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Fig. 100.

WITNESSES.

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UNITED STATES PATENT OFFICE.

WELCOME F. SWEET, OF ST. LOUIS, MISSOURI.

STREET-CAR ADVERTISING DEVICE.

1,053,934.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed February 3, 1910. Serial No. 541,728.

To all whom it may concern:

Be it known that I, WELCOME F. SWEET, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Street-Car Advertising Devices, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of the mechanism employed at one end of the car for moving the card-carrying frames of my improved street car advertising apparatus; Fig. 2 is a plan view of the mechanism seen in Fig. 1 with parts broken away; Fig. 3 is a cross section taken approximately on the line 3—3 of Fig. 2; Fig. 4 is a diagrammatic view illustrating the two rows of card-carrying frames utilized in my improved apparatus, and showing the positions of the frames at the end of the car while said frames are being switched or shifted from one row to the other.

My invention relates to a street car advertising apparatus which is positioned on the interior of the car immediately over the windows in the sides thereof, and which apparatus employs a series of card-carrying frames which are arranged to travel in a double row from one end of the car to the other.

My invention consists essentially in a continuously rotating shaft positioned immediately beneath the rail or molding on which the card-carrying frames travel, and which shaft operates simple means located at the ends of the molding or rail and which last mentioned means moves intermittently forward and back a distance equal to the length of one of the card-carrying frames for the purpose of moving the two rows of frames, and there being simple means for automatically shifting the card-carrying frames from one row to the other.

One of the principal objects of my invention is to do away entirely with card-carrying means such as endless carriers, reciprocating rods and the like, and to provide simple means whereby the frames are not attached, but bear directly against and push one another during their travel from one end of the apparatus to the other.

To the above purposes my invention con-

sists in certain novel features of construction and arrangement of parts hereinafter more fully described and claimed.

Referring by numerals to the accompanying drawings 1 designates a rail or molding which is positioned on the interior of the car immediately above the windows in the sides of said car and formed in the top of this rail are parallel grooves 2, which are traversed by the lower portions of the card-carrying frames. The upper edges of the frames are supported by a suitable rail or molding (not shown) located at suitable distance above, and arranged parallel with the rail 1. Rigidly fixed at each end of the rail 1, is an inverted L-shaped plate 3, the horizontal leg of which forms a continuation of the top portion of the rail 1. Formed on, or fixed to the ends of each plate 3 are brackets 4 in which are seated the ends of a pair of parallel guide rods 5.

Journaled for rotation beneath or in the lower portions on the rail 1 is a shaft 6 which is continuously driven in any suitable manner, and said shaft extending the entire length of the rail 1. Coupled to each end of said shaft 6 and operating in bearings 7 on the plate 3 between the rods 5, is a shaft 8 on which is formed a double thread. One of these threads, 8^a which may be termed a primary thread, has an acute pitch, and is designed for the purpose of bringing about a comparatively fast forward movement of the front row of card-carrying frames of the apparatus. The other or secondary thread 8^b is cut on the shafts 8 immediately over the primary thread and said secondary thread is of ordinary pitch, the ratio between the two threads being approximately 4 to 1, so that a nut or runner operating in the primary thread will be moved lengthwise approximately four times as fast as when operating on the secondary thread. The secondary thread is for the purpose of bringing about a slow movement of the means utilized for moving the rear row of card-carrying frames which rear row is hid from view by the front row, and during the time the rear row of frames is moving, the front row remains stationary, thus giving ample time for the occupants of the car to read the advertisements on the cards carried by said front row of frames.

Arranged to slide freely upon the rods 5 is a carriage comprising a pair of sleeves 9 mounted on said rods, and connecting the

front portions of said sleeves is a yoke 10. Pivotally mounted in this yoke is a pin 11 on the inner end of which is arranged a segmental block 12, which forms a runner and operates in the threads on the shaft 8. Pivotally mounted on the upper one of the sleeves 9 is a dog 13, the forward end of which extends upward as designated by 14, and said upward extension operates in a longitudinally disposed slot 15 formed in the horizontal leg of the plate 3. The slot 15 in the plate 3 at one end of the apparatus is in direct alinement with the front one of the grooves 2, while at the opposite end of the apparatus, said slot is in alinement with the rear one of the grooves 2, which arrangement is essential to bringing about the proper movements imparted to the double row of card-carrying frames.

