

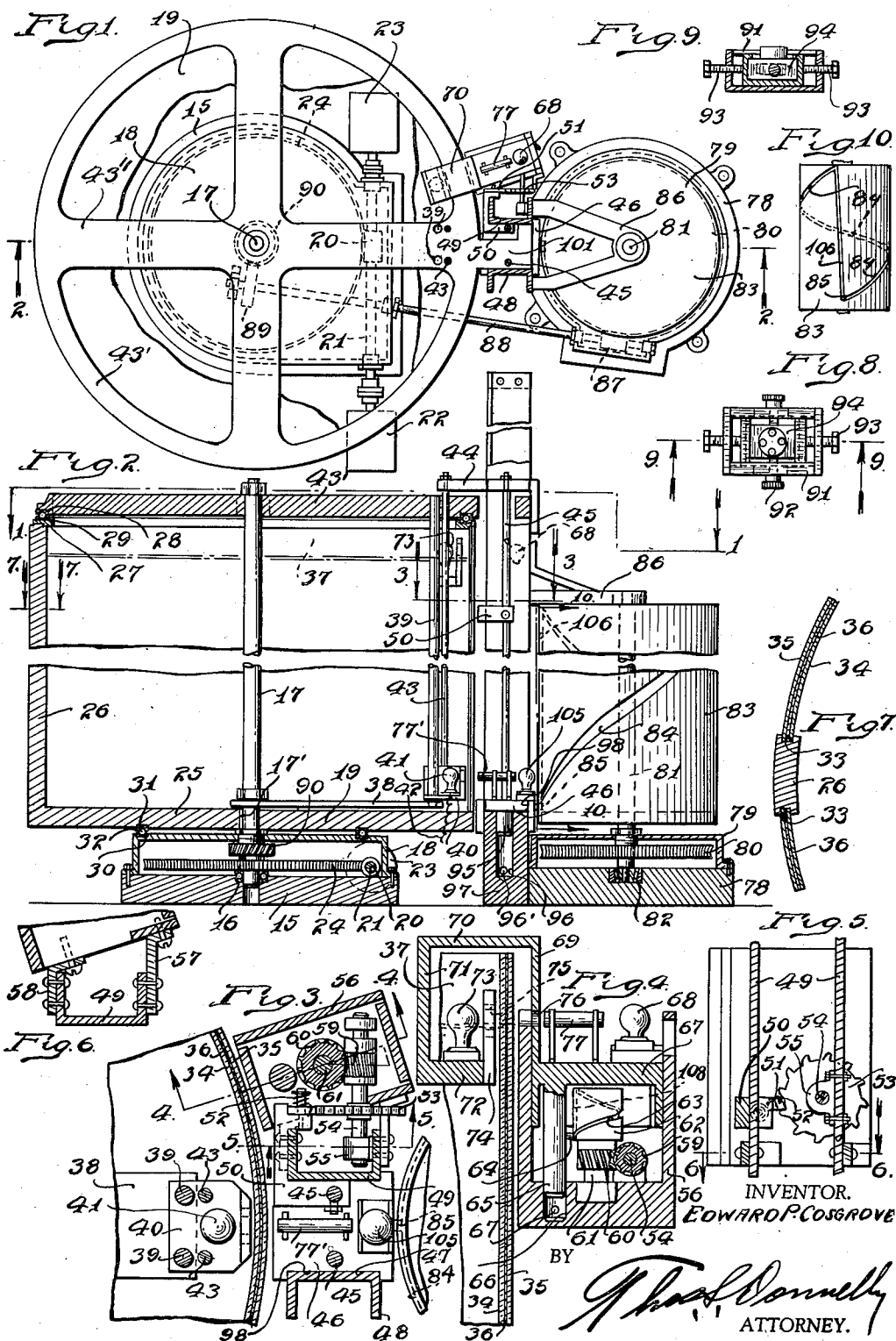
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TIME ANNOUNCER

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TIME ANNOUNCER

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4 Claims. (Cl. 58—14)

My invention relates to a new and useful improvement in a time announcer adapted for use particularly for announcing the time at various intervals and is so constructed and arranged as to announce the hour and such fractions of the hour as may be determined upon.

