

No. 819,762.

PATENTED MAY 8, 1906.

E. E. KEEFE.
TRACK SANDER AND BRAKE SHOES.

APPLICATION FILED OCT. 11, 1905.

2 SHEETS—SHEET 1.

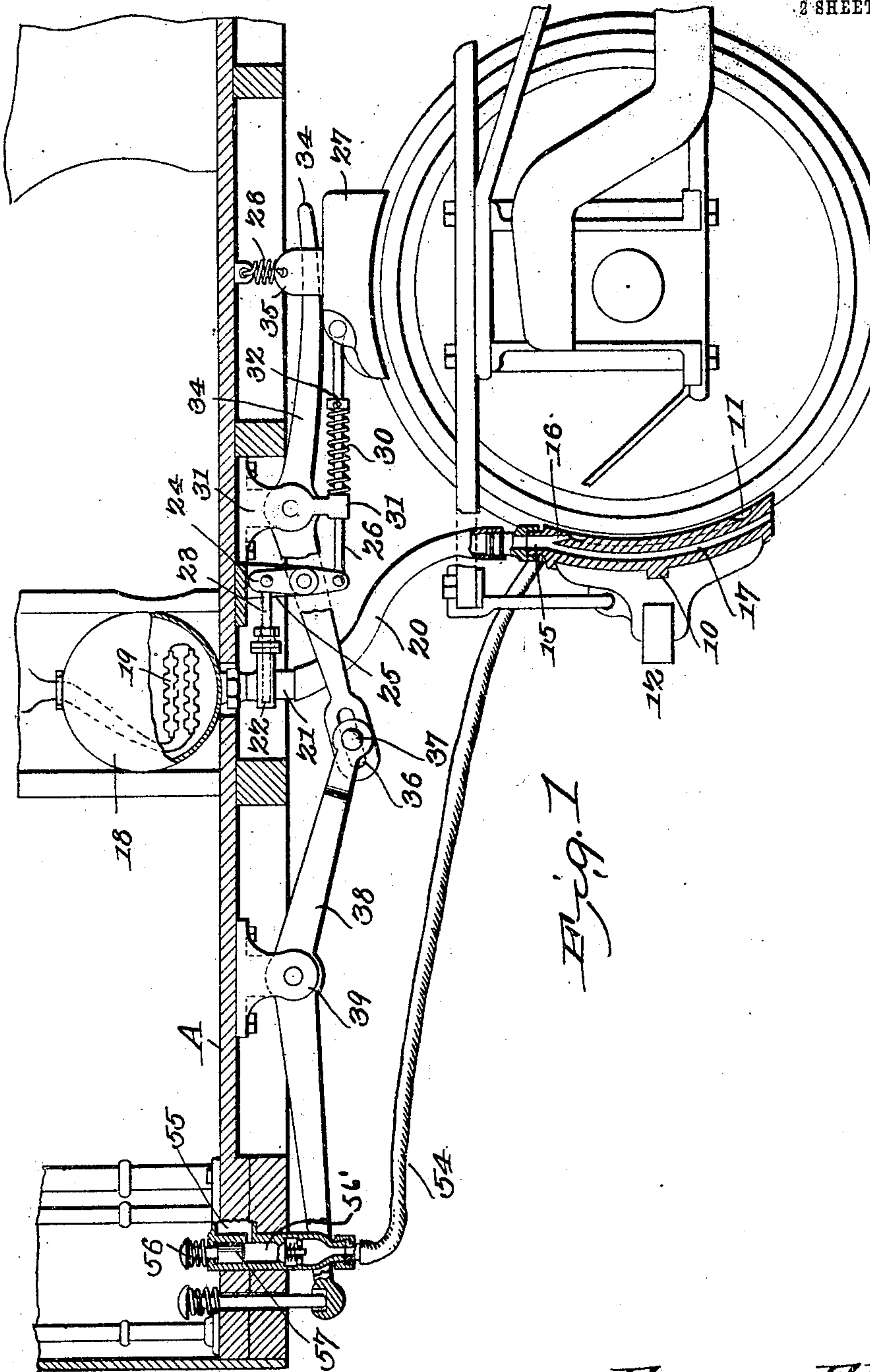


Fig. 1

Witnesses

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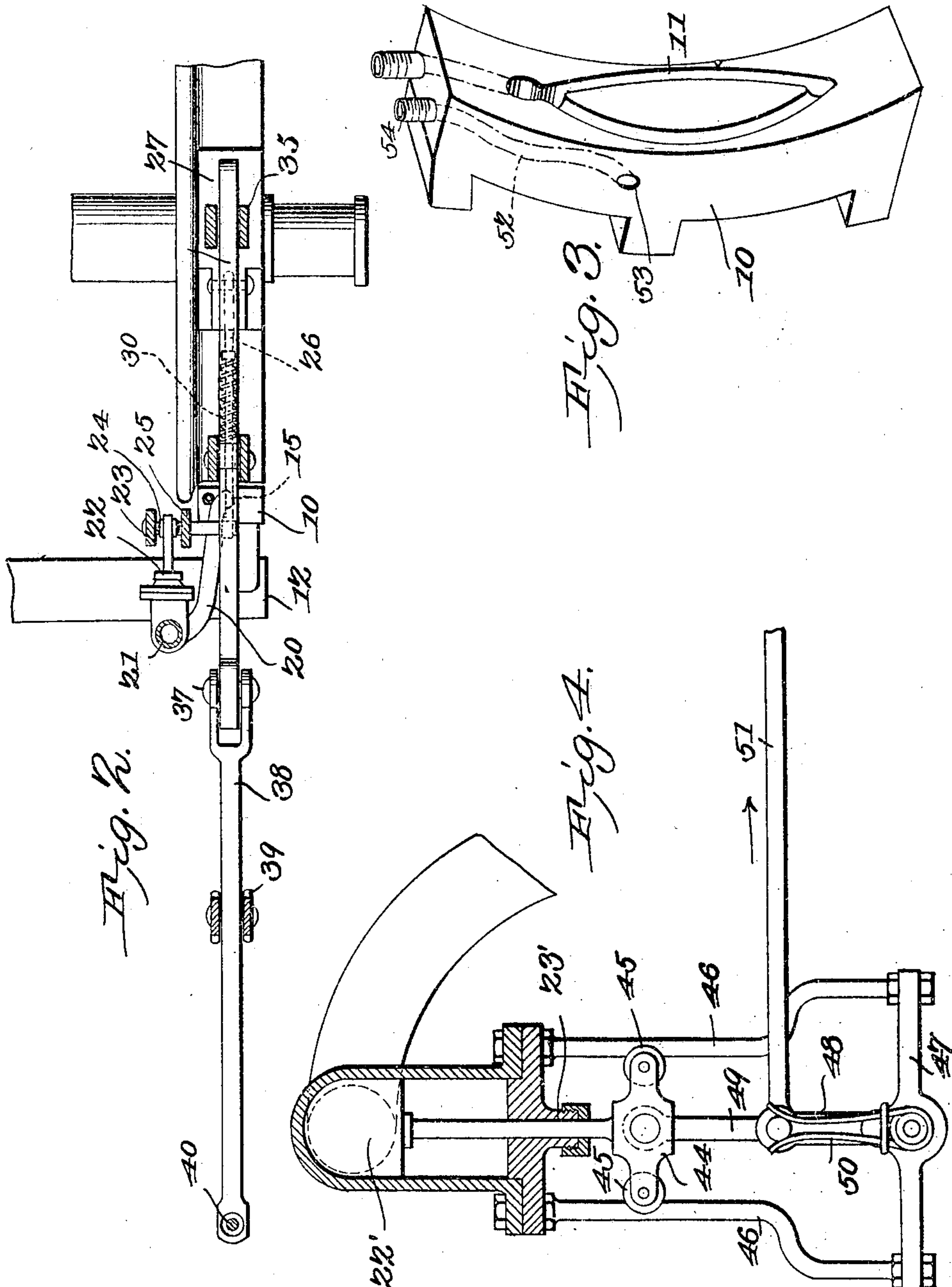
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UNITED STATES PATENT OFFICE.

EUGENE E. KEEFE, OF BELLOWS FALLS, VERMONT.

TRACK-SANDER AND BRAKE-SHOE.

No. 819,762.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed October 11, 1905. Serial No. 282,301.

To all whom it may concern:

Be it known that I, EUGENE E. KEEFE, a citizen of the United States, residing at Bel-
lows Falls, in the county of Windham and
5 State of Vermont, have invented a new and
useful Track-Sander and Brake-Shoe, of
which the following is a specification.

This invention relates to apparatus for con-
trolling the movement of wheeled vehicles,
10 such as street-railway cars, locomotives, and
railway-cars generally.

One object of the invention is to provide
means for feeding suitable material to a
brake-shoe, a gritty or abrading material be-
15 ing supplied between the brake-shoe and the
tread of the wheel when the movement is to
be stopped or retarded and a lubricating ma-
terial being applied to the flange of the wheel
while the car or train is rounding curves.

20 A further object of the invention is to pro-
vide a brake-shoe having grooves in its fric-
tion-surface for the reception of a gritty or
abrading material.