Pivotally mounted adjacent the outer end of the plate 3 on the horizontal leg thereof, is a bell crank 16 in the forward end of which is seated a screw 17, the point of which is adapted to be engaged by the sleeve 9, carrying the dog 13. Pivotally mounted adjacent the opposite end of the plate 3 is a corresponding bell crank 18 in the forward end of which is seated a screw 19 adapted to be engaged by the front portion of the sleeve 9, carrying the dog 13. The forwardly projecting arms of these bell cranks 16 and 18 are connected by a rod 20 in order to cause said bell crank to move simultaneously, and pivotally mounted on the ends of the rear arms of said bell cranks are vertically disposed plates 21 which occupy a position on top of the horizontal leg of the plate 3.

22 designates one of the card-carrying frames such as is utilized in connection with my improved apparatus, said frame carrying a detachable advertising card 23, and the lower corners of each frame are cut away as designated by 24.

I have shown and described only that portion of the apparatus that is located at the right-hand end of the rail 1. A mechanism identically like the mechanism shown and described, is located at the left-hand end of the rail 1, and the parts of the mechanism at the left-hand end are reversed with the exception of the shaft 8. The shafts 8 at both ends of the apparatus are similarly arranged in order to gain the proper motion for the reciprocating carriages operating on the pairs of rods 5, and which carriages carry the dogs 13 which move the card-carrying frames. In the mechanism at the left-hand end of the apparatus, the slot 15 is in alinement with the rear one of the grooves 2 and the vertically disposed plate 21 is arranged to shift the card carrying frames from the front row into the rear row. This arrangement is diagrammatically illustrated in Fig. 4.

The operation of my improved apparatus is as follows: When the various parts of the apparatus are in the positions seen in Figs. 1 and 2, and the shaft 6 is continuously driven, the runner 12 operating in the primary thread 8^a on the shaft 8 causes the carriage comprising the sleeve 9 and yoke 10 to move quickly along the rods 5. The upper end 14 of the dog 13 engages in the notch formed in the lower right-hand corner of the card-carrying frame occupying a position at the right-hand end of the front row, and as said dog is mounted on the carriage the card-carrying frame engaged by said dog will be moved quickly toward the left-hand, and in this manner the entire front row of cards will be pushed toward the left with their lower edges traversing the front one of the grooves 2. During the operation just described the carriage at the left-hand end of the apparatus is being moved toward the left-hand owing to the engagement of the runner 12 on said left-hand carriage in the primary groove in the shaft 8 located at the left-hand end of the apparatus. Just prior to the time the two carriages reach their limit of movement toward the left-hand the forward portions of the sleeves carrying the dogs 13 engage the points of the screws 19 thereby swinging all of the bell cranks upon their pivots, and as a result the plate 21 at the left-hand end of the apparatus will be shifted rearwardly, and in so doing will engage the left-hand one of the card-carrying frames, and move the same from the front row of frames into a position midway between the two rows of frames, and thereby moving the frame, previously occupying a midway position, into a position in alinement with the rear row of frames. Simultaneous with this movement, the plate 21 at the right-hand end of the apparatus, will be correspondingly moved rearward away from the right-hand one of the card-carrying frames into a position to the rear of the path of travel of the rear row of cards (see Figs. 2 and 4). The proper movements for the plates 21 are brought about by the arrangement of the bell cranks 16 and 18 and the members of each pair of bell cranks move together for the reason that they are connected by the rod 20. When the carriages reach their limit of movement toward the left-hand, the runners 12 automatically shift their positions and ride into the secondary threads on the shafts 8, and as these threads are of ordinary pitch the runners and carriages will be moved toward the right-hand at a comparatively slow rate of speed. During this return movement of the carriages the dog 13 at the left-hand end of the apparatus will engage in the notch 24 in the lower left-hand corner of the left-hand one of the rear row of frames, and thus said

