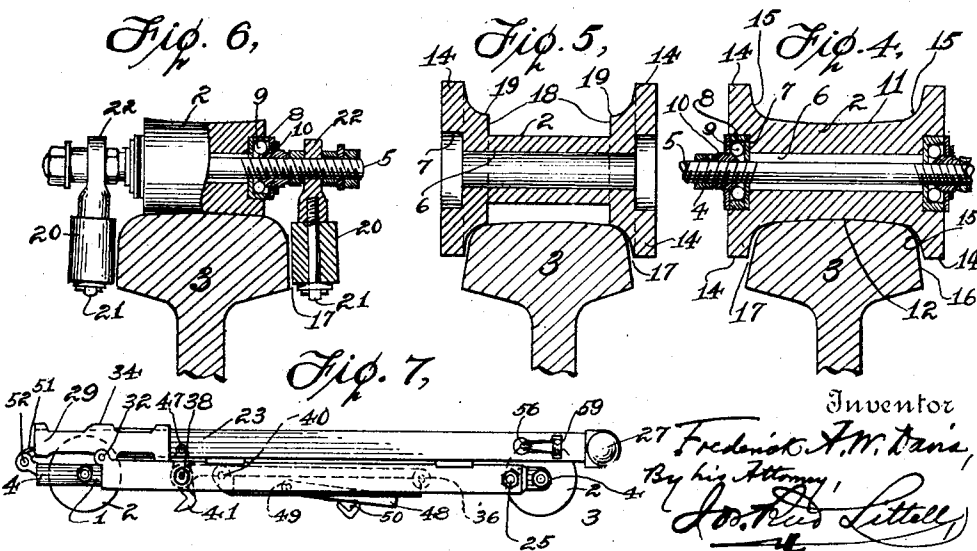
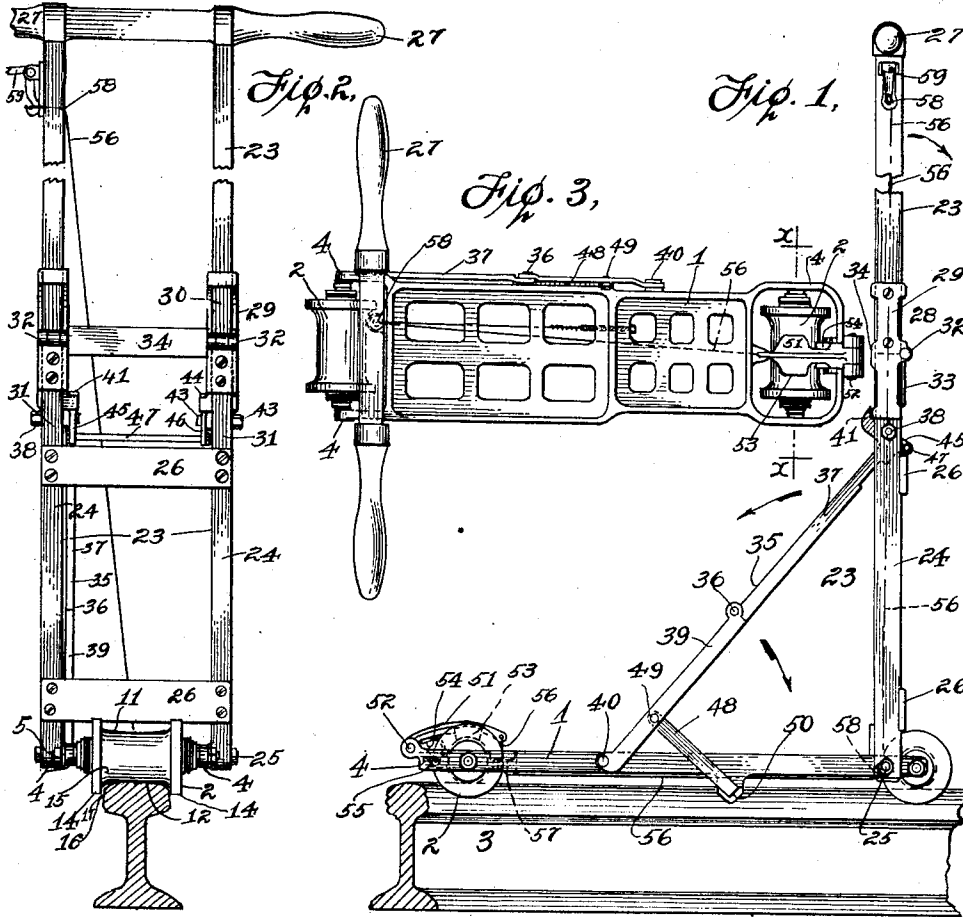


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RAILROAD FLAGMAN'S CARRIAGE.
APPLICATION FILED MAY 23, 1916.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK A. W. DAVIS, a citizen of the United States, and resident of Pelham, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Railroad-Flagmen's Carriages, of which the following is a specification.

