

W. B. WHEELER.
ADVERTISING DEVICE.
APPLICATION FILED JAN. 5, 1914.

1,144,673.

Patented June 29, 1915.

2 SHEETS—SHEET 1.

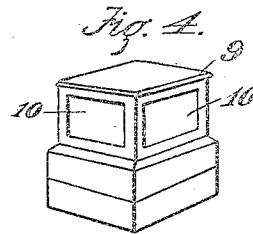
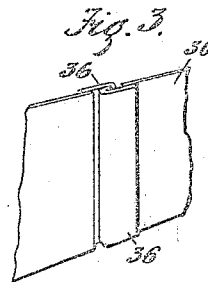
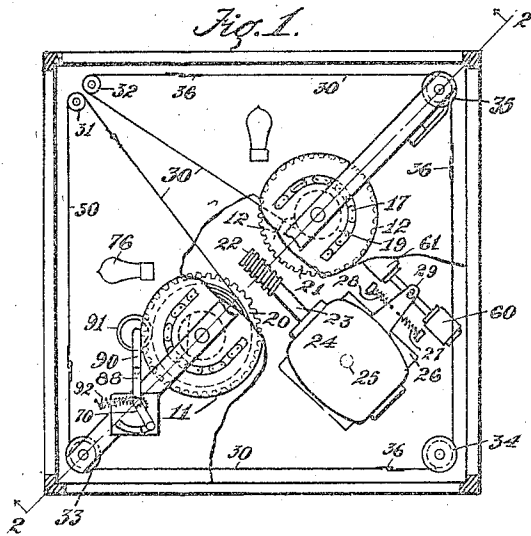
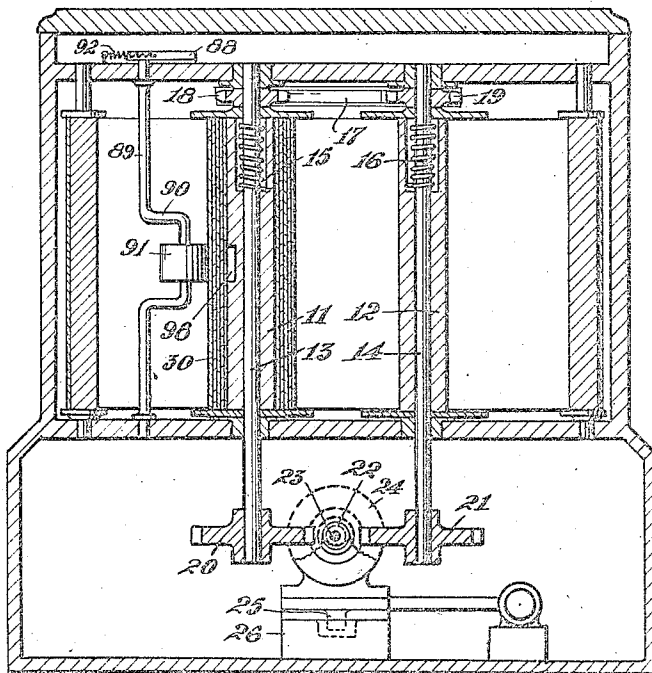


Fig. 2.



Witnesses

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O. S. Perry.

