Dec. 24, 1929. A. H. LESCHKE 1,740,546

CLEANING DEVICE FOR RAILWAY CARS

Filed June 24, 1927 3 Sheets-Sheet 1

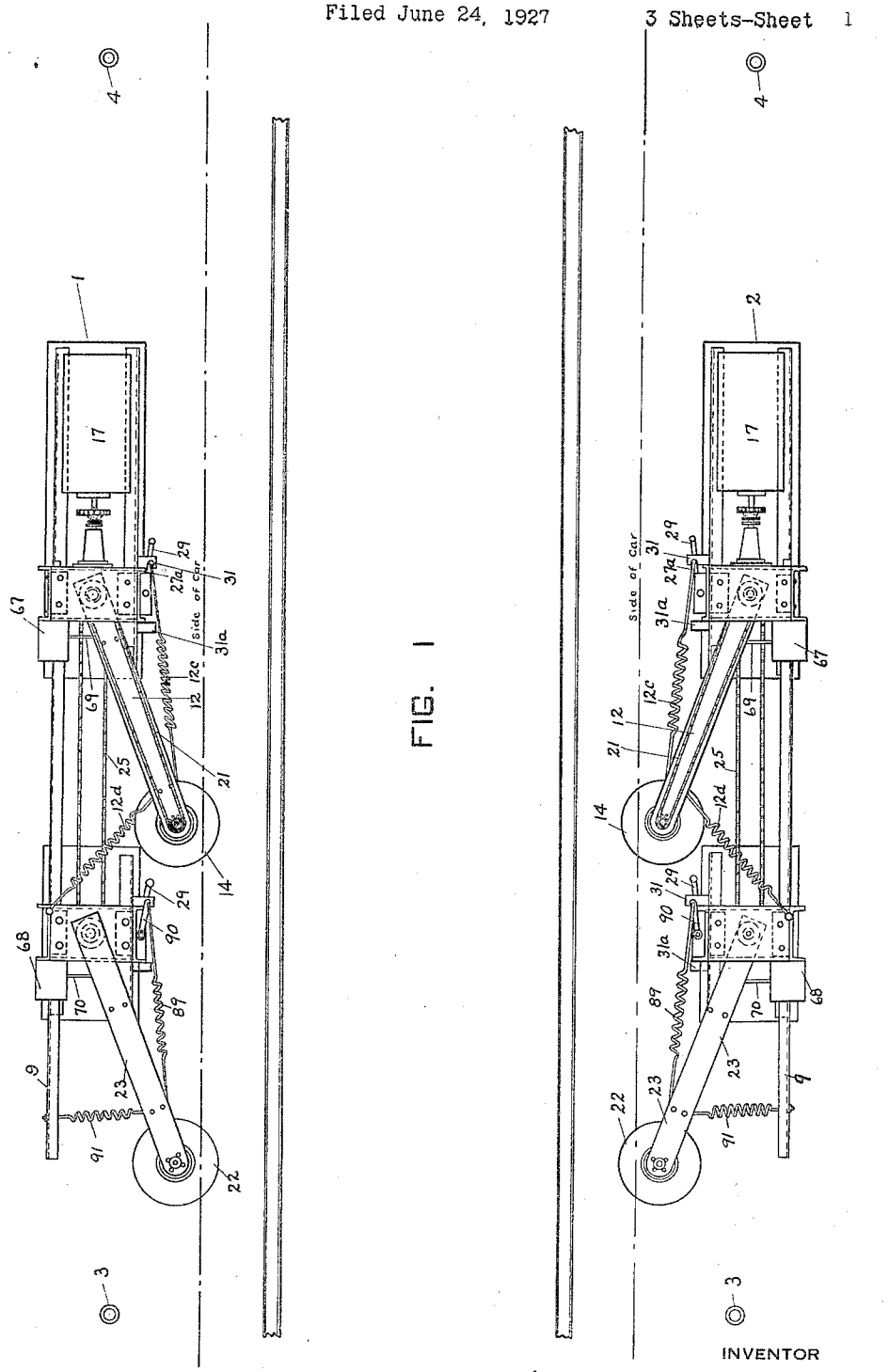

FIG. 1

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