It is an object of the invention to provide a mechanical means of time announcing at pre-determined times, whereby the correct and accurate time may be automatically and mechanically announced so as to dispense with the necessity of vocal announcement, and so as to eliminate the expense incident to vocal announcement.

It is another object of the present invention to provide a mechanism whereby a part of the mechanism may be utilized for a period of one hour in order to effect the announcing of the fractional parts of the hour at intervals and cooperate with such mechanism that during the space of time between the intervals of announcement, the mechanism, when completing the operation of one hour, will return to its initial or starting position, so that no interruption in the periodic announcements may be had.

Another object of the invention is the provision of a mechanism whereby a photo-cell may be utilized in affecting the announcements, both of the hour and of the fractional parts of the hour.

Another object of the invention is the provision in a mechanism of this class of a pair of rotating parts, so co-ordinated as to each other and as to time that the various parts will be in the proper operative position at the periodic intervals of time which are to be announced.

Another object of the invention is the provision of a device of this class which will be simple in structure, economical of manufacture, durable and highly efficient in use and compact.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will best be understood by a reference to the accompanying drawing which forms a part of this specification, and in which,

Fig. 1 is a top plan view of the invention with parts removed and parts shown in section, this figure being taken on substantially line 1—1 of Fig. 2.

Fig. 2 is a sectional view taken substantially on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a fragmentary sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is a fragmentary sectional view taken on line 5—5 of Fig. 3.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 5 with parts removed.

Fig. 7 is a fragmentary sectional view taken on line 7—7 of Fig. 2.

Fig. 8 is a top plan view of a socket housing used in the invention.

Fig. 9 is a sectional view taken on line 9—9 of Fig. 8.

Fig. 10 is a fragmentary view taken on line 10—10 of Fig. 2.

The invention is primarily adapted for use in performing the function of time announcers which are now employed in many telephone offices. Under this system of time announcing, a party calling into the central office requesting the time is connected with a transmitter in a room in which a gong is sounded at periodic intervals, these intervals being preferably fifteen second intervals. When the request for the time is made and the connection to the announcing room is effected, the person vocally announcing the time will announce that at the next sounding of the gong the time will be a certain hour a certain number of minutes and a certain number of seconds. This operation is carried on throughout the entire day, and the present mechanism is specifically adapted for making such announcements. When the announcements are made vocally it is evident that proper reliefs of the employees must be provided at short periods of time, so that considerable expense is entailed because of the number of employees engaged in such announcing. With the present mechanism, the announcing is automatically and mechanically taken care of.

In the invention, I provide a base 15, on which is attached a suitable bearing 16, for a vertically extending shaft 17. This shaft 17 projects through the gear box 18 and through the drum base 19. In the gear box or housing 18 is a worm 20 fixedly mounted on the shaft 21, which is driven by the pair of motors 22 and 23. This worm 20 meshes with the worm wheel 24 which is fixedly mounted on the shaft 17. Projecting upwardly from the base 25 and preferably formed integral therewith, are the standards or supports 26, which are positioned preferably at diametrically opposite sides. Connected to and carried by the supports 26 is a ring 27 which serves to cooperate with a ring 28 to form a ball race for retention of the roller bearings or balls 29. The shaft 17 is keyed by the key 17' to the base 19. A ball race for the retention of the balls 32 is pro-

vided by the rings 30 and 31, one of which is secured to the gearing housing 18 and the other of which is secured to the under-surface of the base 25.

5 The base 25 forms a base for a drum which is open at its upper end and the cylindrical portion of which is formed from a pair of semi-cylindrical sections. I prefer this form of construction, although it will be obvious that the cylindrical
10 portion of the drum may be formed from as many sections as desired. Each of these sections consists of an outer glass portion 35, and an inner glass portion 34, and secured to, or clamped by the same, is a film strip 36 on which sound recordings for electrical reproduction have been made.
15 The edges of these sections engage in channel 33, formed in the uprights or standards 26. The upper portion 37 of the film may be separate from the lower portion; but in any event the recordings differ from the recordings on the lower portion.
20 These recordings on the film beginning from the bottom and extending to the lower edges of the strip 37 are progressive in spiral arrangement about the drum. The recordings on the
25 upper strip are not spirally arranged, but consist preferably of 12 separate sections, each section corresponding to one of the hours of a day. The recordings on the lower section or lower film correspond to the various minutes and fractional
30 parts of a minute or an hour, so that the reproducing device may be operatively associated with the recordings on the lower portion of the drum for a period of one hour upon which the operating mechanism may be returned to its initial or
35 starting position.