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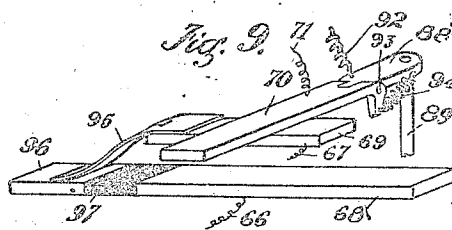
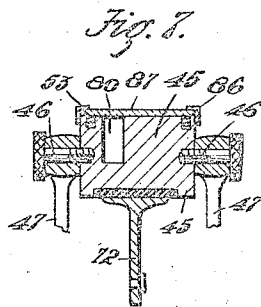
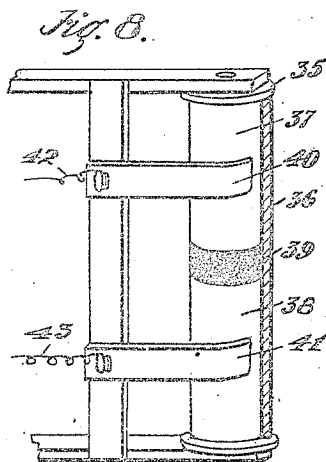
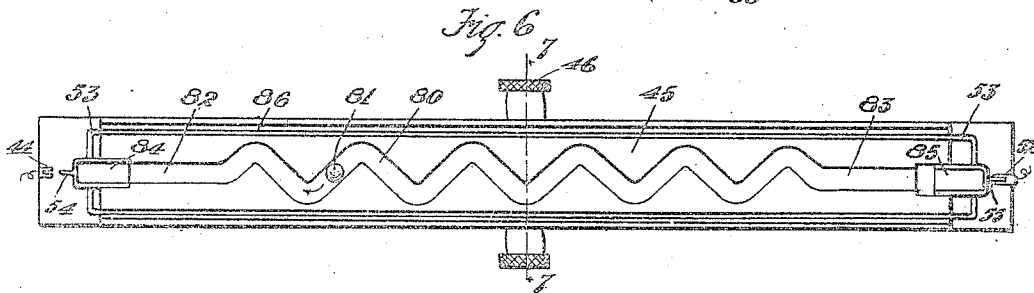
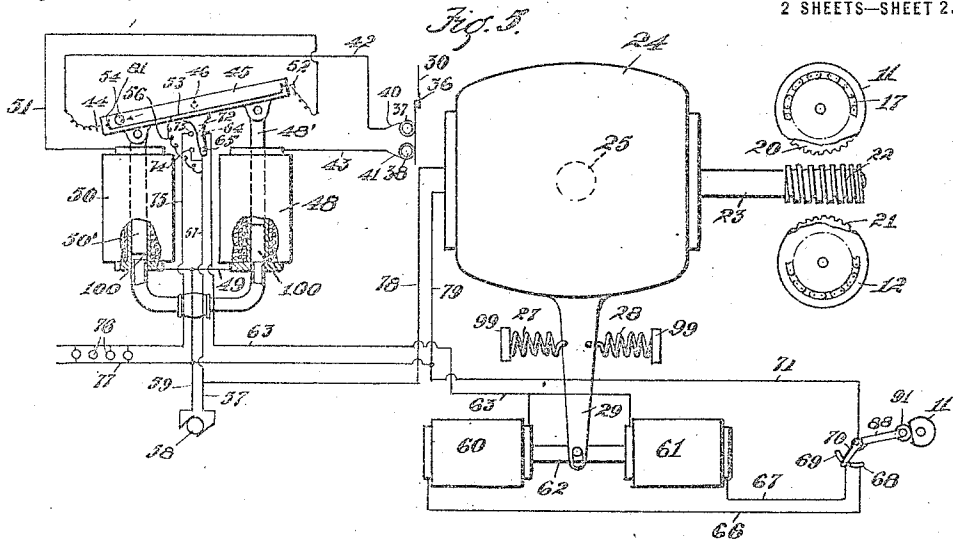
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1,144,673.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WELLINGTON B. WHEELER, OF LONG BEACH, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
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ADVERTISING DEVICE.

1,144,673.

Specification of Letters Patent.

Patented June 29, 1915.

Application filed January 5, 1914. Serial No. 810,306.

To all whom it may concern:

Be it known that I, WELLINGTON B. WHEELER, a citizen of the United States, residing at Long Beach, in the county of Los Angeles, State of California, have invented new and useful Improvements in Advertising Devices, of which the following is a specification.

This invention relates to an advertising device, and particularly pertains to an intermittently movable sign.

It is the object of this invention to provide an advertising device in which advertisements carried on a ribbon may be displayed intermittently and successively on the sides of a many-sided case.

A further object is to provide means for intermittently moving the advertising ribbon and for regulating the movement thereof.

A further object is to provide means for maintaining the advertising ribbon taut while winding from one reel to another to compensate for the differential diameters of the reels caused by the ribbon winding and unwinding thereon.

Another object is to provide means for automatically reversing the direction of movement of the advertising ribbon when it becomes fully unwound from the reel.

The invention primarily resides in a case having a plurality of sides, a pair of reels revolubly mounted within the case, an advertising ribbon arranged to be wound from one reel to the other and directed across the faces of the case, means for intermittently rotating the reels in synchronism controlled by the ribbon, and means for reversing the direction of rotation of the reels when the ribbon is unwound from either of the reels controlled by the ribbon and one of the reels.