A further object of the invention is to pro-
25 vide a brake-shoe having a passage leading to
the friction-surface of the shoe and to provide
means for feeding a gritty or abrading mate-
rial through such passage.

A still further object of the invention is to
30 provide a means for feeding a gritty or abrad-
ing material to a brake-shoe and to the brake.

A still further object of the invention is to
provide a brake-shoe having passages so ar-
ranged as to feed a gritty or abrading mate-
35 rial partly between the friction-surface of the
shoe and the wheel and partly to the track.

A still further object of the invention is to
provide a mechanism of simple character for
controlling the flow of material from the sand
40 box or other reservoir to the point of applica-
tion.

A still further object of the invention is to
provide an automatic sand-valve operable
from one of the vehicle-wheels.

45 With these and other objects in view, as
will more fully hereinafter appear, the inven-
tion consists in certain novel features of con-
struction and arrangement of parts, hereinaf-
ter fully described, illustrated in the accom-
panying drawings, and particularly pointed
50 out in the appended claims, it being under-
stood that various changes in the form, pro-
portions, size, and minor details of the struc-
ture may be made without departing from

the spirit or sacrificing any of the advantages 55
of the invention.

In the accompanying drawings, Figure 1 is
a view in sectional elevation of the lower front
portion of a railway-car provided with track-
sanding and braking apparatus constructed 60
in accordance with the invention. Fig. 2 is a
plan view of the principal parts of the mech-
anism, the housing or supports being shown
in section. Fig. 3 is a detail perspective view
of the brake-shoe. Fig. 4 is a detail view, 65
partly in section, of a modified form of valve-
operating mechanism for controlling the flow
of sand or similar material from the sand-
box.

Similar numerals of reference are employed 70
to indicate corresponding parts throughout
the several figures of the drawings.

The apparatus forming the subject of the
present invention is illustrated in the present
instance in connection with a street-railway 75
car A, this being merely typical of the vehi-
cle, and it is to be understood that the device
may be applied with equal facility to locomotives
or rolling-stock of any character.

The brake-shoe 10 is formed of metal cast 80
or otherwise shaped, and in the face thereof
is arranged a groove or grooves 11, two
grooves being shown in the present instance
extending on curved lines lengthwise of the
shoe and meeting at the upper and lower 85
ends. These grooves are designed to receive
sand or other material, and when the shoe is
forced against the periphery of the wheel
comparatively light pressure is all that is nec-
essary to check the movement of the vehicle, 90
so that the car or other vehicle may be stopped
without locking the wheel and skidding, this
latter operation resulting in the flattening of
the wheels and necessitating turning. Should
light skidding result, any flattened places 95
may be removed, owing to the abrading ac-
tion of the sand or other material between
the brake-shoe and the periphery of the
wheel, so that the device not only minimizes
the danger of flattening, but redresses the 100
wheel in case flattening should accidentally
occur. The brake-shoe is hung in any suit-
able manner and is connected to a brake-
beam 12 of the usual type. In the upper por-
tion of the brake-shoe is formed a passage 15, 105
divided into two branches 16 and 17, the for-
mer extending to the top of the grooves 11,
while the latter runs entirely through the

brake-shoe to permit the flow of sand or other material to the surface of the track at a point in front of the wheel.

On the car is arranged a sand box or reservoir 18, that preferably is provided with an electric heater 19 in case of an electrically-propelled car, the heater serving to dry the sand and expel any moisture, so that the sand may flow freely from the box. This box is connected to the upper end of the brake-shoe by a hose 20, that preferably is flexible to permit the necessary movement of the brake-shoe, and the connection between the box and the tube is formed by a valve-casing 21, in which is arranged a suitable valve 22. This valve carries a stem 23, that extends outside the casing, and is connected to the upper end of a lever 24, that is pivoted on a hanger 25. The lower end of the lever is connected by a rod 26 to a friction-shoe 27, arranged above the tread of the wheel and normally held out of contact therewith by a helical tension-spring 28. The valve is retained in closed position by a spring 30, which may be coiled around the rod 26, one end of the spring bearing against a hanger 31 and the other against a collar 32, that is secured to the rod.

