No. 617,420. Patented Jan. 10, 1899.

G. HUFF.

STREET RAILWAY CURVE SWEEPER AND OILER.

(Application filed Oct. 13, 1897.)

(No Model.) 3 Sheets—Sheet 1.

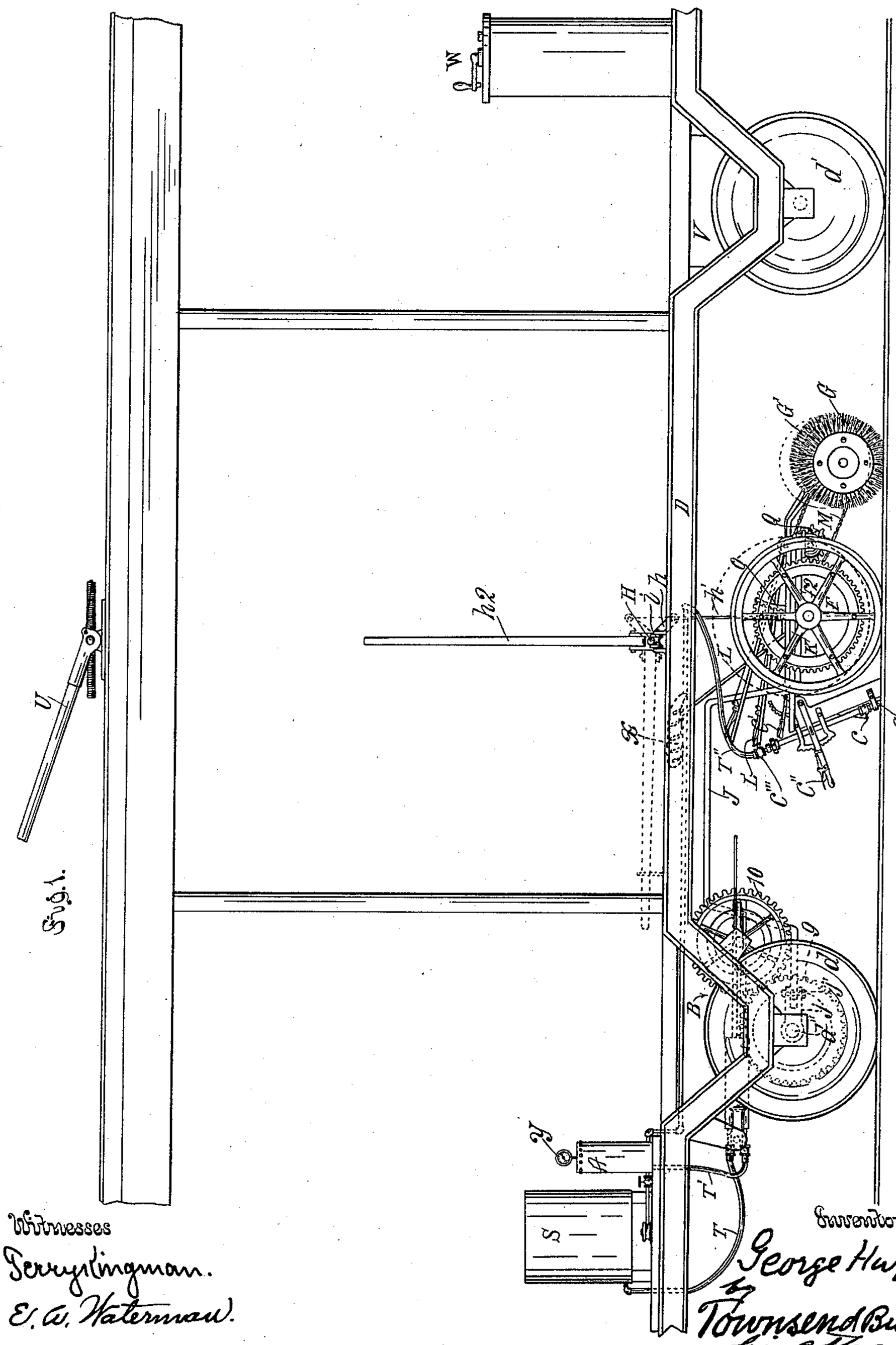


Fig. 1.