This invention relates to carriages designed to be used upon railroad rails and is especially adapted for the rapid transportation of railroad flagmen and other operatives who are required to transverse the line of railroad.

Under the usual conditions of railroad operation, flagmen are required to go a considerable distance beyond the rear of trains for signaling purposes and considerable loss of time and delays ensue under conditions of making the trip on foot. My invention is designed to provide a simple carriage device which can be operated by the individual flagman or railroad operative under a propelling impulse which will attain a very high speed upon one of the rails of the track and enable the rapid carriage of the operator to and from the desired point. The device is also designed to enable the rapid carriage of any individual operative along a track rail under any conditions of desired employment or use.

It is the object of my invention to provide a simple and inexpensive carriage device of the character above indicated, which can be effectively and conveniently used by the operator for rapid transportation on a track rail, which will be readily portable, which will be compact and occupy but little space when out of use, and which will possess maximum effectiveness and general efficiency.

In the drawings—

Figure 1 is a side view of the device in operative position upon a railroad rail.

Fig. 2 is a front elevation of the structure as shown in Fig. 1.

Fig. 3 is a top or plan view of the structure as shown in Fig. 1.

Fig. 4 is a detail vertical cross-section, through one of the traction rollers, on the line $x-x$, Fig. 3.

Fig. 5 is a sectional view, corresponding to Fig. 4, illustrating a modified construction.

Fig. 6 is a sectional view, corresponding

to Fig. 4, illustrating a further modified construction.

Fig. 7 is a side view showing the device in knock-down or compact folded position when out of use.

Corresponding parts in all the figures are denoted by the same reference characters.

The improved carriage device primarily comprises a foot platform upon which one foot of the operator rests and sustains his weight during travel and which constitutes the body of the device, rollers extending across said foot platform at the front and rear thereof and adapted to support the same over a railroad rail and travel in a guide movement thereon, and an upright mast or framework extending at the front of the device and affording a handhold for the operator. Supplementary to the main elements just set forth, the device comprises means for bracing the mast in connection with the foot platform, and preferably bracing means and a knock-down or foldable construction for the mast and brace.

Referring to the drawings, 1 designates the foot platform, which is an elongated and narrow member of suitable construction and of sufficient longitudinal and lateral area to form a convenient rest and support for one foot of the operator. At the front and rear ends of the foot platform, are mounted transverse rollers, 2—2, adapted to extend across and be guided in travel upon a railroad rail, shown at 3, and support the foot platform a suitable distance above the tread of the rail. The rollers are preferably mounted between extensions, as at 4—4, at the ends of the foot platform, and have their bearing upon a transverse shaft or cross-pin, 5, extending between and fixed to said extensions. The rollers are preferably ball-bearing, and any suitable ball-bearing construction may be employed for this purpose. I have herein illustrated a construction in which a roller, constituted by a metal cylinder, is longitudinally bored, as at 6, to accommodate the cross-pin 5 and is bored at its ends to provide a recess, as at 7, accommodating the cups, 8, which carry the balls, 9, bearing upon a sleeve, 10, carried upon the cross-pin 5.

The tread of the rollers preferably substantially conforms to the surface of the

rail-head, as in the construction illustrated in Fig. 4, the periphery or cylindrical surface of the roller being concave in cross-section, as at 11, and conforming substantially to the convex cross-section of the tread portion, 12, of the rail-head. The concave circumference of the roller produces circumferential flanges, 14—14, at each side, the inner surfaces of which, as at 15, substantially correspond to the convex curvature at the sides of the tread portion of the rail, as at 16, but an allowance (say, approximately $\frac{1}{16}$ th of an inch) is preferably made to provide a space, as at 17, between the inner surface of said flanges and the side surface of the rail tread, to compensate for "play" or "nosing" of the rollers in operation upon the rail and to adapt the device to slight variations in the width of rail-heads. The rollers thus conform to the tread portion of the rail-head and fit over the same, and in their rapid travel and bearing upon the rail are guided and braced laterally by the flanges 14 at each side.

