Dec. 13, 1960 E. J. BUTLER 2,964,370

AUTOMATIC REMINDER

Filed Sept. 17, 1956 4 Sheets-Sheet 1

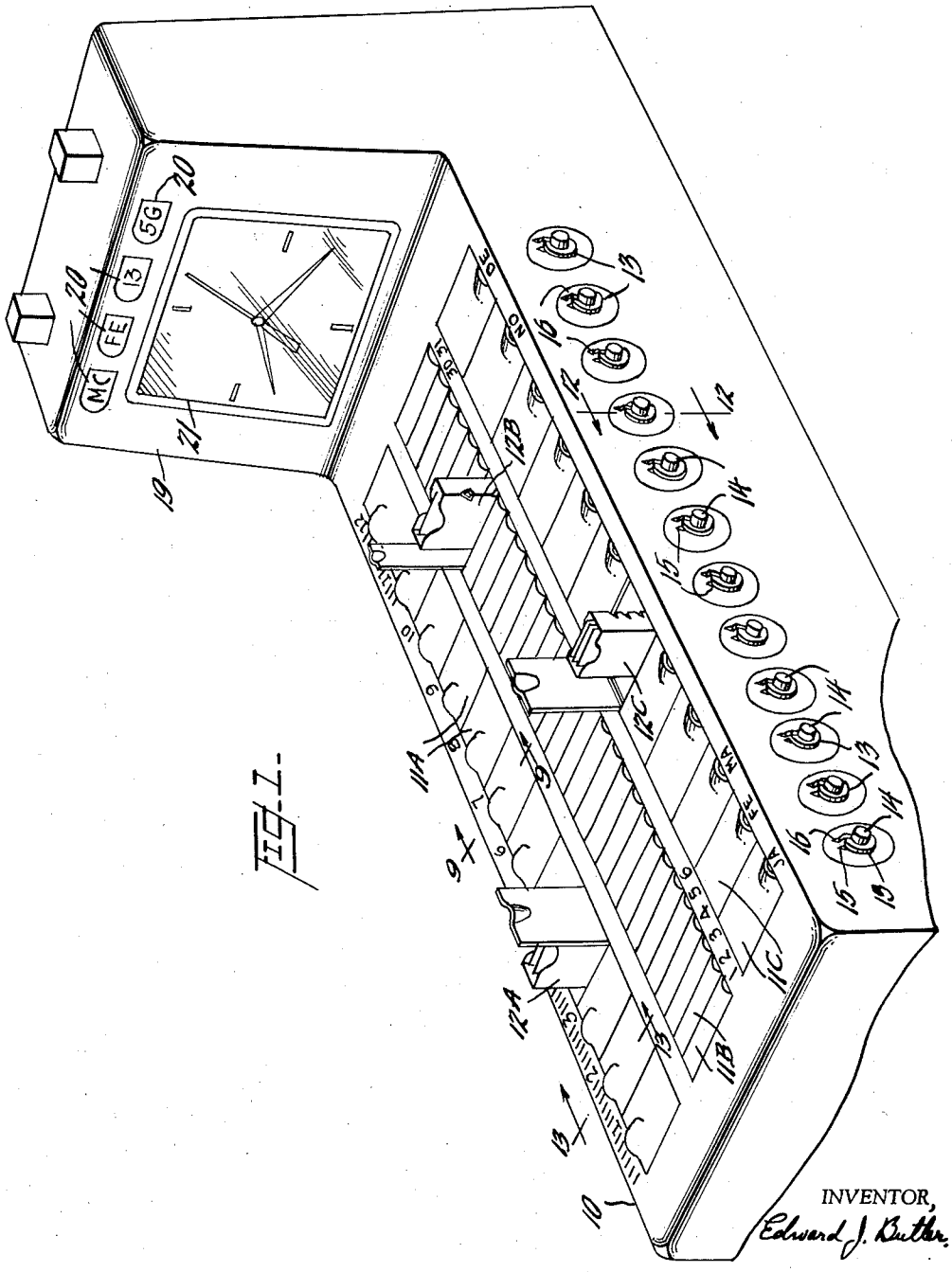

FIG. 1.

INVENTOR,
Edward J. Butler

BY Watson, Cole, Grindle & Watson,

ATTORNEYS.

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AUTOMATIC REMINDER

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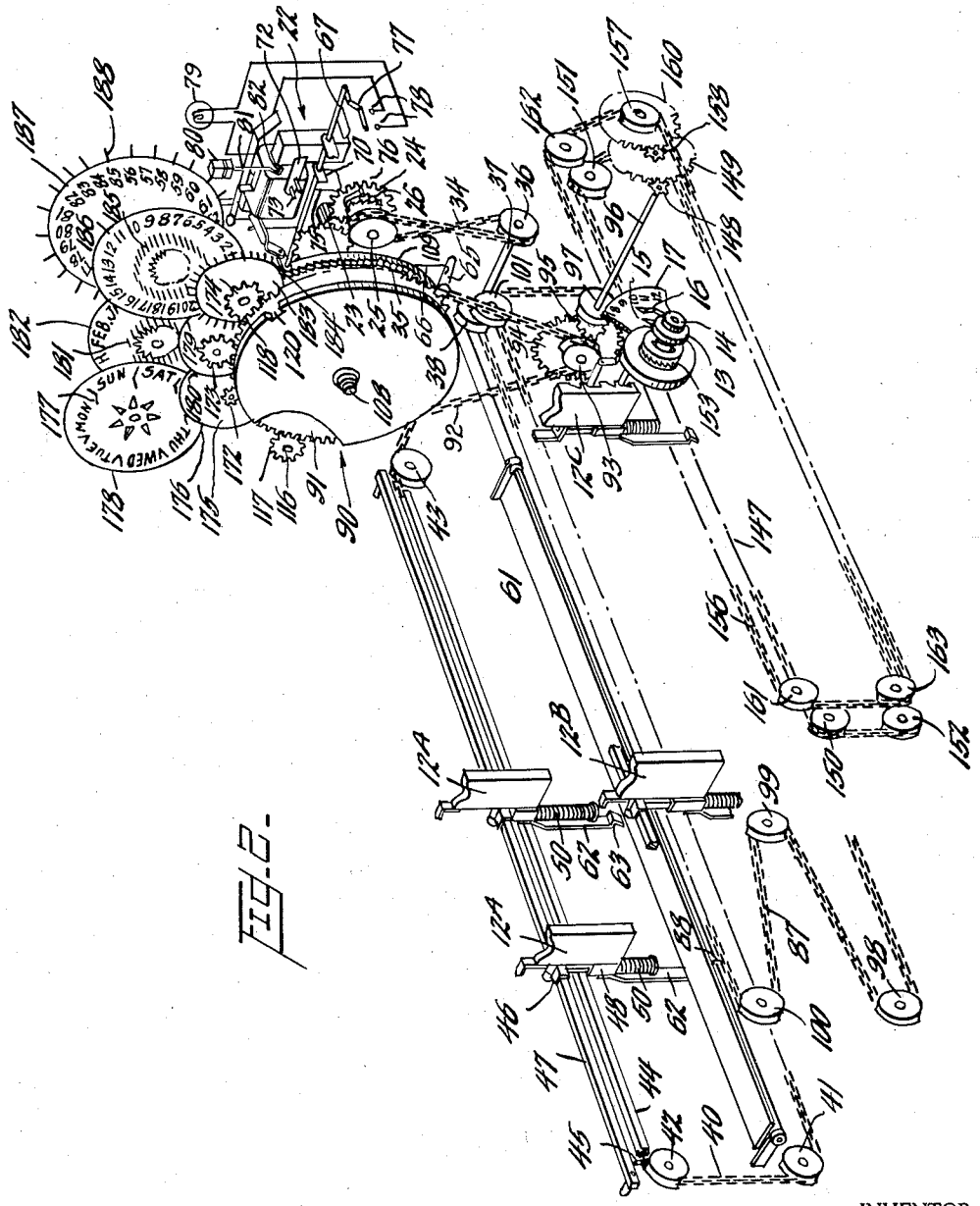