The shaft 17 projects rotatably through an arm 38, which extends radially outwardly from the lower end thereof within the drum. Projecting
40 upwardly from this arm 38 are the spaced guide rods 39 which also project through a carriage 40 on which is mounted a photo-cell 41 which is connected by a pair of wires 42 to an amplifier or sound reproducing mechanism. Secured to the
45 carriage 40 and projecting upwardly therefrom are lift rods 43, which are connected to the plate 44. This plate 44, is connected exterior of the drum, by means of the lift rods 45, with a carriage 46. This carriage 46 is provided at its opposite sides
50 with the recesses 47, in which engage, and which serve to embrace, the vertically extending channel members 48 and 49 which serve as supports and guides.

Mounted on the carriage 46 is an optical tube 77'. Suitably mounted on this carriage 46 also is
55 an exciter lamp 105. The optical tube 77' and the exciter lamp 105 are so located relatively to the photo cell 41 that the rays of light from the exciter lamp 105 will pass through the optical tube 77' and after passing through the portion of the
60 film 36 in alignment therewith, and the glass portions 34 and 35 of the drum will strike the photo cell 41.

Fixedly mounted on the rod 45 is a pawl carrying bracket 50, on which is rockably mounted the
65 pawl 51, which is normally held by the spring 52 in position for engagement with the ratchet wheel 53 which is fixedly mounted on the shaft 54. This shaft 54 is journaled in the bearing 55 mounted
70 on the channel member 49. The construction is such that if the bracket 50 moves upwardly, the pawl 51 will ride over the ratchet wheel 53, without rotating the same and when the bracket 50 moves downwardly the pawl will, through en-
75 gagement with the ratchet wheel, effect a rota-

tion of the same a pre-determined portion of a revolution.

The shaft 54, projects into the housing 56, which is mounted by the brackets 57 and 58 on the channel supporting member 49. Fixedly
5 mounted on the shaft 54 within the housing 56, is a helical gear 59, which meshes with a helical gear 60 fixedly mounted on the shaft 61. This shaft 61, carries an enlarged cylinder 62, having a peripheral spirally directed cam forming groove
10 63 formed therein, in which engages the outer end of a stud 64 projecting outwardly from the stem 65. This stem 65 engages in a socket 66, having a bleed opening 67 formed therein so that there is an air cushion engageable with the end
15 of the stem 65. This stem 65, projects from the base 67 of a carriage which serves to carry the exciter lamp 68. Projecting upwardly from the carriage 67 and preferably formed integral therewith is the bar 69, having the angularly turned
20 horizontally disposed part 70 which extends over the upper edge of the drum, and is provided with the downwardly projecting portion 71, carrying the base 72 on which is mounted the photo-cell 73. Projecting upwardly from the base 72 is a
25 shield 74 in which is formed an opening 75 in alignment with the opening 76. An optical tube 77 is in alignment with the openings 75 and 76 and the exciter lamp 68 so that the rays of light from the exciter lamp 68 pass through the optical
30 tube 77, the opening 76, the portion of the film in alignment therewith on the upper section of the drum and thence through the opening 75 to the photo-cell 73.

Adjacent the base 15 I provide a base 78 on 35 which is positioned a gear housing 79 and in which is located a worm wheel 80, which is fixedly mounted on the shaft 81, journaled in the part 82 and in the bracket 86. A drum 83 is fixedly mounted on the shaft 81 carrying a spiral cam 84
40 engaging with which is a stud 85 projecting outwardly from the carriage 46. This gear 80 is rotated by means of a worm 87 on the shaft 88 which projects into the gear housing 18, and is provided with a gear 89 meshing with the gear 90
45 which is fixedly mounted on the shaft 17. Through this connection the drum 83 and the drum having the base 25 are rotated in unison with each other and at a co-ordinated relative speed of rotation.