frame and all of the frames in the rear row will be pushed toward the right-hand, and during this time the entire front row of frames remains stationary, thus giving the passengers of the car in which the apparatus is located an opportunity to read the advertisements on the cards in said front row of frames. As the carriages reach their right-hand limit of movement, the sleeves 9, carrying the dogs 13 will engage the set-screw 17 thus actuating the pairs of bell cranks 16 and 18, and as a result the right-hand one of the plates 21 will be moved forward to shift the right-hand one of the card carrying frames forward, thereby moving the frame occupying the intermediate position at the right-hand end of the apparatus into a position in alinement with the front row, and at the same time the left-hand one of the plates 21 will be moved forward into position to receive the left-hand one of the front row of frames on the next movement of said front row. When the runners 12 reach the right-hand ends of the shafts 8 they are automatically shifted from the secondary grooves into the primary grooves, and the continued rotation of the shaft 6 and shafts 8 bring about a repetition of the movements just described, and thus the double row of card carrying frames are intermittently moved and the frames are automatically shifted from one row to the other at the ends of the apparatus.

A street car advertising apparatus of my improved construction is comparatively simple, does away with all forms of endless carriers, reciprocating rods and the like, and the card carrying frames are in no way connected to one another, but bear one against the other during their travel from one end of the apparatus to the other.

From the foregoing description it will be observed that there are no "dead" card spaces at the ends of the apparatus, that there is no housing provided to cover the half space left by the two end cards moving in opposite directions as is coincidental to the shifting and reversing of the cards where a continuous endless chain is used as a driver. On the contrary a card is placed immediately behind the left hand card of the front row before the front row is moved toward the right hand so that when said front row is moved the hidden card at the left hand end is uncovered and brought into view, thereupon taking its place in the front row to permit another card to be moved therebehind, thus a dead space at this end of the apparatus is avoided, and likewise a dead space is avoided at the right hand end of the apparatus. It is thus possible to avoid "dead" ends and occupy the entire advertising rack space of the end within the car without the use of magazines to hold a number of cards at the transfer stations.

Indeed by my improvement the space occupied is slightly greater than twice the thickness of a card frame, which is not at all objectionable, and moreover, this space is easily occupied by the molding strip now in common use in connection with advertising frames. The avoidance of dead ends and capacious magazines at the transfer stations is directly attributable to the arrangement of the card carrying frames for a double row upon the support, and the differential movement of the two rows of cards and moving at a relatively low speed in one direction, and the other at an intermittent high speed in the opposite direction.

I claim:

1. In a street car advertising apparatus, a support, a series of independent unattached card carrying frames arranged in a double row on said support, reciprocating means at each end of the support for engaging the end frames of the two rows with pressure, and to move the cards of the two rows in opposite directions, a constantly rotating shaft between the reciprocating means at the ends of the support, and means whereby the rotary motion of the shaft is converted into differential reciprocatory motion and applied to the reciprocating means.

2. In a street car advertising apparatus, a support, a series of independent unattached card carrying frames arranged in a double row on said support, a constantly rotating shaft extending from one end of the support to the other, and means at the ends of said constantly rotating shaft for converting the rotary motion into differential reciprocatory motion, and imparting the same to the rows of card carrying frames.

3. In an advertising apparatus, a support, a series of independent unattached card carrying frames arranged in a double row on said support, shafts each provided with a double thread, and which shafts are arranged for rotation at the ends of said support and card engaging means mounted on said threaded shafts for differential movement lengthwise thereon when said shafts are operated.

4. In an advertising apparatus of the class described, a support, a series of independent, unattached card-carrying frames arranged in a double row on said support, a shaft having a differential double thread arranged for rotation at each end of the support, means operating on said threaded shaft for engaging the end frames of each row to differentially move the rows in opposite directions, and a driving member connecting the threaded shafts.

5. In a street car advertising apparatus, a support, a series of independent unattached card-carrying frames arranged in a double row on said support, and means arranged

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at the ends of the apparatus for engaging the end frames of each row with pressure to move the two rows intermittently and at different rates of speed in opposite directions upon the support.

6. In an advertising apparatus of the class described, a support, a series of independent unattached card carrying frames arranged in a double row on said support, a shaft provided with double threads arranged at each end of the support, frame engaging means arranged to move forward and backward on the threaded shafts, as the same are rotated, and a shaft connecting the threaded shafts, which last mentioned shaft is adapted to be constantly rotated.