Witnesses
Jerry Kingman.
E. A. Waterman.

Inventor
George Huff
by Townsend Bros
his attys

No. 617,420. Patented Jan. 10, 1899.

G. HUFF.

STREET RAILWAY CURVE SWEEPER AND OILER.

(Application filed Oct. 13, 1897.)

(No Model.) 3 Sheets—Sheet 2.

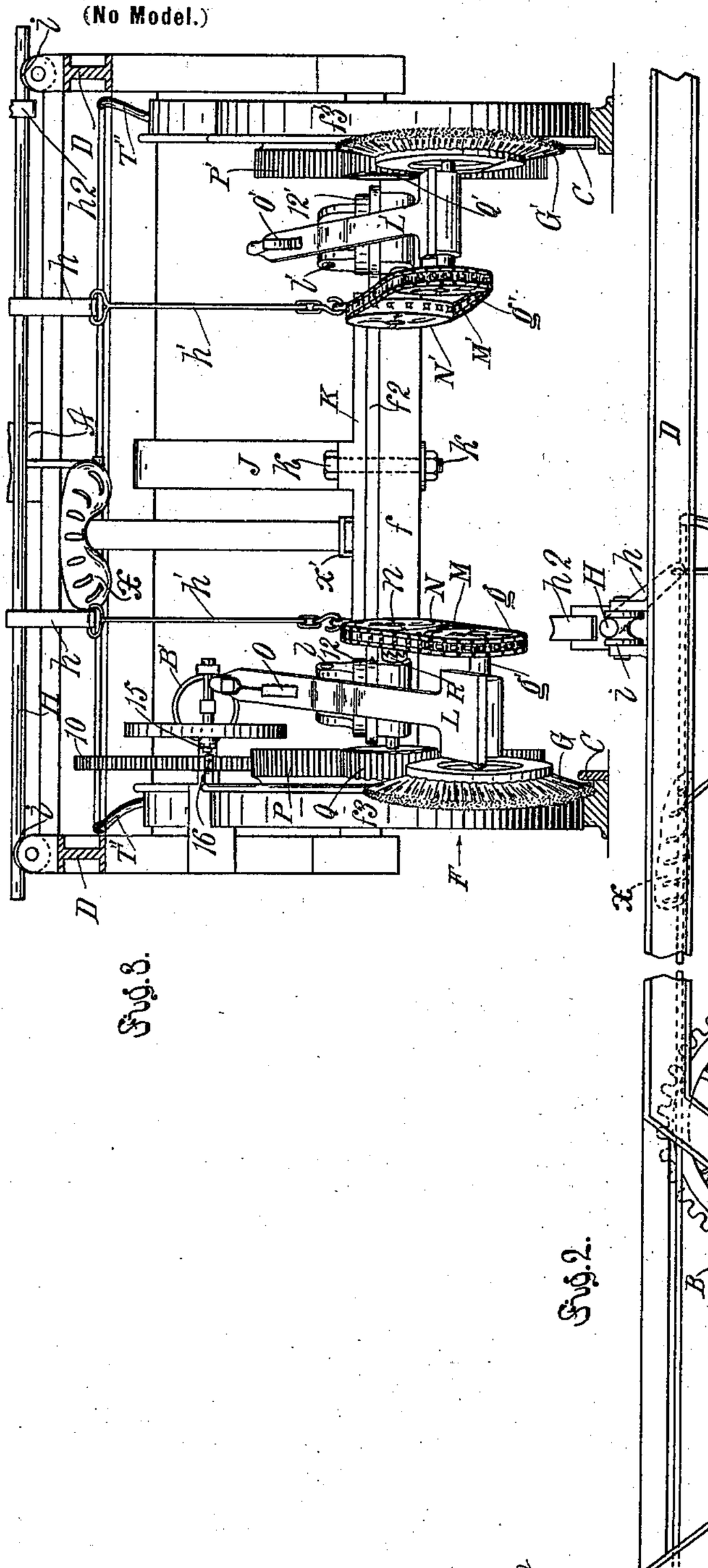


FIG. 2.

