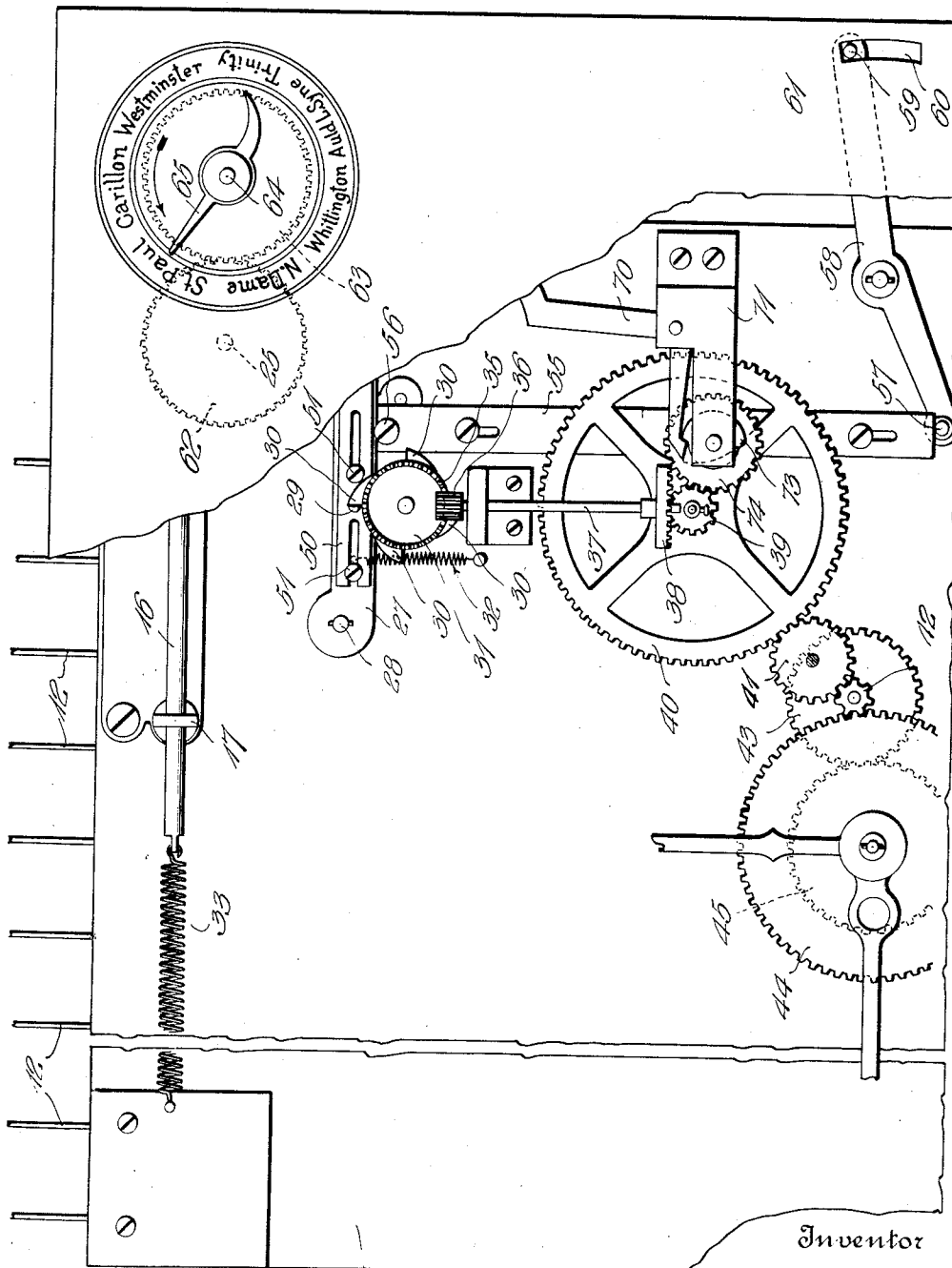


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C. A. JACQUES.
CHIMING CLOCK.
APPLICATION FILED SEPT. 1, 1916.

Patented Mar. 27, 1917.
4 SHEETS—SHEET 1.



