

No. 646,087.

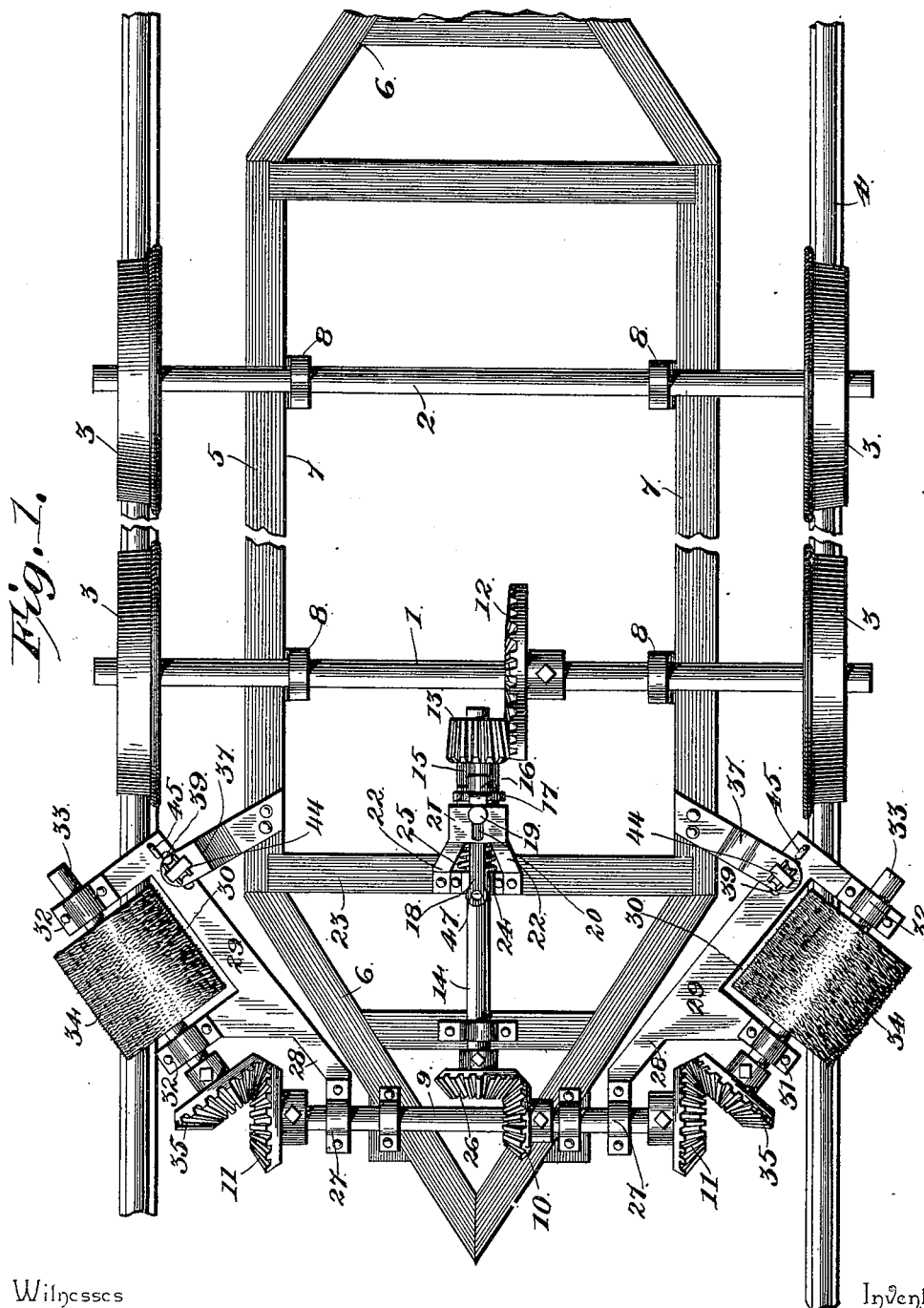
Patented Mar. 27, 1900.