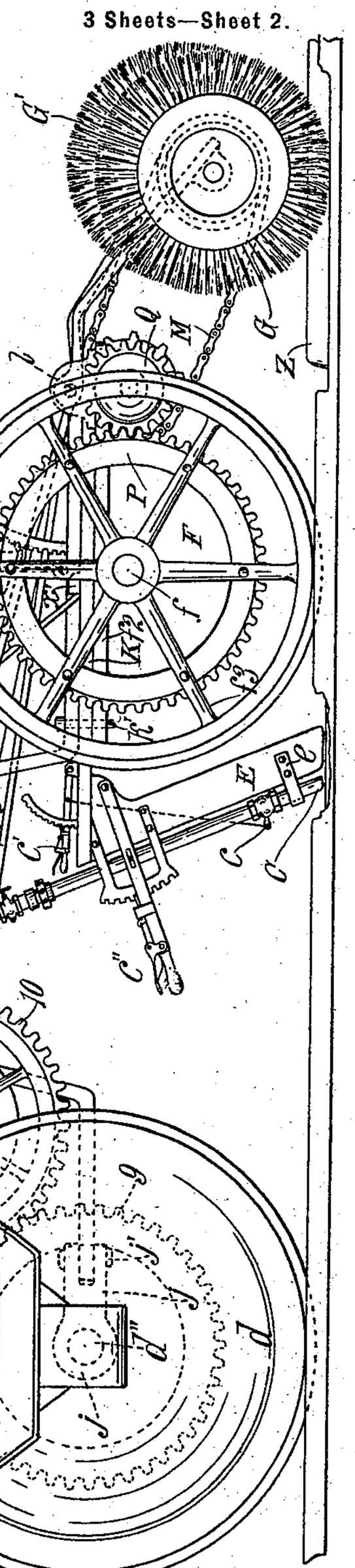


FIG. 3.

Witnesses
Perry Kingman
E. A. Staterman.

