

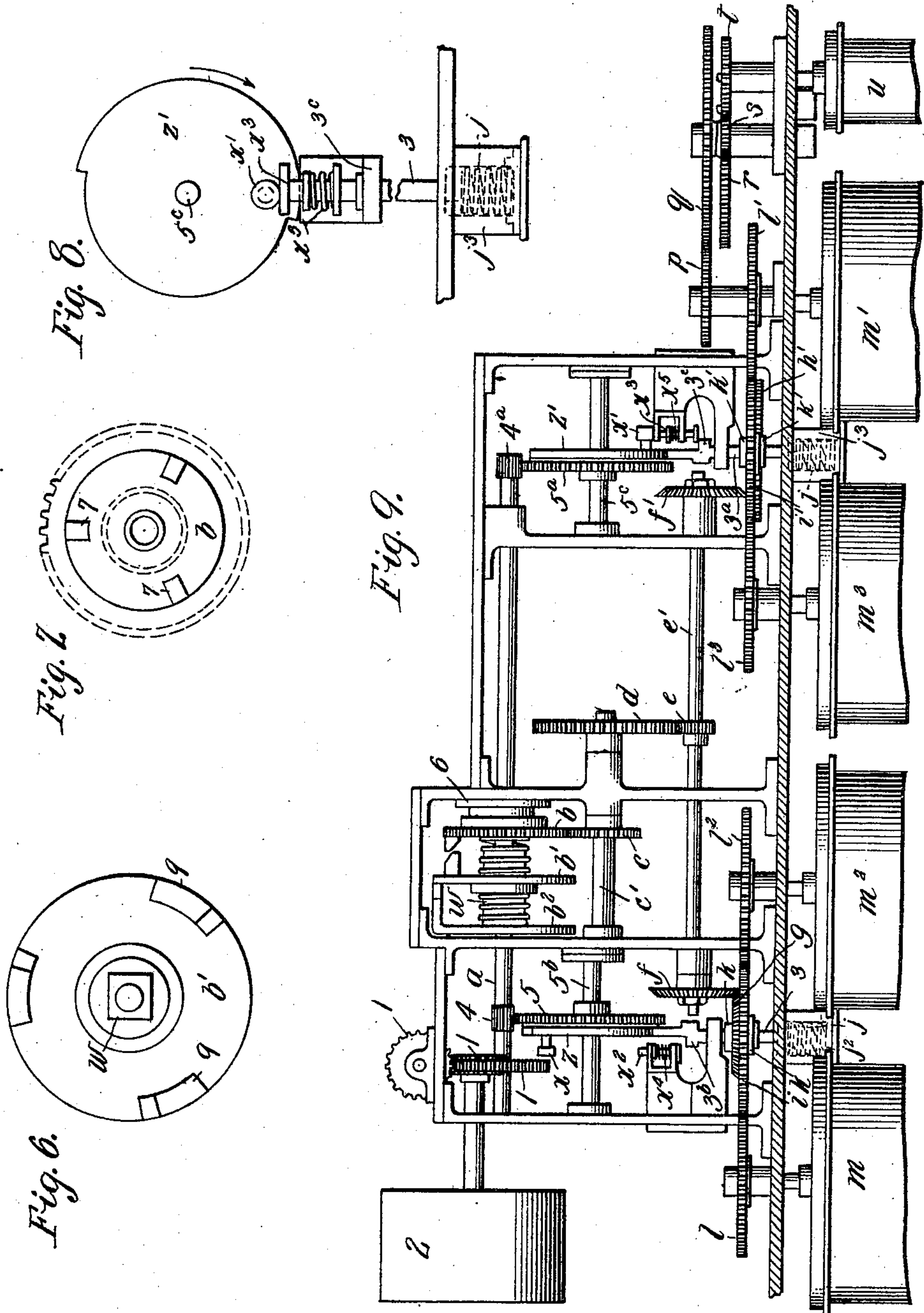
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F. & A. VENEZIANI.
MECHANICAL APPARATUS USED FOR ADVERTISING PURPOSES.

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2 SHEETS—SHEET 2.



Witnesses
Jos. H. Collins.
H. H. Totten

Inventors
Federico Veneziani
and
Aldo Veneziani
by
Knight Bros
Attorneys

UNITED STATES PATENT OFFICE.

FEDERICO VENEZIANI AND ALDO VENEZIANI, OF MILAN, ITALY.

MECHANICAL APPARATUS USED FOR ADVERTISING PURPOSES.

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Specification of Letters Patent.

Patented July 30, 1907.

Application filed April 12, 1905. Serial No. 255,254.