F. D. BRANCH.
TRACK SWEEPER.

(Application filed Dec. 14, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

Howard D. Orr,

By his Attorneys.

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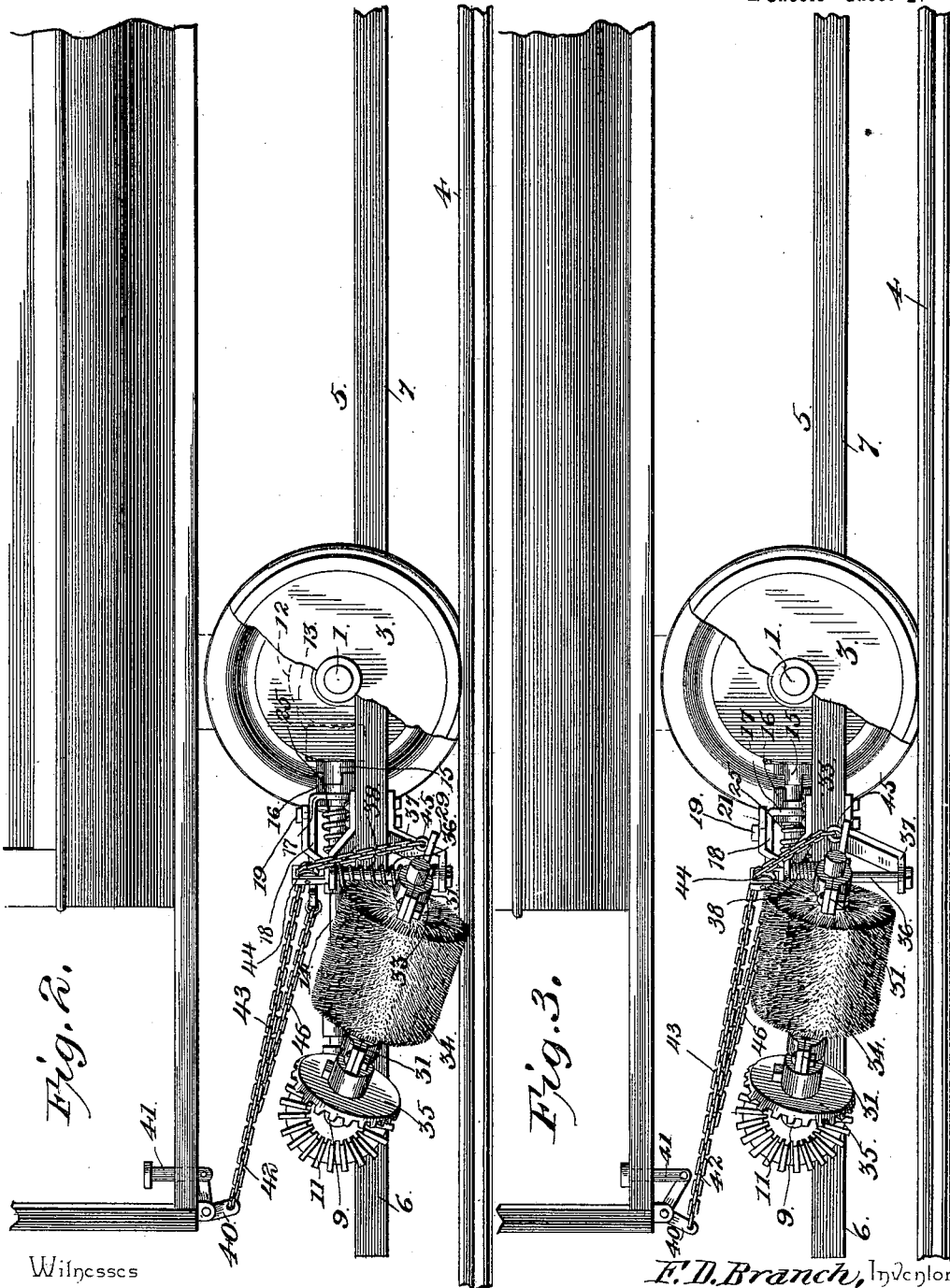
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UNITED STATES PATENT OFFICE.