Witness

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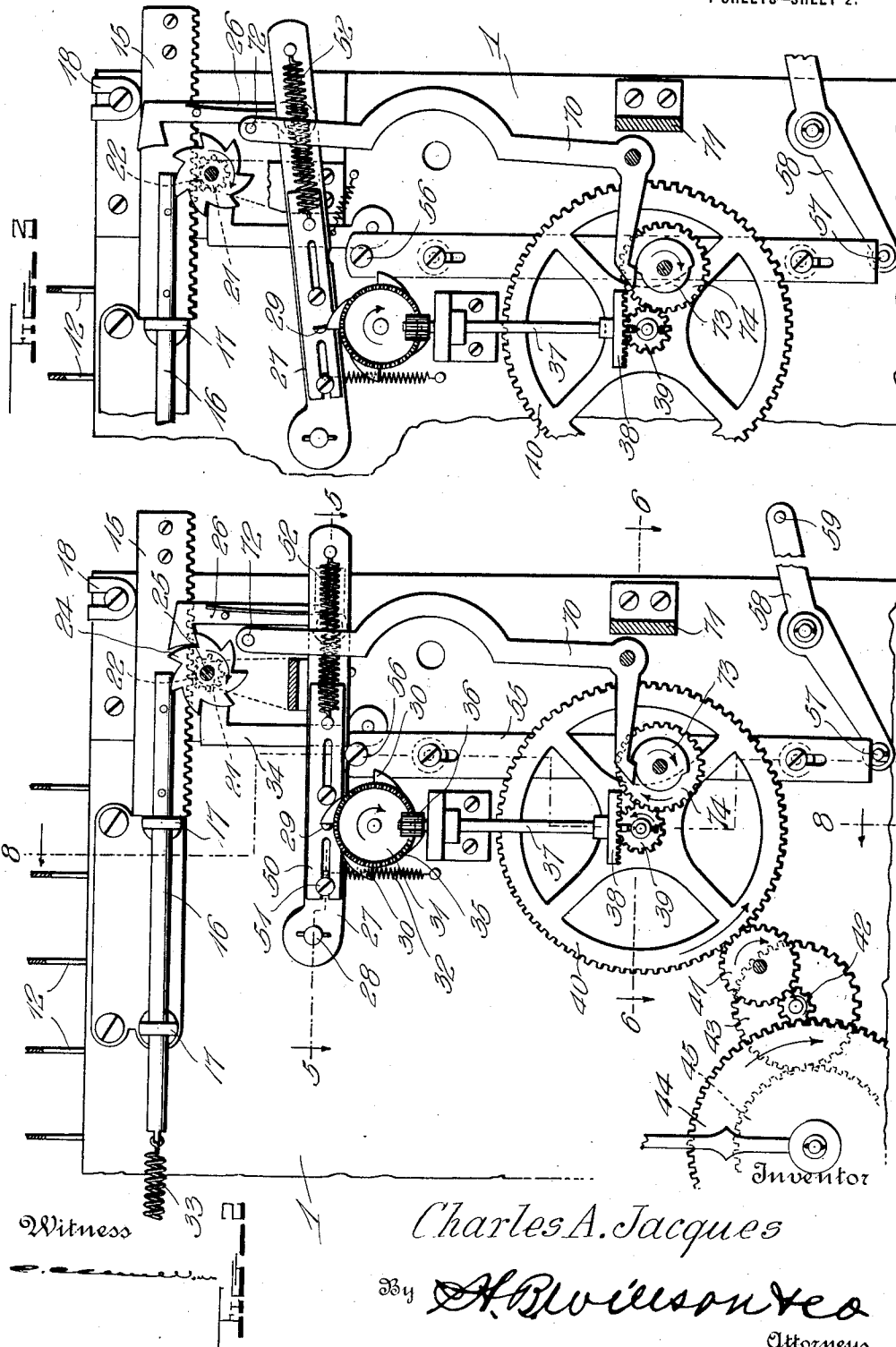
By