To all whom it may concern:

Be it known that we, FEDERICO VENEZIANI, civil engineer, and ALDO VENEZIANI, merchant, subjects of the King of Italy, residing at 8 Via Lupetta, Milan, Italy, (whose post-office address is 8, Via Lupetta, Milan, Italy,) pray that Letters Patent may be granted to them for Improvements in Mechanical Apparatus Used for Advertising Purposes; and do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the invention is an apparatus by means of which a sheet of paper, cloth, celluloid and the like, on which advertisements are printed, painted and so on, is caused to be wound on a roller in proportion as it is being unwound from another loose roller, the loose roller being automatically changed into a winding one and vice versa, and the reversing gear acting uninterruptedly as long as the apparatus is acted upon, by the necessary motive power. Moreover the motion of the cloth or paper sheet carrying the advertisements is such that each advertisement remains at rest for a certain period of time and then disappears in order to give way to the next following one.

In order that the attention of by-passers may be more efficiently attracted the apparatus contains, besides an ordinary clock, indicating the hours, a frame on which the date and the day of the week are to be read.

The apparatus may be internally fitted with lamps, by which both the advertisements, the time dial and calendar tables may be illuminated.

Several clock dials, each fitted with an advertisement sheet may be driven by one device actuating all of the sheets at one time.

The accompanying drawings refer to an apparatus fitted with one actuating device only and a triple advertising sheet appearing on the three sides v , v' , v'' .

Figures 1 and 2 are two front elevations showing the clock and calendar as well as the frames intended to contain the advertisement sheets. Fig. 3 is a diagram of the actuating mechanism. Fig. 4 to 8 are particulars on an enlarged scale, which will be hereinafter explained. Fig. 9 is a section on line A B Fig. 3 the advertising band being removed and Fig. 10 is a plan showing the coupling device.

The toothed wheels h , h' respectively mesh with the wheels i , i' , which in their turn engage with l , l' and l'' on the shafts of which the rollers m , m^2 , m' , m^3 are mounted. Said rollers alternately wind and unwind the cloths n , n' , which are kept tightened and in the immediate proximity of the frames v , v' by the loosely revolving rollers o , o' , o'' . There are therefore two groups of wheels h , h' , i , i' , l , l' , l'' one of which is revolving

and winding the cloths n , n' , while the other group is caused by the cloths themselves to revolve in the contrary direction and therefore to unwind the cloths.

The toothed wheel (Fig. 9) p keyed on the same shaft as l' (Fig. 3) meshes with 9, keyed on the same shaft as r , the latter engaging with both s and s' , which in turn respectively mesh with t , t' . t and t' are mounted on the same shaft as the rollers u , u' , which alternately wind and unwind the cloth u^2 , visible through the frame v^2 . The wheels t and t' carry pawls u^5 and u^4 and on the shafts of the rollers u and u' are rigidly secured ratchet wheels u^5 and u^3 , the teeth of the ratchet wheel u^5 being disposed in the opposite direction to those of the ratchet wheel u^3 for a purpose to be hereinafter described.

Referring to Fig. 9 1 represents a train of gearing wheels, which being driven by a motor 2 actuates the driving shaft a of the mechanism. b , b' , b^2 are toothed wheels (hereinafter described) which intermittently actuate the toothed wheel c which in turn by means of the toothed wheels d , e drives the bevel wheels f , f' at the ends of the shaft e' . The vertical bevel wheels f , f' mesh with the horizontal bevel wheels g , g' , which are connected with the spur wheels h , h' and loosely revolve on the vertical shafts 3, 3^a within the collars k , k' , k'' . 4, 5, z , x , 4^a, 5^a, z' , x' are parts hereinafter described which act on the shafts 3, 3^a so as to cause the bevel wheel g' to get out gear with f' when g meshes with f and vice versa.

From what has been hereinbefore said it appears (Fig. 3 and 9) that when g is in gear with f , the train of wheels h , i , l , l^2 causes the rollers m , m^2 to wind up the cloths n , n' , while the latter are being unwound from the rollers m' , m^3 whereby the train of wheels h' , i' , l' , l^3 will be caused loosely to revolve in the opposite direction. When the whole series of advertisements, printed on the cloths n , n' has been displayed, the reversing device 4, 5, z , x , 4^a, 5^a, z' , x' will bring the bevel wheel g out of gear with f and cause the bevel wheel g' to engage with f' . The train h' , i' , l' , l^3 will cause the rollers m' , m^3 to revolve in opposite direction than formerly; the rollers m' , m^3 will therefore wind up the cloths n , n' unwinding them from the rollers m , m^2 , which will revolve loosely together with the whole train of wheels h , i , l , l^2 in the opposite direction than they did during the preceding period. The third cloth u^2 , being connected to the actuating mechanism through the toothed wheel h' and the trains t , s , r , q , p , l' , i' , t' , s' , r' , q' , p' follows the same course as the cloths n , n' , being alternately wound upon roller u and unwound from roller u' and vice versa.