FIG. 2.

INVENTOR,
Edward J. Butler.

BY Watson, Cole, Grindle & Watson,

ATTORNEYS.

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AUTOMATIC REMINDER

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FIG. 3.

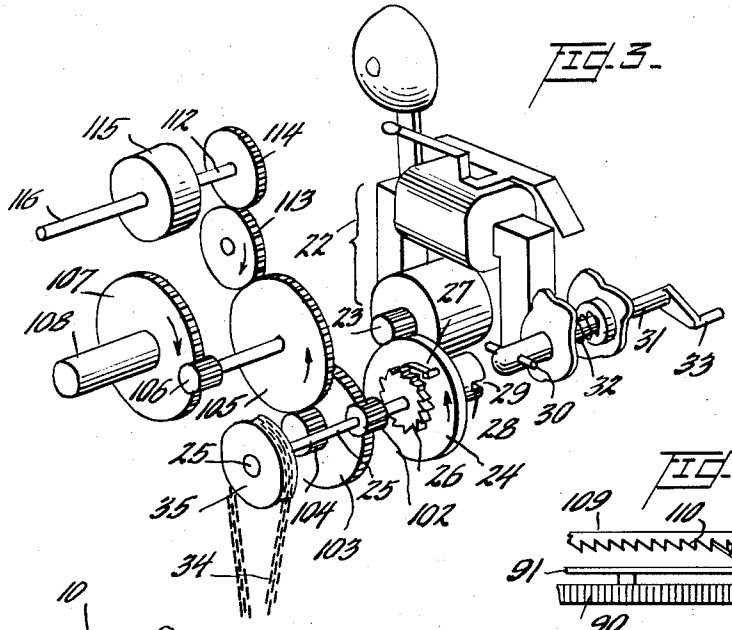


FIG. 5.

FIG. 4.

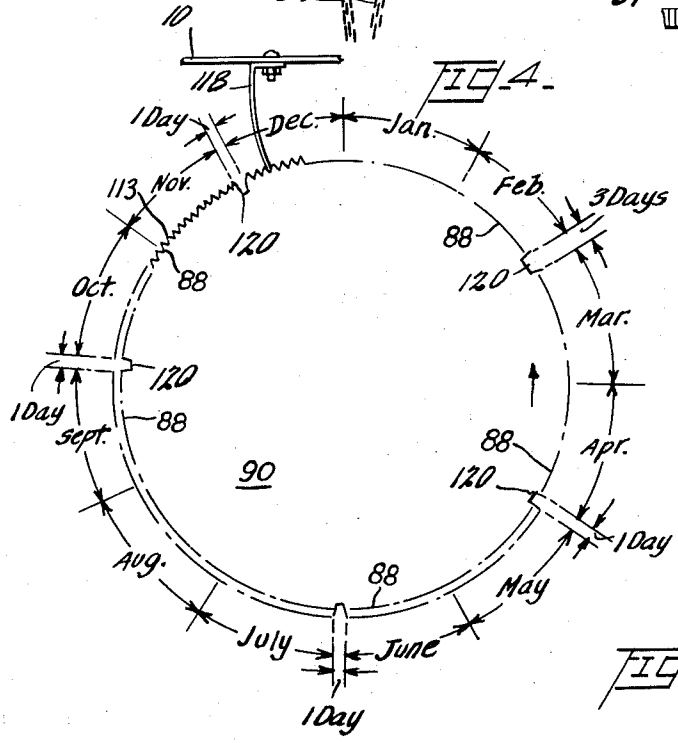


FIG. 6.

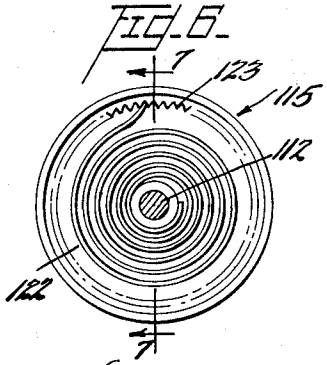
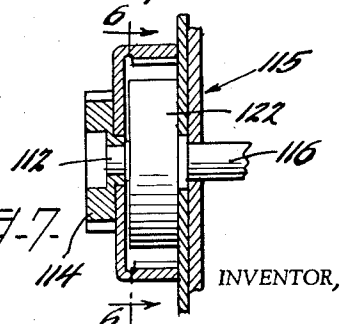


FIG. 7.