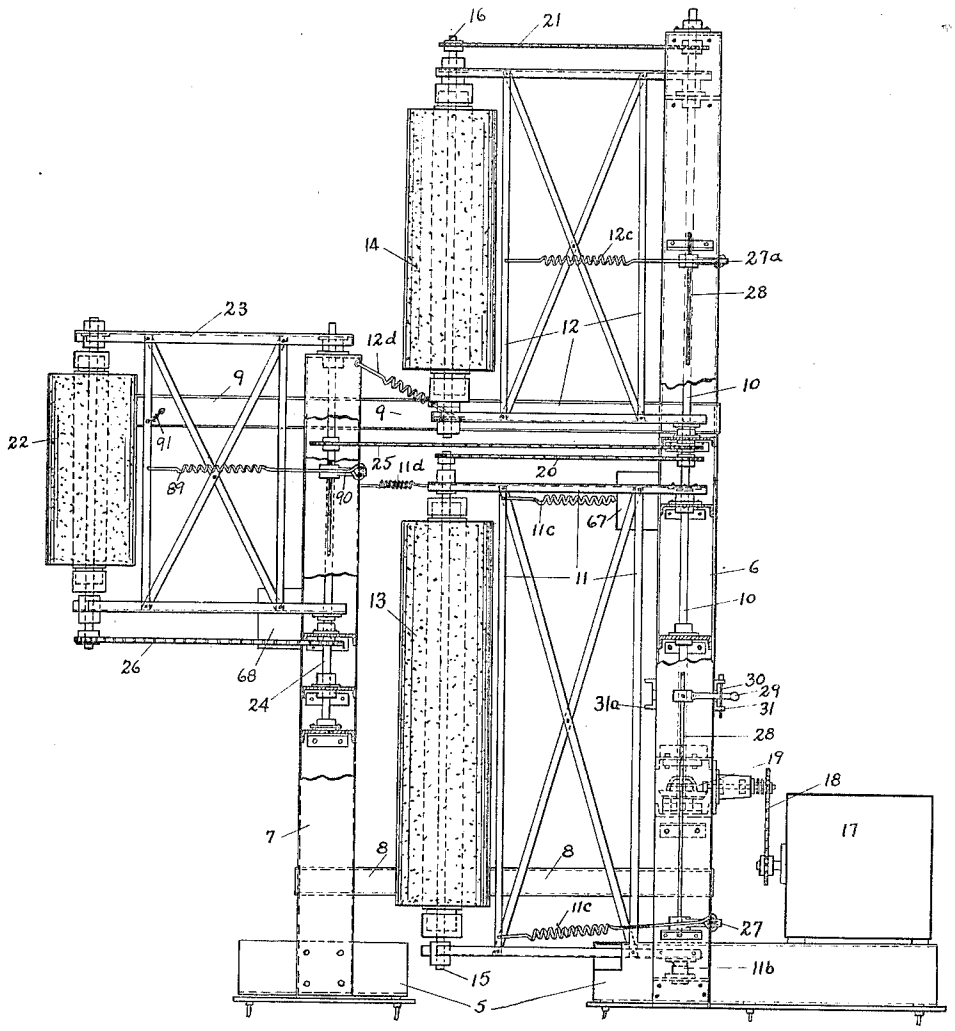

FIG. 2

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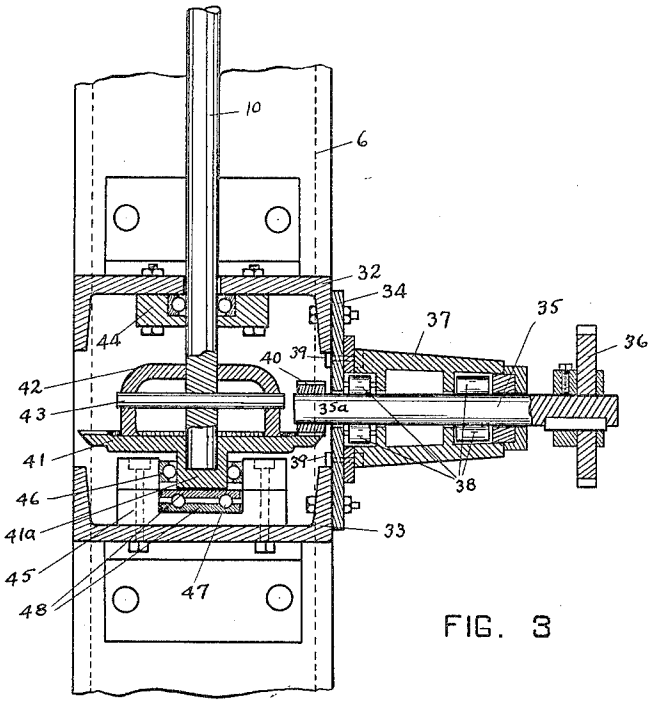
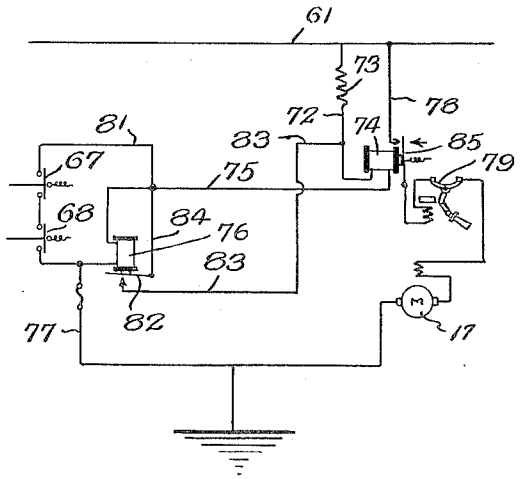