Inventor
George Huff
by Townsend & Bro.
his attys

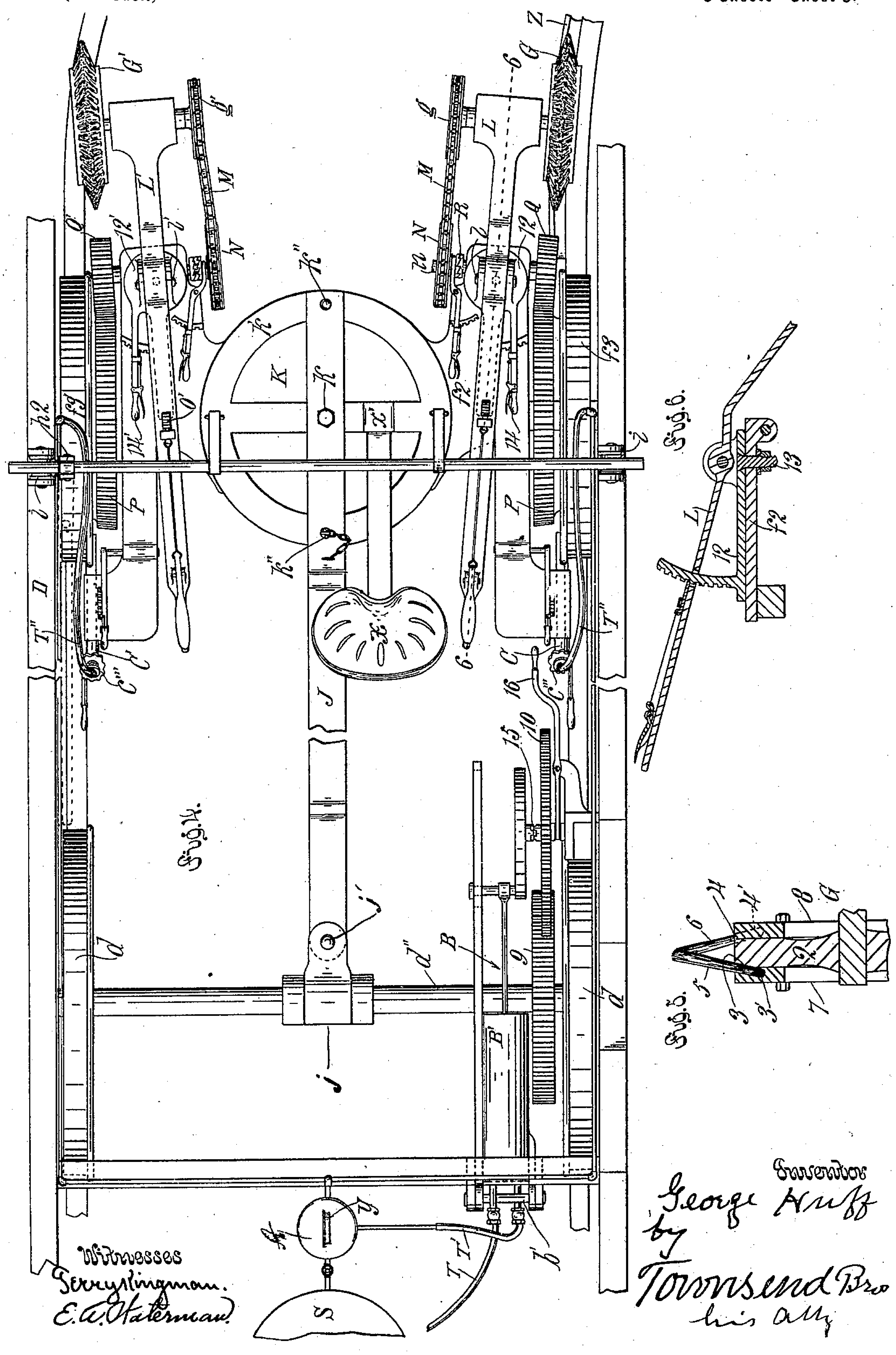
No. 617,420. Patented Jan. 10, 1899.

G. HUFF.

STREET RAILWAY CURVE SWEEPER AND OILER.

(Application filed Oct. 13, 1897.)

(No Model.) 3 Sheets—Sheet 3.



Witnesses
Jerry Kingman.
E. A. Waterman

Inventor
George Huff
by
Townsend Bro
his Atty

UNITED STATES PATENT OFFICE.

GEORGE HUFF, OF TROPICO, CALIFORNIA.

STREET-RAILWAY-CURVE SWEEPER AND OILER.

SPECIFICATION forming part of Letters Patent No. 617,420, dated January 10, 1899.

Application filed October 13, 1897. Serial No. 655,075. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HUFF, a citizen of the United States, residing at Tropico, in the county of Los Angeles and State of California, have invented a new and useful Street-Railway-Curve Sweeper and Oiler, of which the following is a specification.

The object of this invention is to provide a machine by which street-railway curves can be easily, quickly, and properly swept and oiled while the vehicle which carries such machine is running around the curve, and without the necessity of any stoppage at the curves, and doing away with the necessity of any hand sweeping or oiling of the curves.

An object of my invention is to provide the machine with a main oil-carrying tank or reservoir which is not subjected to pressure and is readily accessible for filling at any time, and to force the oil by air-pressure through the lubricating-nozzle without the necessity of pumping any air, and also making provision for the storage under air-pressure of a sufficient quantity of the lubricating liquid for the purpose of oiling one or more curves. I therefore provide an air-cushioned oil-tank with pipe from the oil-supply pump opening thereinto and pipe leading therefrom to the oiling-nozzle.