In the modified construction illustrated in Fig. 5, the concave circumference of the roller (in the construction as shown in Fig. 4) is cut away or recessed at its central portion, as at 18, the area of said circumferential recess being adapted to leave short tangents, as at 19—19, from the side flanges 14 and parallel to the axis of the roller to provide short bearing surfaces upon the top or tread of the rail. This construction reduces the frictional bearing surface of the roller upon the top or tread of the rail, there being no bearing at the central main portion of the circumference of the roller, and it is effectively operative through the side flanges 14 in the same manner as the construction illustrated in Fig. 4 and furthermore obviates an uneven bearing on the worn top surface or tread of a rail.

In Fig. 6, I have illustrated a further modified construction of the roller means for sustaining the foot platform, in which a main roller 2, mounted in substantially the same manner as the rollers illustrated in Figs. 4 and 5, has a reduced longitudinal extent or length and bears only upon the top surface of the tread of the rail, supplementary side rollers, as at 20—20, being provided in lieu of the side flanges 14 of the roller shown in Fig. 4 and adapted to bear against the sides of the head of the rail and effectively serve the same guide and bracing purposes as said flanges. In this construction, the supplementary side rollers have their axis approximately parallel to the side of the rail-head, and they are constituted by metal cylinders bearing upon shafts, 21, carried by brackets, 22, secured to and depending from the shaft or cross-pin 5 of the main roller 2. The circumference of the supplementary rollers 20 is preferably such

that they bear with relation to the main area of the sides of the rail-head, and they thus afford enhanced stability in the lateral bracing and guiding of the carriage device upon the rail. The relative positioning of the supplementary side rollers is preferably such that a space, 17, is provided between the circumference of the roller and the side of the rail-head to permit of the necessary "play" of the rollers in travel upon the rail in the same manner as that heretofore described with reference to the space 17 provided at the side flanges 14 of the roller construction shown in Fig. 4.

The mast, 23, affording a hand-hold and support to the operator, projects in upright position from the foot platform 1 and is constituted by a suitable framework having uprights and cross-bars. In the preferred construction, having a knock-down or folding character, the mast or front support comprises side uprights, 24—24, pivotally connected, as at 25, at their lower ends, to the sides of the foot-platform member 1 and braced at suitable intervals by cross-bars, 26, the top cross-bar being extended transversely to constitute a convenient hand-hold, as at 27, for the operator. To further enhance the foldable character of the mast 23, to the compact form as illustrated in Fig. 7, the uprights 24 are divided at a suitable middle point, as at 28, into two sections joined together by a socket and hinge connection, the preferred construction as herein illustrated comprising a socket-piece, 29, receiving and secured to the lower end of the upper section, 30, of the mast upright and extending downwardly to embrace the upper end of the lower section, 31, of the upright at both sides and at the rear. Said socket-piece has a hinge-joint, as at 32, at its front, carrying a hinge-plate, 33, which is secured to the front of the lower section of the upright, which construction enables the upper section of the upright to be folded forwardly in the direction of the arrow in Fig. 1, carrying the socket-piece 29, and the lower section of the upright to be folded rearwardly in the direction indicated by the arrow, from within the socket, and brought to the compact folded position shown in Fig. 7. The socket-pieces 29 of the respective mast uprights 24 are preferably connected and braced by a transverse cross-bar, as at 34.

The brace, 35, extends diagonally between the upright mast and the foot platform, and to enable the compact folding conditions as before mentioned this brace is divided by a hinge-joint, as at 36, about centrally of its ends, into an upper and lower section, the upper section, 37, of the brace-bar 35 being pivotally connected, as at 38, to one of the mast uprights 24 at a point immediately beneath the socket-piece 29, and the lower section, 39, of the brace-bar being pivotally