FIG. 3

FIG. 4.



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Patented Dec. 24, 1929

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UNITED STATES PATENT OFFICE

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CLEANING DEVICE FOR RAILWAY CARS

Application filed June 24, 1927. Serial No. 201,071.

My invention relates to an apparatus for mechanically washing and scrubbing cars, coaches and the like, whereby a minimum supervision is required in the operation.

A more specific object is to provide a mechanical washer and scrubber as aforesaid, in which the functioning of the apparatus is simply and positively controlled automatically by movement of the car to be cleaned.

An additional object is to have in the said apparatus an electrical circuit whereby the scrubbing means are automatically caused to operate.

In the drawings Figure 1 is a plan view of a track on each side of which is positioned the apparatus; Figure 2 is a side elevation of one unit of the device; Figure 3 is a sectional detail view of the driving connections of the main shaft of a unit; Figure 4 is a wiring diagram of the electrical operating connections to the motor of the apparatus.

As shown in Figure 1 the apparatus as used comprises two units 1 and 2, mounted on each side of the tracks or path of the vehicle to be cleaned. At each end of the said units are vertical spray pipes 3 and 4 which are of usual design. A soaking spray is given the vehicle by pipes 4 before it passes between the scrubbers, and pipes 3 serve to rinse the car as it leaves the scrubbing units.

In order to simplify the description of the invention, one unit will be described in detail, that is, the equipment on one side of the track or pathway of the vehicle only will be described. Each scrubbing unit comprises a base 5 on which are fixed vertical frame members 6 and 7, which are interbraced by cross beams 8 and 9. Rotatably mounted between vertical members 6 is shaft 10, which extends practically the whole length of members 6. On the said shaft 10 are swingably mounted frame members 11 and 12, which carry brushes 13 and 14 respectively. Since shaft 10 does not extend down to the base 5, the lower arm 11^a of frame 11 is pivotally fixed in the auxiliary bearing 11^b. The said brushes are mounted on shafts 15 and 16 which are trunnioned at each end in frames 11 and 12 to permit rotation.

Mounted on base 5 is motor 17, which by means of sprocket chain 18 and gearing 19, herein later described, causes shaft 10 to rotate. Owing to similar sprocket chains 20 and 21 said rotation is also transmitted to brushes 13 and 14.

In washing street cars, owing to the contour of the sides of the same, it has been found desirable to use three brushes positioned as shown. Brush 22 is mounted in frame 23 pivotally mounted on shaft 24, which is rotated by means of a sprocket chain 25 driven from shaft 10. Rotation of the shaft 24 is imparted to the brush 22 by means of sprocket chain 26.

The brushes are resiliently held in the desired position by means of springs attached as shown. The brush 13 is held by springs 11^c, which are each attached at one end to frame 11 and at the other end to an arm 27. The arm 27 for the upper spring 11^c does not appear in Fig. 2, since the view is in partial section to show the mounting of shaft 10. In a similar manner spring 12^c is attached to frame 12 and arm 27^a. The arms 27 and 27^a are fixed to a shaft 28 which is mounted externally on upright member 6. Hand lever 29 is likewise fixed to the said shaft 28 and is held in the position shown in Fig. 2 by means of a pin 30 passing through the flanges of a cross channel member 31. In the position shown the springs 11^c and 12^c are held in tension, drawing frame members 11 and 12 inwardly and tending to hold the brushes 13 and 14 against the side of the car being cleaned. When the apparatus is not in use pin 30 may be withdrawn and arm 29 thrown over to an opposite position in channel 31^a, the tension being taken off the springs and their resiliency retained. Springs 11^d and 12^d pull in opposition to springs 11^c and 12^c so that any shock on the brushes is readily compensated. The mounting of springs on frame member 23, to control brush 22, is identical with those just described in reference to frames 11 and 12. This spring arrangement comprises a spring 89 attached to arm 90, for holding the brush in extended position; and an opposed spring 91, attached to the frame member 7, for taking up shocks on brush 22