My invention comprises a track sweeper and oiler provided with a reversible truck, which carries sweeping and oiling appliances, and means for lifting the truck to allow the same to be reversed on the track. The track-oiler is provided with an oiling-nozzle and with means for forcing the oil through the nozzle to throw it upon the guard-rail of the track, and I provide means for adjusting the nozzle vertically to adapt it for guard-rails of different heights. The sweeping appliance has a rotary brush mounted on a lever which is pivotally connected with said truck, and means are provided for holding the lever in a fixed position. The rotary brush is driven by a wheel of the truck, and preferably the lever of the brush is fulcrumed to a pivoted base, so that the brush is adapted for lateral movement as well as vertical movement. The truck is preferably connected with the frame by a fifth-wheel, the upper member of which is adjustably connected with such frame, the truck being fixed to the under member of the fifth-wheel, and a draw-bar connects the upper member of the fifth-wheel with the frame, suitable means being provided for locking the two members of the fifth-wheel against rotating with relation to each other when the apparatus is moving along the track, but allowing the parts to be unlocked, so that the truck can be reversed when desired.

My invention includes other features, combinations, and parts hereinafter described and claimed.

The accompanying drawings illustrate my invention.

Figure 1 is a side elevation of apparatus embodying my invention and shows my newly-invented street-railway-curve sweeper and oiler ready for operation, the ends of the frame and roof of the car being broken for lack of space. Dotted lines show the position of parts when the oiler-truck is raised. Fig. 2 is a fragmental detail of the same on an enlarged scale. The front pair of frame-carrying wheels is omitted for lack of space. The track-rail is broken away in part to fully show the oiler-nozzle and sweeper-brush. The oil-tank A is sectioned to show the air-chamber *a*. Fig. 3 is a front elevation of the detail shown in Fig. 2. Fig. 4 is a plan of the detail shown in Figs. 2 and 3. Fig. 5 is a fragmental sectional detail showing the construction of the rotary brush. Fig. 6 is a fragmental sectional detail. Line 6 6, Fig. 4, indicates the line of section.

A indicates an air-cushioned oil-tank with compressed-air chamber *a* therein. B B′ indicate suitable means for forcing oil into such tank, and C indicates a lubricating-nozzle connected with the tank to deliver oil therefrom onto the track when the oiler is allowed to operate.

D indicates a wheel-carried frame carried by wheels *d d′*. The pumping apparatus B B′ for forcing oil into the chamber is driven by one or more of the wheels *d* which carry the frame.

E indicates nozzle-guides to make the nozzles follow along the rails upon which the wheels run, and the nozzle C is fastened to the guide by any suitable means, such as the clamp *e*.

F indicates a brush and oiler carrying truck which carries the oiler-nozzle C and a sweeping rotary brush G.

The guard-rails Z of the track to be oiled are always on the inner side of the curve, and in order to sweep and oil both right and left curves the truck is provided with two complete and independent sweeping and oiling appliances. In the drawings the corresponding parts of the right and left sweeping and oiling appliances are marked with like letters, those of the right being distinguished from those of the left by suitable indices. Suitable means are provided for adjustably connecting the truck F to the wheel-carried frame.

H indicates a truck-supporting bar which is connected with the truck by suitable means, such as the arms *h* and links *h'*, and the bar is slidably connected with the frame D to slide to and fro thereacross, thus to allow the brush and oiler truck to shift crosswise the frame to follow the curve in the track between the rear and front frame-carrying wheels *d d'* when the frame is going around a curve. Antifriction grooved rollers *i* are provided to sustain the bar and allow it to slide transverse the frame D.

J indicates a draw-bar which connects the truck F with the frame through the axle *d''*, it being swiveled and journaled to the frame-carrying axle *d''* by the eye *j* and the pivot-bolt *j'*.