connected, as at 40, to the side of the foot-platform member 1. The brace-bar 35 operates, in relation to the preferred foldable construction as herein set forth, to lock the upper section 30 of the mast upright against folding action when the brace-bar is in operative position and the carriage device is in use, and for this purpose the upper end of the brace-section 37 is provided with an extension, as at 41, bearing in the operation of the pivotal connection 38 against the lower end of the socket-piece 29 at the rear thereof. A supplementary lock-catch, 42, corresponding in construction to the upper end of the brace-section 37, is preferably provided to lock the upper section 30 of the mast upright at the other side opposite from the brace 35, and this catch is pivotally mounted, as at 43, to said opposite mast upright and has an extension, as at 44, bearing against the lower end of the opposite socket-piece 29 at the rear thereof. Both the locking end of the brace-section 37 and the lock-catch 42 are provided with a forwardly-projecting extension, as at 45 and 46, respectively, affording a hand-hold to operate the locking means, and these latter extensions are connected by a cross-bar, 47, serving to brace the locking means which are provided at opposite sides of the mast upright. This cross-bar also serves as a means whereby the locking means may be simultaneously operated in unison to bring the lock extensions 41 and 44 either into locking position or into released position to enable the folding of the upper section of the mast upright. The foldable action of the brace 35, and the simultaneous release of the locking means, may also be simply and conveniently effected by pressing downwardly with the foot upon the brace, when the latter is in the operative position illustrated in Fig. 1, which will cause the brace to fold upon its hinge-joint and it will thereafter fold to the final position as indicated in Fig. 7. Supplementary means are preferably provided to lock or maintain the sectional brace-bar 35 in its operative position, and I have herein illustrated for this purpose a lock-bar, 48, pivoted at its upper end, as at 49, to the lower section 39 of the brace 35, at a point intermediate the pivoted end 40 thereof and the hinge-joint 36, the free lower end of the lock-bar being adapted to normally bear in a socket or keeper, 50, provided upon the foot-platform member 1 and thus operate to lock the brace against foldable action. When it is desired to fold the brace, it is simply necessary to grasp the pivoted lock-bar 48 to release it from the socket or keeper 50, and said lock-bar will also then fold to the position indicated in Fig. 7.

As the carriage device will attain an exceedingly high speed in its travel and guidance upon the track rail, a brake means is

provided for the control of the speed and stoppage of the carriage. The brake means may be of any suitable or adapted construction, and I have herein illustrated a preferred construction comprising a brake-shoe, 51, pivotally mounted, as at 52, at its rear end, beyond the rear roller and in connection with the rear extension 4 of the foot platform. This brake-shoe projects forwardly and curves over the circumference of the rear roller 2 and is provided at its under side with a friction block or surface, 53, of suitable area, adapted to bear upon the circumferential surface of the roller. The brake-shoe is normally maintained against contact with the roller by means of a spring, 54, preferably consisting of a curved plate carried by the brake-shoe at a point in front of its fulcrum or pivot 52 and in rear of its bearing surface 53, and bearing at its lower end against a seat, 55, provided upon the extension of the foot platform. To operate the shoe in its brake action upon the roller and against the tension of the spring 54, a flexible cable or wire, 56, is connected to the free front end of the shoe and extends therefrom downwardly and forwardly in keepers or guides, as at 57, upon the foot platform, and upwardly in keepers or guides, as at 58, upon the mast upright, to connection with a hand lever, 59, mounted upon the upright adjacent one of the hand-holes 27 of the mast and adapted to be conveniently operated to draw upon the cable 56 and thus actuate the brake. In the foldable operation of the carriage device, the flexible cable folds with the mast, as indicated in Fig. 7.

The operation and advantages of my invention will be readily understood. When the carriage is in the operative status as illustrated in Fig. 1, it is placed upon the track rail with the rollers in guide position thereon and the operator places one foot upon the foot platform and maintains his position by grasping the mast upright, and the carriage is then propelled upon the rail by the other foot of the operator in step contact with the ground or road-bed. A high speed, carrying the operator upon the supporting foot on the foot platform, can thus be attained upon the railroad rail with merely intermittent steps for propulsion, as the resistance to the travel of the carriage upon the track rail is practically a minimum. The carriage, when out of use, may be readily folded, as hereinbefore described and indicated, to the compact position shown in Fig. 7, in which it will occupy but little space, and it may therefore be conveniently kept upon the rear platform of railroad trains or in a small locker suitably provided. When desired for use, the device may be quickly unfolded and brought to its operative status as shown in Fig. 1. The carriage is therefore convenient and adapted

for a wide range of effective use, not only by railroad flagmen who are required to go and return a considerable distance in the rear of trains, but also by railroad operatives or workmen generally as an effective means of rapid and simple transportation of an individual operator from place to place on a track rail. The inexpensive character of the device, and its convenient operation and adaptability to high speed and effective service, enables its preferred employment or use as a substitute for hand cars or other cumbersome apparatus which are now employed upon railroad tracks for emergency transportation.