Charles A. Jacques
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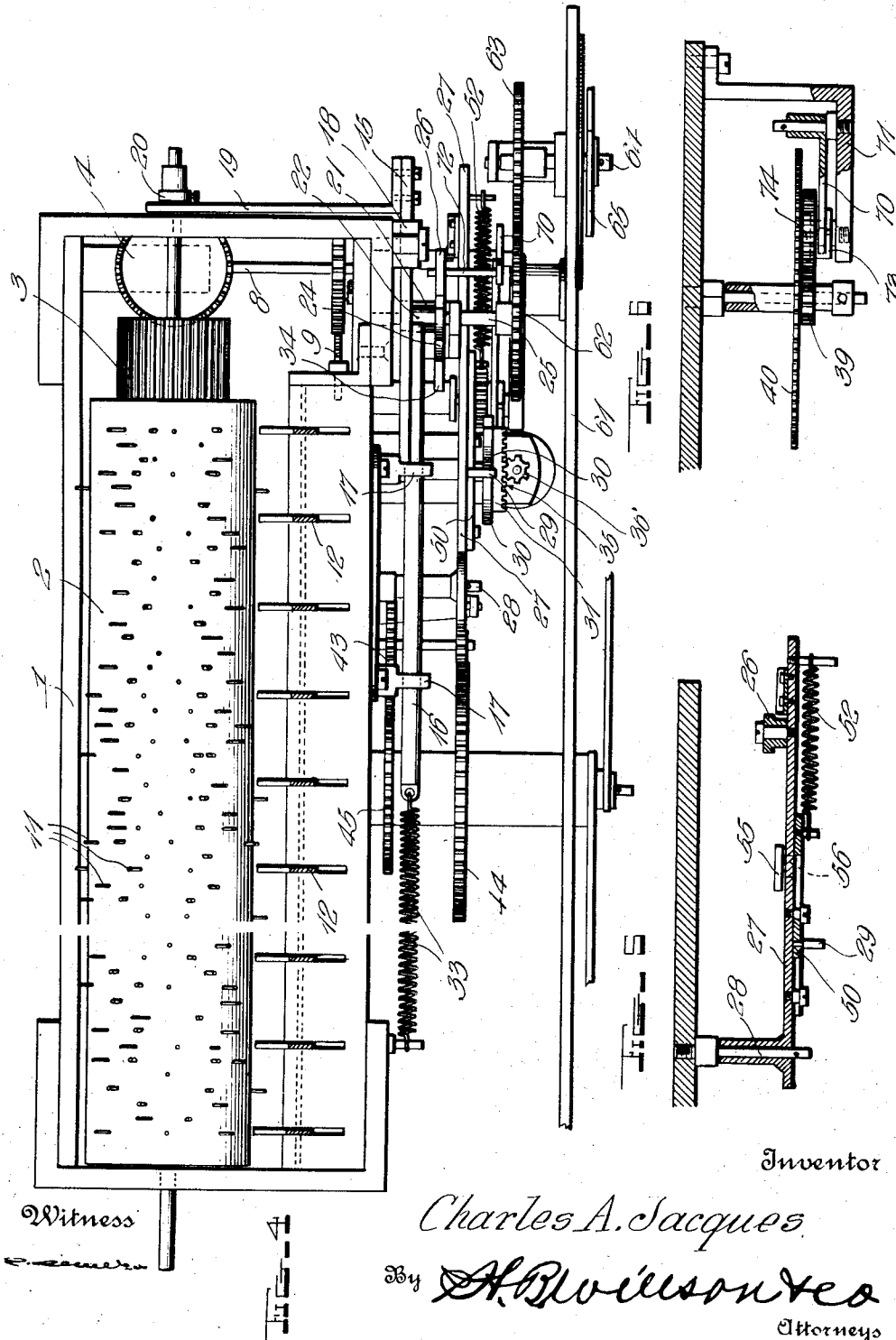
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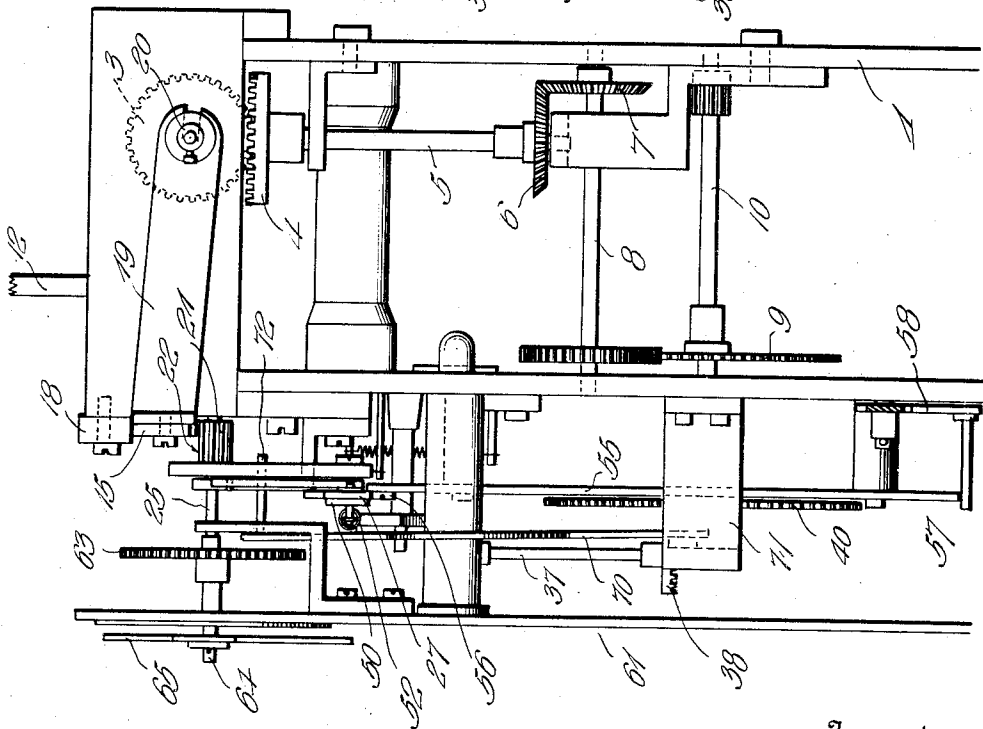
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4 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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CHIMING-CLOCK.