In order to use the apparatus with either end of the wheel-carried frame foremost, it is necessary to reverse the sweeping apparatus, so that the brushes can be thrown in front whichever way the car moves, and for this purpose the draw-bar J is connected with the axle *f* of the truck F by means of a fifth-wheel K, which is pivoted to the axle of the truck by a king-bolt *k*, which passes through the fifth-wheel and the axle *f*. The upper plate *k'* of the fifth-wheel is rigid with the draw-bar and the lower plate f^2 is fixed to the axle *f*. The fifth-wheel is normally prevented from turning by means of one or more pins *k''*, which pass through the two plates of the fifth-wheel, but can be withdrawn, thus to unlock the fifth-wheel and allow it to turn.

c indicates a valve operated by a lever *c'* to control or cut off the flow of oil through the nozzle C.

c'' indicates a ratchet-lever for raising and lowering the pipe and nozzle C to fit the same to guard-rails of different heights.

The brushes G G' are respectively carried by levers L L', which are fulcrumed to the truck F. *l l'* indicate the pivots of such fulcrums, respectively.

M indicates a sprocket-chain driven by a sprocket-wheel N and led over a sprocket-wheel *g*, which is connected with the axle *g'* of the rotary brush G to drive such brush.

The levers L L' operate independently of each other and are held in position by segmental racks O with pawls O'. The sprocket-wheels N N' are driven by power from the truck-wheels f^3 $f^{3'}$ by means of spur-wheels P P', fixed to the said wheel f^3, and a spur-wheel Q, fixed to the axle *n* of sprocket-wheel N and geared with the wheel P. By this arrangement the advance of the truck causes the brush when in gear to rotate in a direction opposite to that of the wheels of the truck.

R indicates a ratchet-clutch connecting and disconnecting the sprocket-wheel N with its shaft *n* to cause the wheel to rotate or not, as may be required.

Only one of the brushes will ever need to be in operation at the same time, and when not in use either or both of the brushes will be carried elevated away from the track and guard-rail. When one of the brushes is in use, the other will be raised, as indicated at the right in Fig. 3 and also shown in Figs. 1 and 2. When thus elevated, the clutch R will be disconnected, so that the sprocket-wheel N and the brush will not rotate. It is obvious that the clutch R can be located at any effective place without departing from the invention.

The brush-carrying levers L L' are respectively mounted upon pivoted bases 12 12', which are respectively pivoted to the axle-plate f^2 by pivot-bolts 13. (See Fig. 6.)

14 14' indicate levers with ratchet to hold the turning bases in the desired position. The levers L L', however, may be made stationary and their brushes adapted to sweep a curve of average degree. The brush will not require to be moved to any great extent in order to fit the track-curves of different degrees.

I regard my invention as including the combination, with the oiler-truck, of the brush G for sweeping the space between the guard-rail and the rail, whether said brush be made adjustable or not.

The brush-wheel G is preferably formed of a circular main body 2, (see Fig. 5,) having brush-receiving cavities 3 4 therein at intervals, staggered around the rim of the wheel. Bundles of wires 5 6 are mounted in the cavities and slant toward the mid-plane of the wheel and are clamped in place by rings 7 8, which are provided with cavities 3' 4', corresponding to the cavities in the main body, so that when the rings are in place the cavities in the main body 2 and those in the rings form the sockets for the bundles of wires which form the brushes of the wheel.

The pump for forcing oil into the tank A is preferably driven from one of the axles of the wheels which carry the frame D.

9 indicates a cog-wheel fixed on the axle *d''*, which connects and rotates with the wheels *d*, and 10 indicates a cog-wheel geared therewith and which drives the piston of the pump B'.

S indicates an oil-tank from which the pump draws the oil to drive it into the pressure-chamber A.