FRANK D. BRANCH, OF DECATUR, ILLINOIS.

TRACK-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 646,087, dated March 27, 1900.

Application filed December 14, 1899. Serial No. 740,314. (No model.)

To all whom it may concern:

Be it known that I, FRANK D. BRANCH, a citizen of the United States, residing at Decatur, in the county of Macon and State of Illinois, have invented a new and useful Track-Sweeper, of which the following is a specification.

This invention relates to track-sweepers and is intended for general application to street or tram cars or motor-cycles; and the object of the same is to provide a simple and efficient device of this character adapted to be quickly attached to or detached from the truck mechanism and reversible for use at either end of the device to which it is applied, the several parts being under complete control from the platform or supporting-frame above and include automatically-operating structural features and means of adjustment to compensate for the reversal of the brushes to equalize the wear on said brushes and also having an arrangement whereby the elevation of the brushes will simultaneously render them inactive by disconnection from the driving mechanism.

With these and other objects and advantages in view the invention consists in the construction and arrangement of parts which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of a portion of the truck mechanism of a car and the major part of the improved device applied thereto. Fig. 2 is a side elevation of a portion of the car and truck, showing the improved device applied in operative position thereto and illustrating the brushes down in working relation to the rails. Fig. 3 is a similar view showing the brushes raised.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

In the drawings the improved device is shown applied to parts of an ordinary street or tram car which may be propelled by any suitable motive power, enough of the truck mechanism being illustrated to show the mode of attaching the improved device.

The numerals 1 and 2 designate axles, having outer wheels 3 to move over the track 4.

The improved device comprises a frame 5, having converged extensions 6 at the opposite

ends, and bolted to the side beams or bars 7 are hangers 8, which extend up to and have passed therethrough the axles 1 and 2. Said axles 1 and 2 loosely rotate in the hangers 8, and the frame 5 is thereby suspended and may be removed by detaching the said hangers from the beams or bars 7 and reversed and said hangers afterward reconnected. Extending transversely across the forward extremity of one of the extensions 6 is a shaft 9, having keyed thereon a power-receiving gear 10, of beveled form, and also provided at opposite extremities with power-transmitting gears 11. A driving-gear 12 is fastened to the axle 1, and in continual mesh therewith is a beveled pinion 13, which is free to rotate on a longitudinally-extending shaft 14 and has connected thereto a clutch member 15, of female form, which is adapted to be engaged by a slidable male clutch member 16, feathered on the shaft 14 and operated by a yoke 17, having a forwardly-extending horizontal arm 18, with a guide stud or bolt 19 extending upwardly therefrom and movable in a slot 20 of a guide-plate 21, supported by rearwardly-extending bracket-arms 22, which are bolted at their front extremities to a cross-beam 23 of the frame 5. Between the forward bolted extremities of the bracket-arms 22 a journal-box 24 is located, and the shaft 14 has bearing therein, a coil-spring 25 surrounding the said shaft 14 between the journal-bearing 24 and the front end of the male clutch member 16 and serving to normally-project the latter rearwardly and hold it in operative engagement with the female clutch member 15. Hence when the clutch member 16 is slidably operated to disconnect it from the member 15 it is drawn against the resistance set up by the said spring, and as soon as the pulling tension is relieved from the arm 18 the latter, together with the male clutch member 16, will automatically move rearwardly and establish an operative relation between the two clutch members. On the front extremity of the shaft 14 a motion-imparting gear 26 is secured and meshes continuously with the gear 10, and it will be seen that so far as the gear connection is concerned they are all continually in operative relation to each other, and the control of the driving power relatively to the movement of the

brushes is had solely through the clutch members heretofore described.