INVENTOR,

Edward J. Butler.

BY Watson, Cole, Grindle & Watson,

ATTORNEYS

Dec. 13, 1960 E. J. BUTLER 2,964,370

AUTOMATIC REMINDER

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FIG. 8.

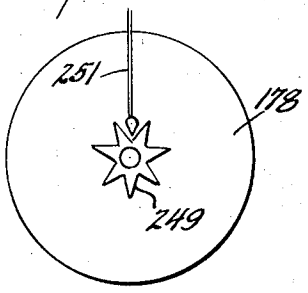

FIG. 9.

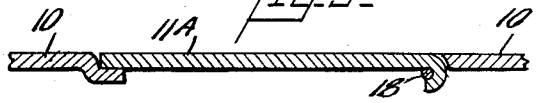

FIG. 10.

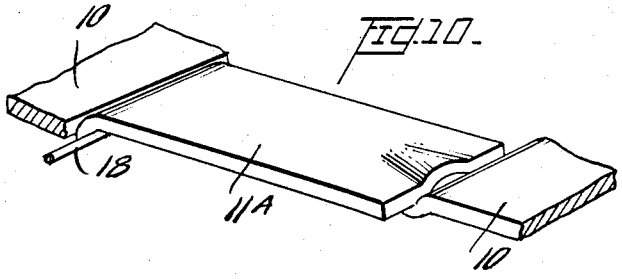

FIG. 11.

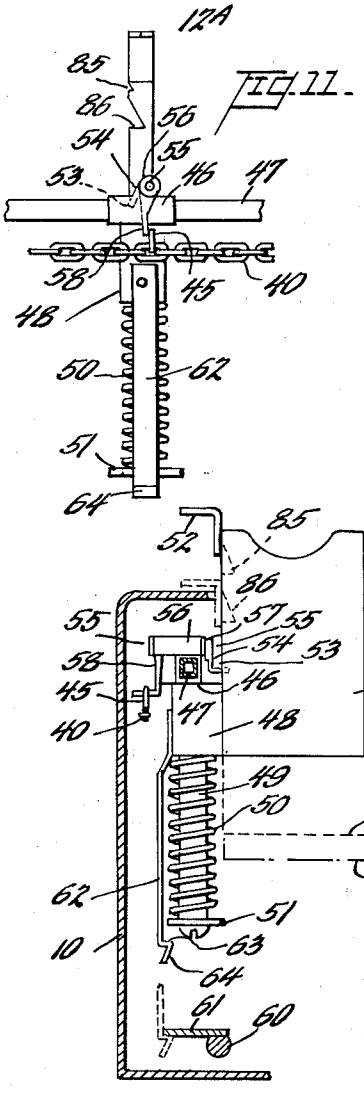

FIG. 12.

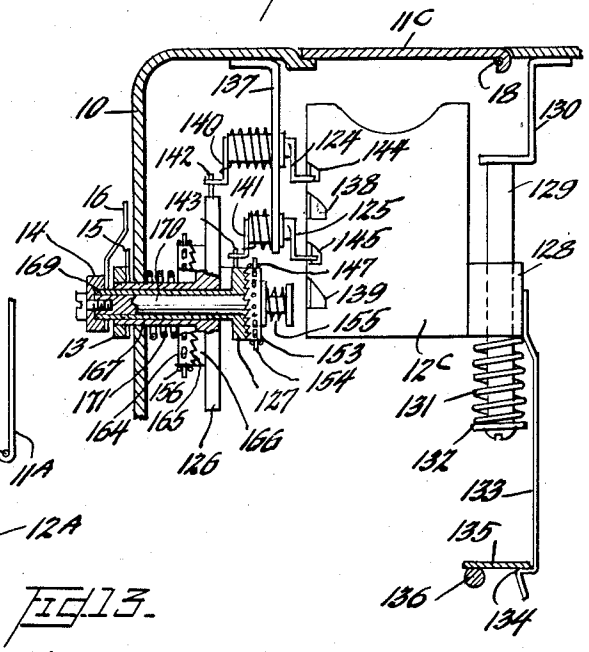

FIG. 13.

INVENTOR,
Edward J. Butler.

BY Watson, Cole, Grindle & Watson,

ATTORNEYS.

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Patented Dec. 13, 1960

2,964,370

AUTOMATIC REMINDER

Edward J. Butler, 649 Read St., Seekonk, Mass.

Filed Sept. 17, 1956, Ser. No. 610,206

4 Claims. (Cl. 312—222)

This invention relates to an automatic timing mechanism and a novel combination thereof with devices actuated by such timing mechanism either to indicate time in the manner of a clock calendar, and/or to actuate any of various devices at predetermined times.

A primary feature of the invention consists in providing a constant speed driving mechanism rotating a rotary timing element and connected thereto with an over-running coupling to permit advance rotation of the timing element ahead of its main driving mechanism, together with auxiliary driving or compensating mechanism operative at predetermined times to advance the rotary timing element ahead of its main driving mechanism. This arrangement finds particular utility in connection with such a device as here employed which is intended to run continuously for months and possibly years. As thus used it may be seen that the normally uniformly rotating timing element may be advanced at the end of each month of less than 31 days to the position that it would normally have occupied at the end of a 31-day month, whereby it may properly position any subsidiary timing chains, dials or other elements driven therefrom for the start of each new month, regardless of the irregularity of the number of days in the several calendar months.

In accordance with a further feature of the invention, flexible timing elements driven from the said rotary timing element move through endless circuits at a constant speed which is normally such that a multiple of 31 days is required for a complete circuit, and the said advancing of the rotary timing element at the end of each calendar month of less than 31 days will supplement the total constant speed movement of such flexible elements to equal the movement normally made by each flexible element in 31 days of its constant speed movement. Thus tripping or actuating elements or devices actuated by the flexible timing elements will be made to assume identical positions at the beginning of each month.

A still further novel aspect of the invention consists in the novel arrangement and disposition of a spring projected receptacle or series of receptacles adapted to be projected at predetermined times under the control of the flexible timing element, these receptacles being adapted to contain reminder cards or the like which may be used to call attention to any of various factors. These receptacles will normally be retained in their retracted positions by latches which are positioned for release incident to the movement of their associated flexible timing elements.