T T', &c., indicate flexible pipes for convey-

ing the oil. The pipe T leads from the oil-tank S to the pump B′, and the pipe T′ leads from the pump B′ to the air-cushioned oil-tank A, into which a sufficient charge of oil can be forced to oil one or more curves, as may be desired. The pipe T″ leads from the air-cushioned oil-tank and receives its supply of oil therefrom to be discharged through its oiling-nozzle.

t indicates a check-valve on the supply oil-pipe T, and *t′* indicates a check-valve on the oil-pipe T′, so that the tank S is simply a reservoir into which the oil can be poured at any time, while the charge available for oiling the curves is constantly under air-pressure in the air-cushioned oil-tank A.

a indicates the air-chamber, in which is contained the compressed-air cushion. The check-valves keep the oil from receding from the air-pressure and also answer for feeding the pump-cylinder proper. As the pump-piston draws oil from the oil-supply tank S the valve *t* opens to allow the oil a free flow and the valve *t′* closes to prevent any oil from passing out of the air-cushioned oil-tank A, and when the piston drives the oil out from the cylinder the valve *t* closes and the valve *t′* opens, allowing the oil to be forced into the air-cushioned oil-tank A.

c‴ indicates a coupling for coupling the flexible pipes or hose T″ with the nozzle C.

In practice the car constituted of the wheel-carried frame D, the wheels and the truck F, and operative mechanisms above described will be preferably driven by the same power which drives the cars of the street-railway to which it is applied.

U indicates a trolley-pole, a fragment of which is shown in Fig. 1, such pole being for the purpose of conveying electricity for driving the motor, which is indicated in Fig. 1 by V. Preferably the handle of the commutator W will be placed within reach of the operator, who will sit on a seat X, from which place he can reach and control the various levers.

In practice the car will be run along the track, and excepting at the curves the brushes will be thrown up out of contact with the track and the oiler-valve will be closed. The pumping apparatus will be allowed to operate until a suitable pressure is shown by the gage Y on the pressure oil-tank. The pressure can be sufficient to throw upon the track guard-rail Z a sufficient quantity of oil to oil the same thoroughly during the short space of time in which the oiler will be moving around the curve. This pressure can best be determined by the operator, as it depends upon the size of the nozzle, fluidity of the oil, and other conditions which must be taken note of in operating this appliance and which any skilful workman will readily observe. When a curve has been reached, the operator will lower the appropriate brush, depending on whether the curve is a right or a left curve, bringing the brush low enough to enter the groove between the guard-rail and the rail. When the car shall pass around the curve and at or before the moment the oiler reaches the curve, the operator will open the valve to allow oil to be thrown through the nozzle as the apparatus passes around the curve. When the curve is passed, the nozzle-valve *c* will be again closed, the rotary brush be raised, and the apparatus run free to the next curve, and the operation will be repeated from time to time and with the appropriate brush and oil-nozzle as the different curves are passed.

15 indicates a clutch for connecting and disconnecting the pumping apparatus and its driving mechanism. 16 indicates the lever for operating such clutch.

In case the curves are a considerable distance apart the operator, instead of allowing the oiler-truck to run upon the track, will depress the lever h^2 of the rocking-bar, and thus raise the wheels of the truck F clear of the track until the next curve approaches. Then the truck can be lowered again to the track to accomplish the oiling of such curve.

At the end of the track the truck will be lifted by depressing the lever h^2. The pins *k″* will be removed and the pipe-couplings *c‴* disconnected from the nozzles, thus allowing the oiler-truck to be turned around to bring the brushes into the reverse position, so that they will be in front when the car runs back over the track, thus allowing the apparatus to be turned independently of the use of any turn-table in the track. When the truck has been reversed, the oil-pipes will be coupled to supply oil to the nozzles, and the apparatus will again be ready for operation.

X′ indicates a seat-socket in the top member of the fifth-wheel, which is rigidly fixed to the draw-bar J, and the seat-support will be drawn out of the socket and reversed for use when the apparatus is run in the opposite direction.

The pump B′ which I have shown is an oscillating pump carried by the pin *b′*, and the pipes T T′ are flexible to permit the oscillations of the pump B′. It is to be understood, however, that any form of pump may be used without departing from my invention.