Pivoted to the hanger 31 is a lever 34, the rear end of which extends through a bracket 35, that is secured to the upper end of the shoe 27, and the opposite end of said lever is provided with a slot 36 for the reception of a pin 37, carried by a lever 38, pivoted on a hanger 39, depending from the floor or frame of the car. The front end of the lever 38 carries a pedal-rod 40, extending through a guiding-opening in the floor of the car within convenient reach of the motorman or other operator, and when the brake is to be applied comparatively light pressure on the pedal-rod 40 will be transmitted through the several levers to the friction-shoe 27, forcing the latter down into engagement with the tread of the wheel. The friction-block will be carried forward as the wheel rotates, and this movement will be transmitted to the valve-stem, opening the valve and allowing the sand or other material to flow from the box down through the tube 20, a portion of the sand passing through the grooved face of the brake-shoe and the remainder passing through the passage 17 and falling to the track. The brake-shoe may be forced against a wheel by hand or other power. When pressure on the pedal-rod 40 is relieved, the spring 28 raises the friction-shoe from contact with the wheel and the spring 30 moves the valve to its closed position.

In the construction shown in Fig. 4 the stem 23' of the valve 22' is provided with a cross-head 44, having rollers 45 at its opposite edges. The rollers travel against cross-head guides 46, forming part of a frame 47, and to the frame is pivoted a rocker-arm 48,

which, in connection with a link 49, forms a toggle-joint between the cross-head and the frame, and said toggle-joint is normally maintained in the position shown in Fig. 4 by means of a pair of springs 50. The valve-operating means is coupled in any suitable manner to the rod 51, and when this rod is moved in the direction of the arrow the toggle will be broken, the cross-head moved, and the valve will be opened to allow the flow of sand. During the winter months, when ice and snow accumulate on the tracks, it is preferred to place in the sand-box a mixture of sand and salt, which when distributed on the tracks will serve to melt the ice, and thus keep the tracks clear.

A braking apparatus constructed in accordance with this invention may, as above described, be applied to locomotives or cars of any description, and owing to the friction exerted between the brake-shoe and the wheel-tread the motion will be quickly arrested. The surfaces of the wheels will, moreover, be kept true, and any flattening may be remedied by the wearing away of the wheel-tread by attrition.

In rounding curves at high speed there is considerable frictional wear between the flanges of the wheels and the inner edges of the rails, and to overcome this means are employed for feeding a lubricating material to the inner edge of the flange. The brake-shoe is provided with a third passage 52, having a discharge-opening 53 arranged at one side of the shoe, so that material having lubricating properties may be fed through said openings against the wheel-flange, and thus carried down to the rail. The top of the passage is connected by a pipe 54 to a lubricant-containing tank 55, arranged at any convenient point, preferably under the control of the motorman, who by depressing a spring-elevated plunger 56 may force a predetermined quantity of lubricant to the brake-shoe. The tank is placed in communication with a chamber 56', having a downwardly-opening valve 57, the chamber being normally filled with oil from the reservoir. When the plunger is depressed, the oil in the chamber is forced past the valve and communication between the chamber and main reservoir is closed for the time being. When pressure on the plunger is relieved, the valve closes, and the plunger in moving upward again establishes communication between the reservoir and the chamber.

Having thus described the invention, what is claimed is—

1. A wheel-brake shoe having a grooved face, and means for feeding sand thereto.
2. A wheel-brake shoe having a grooved face and provided with a passage leading from the groove, and means for feeding sand through said passage.
3. A wheel-brake shoe, having a passage

leading vertically through the shoe from the upper to the lower end thereof for conveying sand to the track, and means for directing sand into said passage.

5 4. In a wheel-brake shoe a track-sander, a sand-box, and a duct leading from the box to a point adjacent to the track, the brake-shoe having a passage forming a part of said duct.

10 5. A wheel-brake shoe having two sand-passages, one for conveying sand to the face of the shoe, and the other for directing sand to the track.

15 6. In combination, a wheel-brake shoe, a sand-box, and a flexible pipe connecting the two.

7. In combination, a wheel-brake shoe, a sand-box, a flexible pipe connecting the two, and a valve for controlling the flow of sand from the box.

20 8. A brake-shoe having a passage through which a lubricating material may be fed against the flange of the wheel.

9. A brake-shoe having a lubricant-passage terminating at a discharge-point at one

side of the shoe, and a reservoir to which said passage is connected. 25

10. The combination with a brake-shoe having a lubricant-passage, of a lubricant-reservoir, and means for forcing predetermined quantities of lubricant to said passage. 30

11. In combination, a sand-box, a brake-shoe having a sand-passage, a flexible tube leading from the sand-box to the brake-shoe and in communication with said passage, a valve for controlling the flow of sand through the tube, a friction-block, means for forcing said friction-block against one of the vehicle-wheels, and means whereby the movement transmitted from the wheel to the block effects opening movement of the valve. 35 40

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

EUGENE E. KEEFE

Witnesses:

J. E. MCGREEN,
W. J. DORSEY.