In a particularly novel and advantageous utilization of the inventive concept, each such receptacle or other device is retained in its retracted position by a plurality of separate latches adapted for a control by separate timing elements driven at varying rates of speed, the arrangement being such that all latches must be released in order to permit the actuation or projection of the controlled retainer or other device. For example, one such timing element may be arranged to release its associated latch at the beginning of a predetermined month of the year

while another such element may be arranged to release its said latch on a predetermined day of that month.

The invention also includes the concept of alarm or indicating means actuated by projection of such receptacles.

The invention also contemplates the provision of a novel mechanism for controlling and setting the respective timing elements.

Further objects and advantages will be readily apparent from the following detailed description considered in conjunction with the accompanying drawings.

Figure 1 represents a perspective view of the invention as it appears when housed in a suitable casing.

Figure 2 is a diagrammatic perspective view of the mechanism housed in said casing.

Figure 3 is a perspective view of the mechanism omitting certain parts shown in Figure 1 to permit a view of the overrunning or compensating drive for the main rotary timing element.

Figure 4 is an enlarged diagrammatic view showing the manner in which the braking zones or segments around the rotary driving element are arranged, this view being taken from the rear axial side of the said timing element.

Figure 5 is a detailed fragmentary elevational view of the main timing element and its associated constant speed drive.

Figure 6 is a section of the yielding connection or power accumulater utilized in the auxiliary or compensating drive mechanism.

Figure 7 is a diametrical cross-section through the structure of Figure 6 on the line 7—7 of Figure 6.

Figure 8 is a detailed rear elevation of one of the time indicator dials.

Figure 9 is an enlarged detail section on the line 9—9 of Figure 1.

Figure 10 is a perspective view of the structure shown in Figure 9.

Figure 11 is a fragmentary elevation showing one of the receptacles with its associated latching and tripping means.

Figure 12 is a sectional view on the line 12—12 of Figure 1; and

Figure 13 is a section on the line 13—13 of Figure 1.

Referring now in detail to the preferred embodiment of the invention as exemplified in the accompanying drawings, it will be seen from Figure 1 that the various mechanisms of the invention may be conveniently housed in a metal or other casing **10** having suitably disposed openings in its top covered by the hinged flaps **11A**, **11B** and **11C**, through which may be projected at predetermined times any of a series of message containing receptacles, such as the receptacles **12A**, **12B** and **12C**. The receptacles **12A** are arranged for projection at a given time of day; the receptacles **12B** are arranged for projection on a given day of the month; and the receptacles **12C** are arranged for projection on a given month and day of the year. The reference characters **13** and **14** represent control knobs adapted for use in preselecting the particular month and day, respectively, upon which the receptacle **12C** associated with each such set of control knobs will be projected. The pointers **15** and **16** carried by these respective knobs cooperate with suitable month and day calibrations **17** (Figure 2) on the outer face of the casing **10** in known manner.

These several receptacles **12A**, **12B** and **12C** are normally retained within the housing **10** beneath their respective hinged covers **11A**, **11B** and **11C**, by latch means adapted for release at predetermined times under the control of timing and tripping mechanisms within the housing **10**, as hereinafter described. The detailed arrangement of one such hinged cover **11A** is shown by

way of example in Figures 9 and 10, wherein a common hinge pintle 18 is provided for the several covers 11A.

It will be noted that in the preferred exemplification of the invention the casing 10 is provided at one end with an upward projection 19 having suitable windows 20 and 21 or openings through which may be viewed the operative timing portions of a clock calendar which is driven by the same timing mechanism above mentioned.

As will be seen by reference to Figures 2 and 3 of the drawings, there is provided a constant speed main driving mechanism, including the usual electric clock motor 22 having an output pinion 23 thereon engaging gear 24 which, in the present instance, is freely rotatable on the shaft 25 and which imparts unidirectional operative rotation to the shaft 25 by a suitable one way drive connection, exemplified by the ratchet wheel 26 keyed on shaft 25 and driven by a pawl 27 carried by the gear 24. As will be seen from the arrow on the gear 24 in Figure 3, such gear is driven in a counter clockwise direction by the clock motor 22 to similarly rotate the shaft 25.

The unidirectional drive exemplified by the ratchet wheel 26 and pawl 27 makes possible the resetting of the clock mechanism or timing mechanism of the invention independently of the motor 22, whereby such mechanism may be set for the proper time and date. Shaft 25 is provided rearwardly of the gear 24 with a socketed clutch 28 provided with diametrically opposed slots 29 adapted for reception of the crosspin 30 of a cooperating clutch element including the forward end of a resetting crankshaft 31. Crankshaft 31 is rotatably supported through suitable supporting means as shown in Figure 3 and is axially movable through said means into and out of clutching engagement with the clutch element 28, being normally held out of such engagement by the spring means 32. The usual crank handle 33 on the rear of shaft 31 may be employed for manually urging it into operative engagement with clutch 29 and also for subsequently rotating clutch 29 and its associated shaft 25 in a counterclockwise direction in advance of the drive imparted through the motor output pinion 23, gear 24, pawl 27 and ratchet wheel 26. Such rotation of the shaft 25 in advance of its drive motor 22 will permit setting or resetting of the shaft and its associated timing elements as may be desired.

Driven directly from the main drive shaft 25 by means of the chain drive 34 between the sprocket wheels 35 and 36 is a suitable rotatably supported shaft 37 (Figure 2) carrying a drive sprocket 38, which drives a flexible driving chain or element 40 around an endless circuit. The timing chain 40 is operatively guided in its endless circuit around its drive sprocket 38 and a suitably arranged plurality of idler wheels 41, 42 and 43 as is shown in Figure 2. The chain 40 has an operative generally horizontal upper run driven from left to right in Figure 2 between the pulleys 42 and 43. Preferably this operative run extends through and is slidably supported by a rigid trough 44 and is provided with tripping elements or projections such as 45 which are spaced at such intervals along the chain that but one projection 45 moves between the pulleys 42 and 43 at any given time and a second projection is positioned to commence such operative run as soon as same is completely traversed by the first run. The chain 40 in this embodiment can be geared to cause one of the projections 45 to traverse its operative run between pulleys 42 and 43 in any desired period of time. As shown in Figures 1 and 2 the said chain is adapted to travel its operative run in a period of 12 hours, and the casing 10 is calibrated accordingly in terms of 12 hours to indicate the position of the trip element or projection 45 at any time during the said 12 hour period.