7. In an apparatus of the class described the combination with a double row of independent, unattached card-carrying frames, of means arranged at the ends of the rows of frames, for imparting movement to said rows, which means includes a rotating member and a conjoined member movable in opposite directions at differential rates of speed for engaging the end card of each row and moving the entire row of cards the distance of one card length.

8. In an advertising apparatus the combination with a double row of independent, unattached card-carrying frames, of means for imparting intermittent movement to each row, which means includes a shaft arranged for operation at each end of the apparatus, which shafts are provided with double threads, means connecting said shafts whereby the same are simultaneously operated and a member directly connected to each threaded shaft and movable in opposite directions at differential rates of speed thereby for engaging the end frame of each row to move the rows in opposite directions.

9. In a street car advertising apparatus, the combination with a double row of movable card-carrying frames of a constantly rotating shaft arranged at each end of the apparatus upon which shafts are formed double threads, reciprocating members actuated by said shafts for successively engaging and imparting longitudinal movement to the card-carrying frames, and means actuated by the reciprocating means for shifting the card-carrying frames at the ends of the apparatus from one row to the other.

10. In an apparatus of the class described, the combination with a double row of independent unattached card-carrying frames, of a constantly rotating member, and means arranged at the ends of the support, and at the ends of the constantly rotating member whereby the rotary motion of said member is converted into differential reciprocating motion and intermittently imparted to the end frames of each row.

11. In an advertising apparatus a sup-

port, a series of independent unattached card carrying frames arranged in a double row on said support, a member located adjacent said support and adapted to be constantly rotated, and means cooperating with the end portions of said constantly rotating member for successively engaging the end frames of each row and applying pressure thereto for moving said rows differentially and intermittently in opposite directions.

12. In a street car advertising apparatus, a support, a double row of card carrying frames arranged for movement on said support, means arranged at each end of the support and moving at a comparatively slow rate of speed in one direction and at a faster rate of speed in the opposite direction for engaging the end frames of the double row, and imparting intermittent movement to the rows of frames, and a rod extending between and connecting the frame engaging and moving means.

13. In an advertising apparatus, a support, a series of independent unattached card-carrying frames arranged in a double row upon said support, a member arranged for rotation adjacent each end of the support, an operating connection between said rotatable members, a member movable in opposite directions upon each rotatable member and driven at differential rates of speed, and means carried by said last mentioned members for engaging the end frames of each row to move said rows in opposite directions.

14. In a street car advertising apparatus, a support a series of independent unattached card carrying frames arranged in a double row on said support, reciprocating means arranged at the ends of the support and adapted to move at a comparatively slow rate of speed in one direction and at a faster rate of speed in the opposite direction for engaging the end frames of each row, and imparting movement thereto, and a rod connecting the frame engaging and moving means.

15. In an apparatus of the class described, the combination with a double row of card carrying frames, of a member adapted to be constantly rotated, means, including a double differential worm shaft, at each end of said constantly rotating member whereby the rotary motion of said member is converted into differential, reciprocating motion and imparted with pressure to the double row of frames.

16. In a device of the character described, the combination of two rows of frames, and means at the ends of said rows for moving them intermittently in opposite directions at different speeds.

17. In a device of the character described, the combination of two rows of frames, means for shifting the frames at the end of

each row to the other row, and means for differentially moving said rows of frames in opposite directions, said means consisting in connected driving worms and elements
5 driven thereby.

18. In a device of the character described, the combination of two rows of frames, means for intermittently moving them in opposite directions at different speeds, com-
10 prising a rotating worm having a double thread, and an element movable in opposite directions by said worm and coöperating with said frames.

19. In a device of the character described, the combination of two rows of frames, a
15 differentially double pitch driving worm, and a driven element movable in opposite directions by said worm for coöperating with the frames of said two rows.

In testimony whereof I hereunto affix my
signature in the presence of two witnesses,
this 31st day of January, 1910.

WELCOME F. SWEET.

Witnesses:

M. P. SMITH,
L. CORRAO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