On the shaft 9, outside of the opposite portions of the front extremity of the reduced extension 6, on which said shaft is mounted, fulcrum-hangers 27 are disposed and connected to forward projections 28 of brush-frames 29, which are disposed obliquely or have an inward angle relatively to the longitudinal disposition of the device to which they are applied and the track-rails over which they work. Each of the said frames 29 has a brush-recess 30, and at the entrance thereto at opposite sides boxes 31 and 32 are secured, in which a brush-shaft 33 is mounted to freely rotate and has thereon a brush 34. The front extremity of the brush-shaft 33 is supplied with an operating beveled gear 35, which is fast thereto and meshes with the adjacent motion-imparting gear 11, and from the said gear 11 the shaft 33 has a downward inclination, and such angle is also carried out in the arrangement of the brush-frame 29. By this means the rear extremity of the brush 34 is brought to bear on the track-rail, and the parts are so constructed that the brush-shaft 33 can be removed from the boxes 31 and 32 and the gear 35 removed from the end of said shaft, as shown in Fig. 1, and applied to the opposite end to thereby reverse the brush and equalize the wear on the same. The normal tendency of the brush-frame 29, together with the brush-shaft and brush carried thereby, is to depress toward the track-rail, and when free to do so the brush will automatically assume a working position on the rail. This operation is obtained by means of a vertically-disposed rod or bolt 36, held in the outer extremities of divergent bracket-arms 37, which have their inner ends firmly attached to the front extremity of the adjacent side beam or bar 7 of the frame 5, and surrounding the said rod or bolt 26 is a spring 38, which bears at its opposite extremities, respectively, against the upper bracket-arm 37 and the top portion of the frame 29. To compensate for the change of position of the frame 29 when elevated or lowered, a slot 39 is formed in said frame 29 for the passage therethrough of the rod or bolt 36, and thereby avoid binding of the parts or interference with the adjustable movement desired to be effected.

When the frame 29 is elevated or lowered, the fulcrum-hanger 27 freely moves on the shaft 9 and the gears 11 and 35 continually remain in mesh, it being observed that the rod or bolt 36 extends through the outer inner corner of the frame 29, and thereby a greater movement in a vertical direction is permitted, and, furthermore, that portion of the brush 34 which is to be held down closely to the track is maintained in its desired working position.

The means for moving or adjusting the brushes consists of a bell-crank lever 40, pivotally connected at its elbow to the under forward

portion of a platform or supporting-bed of the device to which the brush is attached, and to one arm thereof is movably attached a headed foot-post 41, which extends up through and is freely movable in the said platform or supporting-bed and in convenient arrangement for engagement by a motorman or other operator. To the other arm of the bell-crank lever is attached a pull-chain 42, which has the divergent members 43, extending through direction-pulleys 44 and depending to the rear inner portions of the brush-frames 29, where they are fastened to the eyes 45 in rear of the position of the rods or bolts 36. Also attached to the pulley-chain 42 is a downwardly-extending clutch-controlling member 46, which is attached to an eye 47 at the front extremity of the arm 18. These several chain members are so regulated primarily that the tension on the same will be equal, so that when the pull-chain 42, controlling all of said chain members, is drawn forwardly by a depression of the post 41, as shown in Fig. 3, both brush-frames 29 will be equally elevated, and simultaneously therewith the male clutch member 16 will be disconnected from the clutch member 15, thereby immediately causing an inactivity of the brushes. When the pressure on the post 41 has been relieved therefrom, the clutch-spring 25 and the springs 38 are free to act and respectively restore the clutch member 16 in operative connection with the clutch member 15 and position the brushes 34 in proper relation to the track-rails. This operation is accomplished without shifting or moving gears or shafts in the least, and mechanism, usually necessary for the purpose and heretofore employed in analogous devices, is entirely dispensed with.