When the wheel r revolves in the direction of the arrow (Fig. 10) the pawl u^4 will carry the ratchet wheel u^3 along and cause the cloth u^2 to be wound on the roller u' , the roller u being free to turn loosely relatively to the wheel t by reason of the ratchet mechanism u^5 , u^6

acting in the opposite direction to the ratchet mechanism $u^3 u^4$. When the direction of rotation of the wheel r is reversed the roller u will be carried along and the roller u' permitted to rotate loosely to unwind the cloth therefrom.

The device by means of which each advertisement is caused to remain at rest during a certain time, then to disappear and give way to the next following advertisement which in turn remains visible for some time and so on, essentially consists of the train of wheels b, b', b^2 .

On a sleeve 6 (Fig. 4 and 7) the toothed wheel b (Fig. 7) fitted with the projections or lugs 7 is loosely mounted. On the driving shaft a is mounted a bush w rectangular in section (Fig. 6) carrying the wheel b' . Wheel b' has as many projections 8 on its right face as there are lugs 7 on the wheel b and is also fitted with lugs 9 on its left face.

Wheel b^2 is secured to the bearing 10; it has as many projections 11 as there are lugs 9 on wheel b' . Two spiral springs $y y'$ are wound around the rectangular bush w , the stronger being inserted between b and b' and the weaker between b' and b^2 .

12 is a ring of rubber, leather or similar material intended to take up the impact that may be exerted by the left side of b' against b^2 .

The projections or lugs 11 and 9 are so shaped that, on wheel b' being turned, the contours of 11 and 9 come into contact with each other, pushing b' towards b and compressing the spring y up to the point when the lugs 8 come into contact with the projections 7, whereby the loose wheel b is caused to revolve with b' as long as the projections 11, 9 remain in contact with each other. As soon as such contact ceases the spring y causes the wheel b' to recede from the wheel b and the projections 7 of the wheel b part from the lugs 8 of the wheel b' , which on further revolving together with the driving shaft a allows of the loose wheel b remaining at rest during the time employed by b' to bring into contact with the corresponding projection 11 the projection 9 following next, which in turn will again cause the loose wheel b to turn, whereupon it will be again abandoned and so on. It is therefore clear that, in spite of the chief driving shaft a uninterruptedly revolving, the toothed wheel b which gearing with c drives, through the spur wheels d, e and bevel wheels $f f'$, the trains of wheels $g h i l l^2, g' h' i' l' l^3$ (Fig. 9 and 3), will keep these trains and therefore the cloths $n, n' u^2$ in motion during a certain period of time, whereupon they will be brought to rest and then started again and these alternations will go on as long as the driving shaft a is kept in motion.

The periods of motion correspond to the moments when the advertisements are disappearing, while during the stoppages the advertisements are kept at rest under the eyes of the by-passers.

The time during which each advertisement disappears is always the same and depends upon the angle through which the wheel b' must be turned in order that the faces of 11 and 9, which have come into contact, part from each other as well as on the ratio of the number of teeth of b, c and the other intermediate toothed wheels and on the diameters of the rollers $m, m^2 m' m^3, u u'$.

It is now to be seen how, when once all the adver-

tisements have been displayed, the same may be brought again under the eyes of the by passers in the reverse order and with the same intervals.

The driving shaft a (Fig. 8 and 9) carries two pinions 4, 4^a gearing with the wheels 5, 5^a secured to the shafts $5^b, 5^c$ and connected to the disks $z z'$ each of which has two different radii, on the two halves of its periphery. Such disks are so located with respect to the mechanism that when the half disk z , having the greatest radius is turned to the left, the half disk z' having the greatest radius is turned to the right and vice versa that is to say the cams of the two disks are disposed at an angle of 180° to each other, the same being the case with the studs on which the small rollers $x x'$ are loosely revolving. Beneath said disks and in the same vertical plane are, situated the shafts 3, 3^a , (Fig. 8), the heads $3^b, 3^c$ of which are double stepped, while their bases have larger diameters acted upon by the springs j located within cases j^2, j^3 , said springs continuously pushing the shafts upwards so as to keep bevel wheel g in gear with f or g' in gear with f' .