In passing around a curve the oiler-carrying truck will be pushed sidewise by the curved rails, and the sliding bar H allows sufficient lateral motion to avoid any binding between the several trucks and the track.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a wheel-carried frame independent of the truck, of an air-cushioned oil-tank; means for forcing oil from a source of oil-supply into such tank; a lubricating-nozzle connected with the tank to deliver oil therefrom onto the side of a guard-rail; and a valve to control and cut off the flow of oil from the nozzle.

2. The combination of a wheel-carried frame; an air-cushioned oil-tank; an oil-sup-

ply tank; a pump for forcing oil from the supply-tank into the air-cushioned tank and driven from the wheels which carry the frame; and a lubricating-nozzle connected with the air-cushioned tank to deliver oil therefrom.

3. The combination of a wheel-carried frame; an air-cushioned oil-tank; an oil-supply tank; means for forcing oil from the supply-tank into the air-cushioned tank; and a lubricating-nozzle connected with the air-cushioned tank and arranged to follow along the rail upon which the wheels run to deliver oil onto a rail of the track.

4. The combination of a wheel-carried frame; an oil-tank with compressed-air chamber; a pump for forcing oil into the chamber and driven from the wheels which carry the frame; a guide to make the nozzle follow along the rail upon which the wheels run; and a nozzle fastened to the guide and connected with the oil-tank to deliver oil therefrom.

5. The combination of the wheel-carried frame; a brush-and-oiler-carrying truck; and means adjustably connecting the truck to the frame, and arranged to allow the truck to move transverse to the frame.

6. The combination of the wheel-carried frame; a truck between the wheels of the frame; a truck-supporting bar connected with the truck and arranged to slide transverse the frame; and a draw-bar connecting the truck with the frame.

7. The combination of the wheel-carried frame; a truck between the wheels of the frame; a truck-supporting rocking bar arranged to slide transverse the frame; and a fifth-wheel carried by the arms of such rocking bar and pivoted to the truck.

8. The combination of the wheel-carried frame; a truck between the wheels of the frame; a truck-supporting rocking bar arranged to slide transverse the frame; a fifth-wheel carried by the arms of such rocking bar and pivoted to the truck; and means for preventing the fifth-wheel from turning.

9. The combination of the wheel-carried frame; a truck between the wheels of such frame and provided with a forwardly-extending rotary brush; means connecting the rotary brush with the wheel of the truck for driving the brush; means connecting the truck with the frame and arranged to slide transverse the frame; and a draw-bar connecting the truck with the frame.

10. A track sweeper and oiler provided with a reversible truck which carries sweeping and oiling appliances; and means for lifting the truck to allow the same to be reversed on the track.

11. The combination with a truck, of the rotary brush mounted in a lever pivotally connected with said truck to move vertically and laterally; and means for holding the lever in a fixed position.

12. The combination of the wheel-carried frame; a rocking bar mounted on such frame and provided with a lever for turning the rocking bar; a truck provided with a fifth-wheel adjustably connected with said frame; and links connecting the upper plate of the fifth-wheel with the arms of the rocking bar.

13. The combination of a wheel-carried frame; a truck adjustably connected with such frame; and a rotary brush driven by a wheel of such truck and connected with such truck by a lever which admits of the raising and lowering of the brush.

14. A track-cleaner provided with a rotary brush carried by a lever fulcrumed to a pivoted base.

15. The combination of the wheel-carried frame; a fifth-wheel the upper member of which is adjustably connected with such frame; a truck fastened to the under member of the fifth-wheel; a draw-bar connecting the upper member of the fifth-wheel with the frame; and means to lock the two members of the fifth-wheel against rotating with relation to each other.

16. A brush for a track-cleaner comprising a circular main body having brush-receiving cavities therein around the rim of the wheel; bundles of wires which are mounted in the cavities and slant toward the mid-plane of the wheel; and rings which are provided with cavities corresponding to the cavities of the main body, and fastened to the main body to clamp the bundles of wires in the sockets formed by said cavities.

GEORGE HUFF.

Witnesses:
JAMES R. TOWNSEND,
F. M. TOWNSEND.