1,220,851.

Specification of Letters Patent.

Patented Mar. 27, 1917.

Application filed September 1, 1916. Serial No. 118,071.

To all whom it may concern:

Be it known that I, CHARLES ADOLPHE JACQUES, a citizen of the United States of America, residing at New York, in the
5 county of New York and State of New York, have invented certain new and useful Improvements in Chiming-Clocks; and I do declare the following to be a full, clear, and exact description of the invention, such as
10 will enable others skilled in the art to which it appertains to make and use the same.

My invention aims to provide a comparatively simple combination of parts whereby chiming clocks may be made to sound automatically different chimes each day in the
15 week and to repeat automatically the same chiming operations each week.

A further object is to provide hand operated means for adjusting the chime striking mechanism, in addition to the automatic operating means therefor, and to devise simple construction for preventing manual adjustment of the chime actuating means while it is being adjusted mechanically.

Yet another object is to so construct certain of the improved features of construction as to permit setting of the clock hands by turning them in a retrograde direction, without injury to any parts of the device.

With the foregoing general objects in view, the invention resides in certain novel features of construction and in unique combinations of parts to be hereinafter fully described and claimed, the descriptive matter
30 being supplemented by the accompanying drawings which constitute a part of this application and in which:

Figure 1 is a front elevation of a clock with the face thereof broken away and with a number of old parts omitted to more clearly disclose the nature of the present invention;

Figs. 2 and 3 are views somewhat similar to Fig. 1 but with the entire face of the clock removed, these views showing different positions of parts to be hereinafter referred to;

Fig. 4 is a top plan view;

Figs. 5 and 6 are horizontal sections on the planes of the lines 5—5 and 6—6 of Fig. 2;

Fig. 7 is an end elevation; and

Fig. 8 is a vertical section taken substantially on the planes of the line 8—8 of Fig. 2.

In the drawings above briefly described the numeral 1 designates the main body of the clock within which the usual works are located, said works being omitted, however, for the sake of clearness since their structure constitutes no part of the present invention. A pin roller 2 is disposed at the upper end of the body 1 and in the present embodiment of the invention is mounted for axial shifting, said roller having at one end a widened
60 driving gear 3 meshing with a crown wheel 4 on an upright shaft 5, said shaft having a bevel gear 6 meshing with a similar gear 7 on a transverse shaft 8. By means of gear 9 the shaft 8 is driven from another shaft
65 10 which latter is turned every time the striking mechanism of the clock is to be operated, this mechanism being controlled by any suitable means which is tripped at predetermined intervals so as to strike every
70 hour and half hour or more often as occasion may demand.

The pins 11 of the pin roller 2 cooperate with the usual hammer levers 12 which are fulcrumed at the upper end of the body 1. It is my intention to shift the roller 2 end-
80 wise in a step by step manner, one step of the shifting being performed every twenty-four hours so that different pins 11 will come in contact with different levers 12 and will
85 thus sound different chimes or combinations of chimes each day. At the end of the seventh step thus performed, I provide means for returning the roller 2 to its initial position, and throughout succeeding weeks,
90 unless adjustments are made by hand, the same striking operations will be duplicated. In carrying out these ideas the structure now to be described is provided.