In Figure 3 is shown in detail the gearing structure 19 which transmits rotation to shaft 10. Between the two vertical channels of frame 6 are cross channels 32 and 33 to which is bolted plate 34. Shaft 35 carrying the sprocket gear 36, which is driven by chain 18, is housed in the conical housing 37 and friction is reduced in its operation by means of roller bearings 38. Said housing 37 is held by means of bolts 39 passing through plate 34. On the end 35a of shaft 35 is pinion 40 meshing with a plate gear 41 which is fixed to cap 42. Pin 43 passes through the shaft 10 and cap member 42, so that the shaft 10 rotates with gear 41. Attached to cross channel 32 is ball bearing 44, and to cross channel 33 is fixed the bearing 45. Such bearing 45 has two races of balls, race 46 bearing on the sides of protrusion 41a of gear 41, taking care of the lateral support of shaft 10 at this point, and race 47 is positioned between plates 48 to take the end thrust of said shaft 10.

Figure 4 of the drawings shows a wiring diagram for the automatic motor control of a cleaning unit. Mounted on each unit are two mine switches 67 and 68. Switch 67 is operated by means of a link 69 which is connected to frame 11, and switch 68 is connected to frame 23 by means of link 70. When there is no car between the two units 1 and 2, the brushes and their carrying frames are in the position shown in Figure 1 and in this position the mine switches are closed. When a car enters between the units 1 and 2 the brushes are pushed back to the dotted lines shown in Figure 1 as representing the sides of the car to be washed and scrubbed. This movement of the brush supporting frames allows the mine switches to open, and the circuit is then closed through the motor as shown in Figure 4.

It will be noted when either mine switch 67 or 68 is open the current from trolley wire 61 passes down line 72, through resistance 73, through relay 74, along line 75, through relay 76, and down line 77 to the ground. The energizing of the relay 74 completes the motor circuit from the trolley wire along line 78, through overload circuit breaker 79, through motor 17 and thence to the ground. As long as the sides of the car engage any one of the brushes 13 or 22 the motor will remain running and all of the brushes revolving, since only one mine switch need be open to fulfill the above description. However, when the car passes from out all of the brushes, both mine switches will be closed and the current along line 75 will deviate along line 81 through the mine switches 67 and 68 to the ground; this will rob relay 76 of its energy, and allow contact arm 82 to drop and shunt the circuit through line 83, through contact arm 82, along line 84 to line 81 and thence through the mine switches to the ground. The automatic shunting of the circuit away from relay 74 causes contact arm 85 to open and cut off the current to the motor.

What I claim is:

1. In car cleaning apparatus the combination of revolubly mounted brushes arranged to project into the path of movement of a car and be deflected on contact therewith, an electric motor, actuating connections from the motor to said brushes for rotating the latter, electrical connections to the motor, and means operated by deflection of the brushes upon contact of the car with said brushes to complete the electrical connections to the motor for energizing the same.

2. In car cleaning apparatus the combination of swingably mounted frames, brushes revolubly mounted in said frames and arranged to project into the path of movement of a car, an electric motor, actuating connections from said motor to said brushes for rotating the latter, electrical connections to the motor, and means actuated by swinging movement of one of the brush frames upon contact of the car with its brush for completing the electrical connections to the motor for energizing the same.

3. In car cleaning apparatus the combination of a swingably mounted brush frame, a second swingably mounted brush frame horizontally spaced from the first named frame, brushes revolubly mounted in said frames, an electric motor, operating connections from said motor to both of said brushes for rotating the latter, electrical connections to said motor, and means actuated by swinging movement of either of the brush frames for completing said electrical connections and energizing the motor.

4. In car cleaning apparatus the combination of two swingably mounted brush frames, one arranged above the other, a brush revolubly mounted in each of said frames, said brushes being vertically spaced apart and in vertical alignment, a third swingably mounted frame, and a third revoluble brush mounted in said frame to substantially bridge the space between the two first named brushes.