The invention is illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of the advertising case with the top removed and portions broken away. Fig. 2 is a vertical section on the line 2—2 of Fig. 1, as seen in the direction indicated by the arrows. Fig. 3 is a detail in perspective of the advertising ribbon showing the sectional construction of the same. Fig. 4 is a perspective view of the case. Fig. 5 is a diagram illustrating the electro-mechanical mechanism, for operating the advertising ribbon. Fig. 6 is a

detail plan view of the timing device. Fig. 7 is a section on the line 7—7 of Fig. 6. Fig. 8 is a detail in perspective of the circuit breaker controlled by the ribbon for automatically stopping the movement thereof. Fig. 9 is a detail in perspective of the reel controlled switch.

More specifically, 9 indicates the case of the advertising device, which is here shown as four sided with display openings 10 on each side. Mounted in suitable bearings within the case 9 is a pair of vertically disposed reels 11 and 12, which reels are turnable in relation to shafts 13 and 14 extending longitudinally therethrough, and which shafts are connected to the reels 11 and 12 by means of coiled springs 15 and 16 wound in opposite directions and opposed to each other. The springs 15 and 16 form a yieldable connection between the reels 11 and 12 and the shafts 13 and 14 so that when the latter are rotated the reels will revolve therewith and are provided for the purpose of maintaining a ribbon wound on the reels in a taut condition.

The shafts 13 and 14 are geared together to rotate in synchronism by means of a sprocket chain 17 which passes around sprocket wheels 18 and 19 on the shafts 13 and 14. Mounted on the lower ends of the shafts 13 and 14 are worm gears 20 and 21 which are disposed on the same plane and are spaced apart. Extending between the adjacent edges of the worm gears 20 and 21 is a worm pinion 22 on a drive shaft 23 of an electric motor 24 which worm pinion is adapted to be moved into engagement with either of the worm gears 20 and 21, or disposed intermediate thereof as will be later described.

The motor 24 is pivoted at 25 on a suitable base 26 and is normally maintained in such position that the worm wheel 22 will be out of mesh with the gears 20 and 21 by means of opposed centralizing springs 27 and 28 connected to opposite sides of an arm 29 on the motor 24 and attached at their outer ends to rigid members 99.

Connected to the reels 11 and 12 is a sectional ribbon 30, which passes from the reels around guide rollers 31 and 32 arranged adjacent one corner of the case; thence around direction rollers 33, 34 and 35 arranged in the other corners of the case, in such manner as to dispose the ribbon 30 across the

four sides of the case, as particularly shown in Fig. 1. The ribbon 30 is preferably formed of removable sections which can be interchanged and removed and replaced with other sections as desired. The connection between adjacent sections of the ribbon is formed of sheet metal clips 36, the edges of which are intumed to form a hook engagement with the intumed edges of a clip on an adjacent section.

The clips 36 preferably extend throughout the width of the ribbon 30 and are formed of an electrical conducting material insulated from the ribbon to form an electrical connection between contact plates 37 and 38 on the direction roller 35. The plates 37 and 38 surround the roller 35 and are separated from each other by means of an insulating material 39. Slidably engaging the contact members 37 and 38 are wiper contacts 40 and 41 connected to electric conductors 42 and 43, respectively. The conductor 42 leads to and connects with a fixed contact member 44 on a timing rocker-bar 45 pivoted intermediate its ends at 46 on a suitable support 47 as shown in Fig. 7. The conductor 43 connects with one terminal of a solenoid magnet 48, the other terminal of which connects to a conductor 49 leading to the terminal of a second electro-magnet 50, the other terminal of which connects to the conductor 51 leading to a fixed contact member 52 on the end of the rocker-bar 45 opposite the contact member 44.

Mounted on the rocker-bar 45 to reciprocate longitudinally thereon is a rack 53, the ends of which terminate adjacent the contact members 44 and 52 and carry knife contact members 54 and 55 adapted to alternately move in and out of connection with the contact members 44 and 52 when the rack 53 is reciprocated, as will be later described. The rack 53 is formed of a suitable conducting material and is connected through a conductor 56 leading from a conductor 57 connected with one terminal of a suitable source of electric supply 58, the other terminal of which connects with a conductor 59 leading to the conductor 49 connecting the magnets 48 and 50.