I do not desire to be understood as limiting myself to the detail construction and arrangement of parts as herein shown and described, as it is manifest that variations and modifications therein may be resorted to, in the adaptation of my invention to varying conditions of use, without departing from the spirit and scope of my invention and improvements. I therefore reserve the right to all such variations and modifications as properly fall within the scope of my invention and the terms of the following claims.

Having thus described my invention, I claim and desire to secure by Letters Patent:

1. A foot carriage adapted to operate at high speed in balanced action upon a single railroad rail, comprising a platform member of restricted lateral area to afford a support only for the foot of the operator, a single roller member extending transversely of said foot platform and in the median line thereof and mounted one at each of the terminal front and rear ends of said platform, said respective roller members conforming to and affording a braced bearing upon the tread and also both sides of the head of the single rail, whereby they are operative in a balanced guide movement thereon, and a hand-hold member projective upwardly from said foot platform at the front thereof whereby the balanced action of the foot platform can be sustained by the operator under the inertia of the guided travel of the roller members upon the single rail, substantially as set forth.

2. A carriage operative upon a railroad rail, comprising a foot platform constituting a rest and support for the foot of the operator, rollers extending transversely of said foot platform at the front and rear and in the median line thereof and sustaining said foot platform in balanced action on a single railroad rail in travel in a guide movement thereon, a foldable upright mast or framework extending from said foot platform transversely at the front thereof and affording a hand-hold for the operator, and a brace extending rearwardly at one side of said foot platform and operative to sustain

the mast in operative position and comprising means operating as a lock against the foldable action thereof.

3. A carriage operative upon a railroad rail, comprising a foot platform constituting a rest and support for the foot of the operator, rollers extending transversely of said foot platform at the front and rear and in the median line thereof and sustaining said foot platform in balanced action on a single railroad rail in travel in a guide movement thereon, a foldable upright mast or framework extending from said foot platform transversely at the front thereof and affording a hand-hold for the operator, a foldable brace extending rearwardly at one side of said foot platform and operative to sustain the mast in operative position against the foldable action thereof, and means extending from the foldable brace to the foot platform for locking said brace against its foldable action.

4. A carriage operative upon a railroad rail, comprising a foot platform constituting a rest and support for the foot of the operator, rollers sustaining said foot platform over a railroad rail and operative in a guide movement thereon, a foldable upright mast or framework extending from said foot platform and affording a hand-hold for the operator, a foldable brace operative to sustain the mast in operative position and constituting a lock against the foldable action thereof, and means for locking said brace against its foldable action.

5. A carriage operative upon a railroad rail, comprising a foot platform constituting a rest and support for the foot of the operator, rollers sustaining said foot platform over a railroad rail and operative in a guide movement thereon, an upright mast or framework extending from said foot platform and affording a hand-hold for the operator, and a brake mechanism operative upon one of said rollers.

6. A carriage operative upon a railroad rail, comprising a foot platform constituting a rest and support for the foot of the operator, rollers sustaining said foot platform over a railroad rail and operative in a guide movement thereon, an upright mast or framework extending from said foot platform and affording a hand-hold for the operator, and a brake mechanism bearing with relation to one of said rollers and extending to and operative from said upright mast.

7. A carriage operative upon a railroad rail, comprising a foot platform constituting a rest and support for the foot of the operator, rollers sustaining said foot platform over a railroad rail and operative in a guide movement thereon, a foldable upright mast or framework extending from said foot platform and affording a hand-hold for the op-

erator, and a brake mechanism bearing with relation to one of said rollers and extending to and operative from said upright mast and foldable therewith.

- 5 8. A carriage operative upon a railroad rail, comprising a foot platform constituting a rest and support for the foot of the operator, rollers sustaining said foot platform over a railroad rail and operative in a guide

movement thereon, an upright mast or 10 framework extending from said foot platform and affording a hand-hold for the operator, and braking means for retarding the travel of the carriage upon the railroad rail.

In testimony whereof I have signed the 15 foregoing specification.

FREDERICK A. W. DAVIS.