The ratio between the number of teeth of the toothed wheels 5, 5^a and the pinions 4 4^a is such that when the driving shaft a has made as many revolutions as are necessary to cause the whole series of the advertisements to be displayed, the toothed wheels 5, 5^a and the disks $z z'$ connected thereto have made half a revolution. Under such conditions if the bevel wheels $g' f'$ are out of gear owing to the part of disk z having the greatest radius, pressing on the head of the vertical shaft 3^a , the same bevel wheel g' will gear with f' owing to the action of spring j , as soon as the disk z' happens to leave the shaft 3^a , owing to the action of its spring j , and pass forward with its half of smallest radius. At the same moment the bevel wheel g will come out of gear with f owing to the part of the disk z , which has the greatest radius having pressed downward the head 3^b of shaft 3, compressing the spring j . These alternations will go on uninterruptedly one after another.

In order to prevent the disks $z z'$ from jamming against the heads of the shafts 3, 3^a , when they happen to slide thereon with the parts having the greatest radius, the small loose rollers $x x'$ are provided. They are so arranged as to press with a slight angle of lead against the head of the small shafts $x^2 x^3$ which in turn press the head of the shafts 3, 3^a with their lowest ends ending in a washer of larger diameter, against the second step, thus facilitating the passage of the disk $z z'$ at the required moment. As soon as the roller $x x'$ is out of action the small shaft x^2, x^3 pressed by the spiral springs $x^4 x^5$ surrounding it returns to its previous position.

The clockwork of whatever description, to be employed in connection with the advertising device will find a convenient location above the same, the clockwork and the advertising device being or being not actuated by the same driving shaft.

Now what we consider as novel and claim as our invention is:

1. In a device of the character described, the combination with a pair of rollers, and an advertising band wound on the rollers, of mechanism for intermittently rotating one of said rollers to unwind the band from the other roller; said mechanism comprising a driving shaft, a gear wheel loosely mounted on said shaft, a gearing between said gear wheel and the roller to be rotated, a cam disk

5 having cams on both faces and slidably mounted on the driving shaft to rotate therewith, a stationary cam disk located adjacent to said sliding cam disk to cause the sliding disk to move into engagement with the loose gear wheel at intervals and cause rotation thereof, and a spring for disengaging the sliding disk from the loose gear wheel.

10 2. In a device of the character described, the combination with a pair of rollers and an advertising band wound on the rollers, of mechanism for alternately rotating said rollers in opposite directions; said mechanism comprising a driving shaft, a slidably mounted gear for each of the rollers, a gearing between the driving shaft and the roller gears, means tending to hold the roller gears in engagement with said gearing, and means driven by the driving shaft for alternately bringing the roller gears out of engagement with said gearing.

20 3. In a device of the character described, the combination with a pair of rollers and an advertising band wound on the rollers, of mechanism for alternately rotating said rollers in opposite directions; said mechanism comprising a driving shaft, a slidably mounted gear for each of the rollers, a gearing between the driving shaft and the roller gears, means tending to hold the roller gears in engagement with said gearing, and means driven by the driving shaft for alternately bringing the roller gears out of engagement with said gearing; said last-named means comprising a pair of cam disks engaging the roller gears to cause the cams of the disks to bring the gears out of engagement with the gearing.

30 4. In a device of the character described, the combination with a pair of rollers and an advertising band wound on the rollers, of mechanism for alternately rotating said rollers in opposite directions; said mechanism comprising

a driving shaft, a slidably mounted gear for each of the rollers, a gearing between the driving shaft and the roller gears, means tending to hold the roller gears in engagement with said gearing, and means driven by the driving shaft for alternately bringing the roller gears out of engagement with said gearing; said last-named means comprising a pair of cam disks engaging the roller gears to cause the cams of the disks to bring the gears out of engagement with the gearing; the cam of one disk being located at an angle of 180° to the cam of the other disk.

5. In a device of the character described, the combination with a pair of rollers and an advertising band wound on the rollers, of mechanism for alternately rotating said rollers in opposite directions; said mechanism comprising a driving shaft, a slidably mounted gear for each of the rollers, a gearing between the driving shaft and the roller gears, means tending to hold the roller gears in engagement with said gearing, and means driven by the driving shaft for alternately bringing the roller gears out of engagement with said gearing; said last-named means comprising a pair of cam disks engaging the roller gears to cause the cams of the disks to bring the gears out of engagement with the gearing; the cam of one disk being located at an angle of 180° to the cam of the other disk, and each cam extending over half the periphery of the disk.

In testimony whereof we affix our signature to this specification, in the presence of two witnesses.

FEDERICO VENEZIANI.
ALDO VENEZIANI.

Witnesses:
MICHELE DE DRAGO,
B. CARLOS ALVOTZ.