The solenoid magnets 48 and 50 are provided for the purpose of actuating the rocker-bar 45 and cooperate with the latter to control the operation of a pair of solenoid magnets 60 and 61 for swinging the motor 24 on its pivot 25, the rocker-bar 45 constituting an element of a timing device co-operating with the contact member formed by the clips 36 to energize and deenergize the magnets 48 and 50 at predetermined regular intervals of time. Cores 48' and 50' of the magnets 48 and 50 are pivotally connected to the rocker-bar 45 on opposite sides of its pivotal mounting 46. The magnets 60 and 61 are arranged to actuate a single core

62 pivoted to the outer end of the arm 29 connected to the motor 24 and are energized singly at intermittent periods through the operation of the timing device, as will be later described.

The circuit controlling the magnets 60 and 61 comprises a conductor 63 connecting with one terminal of each of the magnets 60 and 61 and leading to a contact member 64 adjacent the rocker-bar 45, which contact member is adapted to be electrically connected to a contact member 65 on the main conductor 57; and conductors 66 and 67 leading from the other terminals of the magnets 60 and 61 connecting with contact members 68 and 69 adapted to be separately connected by a switch 70 to a conductor 71 leading to and connecting with the other main conductor 59. The contact members 64 and 65 are adapted to be connected to direct current to either the magnet 60 or 61 according to the position of the switch member 70, these members 64 and 65 being connected by means of a wiper contact arm 72 carried by the rocker-bar 45 centrally thereof and insulated therefrom; when the rocker-bar 45 is inclined in one direction as shown in Fig. 5. When the rocker bar 45 is inclined in the opposite direction the wiper arm 72 connects contact members 73 and 74 to direct current through a lighting circuit.

The lighting circuit comprises a conductor leading from the conductor 57 to the contact member 74, and a conductor 75 leading from the contact member 73 to lamps 76 electrically connected through the main conductor 59 to a conductor 77.

The motor 24 is designed to be operated continuously when the device is in use; the current for the operation thereof being supplied thereto through conductors 78 and 79 connecting with the main conductors 57 and 59.

The timing device, before referred to, includes the rocker-arm 45 which is formed with a sinuous channel 80 in which a ball 81 travels when the rocker-bar is inclined, the ends of the sinuous channel terminating in straight channels 82 and 83 leading to pockets 84 and 85 carried on the ends of the slidable rack 53 and guided in the ends of the channels 82 and 83. The slidable rack 53 is in the form of a rectangular frame which is supported in channels 86 formed in the upper face of the rocker-bar 45 and frictionally engaged by the latter to prevent too free movement. The top of the rocker-bar 45 is covered with a transparent plate 87 to close the channels 80 and 86.

The reversing mechanism by which the direction of rotation of the reels 11 and 12 is controlled includes the switch member 70 and a means for operating same, actuated by the ribbon and one of the reels which is

particularly shown in Fig. 9, and includes an arm 88 carried on a rock shaft 89 formed with a crank 90 on which a roller 91 is mounted and caused to bear against the reel 11 or ribbon thereon by means of a spring 92 connected at one end to a portion of the case and at the other to the arm 88.

The switch member 70 is pivoted at 93 on the outer end of the arm 88 and has a spring 94 connected thereto to exert a normal downward pressure on its outer end. The contact members 68 and 69 are in the form of superposed plates suitably spaced apart. The switch member 70 is designed to be maintained in connection with the contact member 68 when the arm 88 is moved in one direction and be in connection with the contact member 69 when the arm 88 is moved in the opposite direction; the switch 70 moving from the contact member 68 to the contact member 69 under and over a hinged directing gate 95 forming part of the contact member 69 which is electrically connected at its lower end to a plate 96 on a plane with the contact plate 68 and insulated therefrom by insulation 97.

The contact plate 69 terminates at such point that the switch member 70 will ride over its end and drop on the contact plate 68 as will be later described. The reel 11 is formed with a recess 98 into which the roller 91 moves when the ribbon 30 is unwound from the reel so as to cause the spring 92 to act on the arm 88 to throw the switch member 70 from the contact plate 68 to the plate 96.