A sliding rack 15 is mounted on the front
95 side of the body 1, said rack preferably having a guide rod 16 sliding in bearings 17 and bearing at its smooth upper edge against a shoe 18 which prevents upward movement of said rack. The rack 15 is connected by
100 means of a rigid arm 19 with a grooved collar 20 which is secured on the shaft of the pin roller 2 and it will thus be evident that as said rack is shifted longitudinally in a step by step manner, the roller 2 will be
105 moved correspondingly to produce the results above set forth. A pinion 21 meshes with the teeth on the lower edge of the rack bar 15 and at 22 said pinion is stripped of a suitable number of teeth for the purpose
110

of permitting the rack 15 to return to its initial position after seven successive adjustments have been imparted thereto, said pinion being turned at intervals of twenty-four hours by means of a ratchet 24 secured on the shaft 25 thereof, this ratchet being operated by means of a vertically moving spring pressed dog 26.

The dog 26 is pivoted to one end of a dog-carrying member in the form of a lever 27 which is fulcrumed at 28 to the front of the body 1, said lever having a lateral projection 29 which is adapted to be successively engaged by cams 30 on a cam wheel 31, this cam wheel being turned the length of one cam every twenty-four hours, whereby at the end of each period of this length the lever 27 will be raised to move the dog 26 back along the ratchet 24 to permit said dog to take over another tooth of said ratchet. When projection 29 drops from any cam, a coiled spring 32 returns the lever 27 to its normal lowered position and thus the ratchet 24 is turned to rotate the pinion 21 a fraction of a revolution. This motion is imparted to the rack 15 which moves the pin roller 2 in the manner set forth.

After seven adjustments of the roller 2 in the manner just described, the toothless portion 22 of the pinion 21 will be exposed to the rack 15 as indicated in Figs. 2 and 3, and a coiled spring 33 which has been placed under tension by movement of the rack 15 to the right will return said rack to its original position, the spring in question being connected to the free end of rod 16 as shown. In order to prevent the spring 16 from returning the rack 15 after each adjustment thereof by the dog and ratchet, a locking dog 34 preferably engages said ratchet as shown.

The cam wheel 31 is provided with a crown gear 35 meshing with the pinion 36 on an upright rod 37, the lower end of said rod having a crown gear 38 meshing with the pinion 39 on the hub of a large spur gear 40. The gear 40 meshes with a smaller gear 41 whose teeth are engaged by a small pinion 42 extending from the usual minute wheel 43. Pinion 42 also serves to drive the hour wheel 44 and is itself driven from the gear 43 through the instrumentality of the well known cannon pinion 45.

From the construction set forth in the preceding paragraph it will be obvious that since the cam wheel 31 is driven from the driving means of the clock hands, it must be rotated when said hands are turned for setting the clock. As long as the hands are turned in the proper direction, rotation of the wheel 31 will simply cause the active cam 30 to raise the lever 27 and release it if said hands are turned far enough. In case the hands are turned in a retrograde direction, however, it becomes essential to provide some simple means for preventing breakage of

parts which would undoubtedly occur if the projection 29 were carried rigidly by the lever 27 and approached by the rear ends of the cams 30. To overcome any possibility of such an occurrence, the projection 29 which is preferably in the form of a flat sided pin, is carried by a slide 50 having slot and pin connections 51 with the lever 27, said slide being held yieldably at one limit of its movement by means of a coiled spring 52 secured at one end to said slide and at its other end to the lever. It will thus be evident that retrograde movement of the cam wheel 31 will bring the cams 30 up against the pin 29, yet regardless of this no injury will result since the spring 52 permits the slide 50 to move, thus allowing the pin 29 to move to the necessary extent to obviate untoward results.

For rocking the lever 27 manually to successively raise and lower the dog 26 by hand, in order to set the chiming means wherever desired, a vertical slide bar 55 is preferably provided, said bar having at its upper end a stop 56 preferably in the form of a screw head which contacts with the under side of said lever. The lower end of bar 55 rests on a pin 57 which extends laterally from one end of an adjusting lever 58 fulcrumed to the body 1, the other end of said lever having an operating pin 59 which as shown clearly in Fig. 1 projects through a slot 60 in the face 61 of the clock. It will thus be observed that as the lever 58 is oscillated by means of the pinhandle 59, the lever 27 will be raised and lowered to cause the dog 26 to successively turn the ratchet 24 a fraction of a revolution, the result being that the roller 2 is shifted endwise to cause it to operate the hammer levers of different chimes.