Only one brush-frame and its appurtenances have been described; but it will be understood that both brush-frames are the same in structure, and, as before indicated, the frame 5 may be quickly reversed to accommodate a change of direction of movement of the device to which it is applied, or, if desired, similar mechanism may be attached to opposite extremities of the said frame 5 and which would require but a duplication of the parts. The improved form of sweeper is not intended to absolutely supplant the regular track sweeper or cleaner, but is intended to be used principally as an auxiliary thereto and serve to clear the rails of any snow or ice that may become deposited thereon and is especially effective in its use with electric-motor cars to thoroughly clean the track-rails and enable the car-wheels to gain a perfect contact with said rails. The materials that will be used in making the several parts will be varied to suit different conditions and may be regulated at will.

The brushes may be formed of steel wires, whalebone, wood splints of a suitable nature, or other material, and it will be noted that by inclining the brushes as shown they will be more effective in their cleaning operation by

reason of the fact that clogging is less liable to ensue, and, furthermore, the life of the brush is prolonged, as less wearing-surface is brought into conjunction with the rail. Furthermore, the springs 37 will tend to maintain a uniform pressure of the brushes on the rail, and when the said brushes gradually wear the said springs will also effectively operate to continue their depressing function within predetermined limits, and in the event of the brushes striking resisting obstacles they will not be injured, but will be permitted to automatically rise, and after passing said obstacles will immediately resume their normal position.

Changes in the form, proportion, and minor details of construction may be resorted to without in the least departing from the principle or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new is—

1. In a track-sweeper of the character set forth, the combination with a movable element, oppositely-disposed brushes adapted to be elevated, intermediate mechanism between the said brushes and the movable element operating the parts, a clutch throwing in or out the movable effect of said element, and means attached to said brushes and clutch for simultaneously disconnecting the clutch and elevating the brushes.

2. In a sweeper of the character set forth, the combination with operating mechanism, of adjustable frames normally disposed at a downward-and-rearward angle of inclination from their front elevated extremities and adapted to be simultaneously elevated, similarly-inclined brushes rotatably mounted in the outer portions of said frames, and flexible operating devices attached to portions of the said frames and operable from the platform of the car for simultaneously operating said brushes and frames.

3. In a sweeper of the character set forth, the combination with an operating element, of a motion-imparting mechanism connected to said element, brushes having a fulcrum-support on said motion-imparting element, and normally depressed at a rearward downward incline, operating devices between the motion-imparting mechanism, and means for simultaneously elevating the brushes and throwing the operating element out of connection with the said motion-imparting mechanism.

4. In a sweeper of the character set forth, the combination with an operating element, of a motion-imparting mechanism movably connected to said element, brush-frames having fulcrum-supports on opposite portions of the said motion-imparting mechanism, brushes rotatably carried by the said frames and having operative connection with said motion-imparting mechanism, said brushes and frames being depressed and disposed at a downward rearward angle of inclination, yielding means for holding the rear portions of said frame depressed, and means for automatically elevating the said brushes and frames and disconnecting the motion-imparting mechanism from the operating element.

5. In a sweeper of the character set forth, the combination of an axle having a gear thereon, a longitudinally-disposed shaft carrying a loose pinion in continual mesh with the said gear, a spring-actuated clutch connection between the said shaft and pinion, a transverse shaft in rotatable relation to the said longitudinal shaft, and having gears on opposite extremities thereof, brush-frames movably supported by said transverse shaft and carrying rotatable brushes having gears in mesh with those on the transverse shaft, devices for yieldingly holding the brush-frames and brushes in depressed angular position, and means for simultaneously elevating the brush-frames and brushes and unshipping the clutch from the said pinion.

6. In a sweeper of the character set forth, the combination with an operating element, of motion-imparting mechanism, intermediate operating mechanism between the said motion-imparting mechanism and the said element, brush-frames fulcrumed on opposite portions of the said motion-imparting mechanism and having a normal downward-and-rearward inclination, brushes rotatably carried by the said frames, spring-actuated pins extending through the said frame, the said springs bearing upon the upper portion of the frame, and means for elevating the frame and brushes and throwing the intermediate mechanism out of operation with the motion-imparting mechanism.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK D. BRANCH.

Witnesses:

TILLIE E. SCHMINK,
A. J. FROST.