In the operation of the invention, assume the ribbon 30 to be wound on the reel 11 with the roller 91 bearing thereagainst in opposition to the spring 92, the switch 70 being in connection with the contact member 68 so as to electrically connect the conductor 71 to the conductor 66 leading from the magnet 60 which will be energized by the current from the main conductor 57 through the contact member 65, switch arm 72, contact member 64 and conductor 63, the rocker-bar 45 being previously positioned to dispose the switch arm 72 in connection with the contact members 64 and 65. The energizing of the magnet 60 operates on the core 62 to rock the motor 24 through the arm 29 in opposition to spring 28 to move the worm pinion 22 into mesh with the worm gear 21 connected to the reel 12 through the shaft 14 to wind the ribbon 30 thereon and unwind it from the reel 11; the reel 11 being rotated in synchronism with the reel 12 through the sprocket chain 17. The springs 15 and 16, being oppositely wound and tensioned to exert a pressure greater than the resistance offered by the movement of the ribbon, will operate to maintain the ribbon taut as it passes from one reel to the other, thereby compensating for the varying diameters of

the reels occasioned by the increase and decrease of the number of layers of ribbon thereon.

The ribbon 30 will be moved continuously from the reel 11 around the direction rollers 31, 34, 35 and 32 on to the reel 12 during the length of time the worm pinion 22 is in engagement with the worm wheel 21 which corresponds with the length of duration of the energizing of the magnet 60. The length of time that the magnet 60 is energized is proportionate to the length of the display opening 10 in the case 9, being such that the length or section of ribbon displayed through one of the display openings on one side of the case will be moved into position rearward of the display opening on the adjacent side of the case before the magnet 60 becomes deenergized to cause the spring 28 to restore the motor 24 and the worm pinion 22 to their normal central positions. This deenergizing of the magnet 60 is accomplished by the conducting clip 36 on one of the ribbon sections moving into contact with the contact members 37 and 38 on the direction roller 35 to complete a circuit to electrically connect the conductors 42 and 43 through the wipers 40 and 41, thereby energizing the magnet 48; the contact members 44 and 54 being previously connected to permit a flow of current from the main line conductor 57 through the conductors 42 and 43 and magnet 48.

The energizing of the magnet 48 will operate on the core 48' thereof to move the latter longitudinally and thereby rock the rocker-bar 45 in such position as to move the switch arm 72 out of connection with the contact members 64 and 65 and into engagement with the contact members 73 and 74, thereby breaking the circuit to the magnet 60 and completing a circuit through the lights 76 to illuminate the interior of the case back of the advertising ribbon.

The deenergizing of the magnet 60 releases the core 62 and permits the spring 28 to rock the motor 24 and throw the worm pinion 22 out of mesh with the worm gear 21 and thereby stop the rotation of the reels and the movement of the ribbon, in which position they will remain until the magnet 60 is again energized which will be the length of time controlled by the ball 81, which will start to travel down the sinuous channel 80 when the rocker bar 45 is tilted by the energizing of the magnet 48. The ball 81 on leaving the sinuous channel 80 will enter the straight channel 83 where its movement will be accelerated so that it will strike the cup 85 with sufficient impact to move the rack 53 longitudinally and thereby disconnect the contact members 44 and 54 to break the circuit to the magnet 48, and connect the contact members 52 and 55 to complete a circuit from the main conductor 57,

through rack 53, contacts 55 and 52, conductor 51 and magnet 50. The magnet 50 will thus be energized to actuate its core 50' to rock the rocker bar 45 and restore the switch contact 72 thereon into connection with the contact members 64 and 65, thereby reenergizing the magnet 60 which will operate, as before described, to cause the rotation of the reel 12.