The shaft 25 of the ratchet 24 and pinion 21 carries on its front end a gear 62 meshing with another gear 63 on the rear end of an indicator shaft 64 which passes through the face 61. Shaft 64 carries a pointer 65 for coöperation with the names of the different chimes, which names are inscribed in the face of the clock, so that at each individual adjustment of the roller 2, the pointer 65 will indicate the name of the chimes which those of the clock are reproducing. This arrangement is also of advantage when setting the roller 2 by actuation of the handle 59 since a glance at the position of the pointer 65 will indicate what chimes will next be sounded.

Owing to the length of the cams 30 there is a period of nine hours after each tripping of the lever 27 by one of said cams in which the hand operated means for actuating said lever may be used to change the strike of the clock. After this time, however, when one of the cams begins to raise the lever 27, the hand operated means is not effective since although it raises lever 27 the required amount, the pin 29 and the active cam 30

will prevent said lever from moving downwardly to the extent necessary in order to permit dog 26 to turn ratchet 24 the proper amount. Were hand adjustments made

5 after this nine hour period, therefore, the roller 2 would be caused to assume an inoperative position with respect to the hammer levers 12 and some of the pins of said roller might be jammed and bent. In short a number of undesirable results would ensue if 10 manual adjustments were permitted after the period in question. To prevent any possibility of such adjustments being made, therefore, I provide the simple construction described below.

15 A bell crank lever 70 is fulcrumed to a bracket 71 and carries at its upper end a laterally projecting pin 72 which bears against the inner edge of the dog 26 so as to prevent inward movement of said dog when 20 said pin is properly positioned by the lever 70. A cam 73 holds the lever 70 in the position mentioned from the end of the nine hour period above referred to until the lever 25 27 is about to drop due to the active cam clearing the pin 29. The cam 73 may be driven in any suitable manner but movement is preferably imparted thereto from the pinion 39 through the instrumentality of a 30 gear 74.

The foregoing completes the description of the improved features of construction but it will be well to describe in general the operation thereof. To this end let us assume 35 that on Monday of one week the roller 2 stands in its initial position at the limit of its movement toward the left, and that the chimes which will be operated by the clock throughout the day are those rendering the 40 St. Paul chimes, as indicated at the right of Fig. 1. Until Monday night, therefore, the St. Paul chimes will be sounded whenever the striking mechanism is tripped in the usual or any preferred manner. At any pre- 45 determined hour in the night, however, the change in the chiming mechanism may be made to take place and at this particular time one of the cams 30 of the cam wheel 31 will release the pin 29, having previously 50 raised said pin to the position shown in Fig. 3. At about the same time the cam 73 releases the lever 70 to permit the dog 26 to move inwardly for engagement with the ratchet 24. The spring 32 now moves the 55 lever 27 suddenly downward and turns the pinion 21 one-seventh of a revolution. The dial now indicates that the turning of the pinion 21 has so shifted the roller 2 as to cause the Notre Dame chimes to be sounded 60 throughout Tuesday. On Tuesday night and upon all succeeding nights of the week the same operation above described takes place with the result that on Wednesday, Thursday, Friday, Saturday, and Sunday, 65 the chimes Whittington, Auld Lang Syne,

Trinity, Westminster, and Carillon respectively will be sounded. On Sunday night, after the Carillon chimes have been in use all day, the last operation of the dog 26 on this day positions the toothless portion of 70 the pinion 21 toward the rack 15. The moment this takes place the spring 33 returns said rack to its initial position and the latter carries with it the roller 2. The result is that on the following Monday the St. 75 Paul chimes will be sounded and the same striking operations will be duplicated during succeeding weeks unless manual adjustments are made by means of the handle 59.

Particular emphasis is laid not only upon 80 the general combination and arrangement of parts but upon the unique structure for permitting setting of the hands without injury to the mechanism and upon the provision of the lever 70 and cam 73 for preventing 85 manual actuation of the dog 26 while the automatic shifting means thereof is in operation.