The lamps and photocells are mounted on a suitable support carried on the carriages. The socket 94, which supports the lights is loosely positioned within a frame 91. This frame 91 is
55 fixed to the carriage with which it is associated by set screws 93. The set screws 92 serves as a means for adjusting the position of the socket in the frame 91, so that the position of the light bulbs might be properly determined for focusing purposes and for alignment with the optical tubes
60 77 and 77'.

A stem 95 projects downwardly from the carriage 46 and engages in the socket 96 formed in the support 97. This engagement in the socket is a snug one so that an air cushion is provided.
65 A suitable bleed opening 96' communicates with the socket 96. This carriage 46 is recessed at its opposite ends as at 98 to embrace the channel uprights or standards 48 and 49 and slide thereon.

The ring 28 serves as a support for the ring 43' which is provided with the webs 43'', through which the shaft 17 rotatably projects. A peripheral projection 101 is formed on the ring 43' and projects so as to extend between the channel
75

members 48 and 49 so that a rotation of the ring 43 is prevented.

When the device has been assembled as described the film in the drum sections will be properly located, the portion 37 of the film carrying the recordings for the announcements at periodic intervals. These recordings will consist of twelve rows, one row for each hour. The lower portion of the film will bear recordings as previously mentioned to announce the various minutes and fractional parts thereof. The exciter light of the photo-cell must be properly electrically connected; and the device may then be operated. The device is geared to rotate at a pre-determined speed so that each of the drums 83 and the drum formed from the sections 34 and 35 will make a complete revolution in one hour. When the motors 22 and 23 are set into operation each of the drums will rotate, and as the light from the exciter lamps 68 and 105 passes through the glass drum, and through the proper portion of the film the photo-cells will be affected to bring about the sound reproduction desired. The photo-cell 73 will be acted upon by the upper portion 37, of the film so that during the complete rotation of the drum, a certain hour will be announced, this announcement being repeated at pre-determined intervals. When a complete revolution has been effected because of the engagement of the stud 85 in the cam groove 84, the carriage will have been raised a distance sufficient to bring the light 68 and photocell 73 into alignment with the next row of film on which the succeeding hour has been recorded for announcement. When the rotation begins, the drum 83 will be rotated, and the cam 84, through engagement with the stud 85, will cause the carriage 46 to move upwardly. The carriages 46 and 40 move in unison with each other because of their connection through the lift rods 45, bar 44, and the lift rods 43. This upward movement of the photocell 41 and light 105 is constant so that as the film bearing drum rotates a new portion of the film is brought into position for use and the succeeding minutes and succeeding fractional parts of the minutes are thus announced through the actuation of the photo-cell 41. The arrangement is such that when a complete revolution has been effected the carriages 46 and 40 are therefore moved to their uppermost position and the stud 85 will have ridden into the axially directed peripheral groove 106, thus permitting the carriages 46 and 40 to move downwardly by gravity. There is an interval of several seconds between each audible announcement, and this interval is sufficient time to permit these carriages to move from their uppermost to their lowermost positions by gravity. Consequently, when the light 105 and photocell 41 have moved to their lowermost positions the operation is repeated. In this downward movement the bracket 50 will be moved downwardly and the pawl 51 will engage one of the teeth of the ratchet wheel 53 and effect a rotation of the cylinder 62 sufficiently to elevate the light 68 and photocell 73 to the proper position for the next step of operation. When the carriage 67 has been moved to its uppermost position so that the upper strip of film on the portion 37 has been used the stud 64 will ride into the peripheral groove 102 which is formed in the cylinder 62 and the carriage 67 will move downwardly by gravity to its initial starting position.

It will thus be seen that I have provided an apparatus whereby separate strips of film will

co-ordinate in the announcement of periods of time, in which the hour, the minute, and the fractional parts may be audibly announced. The mechanism is such, that when properly timed and in proper working condition this audible announcement will continue indefinitely. It is, of course, believed obvious that in the use of this mechanism the sounding of the gong, at a location where the same would be audible to the sound receiving apparatus which receives the audibly announced time, would still be used, so that to all intents and purposes the method of announcing the time would be the same and a person receiving the time over the telephone would be unaware of the mechanical operation which brings about the announcement.