As has been earlier mentioned, the tripping projections 45 of the chain 40 are adapted in the course of their movement to engage and release latch mechanisms which normally retain the several receptacles 12A in retracted position. The receptacles 12A may assume any of various forms and, in fact, such receptacles and their latches exemplify various devices which are adapted for control by the flexible timing chains or elements.

In the form of receptacle 12A associated with the chain 40 (Figures 2, 11 and 13), the receptacle is mounted on a carriage or bushing 46 which is slidably supported for movement along a trackway 47, the latter being in turn supported parallel to the operative run of the chain 40. Thus one or more receptacles 12A supported on such carriages 46 may be adjusted to varying positions along the trackway 47 and frictionally retained in such positions to be released and projected at various times through actuation of their respective latches by the projections 45. Obviously, in their various preselected positions along the trackway 47, the receptacles 12A will be positioned beneath and in registry with the hinged covers 11A.

Each receptacle 12A preferably opens upwardly and is provided with a slide bearing 48 of rectangular cross section by means of which it is supported for vertical sliding or projection movement on a vertical standard 49 (Figure 13) of similarly rectangular cross section carried by and depending from the carriage or slide 46. Suitable means for exerting a resilient upward projecting thrust against each such receptacle 12A comprises a spring 50 disposed about the standard 49 under compression between an enlargement 51 at the lower end of said standard and the supporting slide bearing 48 thereof. For facilitating downward movement of each receptacle 12A to a retracted position, such receptacle may be conveniently provided with an upwardly projecting bracket 52 forming a finger piece.

A latch operatively mounted on each such carriage 46 is adapted to cooperate with the container 12A to retain it in retracted position until such time as the latch is engaged and released by the tripping projection 45 or tripping element of the chain 40.

As is best seen in Figures 11 and 13, the latch 53 is eccentrically carried by a crank arm 54 fixed on a crankshaft 55 which is rockably supported in a bearing 56 on the carriage 46. A torque spring 57 resiliently urges the latch 53 toward operative latching engagement with its associated receptacle 12A. The latch trip arm 58 is fixedly attached to the shaft 55 on the opposite side of bearing 56 from the latch 53 and has its free end normally disposed in the path of movement of the tripping projections 45.

As above mentioned the receptacles 12A are adapted to receive cards with information or messages thereon, whereby the upward projection of such a receptacle at a predetermined time, together with the upward swinging of the hinged lid 11A for the particular receptacle may visually indicate that the enclosed card or cards should be removed from the receptacle to serve as reminders of acts which should be carried out at or shortly after the particular time of projection of the receptacle.

In some cases and under some circumstances it may be desirable to provide additional visual or audible signals for indicating the projection of such receptacle 12A.

To this end and as shown in Figures 2 and 13, there is provided an auxiliary signalling mechanism including a rock shaft 60 journaled in the housing 10 parallel to the operative run of the flexible timing element or chain 40. An actuating plate 61 is fixed to and projects eccentrically and generally horizontally from the shaft 60 so that it will extend transversely to the projection movement of the receptacles 12A. A suitable coupling means carried by each receptacle 12A through its supporting slide 48 may comprise the depending leaf spring element 62 terminating at its lower end in a ledge or hook portion 63 adapted for movement beneath the actuating plate 61 to engage beneath same so that upon the subsequent upward projection of the receptacle 12A, the actuating plate and also the rock shaft 60 will be partially rotated to actuate suitable signal means. In order that the ledge portion 63 of the coupling element 62 may be laterally

deflected to permit its movement beneath the plate **61**, the coupling element is provided with a deflecting cam portion **64** depending from its ledge **63**. Due to the resiliently deflectable nature of the coupling **62**, it will be seen that after the ledge **63** has passed beneath the plate **61**, it will be resiliently urged toward operative position beneath the plate as indicated in broken lines in Figure 13 to rock the alarm shaft **60** incident to upward projection of its receptacle **12A**.

Fixed at the end of the shaft **60** is a crank arm **65** connected through a link **66** to a crank arm (not shown) on the shaft **67** which is rotatably supported adjacent the clock motor **22**.

A switch arm **77** carried by the rock shaft **67** is positioned for engagement with the contacts **78** of an electrical signal circuit to close the circuit through a visual signalling device as exemplified by the light **79**, when the switch arm **77** and its associated shaft **67** are swung downwardly responsive to actuation of rock shaft **60** to its operative signalling position incident to the upward projection of any one of the receptacles **12A**. A control button **80** is mounted on a wire or rod **81** for movement toward and away from the lever **72** whereby a shoulder or projection **82** on the wire may be moved toward or away from the lever **72** to prolong or to stop the signals.

It becomes apparent, therefore, that when any one of the receptacles **12A** is projected upwardly, the catch **63** of its coupling **64** will engage the plate **61** and through it will rock the shaft **60**, whereby the lever **65** and its connecting link **66** with the shaft **67** will rock the latter shaft to actuate the various signals controlled thereby. Among other things, it will be seen that such actuation of the shaft **67** will interpose the wire **75** into the path of fingers **76** of the gear **24**. Since this gear rotates at a rather rapid rate and since the wire **75** is of a resiliently flexible material, it will be seen that the engagement of the fingers with the wire will cause the wire to vibrate somewhat in the manner of a reed, thus creating an audible signal, unless the button **80** has been actuated to discontinue energization of the signalling mechanisms here disclosed.

Where it is desired that any one or more of the receptacles **12A** not be projected responsive to the movement of its associated flexible timing element **40**, the said receptacle may be latched in an intermediate or inactive position as indicated by the broken line **83** in Figure 13, as contrasted to its fully retracted position as indicated by the broken line **84** in the same figure. For this purpose the receptacle **12A** is provided with relatively vertically spaced notches **85** and **86**, respectively, adapted for cooperating latching reception of the latch element **53**. The notch **86** is vertically positioned in such manner that it will cooperate with the latch **53** to retain the receptacle in the intermediate or inoperative position of line **83**, in which its coupling element **62** will not have operatively engaged the plate **61** of the alarm or signal control shaft **60**. Moreover, as shown in Figure 11, this particular notch **86** will be of considerably greater depth than the notch **85** so that when it receives the latch **53** the latch actuating arm **58** will be positioned or swung rearwardly out of the path of movement of tripping projections **45**. However, when the receptacle **12A** is depressed to fully retracted position to receive the latch **53** in its relatively shallower latching notch **85**, the latter notch will position the latch with its trip arm **58** disposed for operative engagement by the tripping projection **45**. Moreover, as thus fully retracted, the coupling element **62** will operatively engage plate **61** of the alarm actuating shaft **60**.