The rocking of the rocker-arm 45 by the magnet 50 will cut out the light circuit and cause the ball 80 to re-traverse the channel 80 into the straight channel 82 where it will gravitate against the pocket 84 to shift the rack 53 and move the contact member 54 into engagement with the contact 41 and separate the contact members 52 and 55, thereby deenergizing the magnet 50 and electrically connecting the conductors 42 and 57 so that when the conducting clip 36 on the next section of the ribbon engages the direction roll 35 the magnet 48 will be energized, as before described. As a means for cushioning the operation of the rocker-bar 45 the cores 48' and 50' and are made in the form of plungers which extend into dash-pots 100 and operate to prevent too rapid movement of the rocker bar. The ribbon 30 will thus be advanced step by step from the reel 11 to the reel 12 and when it has been fully unwound from the reel 11 the roller 91 will contact with the periphery of the reel and immediately after quickly move into the recess 98. Just before the roller 91 enters the recess 98 the arm 88 will be so positioned that the switch member 70 thereon will be disposed adjacent the insulation 97 separating the contact members 68 and 69 so that when the roller 91 enters the recess 98 to cause an increased throw of the arm 87 at this point the switch 70 will pass under the hinged gate 95 on to the plate 96. This will break the circuit to the magnet 60 from the conductor 71 and complete the circuit to the magnet 61 through the conductors 67 and 71 so that when the contact members 64 and 65 are connected by the switch arm 72 the magnet 61 will be energized to cause it to rock the motor 24 in opposition to the spring 27 and move the worm pinion 22 into mesh with the worm gear 20 on the shaft 13 of the reel 11. This will reverse the direction of rotation of the reels so that the ribbon 30 will wind from the reel 12 on to the reel 11 in the step by step fashion before described until the switch 70 is restored into connection with the contact member 68. This is accomplished by the arm 88 which is moved in such direction by the increasing thicknesses of the ribbon 30 on the roller 11 acting on the crank 90 and rock shaft 79 to cause the switch member 70 to travel up the hinged gate 95 on to the contact member 69; the switch member 70 passing from the end of the switch member 69 the moment the

ribbon 30 is fully wound on the reel 11, thus breaking the electrical connection to the magnet 61, and completing the electrical connection to the magnet 60. By this construction of the contact plates 68 and 69 and the switch member 70 the length of the ribbon 30 can be increased or diminished as desired; the length of the contact member 69 being adjusted accordingly so that the switch member 70 will leave its outer end the moment the ribbon 30 is fully wound on the reel 11.

From the foregoing it will be seen that the ribbon will be advanced step by step from one reel to the other and when fully wound on one reel its direction of movement will be automatically reversed so that it will be wound step by step on the other reel, thus displaying portions of the ribbon successively in the display openings on the various sides of the case; each section of the ribbon thus being exposed for a period of time on each side of the case.

What I claim is:

1. In an advertising device, a pair of reels, a ribbon mounted to be wound from one reel to the other, means for maintaining the ribbon taut between the reels, a motor adapted to be moved into driving engagement with either of the reels and normally positioned out of engagement therewith, a timing device, and electrical means controlled by the timing device cooperating with the ribbon for intermittently positioning the motor in driving connection with one of the reels.

2. In an advertising device, a pair of reels, a ribbon mounted to be wound from one reel to the other, means for maintaining the ribbon taut between the reels, a motor adapted to be moved into driving engagement with either of the reels and normally positioned out of engagement therewith, a timing device, electrical means controlled by the timing device cooperating with the ribbon for intermittently positioning the motor in driving connection with one of the reels, and electrical means controlled by the ribbon and one of the reels and cooperating with the timing device, whereby the motor may be intermittently connected to the other of the reels to reverse the movement of the ribbon.

3. In an advertising device, a pair of reels, a ribbon mounted to be wound from one reel to the other, a motor adapted to be moved into driving engagement with either of the reels, spring means for normally positioning the motor out of engagement with the reels, a pair of magnets for engaging the motor with either of the reels, means controlled by one of the reels for directing the flow of electrical current to either one or the other of the magnets according to the direction of rotation of the

reels, and a timing device for directing current to the selected magnet intermittently.

4. In an advertising device, a pair of reels geared together, a ribbon mounted to be wound from one reel to the other, a motor adapted to be moved into driving engagement with either of the reels, means for normally positioning the motor out of engagement with the reels, a timing device, and electrical means controlled by the timing device cooperating with the ribbon for intermittently positioning the motor in driving connection with one of the reels.

5. In an advertising device, a pair of reels geared together, a ribbon mounted to be wound from one reel to the other, a motor adapted to be moved into driving engagement with either of the reels, means for

normally positioning the motor out of engagement with the reels, a timing device, electrical means controlled by the timing device cooperating with the ribbon for intermittently positioning the motor in driving connection with one of the reels, and electrical means controlled by the ribbon on one of the reels and cooperating with the timing device, whereby the motor will be intermittently connected with the other of the reels.

In witness that I claim the foregoing I have hereunto subscribed my name this 19th day of December, 1913.

W. B. WHEELER.

Witnesses:

MARIE BATTEY,
EDMUND A. STRAUSS.