On account of these salient features as well as all other unique structural details 90 hereinbefore described, the arrangement of parts set forth in the present application constitutes the preferred form of the device. It is to be understood, however, that within 95 the scope of the invention as claimed numerous changes may be made without sacrificing the principal advantages thereof. For instance, although chimes have been herein referred to, it will be evident that any other 100 appropriate audible signals might well be used.

I claim:

1. A clock having a shiftable roller for actuating different chimes when in different positions, and means for automatically shifting said roller in a step by step manner, the steps being performed at equal intervals of several hours.

2. A clock having chime actuating means adjustable for striking different chimes, a 110 ratchet for adjusting said means, a dog for successively moving said ratchet, and means for actuating said dog automatically at intervals of several hours.

3. A clock having chime actuating means adjustable for striking different chimes, a ratchet and a dog for adjusting said means, a dog operating member on which said dog is mounted, a cam driven from the driving 120 means of the clock for successively shifting said dog operating member, and a thrust member which said cam engages, said thrust member having a one-way yielding connection with said dog operating member to permit manual turning of the clock hands in a retrograde direction without injurious results.

4. A clock having chime actuating means adjustable for striking different chimes, a ratchet and a dog for adjusting said means, 130

a dog operating member on which said dog is mounted, a cam driven from the driving means of the clock for successively shifting said dog operating member, a slide 5 mounted on said last named member and having a lateral projection engaged by the cam, and a spring for permitting movement of said slide in one direction when the cam is turned in a retrograde direction by manual 10 setting of the clock hands.

5. A clock having chime actuating means adjustable for operating different chimes, and both automatically and hand operated means for adjusting said actuating means.

15 6. A clock having chime actuating means adjustable for operating different chimes, a dog and ratchet for adjusting said actuating means, a dog carrying member on which said dog is mounted, means for automatically actuating said member at intervals, 20 and additional means for operating said member by hand.

7. A clock having chime actuating means adjustable for operating different chimes, 25 both automatically and hand operated means for adjusting said actuating means, and means for preventing active actuation of the hand operated means while the automatic means is in operation.

30 8. A clock having chime actuating means adjustable for operating different chimes, a dog and ratchet for adjusting said actuating means, means for automatically moving said dog back along the ratchet at intervals to 35 permit it to again move said ratchet, a handle for moving the dog by hand, and means for preventing engagement of the dog with the ratchet while the automatic dog moving means is in operation and for releasing said 40 dog at the completion of this operation.

9. A clock having chime actuating means adjustable for striking different chimes, a dog and ratchet for adjusting said actuating means, means for automatically moving said 45 dog back along the ratchet at intervals to permit it to again shift said ratchet, a handle for similarly moving said dog by hand, a dog controlling member, and a cam for operating said member for preventing the 50 dog from engaging the ratchet while the automatic dog shifting means is in operation and for releasing said dog at the completion of this operation.

10. A clock having chime striking mechanism 55 for automatically striking different chimes each day in the week and for auto-

matically repeating the same striking operations during succeeding weeks.

11. A clock having chime actuating means adjustable for striking different chimes, a 60 rack and pinion for adjusting said actuating means in a step by step manner, means for successively turning said pinion a fraction of a revolution, said pinion having a toothless portion presented to the rack when 65 said pinion is rotated a predetermined amount, and means for returning said rack to its initial position when said toothless portion of the pinion permits.

12. A clock having a plurality of hammer 70 levers for actuating different chimes, a pin roller for operating said hammers, a sliding rack bar connected with said roller, a pinion for shifting said roller longitudinally to vary the relation of pins and levers 75 to change the tone of strike, means for successively turning said pinion a fraction of a revolution, said pinion having a toothless portion presented to the rack when said pinion has been rotated a predetermined 80 amount, and means for automatically returning the roller to its initial position when the pinion permits.

13. A clock having an axially shiftable roller for actuating different chimes when 85 in different positions, means for automatically moving said roller from one extreme toward the other in a step by step manner, the steps being performed at equal intervals, and means for automatically returning said 90 roller to its initial position when it has moved to its other extreme.

14. A clock having chime actuating means adjustable for striking different chimes, and a proceeding and receding member synchro- 95 nized with the driving means of the clock for successively adjusting said chime actuating means.

15. A clock having an axially shiftable roller for actuating different chimes when in 100 different positions, and a proceeding and receding operating member synchronized with the driving means of the clock for successively shifting said roller in a step by step manner. 105

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES A. JACQUES.

Witnesses:

JOHN W. BARROW,
H. SOMBORN.