5. In car cleaning apparatus the combination of two swingably mounted brush frames, one arranged above the other, a brush revolubly mounted in each of said frames, said brushes being vertically spaced apart and in vertical alignment, a third swingably mounted frame, and a third revoluble brush mounted in said frame to substantially bridge the space between the two first named brushes, a motor, operating connection from said motor to all of said brushes for rotating the latter, electrical connections to said motor, and means actuated by swinging movement of one of the first said brush frames or by swinging movement of the third brush frame for completing said electrical connections and energizing the motor.

6. In a car cleaning apparatus the combi-

nation of a frame, a swingably mounted brush-supporting frame, a brush revolubly arranged therein to normally project into the path of movement of a car, opposed springs connected between the said frame and said brush-supporting frame tending to maintain the latter in its normal position, a motor, operating connections from the motor to said brush for rotating the latter, and means actuated by swinging movement of said brush-supporting frame upon contact of the car with the brush to produce actuation of said operating connections by said motor.

7. In car cleaning apparatus the combination of swingably mounted brush supporting frames, brushes revolubly arranged in said frames to normally project into the path of movement of a car, springs arranged on opposite sides of said frames tending to maintain the same in their projecting position, means for relieving the tension on said springs, a motor, operating connections from the motor to said brushes for rotating the latter, and means actuated by swinging movement of said brush-supporting frames upon contact of the car with the brushes to produce actuation of said operating connections by said motor.

8. In car cleaning apparatus the combination of swingably mounted frames, brushes revolubly mounted in said frames and arranged to project into the path of movement of a car, an electric motor, actuating connections from said motor to said brushes for rotating the latter, electrical connections to the motor, means actuated by swinging movement of the brush frames for completing the electrical connections to the motor for energizing the same, and opposed springs on said revolubly mounted frames for resiliently maintaining the brushes against the car and controlling the inoperative position of said brushes in the said path of the said car.

9. In car cleaning apparatus the combination of swingably mounted frames, brushes revolubly mounted in said frames, a motor, operating connections from said motor to said brushes for rotating the latter, and means actuated by the swinging movement of the brush frames for producing actuation of said connections by the said motor to rotate the said brushes.

10. In car cleaning apparatus the combination of horizontally spaced and swingably mounted brush frames, brushes revolubly mounted in said frames to project into the path of movement of a car, a motor, operating connections from said motor to said brushes for rotating the latter, and means associated with each of said brushes and actuated by swinging movement of said brush-supporting frames upon contact of the car with the brushes to produce actuation of said operating connections by the motor.

11. In car cleaning apparatus the combination of horizontally spaced and swingably mounted brush frames, brushes revolubly mounted in said frames to project into the path of movement of a car, an electric motor, electrical connections to the motor, operating connections from said motor to said brushes for rotating the latter, and means associated with each of the brush frames to be actuated by swinging movement thereof for completing the electrical connections to the motor for energizing the same.

12. In car cleaning apparatus the combination of two swingably mounted brush frames, one arranged above the other, a brush revolubly mounted in each of said frames, said brushes being vertically spaced and in vertical alignment, a third revoluble frame spaced horizontally from the vertically aligned brush frames, a third brush revolubly mounted in said frame to substantially bridge the space between the two first named brushes, all of said brushes being arranged to project into the path of movement of a car, a motor, operating connections from said motor to said brushes for rotating the latter, and means associated with the horizontally spaced frame and with one of the vertically aligned frames and actuated by swinging movement of each of the latter designated frames upon contact of the car with the brushes mounted therein to produce actuation of said operating connections by the motor.

13. In car cleaning apparatus the combination of two swingably mounted brush frames, one arranged above the other, a brush revolubly mounted in each of said frames, said brushes being vertically spaced and in vertical alignment, a third revoluble frame spaced horizontally from the vertically aligned brush frames, a third brush revolubly mounted in said frame to substantially bridge the space between the two first named brushes, all of said brushes being arranged to project into the path of movement of a car, an electric motor, electrical connections to the motor, operating connections from said motor to said brushes for rotating the latter, and means associated with one of the vertically aligned frames and with the horizontally aligned frame arranged to be actuated by swinging movement of each of said frames for completing the electrical connections to the motor for energizing the same.

14. In car cleaning apparatus the combination of two swingably mounted brush frames, one arranged above the other, a brush revolubly mounted in each of said frames, said brushes being vertically spaced apart, a third swingably mounted frame, and a third revoluble brush mounted in said frame to bridge the space between the two first named brushes.

In witness whereof, I hereunto set my hand

AUGUST H. LESCHKE.