In addition to, or in lieu of, the hour of day chain **40** there may be a day of the month chain **87** as in Figure 2 adapted to control the projection of one or more receptacles **12B** on predetermined days of the month.

The receptacles **12B** may be constructed and arranged identically to the receptacles **12A** heretofore described and provided with similar latches adapted for release by tripping projections **88** on the chain **87** together with signal or alarm mechanism actuated in the same manner above described.

The chain **87** is driven from the main drive through a rotary timing element **90** which may include or have fixed thereto a driving gear **91**, preferably in axially spaced relation, whereby it defines with the wheel or element **90** a pulley or sprocket for reception and cooperation with a drive chain **92**. The chain **92** transmits rotary driving motion through a sprocket **93** to a relatively coaxial gear **94**. Gear **94** meshes with a pinion **95** keyed on the rotatably supported shaft **96**. A drive sprocket **97** on the shaft **96** drives the said chain **87** around a suitably arranged series of idler pulleys **98**, **99**, **100**, and **101** through an endless circuit, at such a speed that the operative run of the chain between the sprockets **100** and **101** will require a period of 31 days for movement from pulley **100** to the pulley **101**, when driven at constant speed solely by the action of the uniformly rotating timing element **90**. Tripping elements **88** are so spaced along the chain that normally one such element or projection **88**, when driven from the main driving mechanism, will commence its operative run from pulley **100** to pulley **101** each 31 days.

The main drive for the timing element **90** comprises clock motor **22** and the main shaft **25** which is driven from the clock motor, as earlier described. As shown in Figure 3, a pinion **102** keyed on the shaft **25** transmits rotation through a series of reduction gears **103**—**107** to a main shaft **108**, on which the element **90** and its gear portion **91** are freely rotatably mounted. The reduction gears are arranged to rotate the shaft **108**, preferably at the rate of one revolution each 372 days (or in other words, each twelve months of 31 days each). Such rotation is transmitted from the shaft **108** to the timing element **90** through a suitable overrunning coupling or a clutch mechanism which is adapted to permit rotation of the timing element **90** at a faster speed than its drive shaft **108**. In the present embodiment and as shown in Figures 2 and 5, such overrunning coupling comprises the clutch member **109** in the form of a ratchet wheel having axially directed ratchet teeth **110** around its peripheral portion directed towards the adjoining gear portion **91** of the timing element **90**. The gear portion or wheel **91** is fixed to the element **90** as shown in Figure 5, and is provided with a pawl **111** in a driven engagement with the ratchet teeth **110**, the pawl **111** being of the resilient leaf spring type whereby it may override the ratchet teeth **110** when the elements **90** and **91** are advanced or rotated at a more rapid speed than the shaft **108**.

In the present embodiment the advancement or overrunning movement of the element **90** will be through angles corresponding to one complete day or a multiple thereof in terms of the rate of rotation of the main drive shaft **108**. Therefore, the ratchet teeth **110** are so chosen and proportioned that there are 372 such teeth correspondingly respectively to the days of the twelve 31-day months constituting one revolution of the shaft **108** and its associated coupling element **109**. Thus it will be seen that whenever the timing element **90** is rotated a predetermined number of days in advance of the coupling element **109** the driven pawl **111** will come to rest in operative engagement with one of the ratchet teeth **110** so that the elements **90** and **91** may immediately resume their constant speed rotation as imparted from the main shaft **108**.

Since the number of days in the several calendar months varies, some of them being less than 31 days, there is provided an auxiliary driving or compensating mechanism operating at predetermined times to advance the timing element **90** ahead of its driving mechanism. In the preferred arrangement, the auxiliary driving mechanism functions at the end of each month of less than 31 days to angularly advance the timing element **90** to the position that it would normally have occupied at the end of a full 31-day month if driven solely by the con-

stant speed main driving mechanism including the shaft 108. Obviously such advancement will serve to proportionately advance the chain 87 so that one of its tripping projections 88 will be properly positioned at the end of each such short month to commence its operative run between the pulleys 100 and 101 for the next month.

The auxiliary drive in the present instance also derives its power from the main driving mechanism, although this is not essential. To this end, the auxiliary drive comprises a shaft 112 (Figures 2 and 3) which is driven from the shaft 108 of the main driving mechanism through the gear chains 102, 103, 104, 105, 113 and 114. Driven from the shaft 112 through a suitable slip clutch means 115 is the relatively axially aligned shaft 116 having a pinion 117 keyed thereon in operative meshing engagement with the gear portion 91 of the timing element 90 (see Figure 2).

The ratio of the reduction gears which drive the shafts 112 and 116 is such that the pinion 117 tends to rotate the gear 91 at a speed which will cause the timing element 90 to overrun its main driving mechanism including the shafts 25 and 108. However, by means of a braking element 118, exerting a drag or braking force on the periphery of the element 90 the timing element 90 is normally restrained against such overrunning or advance movement. Thus the braking engagement between element 118 and the element 90 is such as will normally cause slipping or yielding of the clutch or coupling 115 between the shafts 112 and 116, but insufficient to affect the constant speed drive of the element 90. As shown in Figure 4, the periphery of element 90 comprises a braking zone or segment for each month of the year, and is toothed or serrated, preferably being provided with one such serration 113 for each day of the year. The angular extents of the respective zones will be proportioned to the lengths of the respective months of the year and the serrations 113 in each will correspond to the number of days in the month. A gap or cutaway portion 120 will be formed in the periphery of the element 90 between each relatively short zone 88 representing one of the short months of the year and the commencement of the next zone representing the next successive month of the year. The length of the gap 120 in an angular direction will correspond to the number of days by which the particular month falls short of 31 days. The pawl 118 which functions as the braking element will preferably be of the resilient leaf spring type resiliently engaging the serrated periphery of element 90 but adapted to permit free advance rotation or overrunning of the element 90 for the full angular extent of each gap 120. This will obviously permit the auxiliary drive mechanism, including the driving gear or pinion 117 to rapidly advance the timing element 90 as the end of each relatively short month is reached so that the timing element and the various timing chains or other means driven by it may be positioned at the start of the next month in the same manner that they would have been following a full 31-day period of constant speed drive by the main driving mechanism.