While I have illustrated and described the preferred form of construction I do not wish to limit myself to the precise details of structure shown, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a mechanism of the class described, a rotatable drum; a medium on said drum having recordings of the various hours of the day for audible announcement, said recordings extending circumferentially of said drum; an exciter lamp and a photocell cooperating with said medium for effecting audible announcement of the recordings thereon; a medium having thereon recordings of the various fractional parts of an hour and mounted on said drum and extended spirally thereof; an exciter lamp and a photocell cooperating with said second mentioned medium for effecting audible announcement of the recordings thereon; means for rotating said drum; means for maintaining said first mentioned photocell in position relatively to said first mentioned medium for effecting audible announcement of the recordings thereon relating to a single hour during the audible announcement of all of the recordings on said second mentioned medium; and means operable upon the rotation of said drum for moving said second mentioned photocell axially of said drum and maintaining the same in position relatively to said second mentioned medium for effecting audible announcement of all of the recordings thereon in a period of one hour of time.

2. In a mechanism of the class described, a rotatable drum; a medium on said drum having recordings of the various hours of the day for audible announcement, said recordings extending circumferentially of said drum; an exciter lamp and a photocell cooperating with said medium for effecting audible announcement of the recordings thereon; a medium having thereon recordings of the various fractional parts of an hour and mounted on said drum and extended spirally thereof; an exciter lamp and a photocell cooperating with said second mentioned medium for effecting audible announcement of the recordings thereon; means for rotating said drum; means for maintaining said first mentioned photocell in position relatively to said first mentioned medium for effecting audible announcement of the recordings thereon relating to a single hour during the audible announcement of all of the recordings on said second mentioned medium; means operable upon the rotation of said drum for moving said second mentioned photocell axially of said drum and maintaining the

same in position relatively to said second mentioned medium for effecting audible announcement of all of the recordings thereon in a period of one hour of time; and means operable
 5 upon expiration of the set period of time for moving said first mentioned exciter lamp and photocell into another position relatively to said first mentioned medium.

3. In a mechanism of the class described, a
 10 rotatable drum; a medium on said drum adjacent one end having thereon, extending circumferentially of said drum, a plurality of recordings, each of the various hours of the day for audible announcement; an exciter lamp and a photo-
 15 sell cooperating with said medium for effecting announcement of the recordings thereon; a medium on said drum and directed spirally thereof and having thereon recordings of the various fractional parts of an hour; an exciter lamp and
 20 a photocell cooperating with said second mentioned medium for effecting successive audible announcement of the recordings thereon upon the rotation of said drum; means for maintaining said first mentioned photocell and exciter
 25 lamp in stationary position during the rotation of said drum; means for moving said second mentioned exciter lamp and photocell axially of said drum during rotation thereof; and means for rotating said drum.

30 4. A mechanism of the class described, comprising: a rotatable drum; a medium adjacent

one end of said drum and having a plurality of axially spaced circumferentially extending recordings thereon, each adapted for the audible announcement of an hour of the day; an exciter lamp and a photocell cooperating with said me-
 5 dium for effecting audible announcement of the recordings thereon; a supporting device for said exciter lamp; a supporting device for said photocell; means for maintaining said supporting de-
 10 vices stationary during the rotation of said drum; means for moving said supporting devices axially of said drum a distance corresponding to the width of one of said circumferentially di-
 15 rected recordings upon the completion of a revolution of said drum; means for rotating said drum; a medium mounted on said drum and having thereon recordings of the various fractional
 20 parts of an hour, said recordings extending spirally of said drum; an exciter lamp and a photocell cooperating with said second mentioned me-
 25 dium for effecting audible announcement of the recordings thereon; axially directed guide means for said second named exciter lamp and said second named photocell; means for moving said
 30 second named exciter lamp and said second named photocell axially of said drum during rotation thereof; and means for returning said second named exciter lamp and said second named photocell to initial position upon completion of a revolution by said drum.

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