In the instant embodiment the slip clutch 115 is especially adapted to rapidly and substantially instantaneously advance the timing element 90 to the full angular extent permitted by each gap 120. For this purpose the clutch 115 is of such construction that it may function not only as a slip clutch but also as a resilient power storing mechanism. Thus referring to Figures 6 and 7 of the drawings, the power storing slip clutch element 115 will be seen to embody a cylindrical housing 121 fixed on the shaft 116 and rotatably receiving shaft 112. Within the housing is a helical spring 122, the inner end of which is fixed to the shaft 112 and the outer end of which is in yielding driving engagement with the serrated inner periphery 123 of the housing. It will be seen that the engagement between the outer end of the spring 122 and the serrations 123 will cause the spring 122 to transmit a torque from the shaft 112 to the shaft 116 and thus through the drive pinion 117 and gear portion 91 to the timing element 90. However, this torque will normally be resisted by the action of the braking element 118 in cooperation with the periphery of element 90 so that after the spring 122 has been wound to a predetermined point by rotation of its shaft 122 at a greater speed than shaft 116, the ensuing slipping between this spring and the serrations 123 will prevent the advancing or overrunning of the timing element 90. However, each time the timing element 90 is rotated to bring one of its gaps 120 into registry with the braking element 118, the force stored in the spring 122 will act to rapidly rotate the shaft 116 and drive pinion 117 to thus practically instantaneously rotate the timing element 90 to the full extent permitted by the respective gap 120.

As thus far described, the invention disclosed in the instant embodiment comprises the receptacles 12A adapted for actuation at any given hour of the day by a timing chain or flexible element 40 which is in direct driving relation with the main driving mechanism. Also there have been described the receptacles 12B, the timing chain 87 associated therewith being driven through the timing element 90 to cause projection or actuation of each receptacle 12B on any given day of the month, the driving element 90 being arranged to correct the constant speed main drive mechanism in order to compensate for the variation in the number of days of the several months. However, this latter series of receptacles 12B may obviously be pre-set for only one month in advance.

In accordance with a further feature of the invention, as shown in Figure 12, there may be provided a series of receptacles 12C having a plurality of latches 124, 125 controlling the projection of each. Tripping mechanisms, including the rotary elements 126 and 127, are independently associated with the respective latches and are driven from the timing element 90 (Fig. 2) in coordinated relation through means hereinafter described. Rotary element 126 is arranged to actuate and release its associated latch 124 at the inception of a relatively large unit of time, as for instance at the beginning of a given month of the year, while the timing element 127 is arranged to release the other latch 125 and permit projection of the receptacle at any predetermined subdivision of time, as for instance at the beginning of any given day, within the larger time unit.

As is best shown in Figure 12 of the drawings, each such receptacle 12C is guided by means of a slide bearing 128 on the depending guide 129 supported from the bracket 130 within the housing 10. As in the case of the receptacles 12A, the several receptacles 12C may be positioned in a rectilineal series beneath the series of corresponding hinged covers 11C through which they may be projected upwardly at predetermined times. The upward projection of each such receptacle may be caused by a compression spring 131 on the guide 129 operating between the washer 132 and slide bearing 128 substantially as in the form of receptacles earlier described. Also, if desired, the resilient link or latch 133 may depend from the slide bearing 128 so that its lower hooked end 134 will operatively engage the actuating plate 135 of the alarm or signalling shaft 136 to actuate this shaft in the manner earlier described in connection with the identical signalling shaft 60. A bracket 137 within the housing 10 rotatably supports the latches 124 and 125 for operative engagement with the receptacle 12C in the identical manner described in connection with the receptacles 12A. To this end the receptacle 12C is provided with a pair of latching notches 138 and 139 which correspond in function to the notches 86 of receptacles 12A to retain the receptacle 12C in an intermediate or inactive position in which the resilient link 133 will be disengaged from the signal shaft plate 135 and the tripping arms 140 and 141 of the respective

latches will be rotated out of the paths of the tripping elements or projections **142** and **143** respectively carried by the rotary timing elements **126** and **127**. However, the uppermost set of notches **144** and **145** are positioned for engagement by the latch elements **124** and **125** in the fully retracted or lowered position of the receptacle **12C** in which position the latch tripping arms **140** and **141** will be positioned for operative engagement by their respective tripping elements or projections **142** and **143** of wheels **126**, **127**. Also in this position the resilient link or latch **133** will operatively engage the plate **135** of the shaft **136**.

It will be noted that the notches **144** and **145** respectively are so spaced vertically that when the latch **124** operatively engages within the notch **144** the latch **125** slightly clears the bottom of its associated notch **145**. Thus when the latch **124** is disengaged from its notch **144** the clearance between latch **125** and the bottom of its notch **145** permits limited upward projection of the receptacle to prevent reseating of the latch **124** in its notch.

As above mentioned the rotary latch tripping elements **126** and **127** are driven from the timing element **60**.

The tripping arm **140** of the upper latch is adapted to be engaged by tripping element or projection **142** carried by timing disc or element **126** which is normally driven at the rate of one revolution per 31-day month. The disc **126** is carried by a sleeve **167** rotatably journalled through a side wall of the housing **10** and having the setting knob **13** on its outer end together with pointer **15** adapted for cooperation with suitable calibrations on the exterior face of the casing **10**.

The tripping arm **141** of the lower latch is adapted for operative engagement by tripping projection **143** of the timing disc **127** which is normally driven at the rate of one revolution per day. Disc **127** is fixed on a hollow shaft **169** which is freely rotatably journalled through the sleeve **167**, and which carries the control knob **14** and indicator hand **16** externally of casing **10**.

Driving of the timing discs or elements **127** at the rate of one revolution daily is accomplished by the chain **147** and sprocket **153**. The chain **147** in turn is driven from the main timing element **90** (Fig. 2) through the drive chain **92** sprocket wheel **93** gears **94** and **95**, thence through the shaft **96** pinion **148**, gear **149** and drive sprocket (not shown) coaxially fixed on the far side of gear **149** in Figure 2, the chain being supported around the drive sprocket together with sprockets **150**, **151** and **152**. The chain **147** operatively engages the sprocket wheel **153** (Figure 12) which has ratchet teeth **154** in operative driving engagement with mating ratchet teeth on the timing disc **127**. Ratchet wheel **153** is carried for rotary and axial movement on a shaft **170** constituting an extension of shaft **167**, and is urged axially by spring **155** into operative engagement with the ratchet toothed face of timing disc **154**. The arrangement is such that by rotation of the knob **14** the timing wheel **127** may be advanced and thus pre-set in any position in advance of its drive from the sprocket **153**.

The day of the month chain **156** is driven by sprocket **157** from the gear chain **148**, **149**, **158**, **160**, and is supported additionally around idler wheels **161**, **162** and **163**. This chain similarly engages a sprocket **164** which has ratchet teeth **165** (Figure 12) in overrunning engagement with ratchet wheel **166** fixed to the rotatable timing disc or element **126**. Sprocket **164** is rotatable and axially movable on sleeve **167** and is yieldingly axially urged into operative engagement with the ratchet wheel **166** by spring **171**.

It will be seen that by suitable actuation of the knobs **13** and **14** the timing elements **126** and **127** respectively may be set to release their respective latches at any predetermined month and day of the year.

While the main rotary timing element **90** is thus exemplified in its preferred use to control the projections of the several receptacles it may also be used to drive a visual time indicating means in the form of a clock calendar, or any other time controlled devices.

Referring now to gear **91** (Figure 2), said gear drives gears **172**, **173** and **174** to operate time indicator dials. Gear **172** is fixed to disc **175** having spaced radial fingers **176** cooperating with 7 spaced axially projecting fingers **177** of indicator dial **178** marked with days of week as shown. Gear **173** is fixed to disc **179** having one radially projecting finger **180** cooperating with spaced axially projecting fingers **181** of indicator dial **182** marked with months of the year. Gear **174** is fixed to disc **183** having 31 spaced radially projecting fingers **184** cooperating with spaced axially extended fingers **185** of indicator dial **186** marked with days of the month. A fourth indicator dial **187** marked with years, is provided with spaced radially extending fingers **188** cooperating with an axially extending finger (not shown) mounted on the rear of indicator dial **186**. It will be noted that the aforementioned discs are so arranged that the topmost marking on each one is visible through an aperture in housing **10**. See Figure 1.

Figure 8 shows a rear view of indicator dials such as **178** in Figure 2. Disc **178** has embossed star shape **249**, projecting rearwardly so that the sides and points of said shape will contact a spring arm **251** which depends from any suitable support. When disc **178** is rotated the spring arm **251** rides up the side of the star shape **249** and over the point thereof, centering itself so as to center the proper reading for the dial. This motion is planned to occur at 12:00 a.m. All of the indicator dials are similarly arranged.

In this application there is shown and described only the preferred embodiment of the invention, simply by way of illustration of the preferred mode of carrying out the invention, as by law required. However, I recognize that the invention is capable of other embodiments and that its various details are subject to modification, all without departing from my invention. Accordingly, the drawings and description herein are intended as merely illustrative and not as restrictive.

Having thus described the invention, I claim:

1. An automatic reminder comprising, a housing having an opening therein, a receptacle normally enclosed in said housing, means guiding said receptacle for projection externally of the housing through said opening, spring means exerting a projecting thrust against said receptacle, a pair of separate latches normally retaining said receptacle in its retracted position in said housing, tripping mechanisms independently associated with the respective latches, and timing mechanism driving the respective tripping mechanisms at varying rates and in coordinated relation to sequentially release the respective latches.

2. The combination of claim 1 in which said timing mechanism is arranged to actuate one said tripping mechanism at the inception of a relatively large unit of time, and to subsequently release the other said tripping mechanism and permit projection of the receptacle at any predetermined subdivision of time within said large time unit.

3. In an automatic reminder, a housing, a hollow outer shaft rotatably supported through a wall of said housing, a hollow inner shaft rotatably coaxially disposed through said outer shaft, and projecting beyond the respective ends thereof, rotary timing elements fixed on the respective shafts within said housing, a radial tripping arm carried by each such timing element, latches having release arms movable to place said latches in their operative and inoperative positions respectively, said release arms being in the rotational paths of and movable to their inoperative positions with the respective tripping arms, and means separately driving said elements in a direction to release said latches comprising sprocket wheels supported by the respective shafts for rotation and axial movement thereon, timing mechanism including timing chains driving the respective sprocket wheels in said

direction, overrunning clutch means normally maintaining a driving relation between the respective sprocket wheels and timing elements and permitting angular adjustments of said elements relative to their sprocket wheels in said direction, and control knobs on the outer ends of the respective shafts for effecting such adjustment.

4. An automatic reminder comprising a rotatable timing element, a main driving mechanism including a clock motor and reduction gearing for driving said element at a constant rotational speed of less than one revolution per year, an overrunning coupling interconnecting said main drive and said timing element to permit advance rotation of the timing element at a more rapid rate than said main driving mechanism, an auxiliary drive mechanism including a combined spring motor and power storing slip cultch means operatively connected to and tending to rotate said timing element at a more rapid rate than said main driving mechanism, braking zones commencing at 30° intervals around said timing element, a braking element positioned for successive braking engagement with the respective zones to normally prevent advance rotation of the timing element by said auxiliary drive mechanism, the angular extents of the respective zones being proportioned to the lengths of the respective months of the year, a gap being left between each relatively short zone representing one of the shorter months and the commencement of the next zone, whereby said auxiliary drive mechanism will instantaneously advance said element to said next zone ahead of said main driving mechanism, said reminder further including a timing chain driven from said rotatable timing element, a plurality of rotary tripping elements driven by said chain, and a similar plurality of latches actuated by the respective tripping elements, each tripping element including a projection positioned angularly thereon for operative engagement with its associated latch.

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